THE CITY OF Kalamazoo

Kalamazoo Safety Action Plan

NOVEMBER

CITY OF KALAMAZOO, MICHIGAN

RESOLUTION NO. 26-08

A RESOLUTION AFFIRMING THE ADOPTION OF A SS4A SAFETY ACTION PLAN FOR THE CITY OF KALAMAZOO

Minutes of a regular meeting of the City Commission of the City held on January 5th, 2026, at 7:00 o'clock p.m. local time, at the City Hall.

PRESENT, Commissioners: Hess, Hoffman, Praedel, Slaby, Wilson, Vice Mayor Duncan, Mayor Anderson

ABSENT, Commissioners: None

WHEREAS, the Safe Streets for All (SS4A) Safety Action Plan (referred to as an "Action Plan") is focused on the following key safety areas:

- Lighting,
- Intersection Safety and Improvements
- Traffic Calming and,
- Bus Stop Safety Improvements

WHEREAS, the Safe Streets for All (SS4A) Safety Action Plan (referred to as an "Action Plan") pertains to projects within or on the boundary of the City of Kalamazoo

WHEREAS, the Safe Streets for All (SS4A) Safety Action Plan (referred to as an "Action Plan") is a commitment by the City of Kalamazoo and aimed at reducing, mitigating, and eliminating serious-injury and fatal crashes affecting all vulnerable roadway users guided by the Safe System Approach.

BE IT RESOLVED: The City of Kalamazoo SS4A Safety Action Plan is hereby adopted.

The above resolution was offered by Commissioner Slaby and seconded by Commissioner Hess.

AYES, Commissioners: Hess, Hoffman, Praedel, Slaby, Wilson, Mayor Anderson

NAYS, Commissioners: Vice Mayor Duncan

ABSTAIN, Commissioners: None

RESOLUTION DECLARED ADOPTED.

Thank You to Our Partners

This Plan would not have been possible without the dedication, insight, and collaboration of our many partners. We are deeply grateful for your contributions to building a safer, more connected, and more equitable transportation future for Kalamazoo.

With sincere thanks to:

- City of Kalamazoo Department of Public Services
- City of Kalamazoo Community Planning & Economic Development
- City of Kalamazoo Neighborhood Activation & Engagement
- Metro Transit
- Kalamazoo Area Transportation Study (KATS)
- Disability Network Southwest Michigan

Your partnership and commitment have been essential to this effort.

THE CITY OF Kalamazoo

This Plan was developed under the leadership of City of Kalamazoo staff in collaboration with a multidisciplinary team that included Alta Planning + Design, Inc. (with Value Engineering, LLC and The Mannik & Smith Group, Inc.) and AECOM (with C2G Consulting). The Alta team led the development of the Pedestrian Safety Plan, the Intersection Safety Improvement Plan, and the design and compilation of this overarching Safety Action Plan document. The AECOM team led the development of the Lighting Safety Improvement Plan, Sidewalk Safety Improvement Plan, and Bus Stop Safety Improvement Plan.

alta AECOM C2G Mannik Smith GROUP ValueEngineering

Executive Summary

The Kalamazoo Safety Action Plan is a people-centered, data-informed roadmap for eliminating serious injuries and fatalities on the city's streets. Developed through a collaborative planning process funded by the U.S. Department of Transportation's Safe Streets and Roads for All (SS4A) program, the Plan centers the needs of Kalamazoo residents—especially those who walk, bike, and ride transit—and prioritizes equitable investments in areas with the greatest safety risks.

From the outset, the Plan was designed to be actionable and strategic, with a clear focus on four high-impact areas: intersections, sidewalks, street lighting, and bus stops. These locations are where infrastructure gaps, crash risk, and community concerns most often intersect—and where focused investments can yield the greatest safety benefits. Each study area includes an in-depth analysis of current conditions, robust public and stakeholder input, and tailored recommendations to improve safety and comfort for all users.

The planning process was led by the City of Kalamazoo in partnership with technical consultants, and with additional guidance from a community-based Safety Task Force. The process included:

- Policy and plan alignment with Imagine Kalamazoo 2025 and regional transportation goals
- Crash and risk analysis using 10 years of data across all modes
- Pedestrian stress mapping and infrastructure evaluation citywide
- Asset and gap assessments for sidewalks, street lights, and bus stops
- Public engagement in two phases, including citywide surveys, interactive maps, events, and pop-ups
- Equity mapping to identify where vulnerable communities face the greatest transportation barriers

The result is a comprehensive, implementation-ready Plan that reflects both technical best practices and community voice. It equips the City of Kalamazoo with the tools, data, and priorities needed to pursue funding, advance projects, and make measurable progress toward its Vision Zero goals.

The sections that follow summarize the core themes, findings, and recommendations from each major component of the Plan.

Chapter 1

Laying the Groundwork for Safer Streets for All

This opening section defines the vision and urgency behind the Plan. It outlines the Safe System Approach and aligns with Imagine Kalamazoo 2025 to reinforce a commitment to people-first, multimodal streets. The chapter also introduces the Plan's focus on equity, infrastructure gaps, and the systemic factors contributing to traffic violence.

Chapter 2

Aligning the Road Ahead

This section synthesizes existing policies, Plans, and funding tools that support safer streets. From the Street Design Manual and neighborhood Plans to regional KATS strategies and local funding sources like the Foundation for Excellence, Kalamazoo has laid the groundwork for transformation. The Plan identifies opportunities to bridge gaps and align efforts for maximum impact.

Chapter 3

Voices That Shape Our Streets

Robust public engagement informed every phase of the Plan. Through surveys, mapping tools, and in-person events, over 1,000 residents shared their insights on where safety is lacking. A Safety Task Force encouraged community perspectives were reflected in every decision. This chapter demonstrates the power of lived experience in shaping solutions.

Chapter 4

Knowing Our Streets

This chapter provides the data-driven context for action. It highlights crash patterns, travel behavior, infrastructure gaps, and equity disparities across Kalamazoo. Key findings include disproportionate crash severity for pedestrians and people of color, especially in areas with incomplete infrastructure and higher posted speeds.

Chapter 5

Pedestrian Safety Study

The Pedestrian Level of Traffic Stress (PLTS) analysis shows where Kalamazoo's walking network supports comfort and where it breaks down. While three-quarters of streets are low stress, high-stress corridors isolate neighborhoods and create barriers to essential destinations. The chapter identifies which streets need urgent redesign to support walking and rolling for all.

Chapter 6

Focus Areas for Safety Action

This expansive chapter presents targeted strategies in four focus areas:

- Fixing Risky Intersections: A scoring system and five detailed cut sheets guide upgrades at high-crash locations. A companion Toolbox supports citywide improvements.
- Filling the Gaps: Sidewalk Safety: A data-driven prioritization framework identifies where sidewalks are missing, unsafe, or overdue for investment—especially in high-risk, underserved areas.
- Brighter Streets, Safer Nights: A lighting audit and photometric study show where visibility upgrades are needed to prevent nighttime crashes.
- Safer Stops, Safer Trips: Fifty bus stops were evaluated for safety, accessibility, and equity. Recommendations include infrastructure upgrades, amenities, and policy reforms to improve access to transit.

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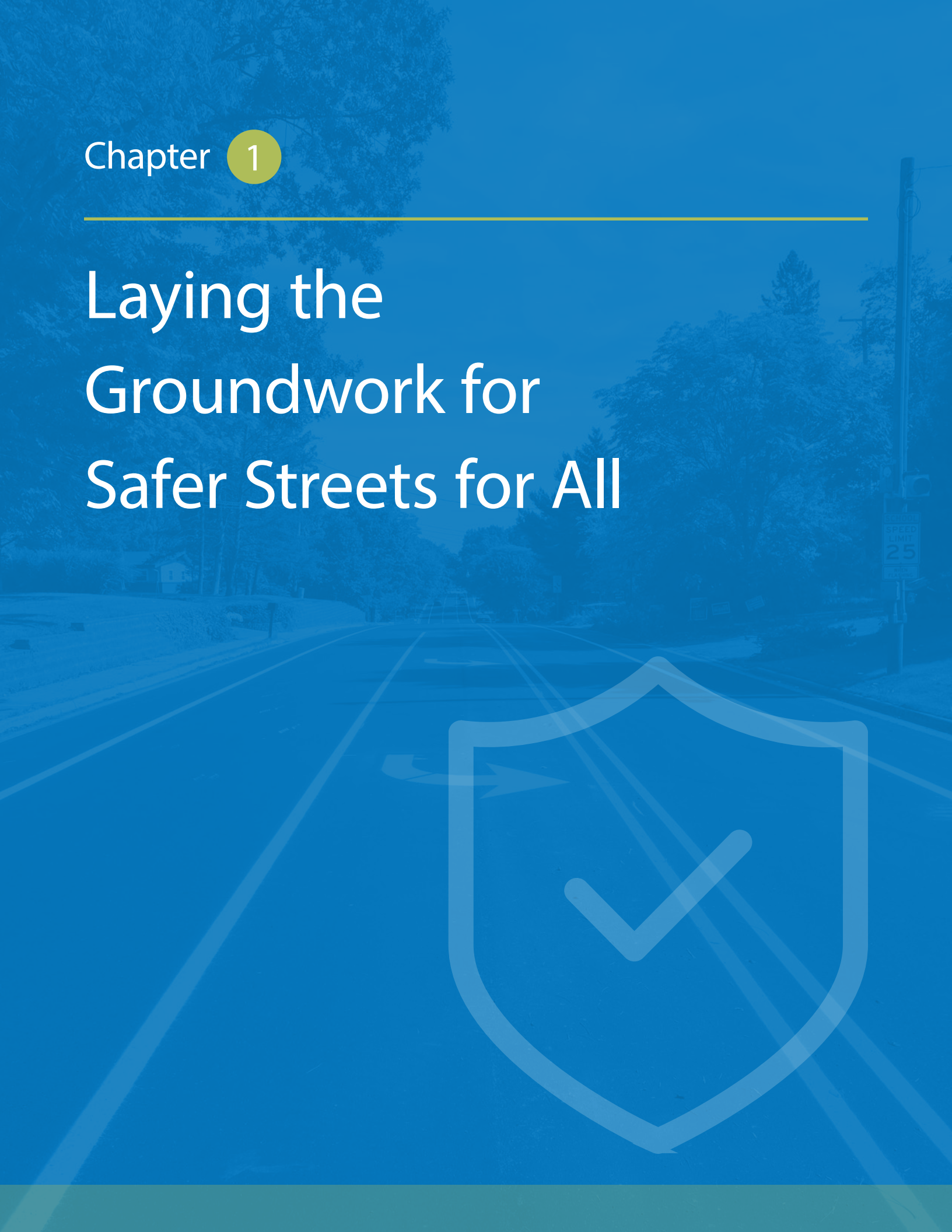
Chapter 1

Laying the Groundwork for Safer Streets for All



A Call to Action: Why a Safety Action Plan Matters

In 2023 alone, Michigan recorded more than 1,000 fatal crashes—28 of which occurred within the city of Kalamazoo. Over 1,218 injuries were reported in Kalamazoo that same year, underscoring the urgent need for systemic change in how we design and operate our streets. Contributing factors such as excessive speed, roadway design, vehicle size, and adjacent land use patterns continue to put lives at risk. These risks are not shared equally: people walking and biking are significantly more likely to be seriously injured or killed in crashes, especially in areas where infrastructure has not been designed with their needs in mind.

The Kalamazoo Safety Action Plan is a strategic response to these challenges. It builds on existing planning efforts and community priorities to investigate crash patterns, analyze contributing conditions, and propose actionable solutions to prevent future tragedies. The Plan aims to make sure every person—regardless of how they travel—can move safely and comfortably through Kalamazoo.

Looking ahead, the Plan offers an opportunity to align citywide safety efforts with national frameworks that emphasize systemic responsibility, proactive design, and the belief that traffic-related deaths are preventable. This alignment can support ongoing progress and strengthen Kalamazoo's long-term vision for safer, more inclusive streets.

Grounding the Work in the Safe System Approach and a People-Centered Focus

This Plan is guided by the Safe System Approach—a nationally recognized framework that shifts the burden of crash prevention from individual responsibility to system-wide accountability. At its core, this approach accepts that human error is inevitable and designs the transportation system to prevent those mistakes from resulting in death or serious injury.

The Safe System Approach is founded on six principles:

- Death and serious injuries are unacceptable
- Humans make mistakes
- Humans are vulnerable
- Responsibility is shared
- Safety is proactive
- Redundancy is critical

In practice, implementing this approach requires attention to five key elements: safer people, safer roads, safer vehicles, safer speeds, and effective post-crash care.

A people-centered approach also acknowledges the need to address past and present transportation decisions that have contributed to gaps in access, safety, and mobility—especially for communities who rely on walking, biking, and public transit. Those walking or biking are disproportionately affected by crashes, and residents of historically underserved neighborhoods often lack adequate infrastructure that supports safe travel. This Plan prioritizes people first by identifying and addressing safety needs. Regardless of age, ability, income level, or travel mode—systems that consider our most vulnerable benefit everyone.

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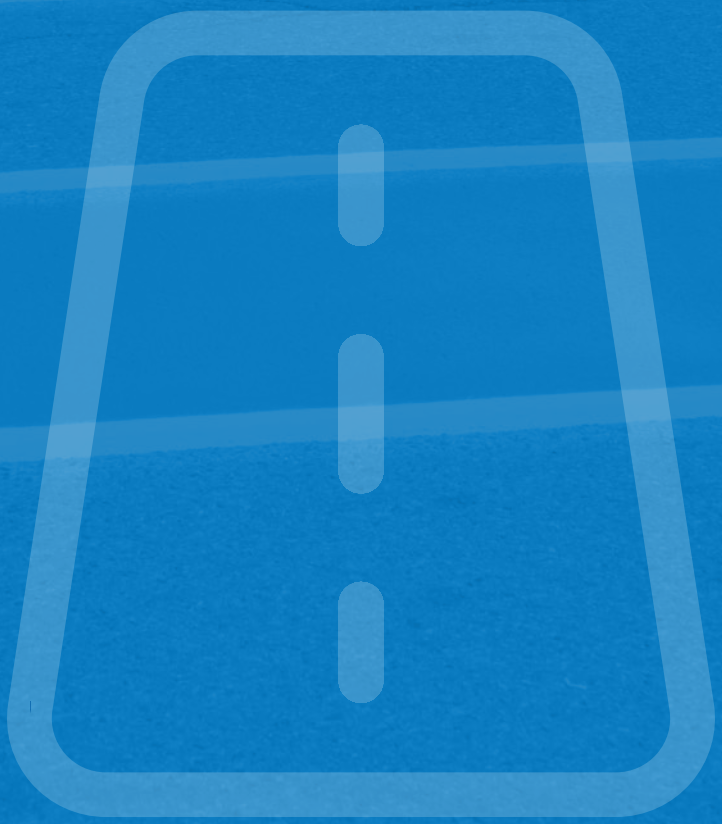
Chapter 2

Aligning the Road Ahead



Citywide Plans and Policies

A strong foundation for the Kalamazoo Safety Action Plan lies in its alignment with the City's existing policies, plans, and community-driven priorities. Over the past decade, the City of Kalamazoo—together with regional and neighborhood partners—has developed a comprehensive suite of planning documents that center transportation safety, equity, and multimodal connectivity. This chapter synthesizes those guiding documents and highlights how each can shape, inform, and accelerate safety-related work moving forward.

Through long-range visioning efforts, design standards, neighborhood plans, and targeted infrastructure investments, Kalamazoo has already demonstrated a deep commitment to building safer streets. These plans not only articulate community values and design goals but also offer tangible tools, policies, and funding strategies that the City can leverage to advance its safety vision.

The Safety Action Plan serves as a strategic bridge—connecting these efforts, identifying existing gaps, and elevating the most urgent needs. By aligning its recommendations with established policies and funding frameworks, the Plan positions Kalamazoo to make measurable progress toward or mitigating traffic-related deaths and serious injuries.

Looking ahead, this alignment will be essential to fostering cross-departmental coordination, securing sustainable funding, and delivering improvements that are both data-driven and community-informed. Together, these efforts will support a transportation network that is safer, more connected, and more equitable—for everyone, in every neighborhood.

Imagine Kalamazoo Master Plan Context

The Imagine Kalamazoo 2025 Master Plan is the City's guiding document for land use, transportation, housing, and community development. Adopted in 2017, it established a vision for a more connected, sustainable, and equitable city through coordinated planning and investment.

As the plan nears the end of its planning horizon, the City will soon begin developing an updated comprehensive or strategic plan—such as "Imagine Kalamazoo 2035"—to reflect current and future needs. This update will provide an opportunity to reassess community priorities, refine growth and mobility strategies, and integrate recent initiatives such as the Kalamazoo Safety Action Plan, Vision Zero commitments, and other modal plans.

Alignment between the next Imagine Kalamazoo plan and the KATS 2050 Metropolitan Transportation Plan (MTP) will be essential to maintain consistency across local and regional transportation, safety, and investment priorities. Coordinated updates will better position the City to leverage regional funding and advance a unified vision for a safe, multimodal system.

Relevance to the Safety Action Plan

Imagine Kalamazoo 2025 establishes a vision for a "Connected City" and a "Safe Community," emphasizing people-first streets, pedestrian-friendly land use, and multimodal infrastructure. Its design guidance—such as traffic calming, pedestrian-scale lighting, and enhanced crossings—provides a strong policy foundation for prioritizing improvements in areas with high pedestrian activity or known safety concerns.

The emerging Safety Action Plan builds on this foundation. Its goals and objectives center on reducing traffic-related fatalities and serious injuries and supporting a more people-centered, multimodal network. The Plan focuses on five key areas:

- Pedestrian safety
- Sidewalk infrastructure
- Intersection safety
- Street lighting
- Bus stop accessibility and design

Informed by community input, crash analysis, and local context, the Safety Action Plan offers an actionable roadmap for implementing targeted safety upgrades that reinforce the connectivity and complete-neighborhood principles established in Imagine Kalamazoo.

> The Imagine Kalamazoo 2025 Master Plan is nearing the end of its planning horizon. As the City looks ahead to a future update (e.g., Imagine Kalamazoo 2035), alignment with the KATS 2050 Metropolitan Transportation Plan (MTP) will be essential to maintain consistency across local and regional transportation and safety goals.

Figure 1. The Imagine Kalamazoo 2025 Plan Framework outlines the city's process for developing a shared vision and implementing community-driven strategies. The framework moves from a broad Visioning Process (imagine, plan, design, and discuss) to Formalizing the Vision (drafting and adopting a strategic vision), to Implementing the Vision (action plans and projects), and finally to Celebrating Success through annual report cards and ongoing community recognition.

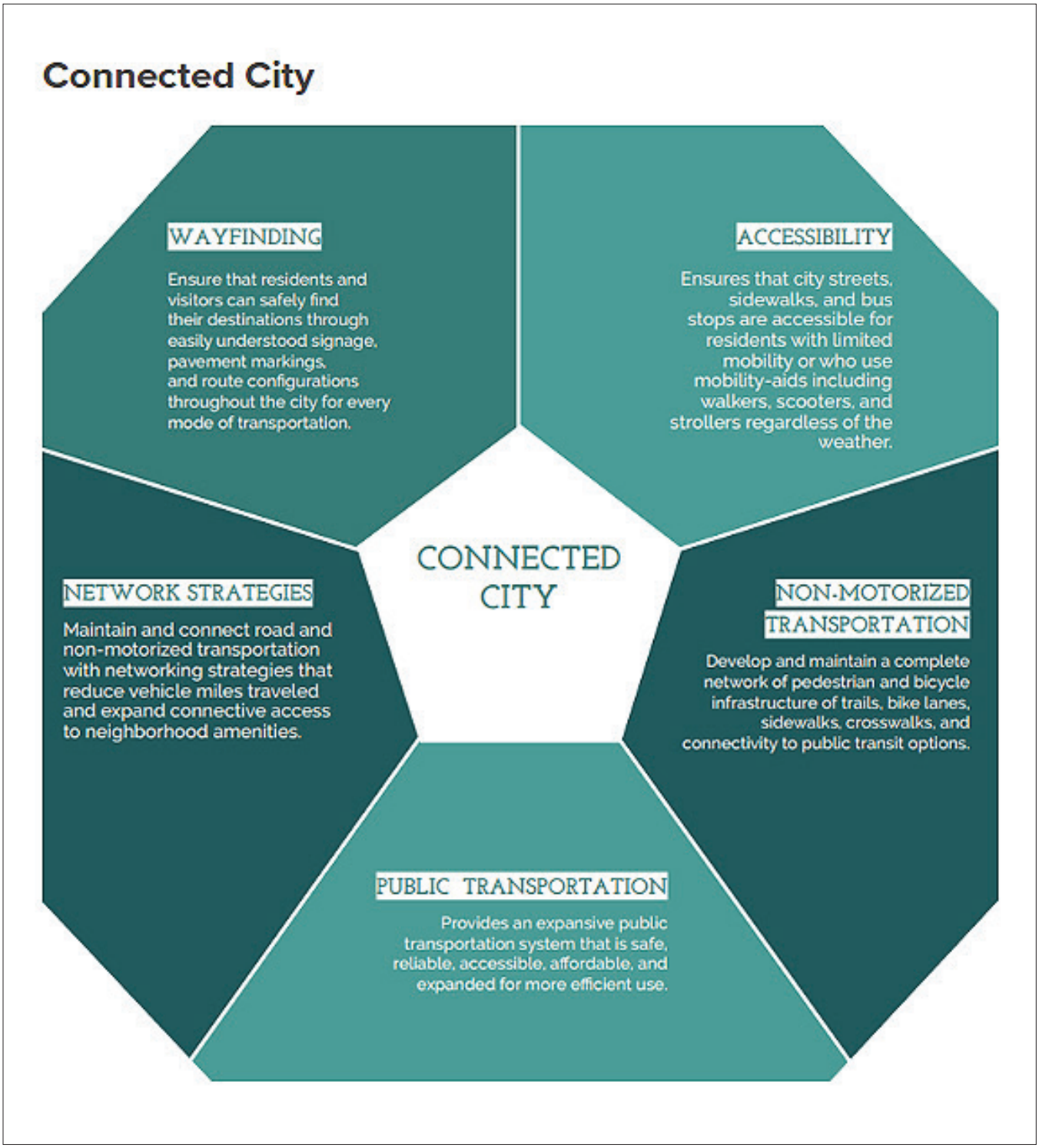


Figure 2. The "Connected City" goal of the Imagine Kalamazoo Plan envisions a multimodal transportation network that improves access, mobility, and safety for all users—whether walking, biking, using a mobility aid, or taking public transit.

Kalamazoo Street Design Manual

The Street Design Manual lays out a framework for creating safe, context-sensitive, and inclusive streets. It introduces street typologies based on land use and transportation function and includes modal hierarchies that prioritize the safety of vulnerable users. Tools such as values-based checklists and recommended design elements for pedestrian and bicycle infrastructure promote safety-oriented design at every stage of project development.

This manual is a key implementation tool for the Safety Action Plan. It can be used to translate high-level goals into site-specific improvements and will be particularly useful when developing corridor-level safety concepts or evaluating alternatives. Its focus on Complete Streets and equity-based decision-making reinforces the plan's commitment to safer outcomes for all users.

Complete Streets Policy

Adopted in 2019, the policy requires all city projects to consider the needs of users of all ages and abilities" – can you please change this to state "Adopted in 2019, the policy requires that all city streets are designed for equitable access, comfort, and mobility of any and all users regardless of ability, age, income, or race.

The policy helps institutionalize safety within the City's planning and engineering processes. It also supports the Plan's goal of creating a connected, multimodal transportation network. The Safety Action Plan can build on this policy by recommending mechanisms for tracking progress, evaluating safety outcomes, and reporting publicly on implementation.

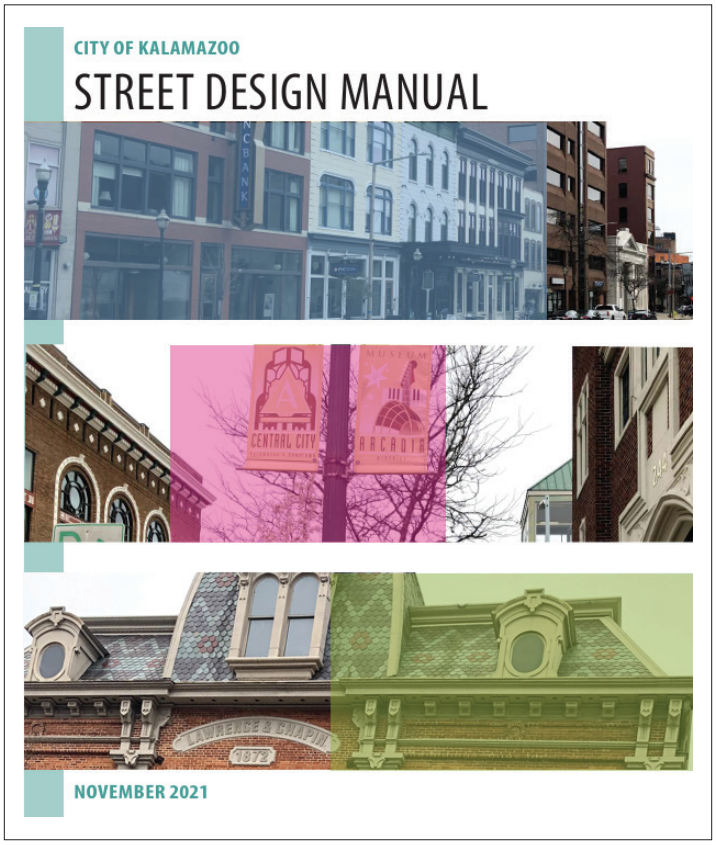


Figure 3. Cover of Kalamazoo's 2021 Street Design Manual, featuring historic downtown architecture and district identity elements that reflect the city's unique character and planning context.

Regional and Metropolitan Transportation Plans

2050 Metropolitan Transportation Plan (KATS)

Developed by the Kalamazoo Area Transportation Study (KATS), the 2050 Metropolitan Transportation Plan outlines regional transportation priorities, including a clear commitment to safety. The Plan identifies performance metrics—such as crash rates for serious injuries and fatalities—and includes a detailed map of high-crash locations.

The Metropolitan Transportation Plan provides a regional framework for aligning safety goals and accessing federal transportation funding. Coordination with KATS will be essential for integrating safety projects into the regional Transportation Improvement Program (TIP) and pursuing implementation funding through state and federal programs.

KATS Moves Pedestrian, Greenways and Transit Plan

The KATS Moves Pedestrian, Greenways and Transit Plan focuses on building out the nonmotorized and transit networks, with an emphasis on safety-focused investments. It includes a methodology for identifying Safety Focus Areas based on crash data and prioritizes projects based on potential impact and feasibility.

This Plan offers a practical template for prioritizing pedestrian and bicyclist safety investments. Its data-driven approach can inform project scoring, while its emphasis on connectivity and mode shift aligns with Vision Zero principles. Recommendations from this Plan should be integrated into the Safety Action Plan's near-term action list.

Local Funding Programs

Foundation for Excellence (FFE)

FFE is a unique public-private partnership that provides local funding for infrastructure, including safety-related projects such as Americans with Disabilities Act (ADA) improvements, pedestrian refuge islands, and traffic calming.

FFE can serve as a flexible and responsive funding source for pilot projects, quick-build installations, and community-requested improvements. The Safety Action Plan should include recommendations for leveraging FFE as a local match for competitive grants and as seed funding for demonstration projects.

Act 51 & Michigan Transportation Fund (MTF)

These sources provide ongoing revenue for local road agencies and can be used for safety improvements. Although historically used for road maintenance, these funds can support targeted safety interventions when tied to crash reduction goals and equity-focused implementation strategies. The Plan should promote their strategic use in high-risk areas.

Transportation Improvement Program (TIP)

The TIP outlines federally funded and regionally significant transportation projects over a four-year period. By aligning with the TIP, the Safety Action Plan's recommended projects will be eligible for federal funding and included in the region's capital planning timeline.

Neighborhood Plans

Neighborhood-level plans across Kalamazoo reinforce community support for safer streets. Plans for areas such as Vine, Northside, Eastside, and Westwood consistently call for:

- Traffic calming on residential and connector streets
- ADA-compliant sidewalks and intersection upgrades
- Enhanced lighting and visibility
- Safer crossings and school zones
- Better access to public transit
- Bike lanes, trails, and greenway connections

Neighborhood plans offer hyper-local context that is invaluable for prioritizing projects and engaging residents. The Safety Action Plan should incorporate these locally identified needs and use them to inform project selection, particularly in underserved areas. Many of these plans highlight systemic issues—such as sidewalk gaps, unsafe crossings, and poor lighting—at the block or corridor level, providing a foundation for equitable investment and community trust. Aligning infrastructure improvements with these documented concerns encourages safety projects that are rooted in community priorities and positioned for lasting impact.

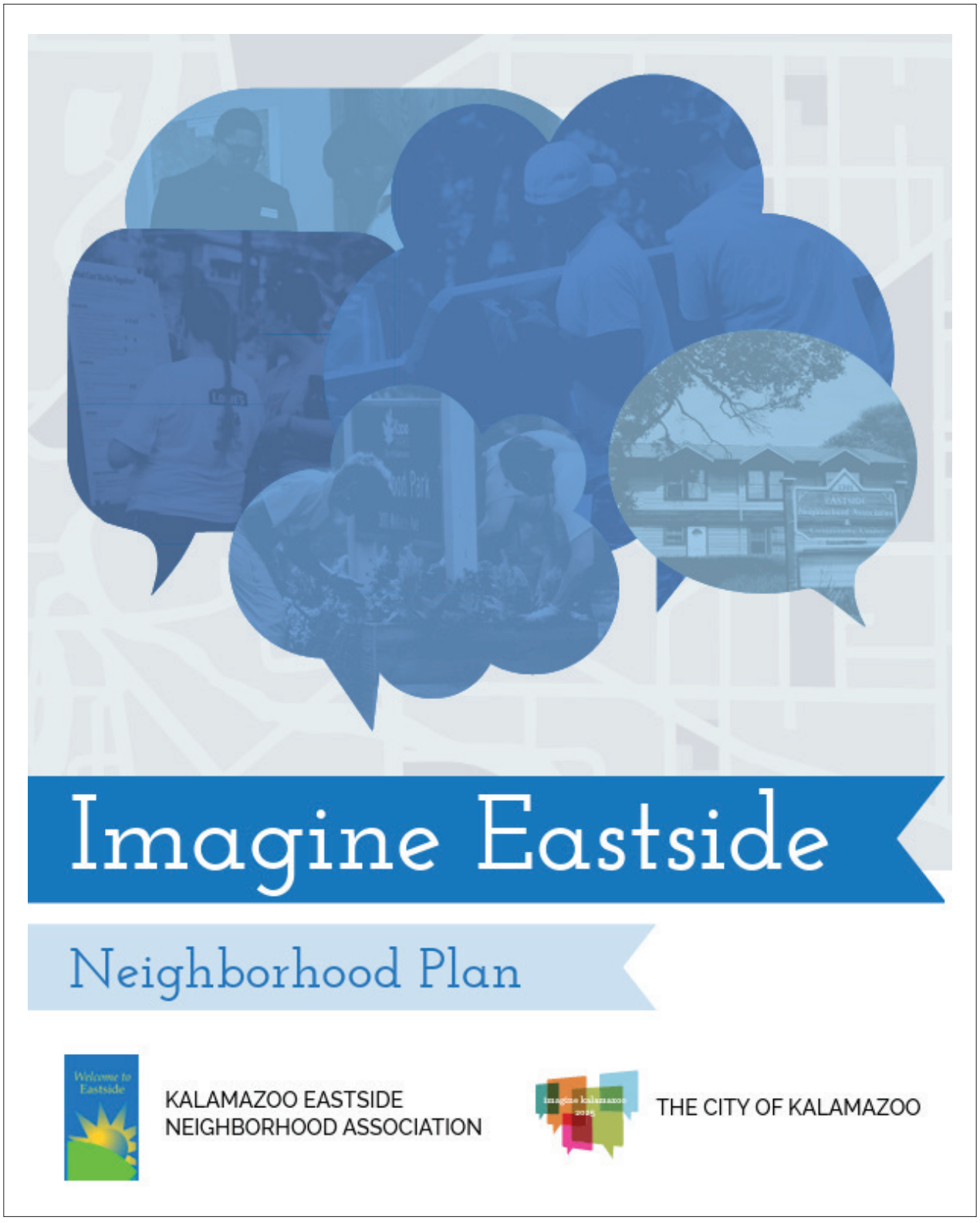


Figure 4. The Imagine Eastside Neighborhood Plan highlights the voices, spaces, and aspirations of Eastside residents, developed in partnership with the Kalamazoo Eastside Neighborhood Association and the City of Kalamazoo.

Key Takeaways

The City of Kalamazoo has laid a solid foundation for advancing transportation safety through an array of forward-thinking plans, policies, and community-led initiatives. This review highlights how these documents—spanning citywide frameworks, regional strategies, and neighborhood visions—reflect a growing, cohesive commitment to safer, more connected, and more equitable streets.

Collectively, they provide not only a clear vision but also a practical roadmap: offering design guidance, policy frameworks, funding mechanisms, and deeply rooted community priorities. By anchoring the Safety Action Plan in this strong planning foundation, Kalamazoo is poised to move from vision to action—prioritizing projects that are feasible, fundable, and aligned with the values and lived experiences of its residents.

The following key takeaways summarize overarching themes from the full review and outline their implications for implementation:

Safety is a shared priority across all levels of planning.

From Imagine Kalamazoo 2025 and the City's Street Design Manual to the KATS regional plans and neighborhood-level visions, safety consistently emerges as a guiding value. Whether through Complete Streets policies, performance metrics, or community design guidelines, the groundwork is already in place to prioritize people-first infrastructure. The Safety Action Plan can unify these efforts into a coordinated strategy for reducing crashes and improving mobility options.

Policy and design tools are already in place to guide implementation

Kalamazoo has adopted robust frameworks—including modal hierarchies, street typologies, equity checklists, and design element guidance—that can be used to inform and streamline the development of safety projects. These tools offer immediate opportunities to standardize practices, support data-driven design decisions, and embed safety across planning, engineering, and maintenance processes.

Community engagement and equity are foundational values

Nearly every plan reviewed—particularly the neighborhood plans—reflects a commitment to authentic public engagement, equity, and responsiveness to local context. Underserved communities have voiced specific needs, from improved crossings and ADA access to better lighting and safer school zones. Kalamazoo safety work should uplift these voices through inclusive project prioritization and implementation strategies that address longstanding disparities.

Funding strategies must be proactively aligned

Many of the reviewed plans identify relevant funding streams, including the Foundation for Excellence, Act 51, TIP, Safe Routes to School, and federal grant programs like Safe Streets and Roads for All (SS4A) and the Highway Safety Improvement Program. The Safety Action Plan should match proposed projects with appropriate funding mechanisms, leveraging local funds as flexible matches and coordinating with KATS to position projects in the TIP. Sustained success will require aligning capital planning, community priorities, and competitive grant readiness.

Neighborhood plans add nuance and depth to safety priorities

While citywide and regional plans set broad policy direction, neighborhood plans offer granular insights—identifying priority corridors, problematic intersections, and underperforming transit stops. These perspectives can inform project scoping, guide equitable investments, and shape future community engagement efforts. Embedding these localized needs into citywide safety strategies helps encourage improvements to be relevant, visible, and trusted.

Coordination across departments and partners will be essential

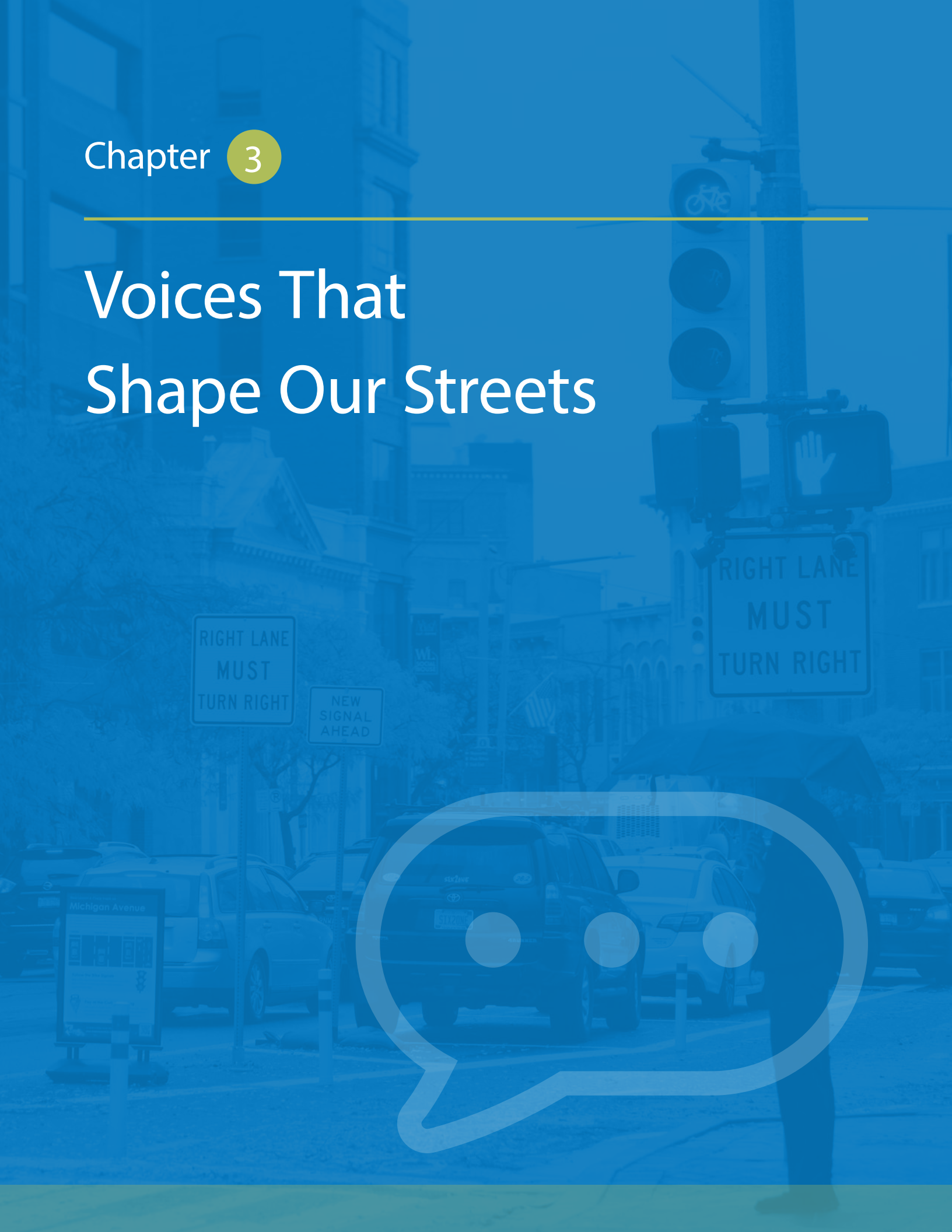
Delivering on the promise of safe streets will require collaboration across City departments, with the Metropolitan Planning Organization (KATS), and with community groups. This includes integrating safety goals into routine maintenance, capital improvement planning, development review, and performance monitoring. Future safety planning and implementation should strengthen interagency coordination and institutionalize safety as a citywide priority.

There is momentum to build on—and a need for measurable progress

Kalamazoo's policy landscape reflects years of thoughtful planning. Now is the time to move from planning to action. City safety champions can play a catalytic role by tying together these plans, translating community-identified needs into funded projects, and tracking outcomes through transparent performance measures.

Chapter 3

Voices That Shape Our Streets



Introduction

Community engagement played a vital role in shaping the Kalamazoo Safety Action Plan so that resident voices, local knowledge, and lived experiences were central to the planning process. The goal was to better understand how people move through the city, where they feel unsafe, and what improvements are most needed to support a safer, more inclusive transportation system.

The engagement process was organized into two distinct phases to guide the plan's development. Phase 1 focused on gathering broad input from community members to identify key safety concerns and travel patterns. Through an online survey and interactive input map, residents shared their daily travel experiences, safety challenges, and desired improvements. This input informed early themes and helped identify preliminary priority locations for analysis.

Phase 2 followed several months later, once draft focus areas had been developed using crash data, safety indices, and community input. This phase was designed to validate and refine those findings by returning to the public with preliminary results. Through an in-person event and a follow-up online map, residents reviewed and responded to the proposed safety focus areas, confirming where the plan should prioritize improvements.

These two phases were facilitated to create a feedback loop: the first built a foundational understanding of community safety concerns, and the second aligned the draft recommendations with residents' priorities and lived experience.

The community engagement process for the Kalamazoo Safety Action Plan helped establish a strong foundation for identifying and prioritizing safety needs across the city. By integrating digital tools with in-person outreach, the project team gathered meaningful input from hundreds of residents on how they experience safety in their daily lives. These insights directly informed the selection of key corridors and locations for further study and will continue to shape project recommendations. Moving forward, sustained public engagement will be critical to building support, maintaining transparency, and delivering transportation improvements that reflect community priorities.

Table 1. What We Heard from the Community

Insights that shaped Kalamazoo's Safety Action Plan			
Intersections	Sidewalks	Lighting	Bus Stops
Residents highlighted unsafe crossings at busy intersections, especially near schools.	Missing sidewalks and poor conditions were major concerns—especially for kids, older adults, and people with disabilities.	Poor nighttime visibility was a frequent comment across both engagement phases.	Community members called out unsafe or inaccessible bus stops, especially those lacking crossings or sidewalks.
Common concerns: high speeds, poor visibility, long wait times, and turning conflicts.	Feedback emphasized the need for a complete, well-maintained sidewalk network.	Residents described feeling unsafe on dimly lit corridors and neighborhood streets.	Feedback on Michigan & Academy underscored the need for better pedestrian access to stops.
Top feedback locations included Lovers Lane & E Cork, Main & Park, and Drake & KL.	Residents noted that gaps and deterioration make walking feel unsafe, particularly in underserved neighborhoods.	Lighting issues were especially noted along Portage Road and near transit stops.	Residents want safe, comfortable waiting areas with improved connectivity to nearby walking routes.
Community input aligned with crash data showing a need for safer, more visible crossings.	-	-	-

Participation Highlights

Online Survey (Nov 2024–Feb 2025): 668 responses representing 24 zip codes.

Online Input Map – Phase 1: 551 comments, 1,568 likes, and 178 dislikes.

Bikes in the Zoo Event (May 2025): In-person validation of draft focus areas and collection of new comments.

Online Input Map – Phase 2: 127 participants submitted 631 votes and 98 comments.

Figure 5. The Kalamazoo Safety Action Plan's two-phase engagement process combines digital and in-person input opportunities to gather public feedback and shape safety priorities across the city.

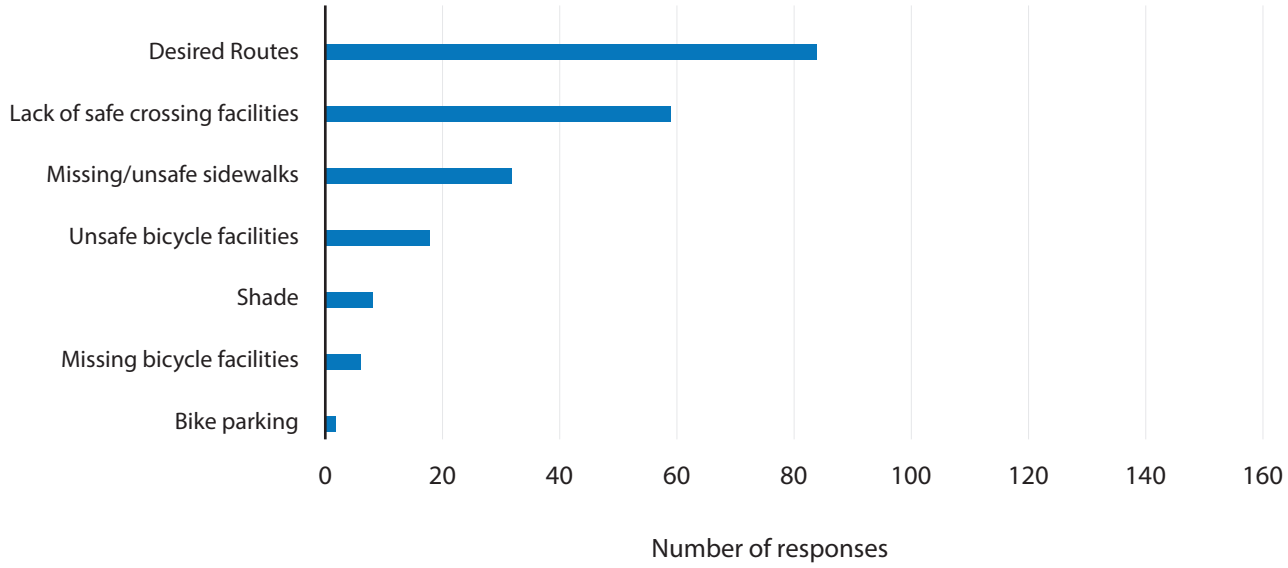
Phase 1: Citywide Input on Safety Concerns

Between November 2024 and February 2025, the project team launched a citywide engagement effort using two online tools: a public survey and an interactive map. These tools enabled broad participation and generated hundreds of responses with detailed insights into transportation behaviors and safety concerns across Kalamazoo.

Online Survey

Completed by 668 people, the survey asked residents about their typical travel modes, comfort levels walking and biking, and locations where they felt unsafe. While most respondents reported driving or walking for daily trips, many expressed a desire to walk, bike, or take transit more—if conditions felt safer. Common concerns included poor driver behavior, high vehicle speeds, missing or narrow sidewalks, and inadequate bike facilities.

Figure 6. This chart visualizes the most frequently cited safety and access concerns from Phase 1 of the public survey, with intersections, crossings, and route connectivity emerging as top priorities for Kalamazoo residents.



Input Map

The interactive map received over 550 comments and more than 1,700 likes and dislikes. Participants dropped pins and drew lines to mark unsafe crossings, missing sidewalks, lighting issues, and other barriers to safe travel. Comments frequently focused on major corridors and intersections where pedestrian and bicycle infrastructure was lacking or vehicle speeds were perceived as dangerous.

The insights from Phase 1 revealed strong alignment between public perception and technical data, especially around the need to address speeding, improve crossings, and close infrastructure gaps in key areas.

Figure 7. The Phase 1 online input map gathered hundreds of community comments identifying safety issues, missing amenities, and needed improvements—laying the foundation for data-driven recommendations in the Kalamazoo Safety Action Plan.

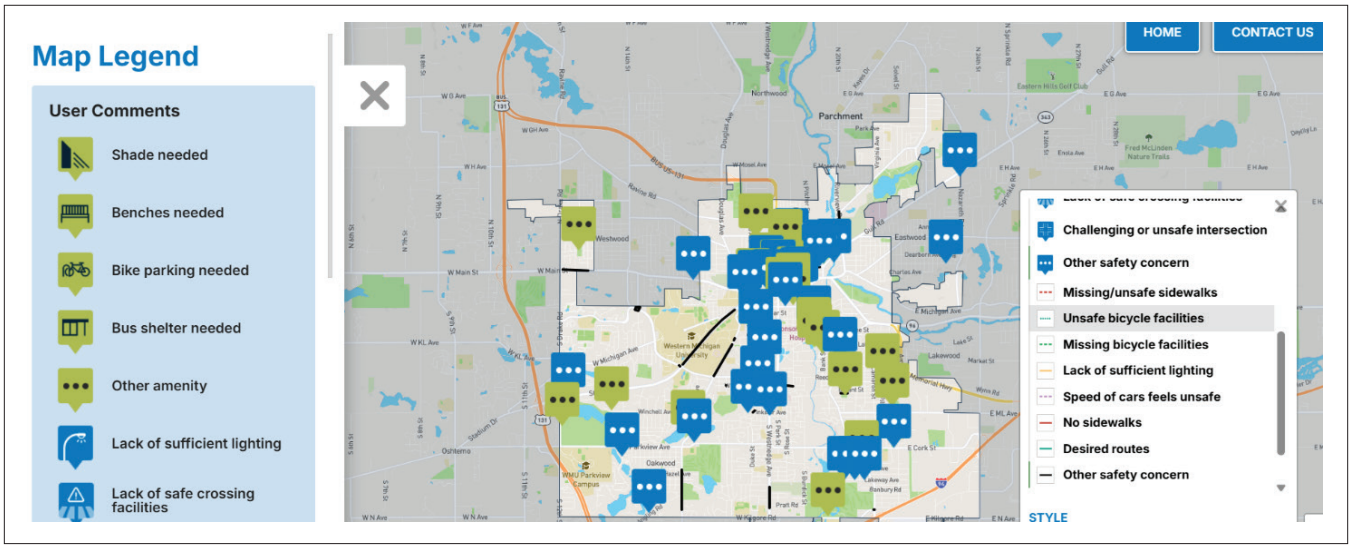
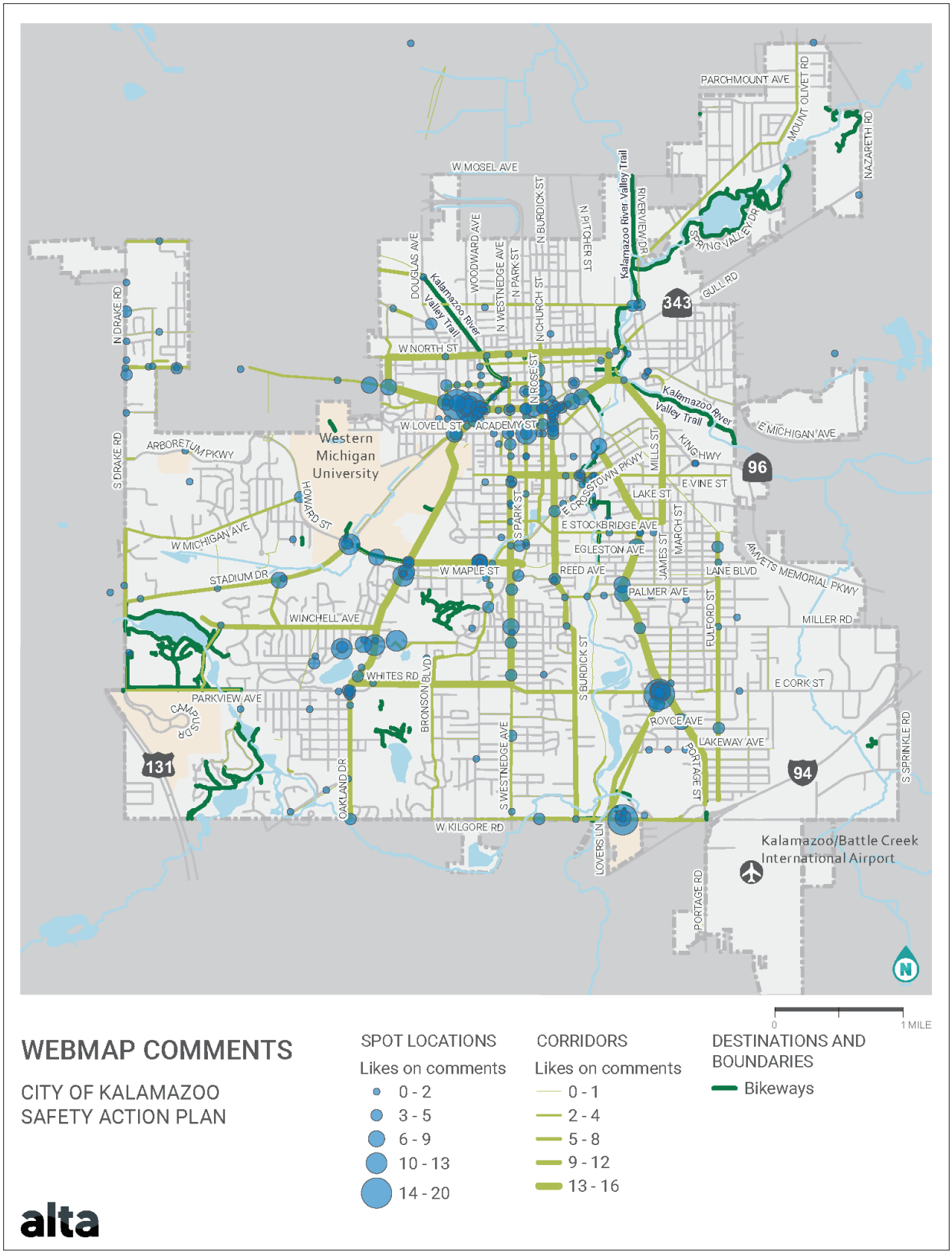


Figure 8. This map visualizes community input received through the Phase 1 Kalamazoo Safety Action Plan interactive webmap, highlighting locations with the most activity.



Phase 2: Validating Focus Areas

In May 2025, the project team conducted the second phase of engagement to validate the initial findings and confirm draft focus areas. This phase combined in-person outreach with online validation tools to gather targeted input on specific study areas, including intersections, sidewalks, bus stops, and lighting.

Bikes in the Zoo Event

Staff from the City of Kalamazoo, Alta Planning + Design, Value Engineering, and AECOM hosted a booth at the annual Bikes in the Zoo event. Posters displayed draft priority locations within each study area, fast facts about the analysis, and information on next steps. Attendees provided written and verbal feedback on the proposed areas and shared their own safety concerns.

Participants emphasized the need for improvements at several key locations, including:

- Lovers Lane & E Cork Street: Unsafe school crossings
- Main & Park / Westnedge: Turning conflicts and pedestrian delays
- Drake & KL: Visibility issues and cyclist detection concerns
- Michigan & Academy: Bus stop access and crossing safety
- Portage Road Corridor: Gaps in bike facilities and inadequate lighting

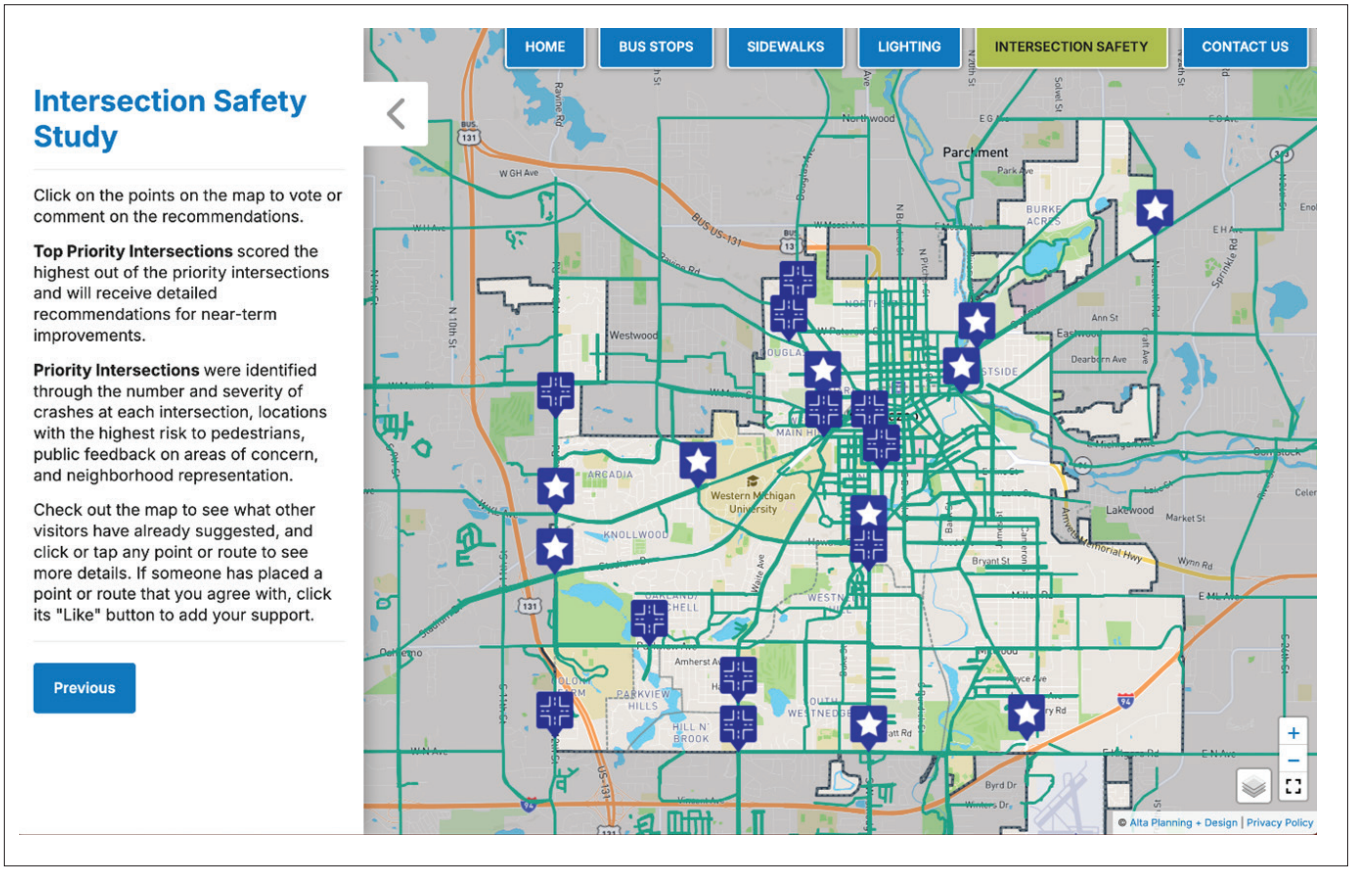
Figure 9. This map visualizes community input received through the Phase 1 Kalamazoo Safety Action Plan interactive webmap, highlighting locations with the most activity.

Figure 10. Community members shared input on the Kalamazoo Safety Action Plan at the "Bikes in the Zoo" event, where project boards and maps invited feedback on intersection safety, sidewalks, bus stops, and lighting improvements.

Online Input Map

A follow-up input map was published in May to allow residents to review and comment on the draft focus areas. Promoted through the City's website and social media channels, the map invited users to agree with or challenge proposed locations and suggest additional needs. Public responses confirmed many of the previously identified priorities and helped fine-tune the Plan's focus.

Figure 11. In Phase 2 of the Kalamazoo Safety Action Plan, the online input map allowed residents to vote and comment on priority intersections identified for near-term safety improvements.



Key Themes from Public Input

Across both engagement phases, consistent themes emerged that shaped the direction of the Safety Action Plan:

- Vehicle Speeds: Speeding was cited as one of the most widespread and serious safety concerns, particularly near schools and on wide, fast-moving corridors.
- Uncomfortable Crossings: Many intersections lacked visible or protected pedestrian crossings, creating dangerous conditions for people walking and biking.
- Sidewalk Gaps and Conditions: Incomplete or poorly maintained sidewalks were frequently mentioned as barriers to safe walking—especially for children, older adults, and people with disabilities.
- Lack of Bike Infrastructure: The absence of protected, connected bike routes limited safe access across the city for people on bikes.
- Lighting and Visibility: Poor lighting, especially in residential neighborhoods, contributed to safety concerns, particularly at night.
- Desire for Multimodal Travel: Many residents expressed a strong interest in walking, biking, or using public transit more often if safer infrastructure were in place.

Across both phases of engagement, several consistent concerns and priorities emerged:

Vehicle Speeds and Driver Behavior: Excessive vehicle speeds and aggressive or distracted driving were top concerns, particularly in areas with pedestrian activity or limited enforcement.

Pedestrian and Bicyclist Safety: Participants expressed discomfort walking or biking due to unsafe crossings, missing sidewalks, or lack of protection from traffic.

Infrastructure Gaps: Missing, deteriorating, or disconnected sidewalks and bike facilities were reported citywide, limiting safe mobility options.

Intersection Challenges: Poor signal timing, confusing layouts, and unsafe crossings at key intersections were frequently flagged.

Lighting and Visibility: Inadequate lighting, especially in the Edison neighborhood and near bus stops, was linked to feelings of unsafety during non-daylight hours.

Transit Access: Residents highlighted dangerous or inaccessible bus stops due to sidewalk gaps, poor crossings, or lack of shelter.

Desire for Multimodal Improvements: There was strong support for infrastructure that supports walking, biking, and transit—especially traffic calming measures, connected bikeways, and safer crossings.

Participants repeatedly identified specific corridors and intersections requiring attention, including:

Michigan Avenue, Stadium Drive, Westnedge Avenue, and Park Street for speeding, confusing bike facilities, and pedestrian barriers.

Downtown Kalamazoo for road diets, bike lane design, and congestion concerns.

Milwood Neighborhood and Cork Street/ Lovers Lane for speeding near schools and sidewalk needs.

Key intersections such as Main & Park, Portage & Cork, and Howard & Michigan for crossing safety and traffic signal issues.

Opportunities to Broaden Participation

While the engagement process generated valuable input, there were gaps in representation that highlight opportunities for future outreach. Most survey respondents identified as White, higher-income, and from neighborhoods such as Oakland Drive-Winchell and Milwood. Groups underrepresented in the feedback included youth, students, people of color, and residents of the Northside and Eastside neighborhoods. Recognizing these gaps is critical, and the City is committed to an ongoing process that continues to seek input from these harder-to-reach groups. These demographics can be especially challenging to engage consistently, but prioritizing strategies to hear their voices will be central to shaping future initiatives.

Future engagement efforts should consider:

- Hosting pop-up events in underserved areas
- Providing incentives or compensation for participation
- Offering materials in multiple languages
- Partnering with trusted local organizations to reach underrepresented groups

Safety Task Force

Purpose and Intent

The Safety Task Force played a vital role in shaping the Kalamazoo Safety Action Plan by bridging technical planning with community insight. As a core component of the plan's engagement strategy, the Task Force helped guide each phase of public input, keeping community voices central throughout the planning process.

The Safety Task Force supported both phases by reviewing the technical findings, interpreting community input, and shaping strategies to reflect the realities of Kalamazoo's neighborhoods. Through their active participation, Task Force members helped the plan's recommendations to be informed by both data and community priorities.

Organizations Represented

The Safety Task Force was composed of local experts, organizational leaders, and community advocates representing a wide range of interests and geographic areas in Kalamazoo. Organizations included:

- City of Kalamazoo – Community Planning, Public Works, and Neighborhood Engagement staff
- Transit and Accessibility Partners – Metro Transit, Disability Network Southwest Michigan
- Neighborhood and Community-Based Organizations – Edison, Stuart Historic, and Vine Neighborhood Associations; Communities in Schools – Kalamazoo; YMCA of Greater Kalamazoo
- Youth and Mobility Advocates – Open Roads Bike Program, Kalamazoo College
- Consultant Partners – Alta Planning + Design, AECOM, and Value Engineering

This diverse group brought critical perspectives to the table—including the needs of pedestrians, transit users, older adults, people with disabilities, youth, and neighborhood residents alike.

Meeting Summaries

Meeting #1

Kickoff and Plan Introduction

The first meeting introduced the goals and structure of the Safety Action Plan and outlined the Task Force's role in guiding its development. Members reviewed preliminary crash data and shared key community safety concerns, including pedestrian safety, ADA compliance, and unsafe crossings. The team also introduced the Phase 1 public engagement tools and emphasized the importance of Task Force support in promoting broad community participation.

October 2024

Meeting #2

Data Review and Focus Location Feedback

The second meeting took place after the conclusion of Phase 2 engagement and focused on reviewing the analysis of crash trends, safety indices, and sidewalk, lighting, and bus stop conditions. The team presented five proposed focus intersections and explained the methodology behind their selection. Task Force members shared feedback on those locations and reinforced the importance of prioritizing improvements in underserved neighborhoods and near schools. This input helped refine the plan's recommendations and confirmed alignment with community values.

June 2025

Meeting #3

Draft Plan Review and Public Comment Support

The final meeting was held during the public comment period and provided members an opportunity to review the full draft Safety Action Plan. Task Force members offered final feedback and committed to promoting public participation in the review process. This final discussion helped complete the feedback loop—promoting the community's voice not only in the plan's development but also in its final refinement.

September 2025

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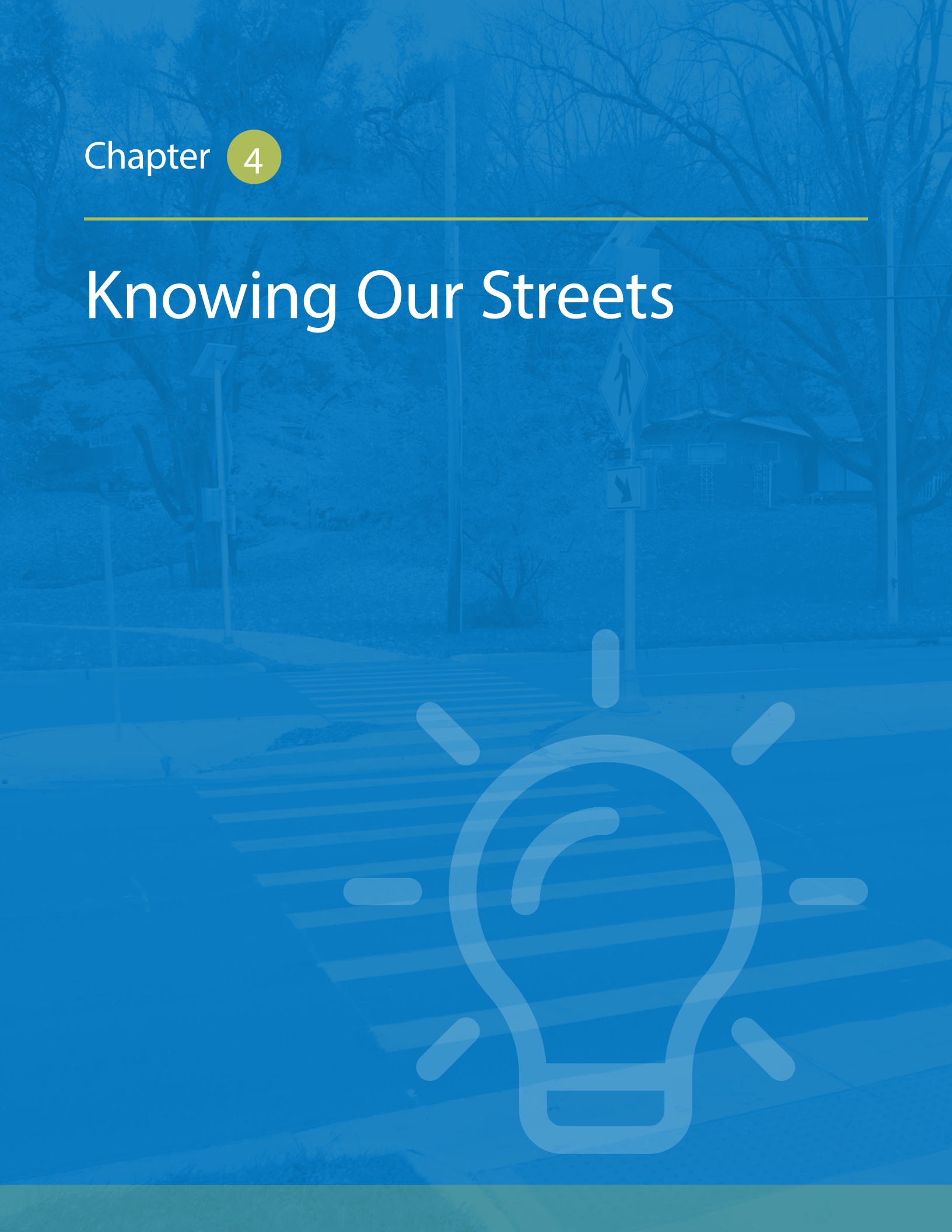
Chapter 4

Knowing Our Streets



Understanding Kalamazoo's Context

This Plan focuses on the city of Kalamazoo's entire street network, neighborhoods, and public spaces. Through data analysis, fieldwork, and community feedback, the planning team identified key locations where safety concerns are most pressing—including specific intersections, corridors, and neighborhood hotspots.

Special attention was paid to making safety improvements responsive to local needs and experiences, reflecting both citywide trends and neighborhood-specific concerns. The result is a geographically representative understanding of safety priorities across Kalamazoo and a framework for creating a safer, more people-centered transportation system.

Kalamazoo's people, places, and transportation network reflect both opportunity and challenge. A young, diverse population, compact urban form, and existing Complete Streets policies provide a strong platform for expanding safe, active transportation. Yet disparities in income, mobility access, and crash risk highlight the need for targeted, community-informed solutions.

By grounding safety work on a clear understanding of who lives in Kalamazoo, how they move, and where risks are concentrated, the City can encourage future investments that support a safer, more equitable future for all.

This section draws on U.S. Census data (2020 Decennial Census and 2018–2022 American Community Survey), state crash records from Michigan's Traffic Crash Reporting System (2014–2023), and equity indices from the Centers for Disease Control and Prevention (CDC) Social Vulnerability Index and federal Justice40 framework to ground the Safety Action Plan in local demographic, socioeconomic, and transportation safety data.

Kalamazoo at a Glance

Kalamazoo is home to 73,598 residents (U.S. Census, 2020) and reflects a diverse demographic profile relative to the state of Michigan. Approximately 58.4% of residents identify as White, compared to 73.9% statewide. Black or African American residents comprise 22.8% of the population, nearly 10% above the state average. Additionally, 9.1% of Kalamazoo residents identify as Hispanic or Latino, and 6.5% identify as two or more races, both higher than statewide figures.

The city is notably young, with a median age of 29, compared to Michigan's 40.5. This youthful demographic reflects the influence of local higher education institutions like Western Michigan University and Kalamazoo College. Despite higher educational attainment—41.7% of adults hold a bachelor's degree or higher, compared to 32.7% across the state—economic disparities persist. The city's median household income is $48,965, well below the state average of $69,183, and the poverty rate stands at 23.5%, nearly double the statewide rate.

Transportation access is also shaped by physical and economic barriers. Approximately 11.7% of households do not have access to a vehicle, and 13.7% of residents live with a disability. While language access is not a significant barrier—only 0.7% of residents speak English less than "very well"—other factors such as income and physical mobility influence how people experience the transportation network.

Travel Behavior and Public Health Connections

Kalamazoo's transportation system is closely linked to broader public health and equity outcomes. The City has adopted a Complete Streets Policy that emphasizes safe, comfortable, and accessible mobility for all users—regardless of age, ability, or mode of travel. This policy guides the design of streets to support walking, biking, and transit use alongside vehicular traffic, with special consideration for people with disabilities and those without access to a car.

Most residents drive alone to work, but walking and carpooling are also relatively common compared to state averages. Commuting times are generally short, with most workers traveling less than 25 minutes. These patterns suggest that Kalamazoo has the foundation for a more active, multimodal transportation system—especially if future investments address barriers to walking, rolling, and biking.

Land Use and Transportation Patterns

The city's land use plays a significant role in shaping how people move. Kalamazoo is composed of a mix of residential neighborhoods, commercial corridors, parks, schools, and employment centers. Denser residential areas, particularly near downtown and university campuses, support higher rates of walking and biking. However, limited infrastructure in some areas and car-centric design patterns in others present safety challenges and inhibit nonmotorized travel.

The relationship between land use and travel behavior underscores the importance of safe connections. Improvements near schools, parks, and transit stops can encourage active transportation while addressing safety risks for those most vulnerable in the system.

Understanding Disadvantaged Areas

A key priority of the Safety Action Plan is promoting equitably distributed safety improvements. Tools like the CDC Social Vulnerability Index and the federal Justice40 framework help identify neighborhoods that face heightened barriers to health, mobility, and opportunity.

According to these measures, the northeast and eastern portions of Kalamazoo experience high levels of social vulnerability, with indicators related to health outcomes, legacy pollution, income, and disability. These same areas often lack complete infrastructure—such as sidewalks, crossings, and lighting—and experience higher exposure to traffic risk.

Using this equity mapping, the Safety Action Plan will prioritize improvements in historically underserved neighborhoods. Focusing investment where needs are greatest helps correct past imbalances and enables all residents—regardless of race, income, or ability—to travel safely.

Crash History at a Glance

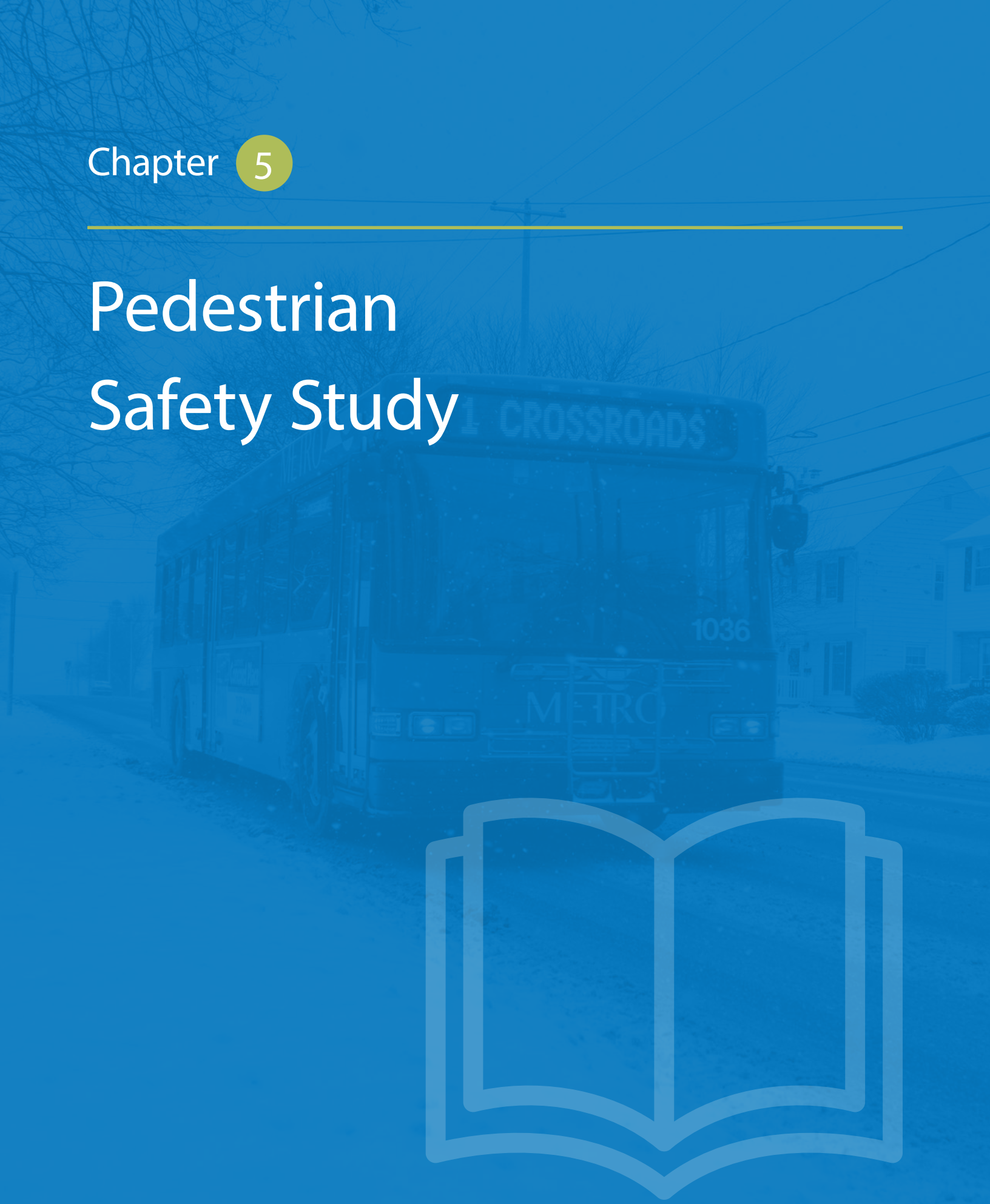
Crash data from 2014 through 2023 provides critical insight into safety challenges across the city. During this period, there were 436 pedestrian-involved and 336 bicycle-involved crashes. While these crashes represented just 2.4% of total crashes, they accounted for a disproportionate share of severe outcomes—making up 33.3% of fatal crashes and 11.5% of crashes resulting in injury.

The most common crash types resulting in injury were angle crashes, rear-end collisions, and crashes with fixed objects. Pedestrian-related, angle, and fixed object crashes were also the most frequent types involved in fatalities. Crash severity tends to correlate with street design, vehicle speeds, and the presence (or absence) of pedestrian infrastructure. Time-of-day and seasonal trends further shape risk, with higher rates of crashes during evening hours and colder months.

This data emphasizes the need for targeted safety improvements on corridors and intersections where the risk of severe injury or death is highest, particularly for people walking and biking.

Chapter 5

Pedestrian Safety Study



Overview

Pedestrian comfort is central to creating a safer, more accessible, and more equitable transportation system. To better understand where people feel safe and supported walking in Kalamazoo—and where they face significant barriers—the project team conducted a Pedestrian Level of Traffic Stress (PLTS) analysis. This evaluation assesses the pedestrian experience on every street segment in the city, considering factors like sidewalk presence, traffic speed, and roadway width. The resulting PLTS ratings help identify where infrastructure upgrades are most needed to support people of all ages and abilities.

What Is PLTS?

The Pedestrian Level of Traffic Stress Analysis identified where gaps or deficiencies in the pedestrian network exist and ranked streets from low stress (suitable for children) to high stress (suitable only to "strong and fearless" pedestrians). Key high-stress corridors include many roadways running through the heart of Kalamazoo and the University campuses, which create barriers for network connections. Overall, Kalamazoo has high potential for walkability, especially if these high-stress corridors are retrofitted with pedestrians in mind.

The PLTS methodology is a national framework adapted from the Oregon Department of Transportation. It evaluates stress levels along pedestrian routes, assigning each street segment a score from LTS 1 (very low stress) to LTS 4 (high stress) based on roadway design characteristics:

- LTS 1: Very low stress—appropriate for all pedestrians, including children and older adults.
- LTS 2: Low stress—appropriate for most pedestrians, though conditions may be less comfortable for some.
- LTS 3: Moderate stress—less comfortable for more vulnerable users.
- LTS 4: High stress—comfortable only for the most confident pedestrians, often lacking key infrastructure.

Scores are determined by analyzing factors like the presence and width of sidewalks, buffers between pedestrians and traffic (e.g., tree lawns or on-street parking), posted speed limits, number of travel lanes, and intersection controls. Streets are rated based on the most stressful condition along the segment.

Key Findings

The analysis revealed that while much of Kalamazoo's street network is relatively low stress, critical gaps in comfort and connectivity persist—especially along major arterials and in areas where vulnerable populations reside.

Citywide Stress Levels

74% of streets are considered low-stress for walking:

- 33% rated LTS 1, offering high pedestrian comfort.
- 41% rated LTS 2, considered generally walkable for most users.

26% of streets are high-stress, with:

- 17% rated LTS 3, where pedestrian comfort is diminished by wider roads, faster traffic, or missing infrastructure.
- 9% rated LTS 4, posing serious barriers to walking due to high vehicle speeds, lack of sidewalks or buffers, and multiple travel lanes.

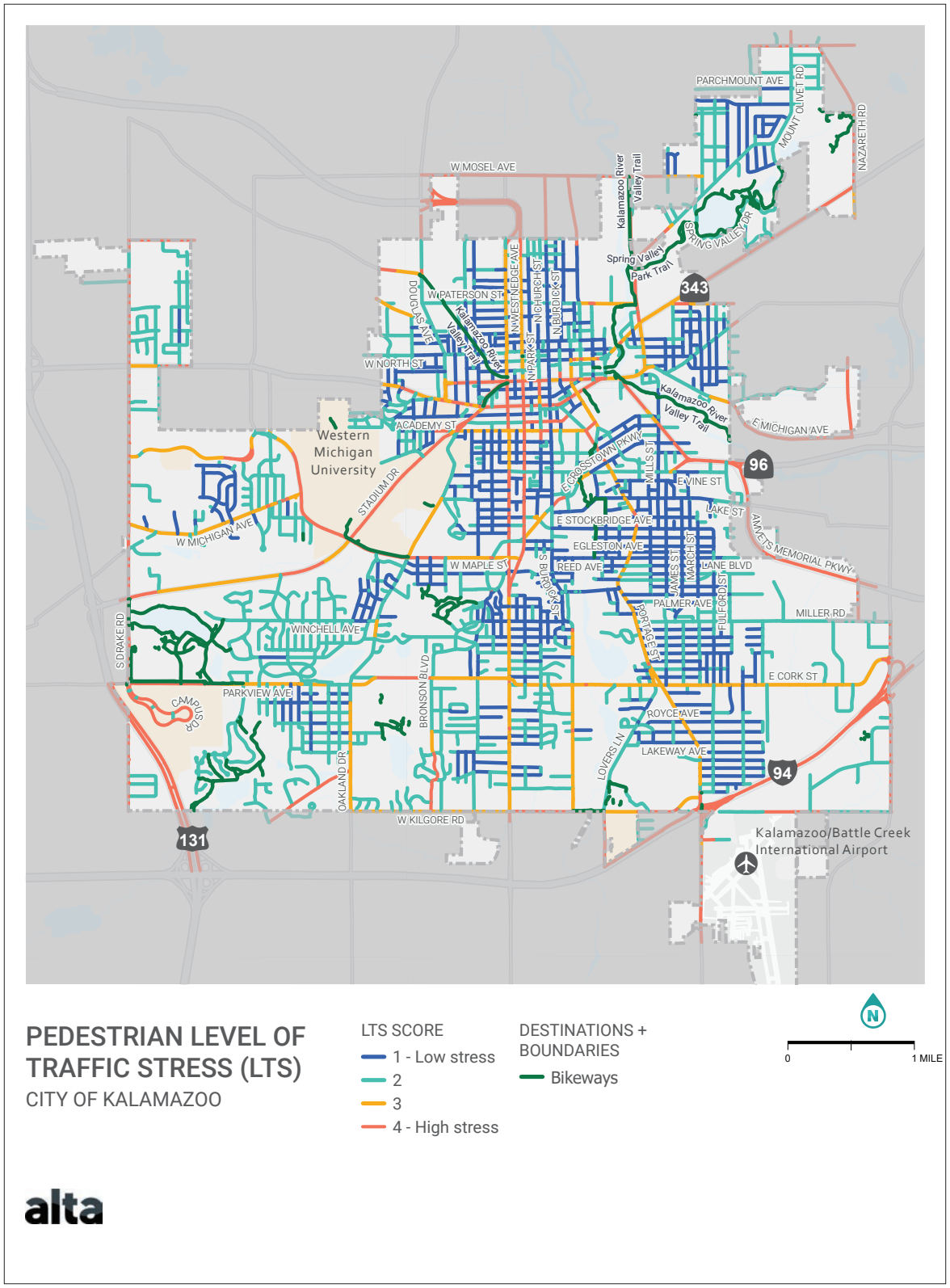
High-Stress Corridors and Barriers

Several major roadways emerged as consistent barriers to walkability:

- Kalamazoo Avenue / Michigan Avenue / Main Street
- Westnedge Avenue
- King Highway
- Stadium Drive
- Gull Road

These streets are often high-speed, multi-lane corridors with intermittent or narrow sidewalks and minimal separation from traffic. While they carry a significant share of vehicle traffic and connect key destinations, their design makes them uncomfortable or unsafe for pedestrians.

Figure 12. This map illustrates Pedestrian Level of Traffic Stress (PLTS) results across Kalamazoo, highlighting areas where walking is most and least comfortable—guiding efforts to improve crossings, reduce speeds, and enhance pedestrian safety.



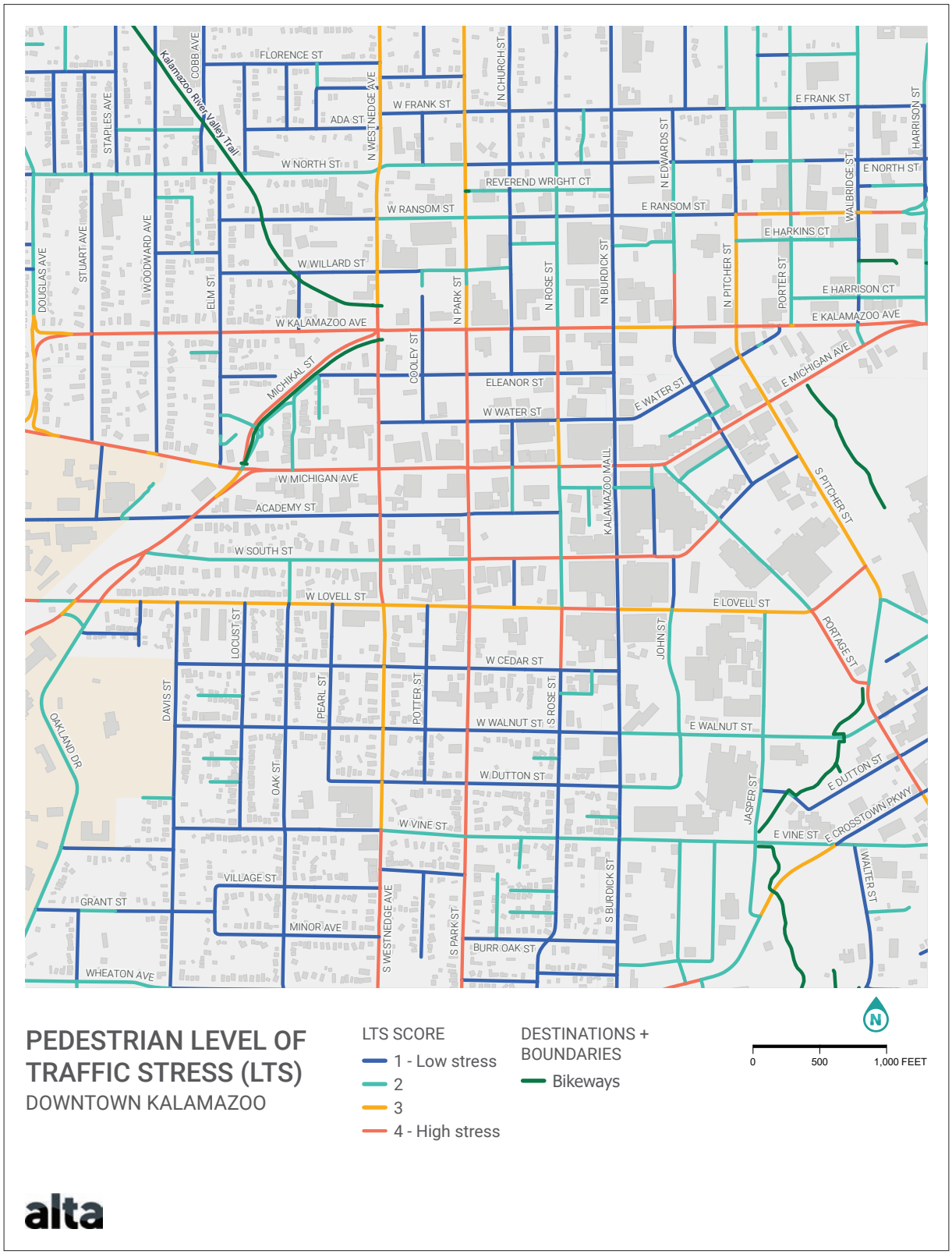
Downtown Challenges

While downtown Kalamazoo features many LTS 1 and 2 streets, it also includes high-stress corridors that fragment walkable areas. Key intersections—such as Michigan & Westnedge or Kalamazoo & Park—act as choke points where people walking must cross wide, fast-moving roads with limited protections. These high-stress conditions undermine the otherwise strong pedestrian environment in the city center.

Neighborhood Disparities

The analysis also revealed that higher stress streets frequently align with historically underserved neighborhoods—particularly on the east and northeast sides of the city. These areas often lack continuous sidewalks, have narrow or unbuffered paths, and face higher exposure to traffic risk. Improving these corridors would significantly enhance walkability, safety, and access to everyday destinations.

Figure 13. This downtown-focused map of Pedestrian Level of Traffic Stress results reveals where walking is most accessible and where improvements are needed, supporting efforts to enhance safety and comfort in Kalamazoo's urban core.



Methodology and Data Sources

The PLTS analysis used a robust and comprehensive dataset, combining:

- City of Kalamazoo street centerline files
- Local sidewalk and tree data
- Michigan Department of Transportation (MDOT) road classification and speed limit data
- OpenStreetMap-derived roadway features

Where data were incomplete—such as missing buffer widths or sidewalk presence—assumptions were made based on typical conditions and context, with a conservative approach that leaned toward higher stress ratings when in doubt. This allows the analysis to identify areas with potential risk, even when detailed field data are limited.

Implications for Safety and Connectivity

The PLTS analysis offers a valuable lens through which the City can focus its pedestrian safety investments:

- Targeted Interventions: High-stress corridors should be prioritized for redesign, including sidewalk construction or widening, speed management strategies, and the addition of buffers like street trees or on-street parking.
- Network Connectivity: By addressing gaps in the low-stress network—especially where LTS 3 or 4 streets sever connections between otherwise walkable areas—the City can greatly expand access to jobs, schools, parks, and transit.
- Equity-Driven Planning: Many high-stress areas overlap with neighborhoods facing social and environmental challenges. Enhancing walkability in these areas supports more equitable access to transportation and improves outcomes in public health, economic mobility, and community safety.

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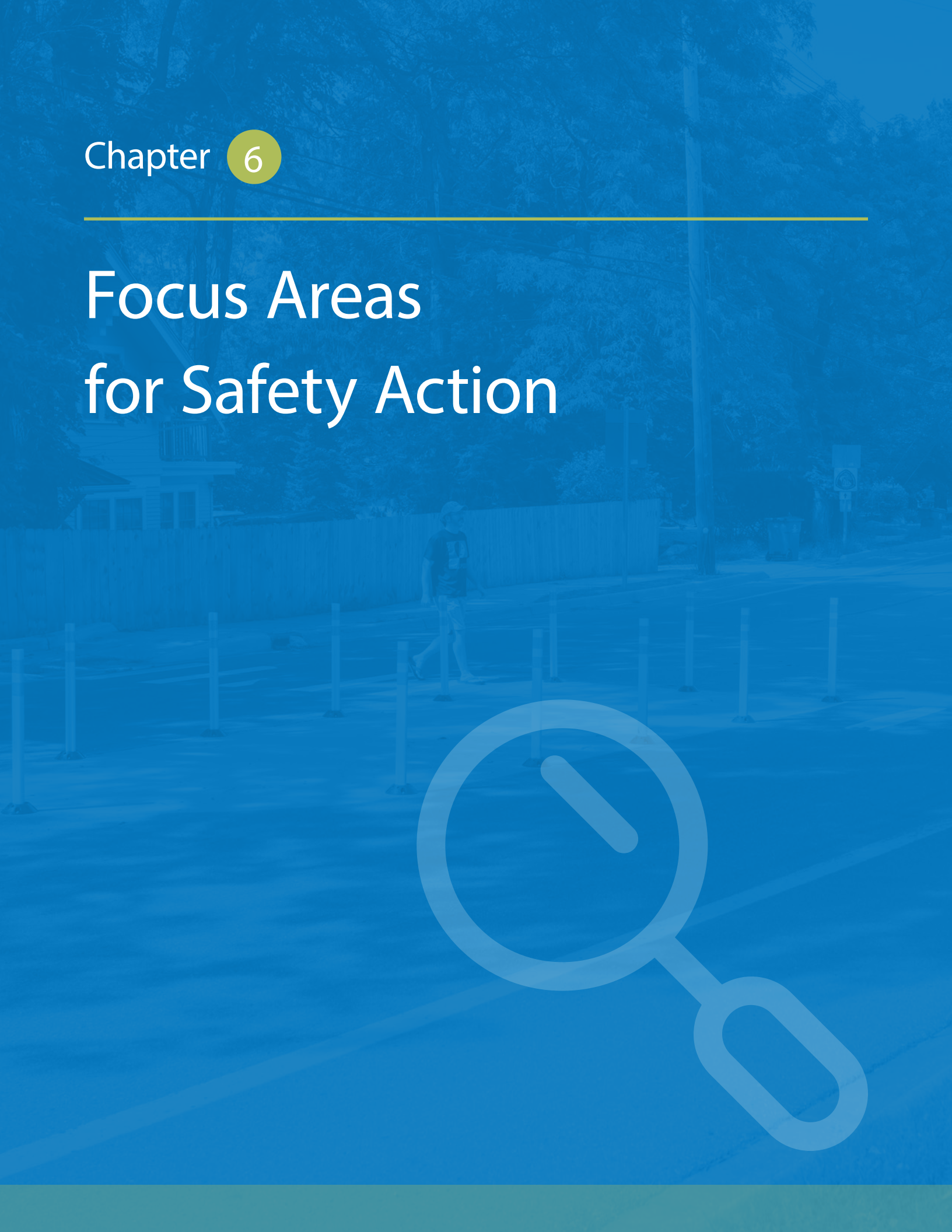
Chapter 6

Focus Areas for Safety Action



Intersection Safety Improvement Plan

Intersection Safety Process & Methodology

The Intersection Safety Improvement Plan builds on the findings of the Pedestrian Safety Analysis to identify and advance safety solutions at high-risk locations across Kalamazoo. As a foundation for this work, the project team developed a comprehensive list of intersections citywide, each scored using an all-crash safety index and a pedestrian safety index. On page 61, the top 50 intersections identified through this analysis process are presented. Investments are considered at the neighborhood level in addition to overall city context.

From this analysis, 10 intersections were identified as top priorities based on elevated crash risk, lack of recent design upgrades, and representation across a diverse range of neighborhoods. The selection process also considered overlaps with other ongoing assessments, including the bus stop and lighting analyses. Intersections appearing in multiple studies were flagged for further attention, reflecting compounding safety concerns. Following review and input from City staff, five intersections were selected for the development of conceptual safety upgrade cutsheets shown on pages 50 to 59.

For these five locations, the project team developed tailored recommendations to improve safety and comfort—particularly for people walking, biking, and using mobility devices. These recommendations include traffic signal modifications, signage enhancements, and infrastructure adjustments aimed at reducing speeds, improving visibility, and enhancing multimodal access. To support ongoing decision-making and evaluation, the Plan also includes a Toolbox of Countermeasures and a framework for measuring the impact of implemented changes.

The following sections provide the key components of the Intersection Safety Improvement Plan in greater detail.

- The Intersection Cut Sheets for Near-Term Implementation present location-specific recommendations for the five prioritized intersections, offering clear guidance for design and funding coordination.
- The Top 50 Intersections Table includes additional locations with elevated intersection safety scores that the City may consider for future action.
- The Intersection Safety Countermeasure Toolbox introduces a suite of proven treatments tailored to common crash patterns and intersection design needs.
- Finally, the Intersection Improvement Evaluation section outlines a set of SMART-aligned performance metrics the City can use to monitor progress, assess effectiveness, and inform future investments.

Introduction

This section presents narrative summaries and recommendations for five priority intersections in Kalamazoo. Each location was selected based on observed safety concerns, multimodal demand, and community input. The summaries highlight key challenges and propose strategies to enhance accessibility, safety, and multimodal connectivity. Recommendations are organized into three components: intersection-wide upgrades that address system-level needs, specific countermeasures tailored to local conditions, and supportive infrastructure considerations that strengthen network-level connections.

Methodology

A multi-step methodology was used to evaluate safety, accessibility, and multimodal conditions at the five intersections. Desktop analysis—including aerial imagery, GIS data, and Metro Transit resources—provided baseline information on the presence and condition of sidewalks, curb ramps, bike facilities, crosswalks, and bus stops. This analysis was complemented by on-site field visits in summer 2025, which offered critical insight into ADA compliance, user behavior, and operational issues not visible from mapping tools alone.

The team also reviewed relevant planning documents, including the City of Kalamazoo Nonmotorized Transportation Plan and Kalamazoo Area Transportation Study (KATS) safety reports, to understand each location's strategic role and proposed improvements. Crash data from 2018–2023 was analyzed to identify patterns of collisions, particularly those involving pedestrians and bicyclists, with emphasis on crash severity and turning conflicts. Where detailed intersection-level data was unavailable, corridor-level trends and engineering judgment informed the analysis.

Together, these methods ensured that the findings and recommendations are firmly grounded in local context, observed field conditions, and national best practices for multimodal street design.

Cost Estimation Approach

Planning-level cost estimates were developed for each priority intersection to provide a sense of scale and help guide implementation discussions. These estimates draw from MDOT unit price data, the Federal Highway Administration's (FHWA's) Safe Transportation for Every Pedestrian (STEP) program, and National Association of City Transportation Officials (NACTO) and American Association of State Highway and Transportation Officials (AASHTO) design guides. Costs reflect construction only and do not include design, right-of-way, or utility relocation, which may add 20–40% depending on site conditions.

Estimates are presented as ranges to account for variability in materials, project phasing, and site-specific factors. Lower-end estimates reflect quick-build applications—such as striping, bollards, or signal reprogramming—while higher-end estimates align with permanent reconstruction, including medians, sidepaths, or curb realignments. These ranges provide a useful framework for prioritizing near-term improvements while planning for larger capital investments over time.

These estimates are conceptual and intended for planning purposes only; they are not final engineering cost opinions and should be refined during project development.

Data + Community Priorities:

Public input and crash data both highlighted key intersections across Kalamazoo where safety concerns and multimodal challenges converge. These intersections have corresponding cut sheets on the following pages with existing conditions review and recommended countermeasures to pursue.

Community-identified intersections:

The public also identified the following intersections as top concerns:

- West Main & Drake
- Stadium & Howard
- Michigan & Rose
- Riverview & Gull
- Portage & Lovers Lane

Intersection Improvement Summaries

W Michigan Avenue and S Howard Street

Existing Conditions

Located near Western Michigan University (WMU) and the neighborhoods of Arcadia and Knollwood, this intersection experiences heavy pedestrian and bicycle activity tied to student housing, academic buildings, and commercial destinations. While bike lanes are present on Michigan Avenue, facilities on Howard Street are inconsistent, creating fragmented connectivity. Non-compliant curb ramps, sidewalk gaps, and insufficient transit amenities limit accessibility, while crash data highlights turning conflicts and pedestrian injury risk.

Key Challenges

- Inconsistent ADA curb ramp treatments and missing tactile warnings
- Bike lane drop-offs and unclear transitions to shared-use paths
- High vehicle speeds and turning conflicts, including known pedestrian crashes
- Desire paths and sidewalk riding indicating unmet infrastructure needs
- Inadequate pedestrian-scale lighting and signal timing

Recommendations

At this intersection, the recommendations emphasize safer connections to WMU and the Vine Neighborhood, where high walking and biking demand meets fast-moving traffic. The key themes are upgrading ADA accessibility, creating continuous separated bike facilities, and calming turning movements to reduce frequent conflicts. Signal and crossing upgrades focus on improving predictability for all users while strengthening the link between WMU's campus network and the citywide bike system.

Intersection-Wide Recommendations

- Upgrade all curb ramps to ADA standards with directional ramps and accessible pedestrian signals.
- Install continental crosswalks on all legs, including shared-use path crossings and reorient crosswalks to shorten crossing distances where appropriate.
- Upgrade signals to include leading pedestrian intervals (LPIs), extended crossing times, and bicycle detection.
- Add pedestrian-scale lighting to improve nighttime safety.
- Coordinate with WMU and the City to ensure consistency with campus mobility needs and nonmotorized planning.

Specific Countermeasures

- Construct a sidepath on Michigan Avenue by converting bike lanes to address high speeds and heavy bicycle traffic.
- Add a sidepath on Howard Street by converting the northbound bike lane and widening sidewalks to address high vehicular speeds and volumes.
- Implement centerline hardening on the west leg of Michigan Avenue to reduce turning crashes; coordinate with truck and bus turning needs.
- Install signal backplates to improve signal visibility.
- Construct mountable aprons at the southwest and northeast quadrants to shorten crossings and slow turns; coordinate with vehicle turning radii.
- Change to all legs of the intersection.
- Widen the median on the north leg to provide refuge and slow left turns.
- Relocate the east-leg crosswalk and add a median nose to improve pedestrian protection.
- Implement protected left-turn phasing if permissive left turns are currently allowed.
- Close driveways nearest the intersection on the south sides of the west and east legs to reduce conflicts. Pending traffic study.

Supportive Infrastructure Considerations

Corridor-scale improvements are needed to complement intersection upgrades. Michigan Avenue and Howard Street warrant separated bicycle facilities or sidepaths due to high vehicular speeds and volumes. Additional crossings north and south of this intersection should be implemented to reduce Howard Street's role as a barrier between WMU and adjacent neighborhoods. Coordination among WMU, the City, and MDOT will be essential to advance these improvements.

Cost Estimates

The estimated cost for improvements at Michigan Avenue and Howard Street is $1.5 million–$2.2 million.

Intersection-wide upgrades such as continental crosswalks, ADA-compliant curb ramps with Accessible Pedestrian Signals (APS),, and signal timing/phasing adjustments account for $150,000–$250,000.

- Sidepaths on Michigan and Howard represent the largest investment, estimated at $800,000–$1.2 million for partial-mile construction segments.
- Safety treatments such as centerline hardening, mountable aprons, and driveway closures add $200,000–$400,000.
- Median modifications and protected left-turn phasing are medium-cost items, ranging $150,000–$250,000.

Quick-build considerations: Striping, bollards, and temporary hardening could reduce near-term costs by 30–50% of the above ranges. However, permanent reconstruction of sidepaths and medians would still be necessary for long-term impact, increasing eventual investment needs.

Clarification

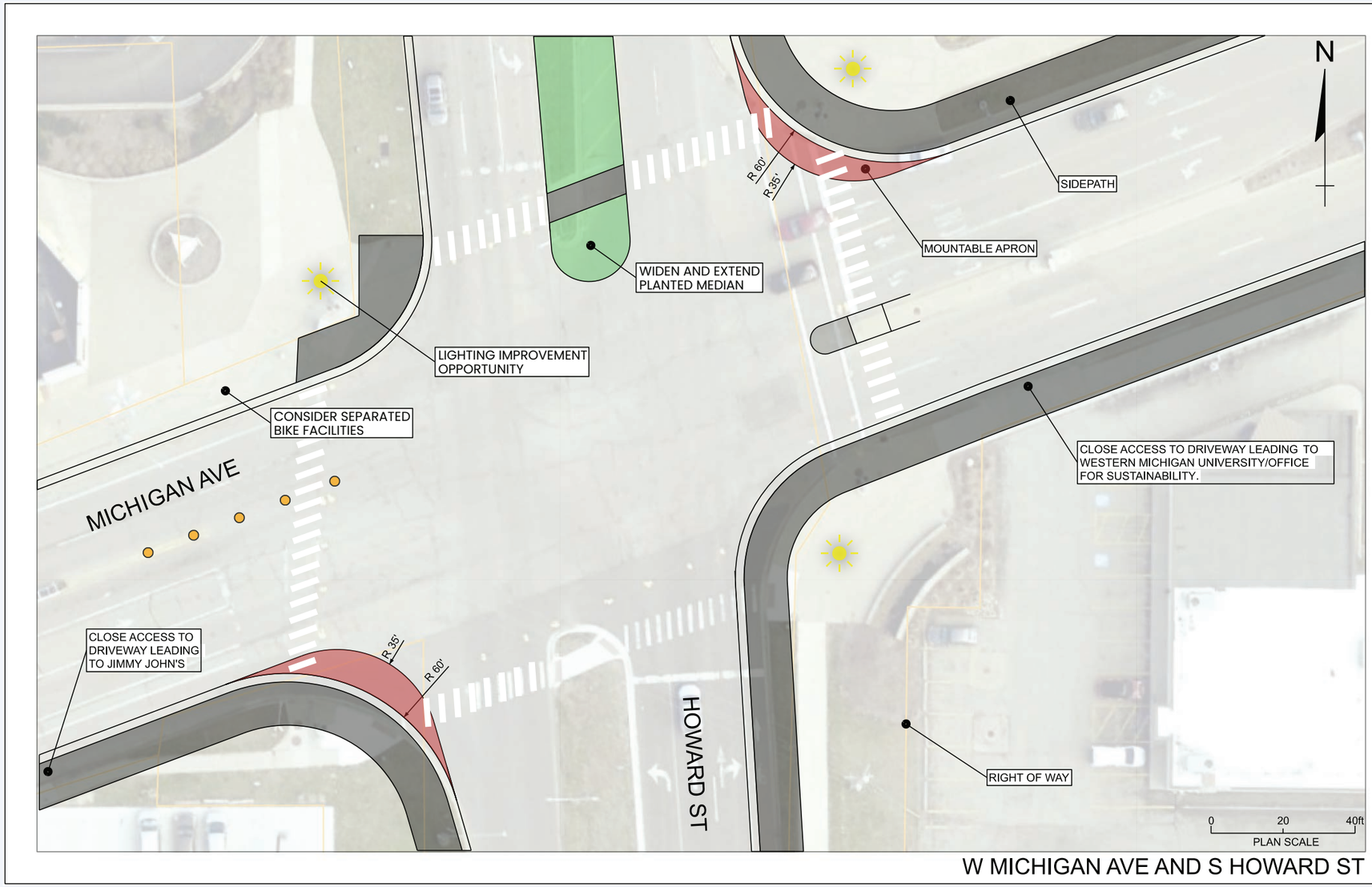
The separated sidepaths are identified as the largest cost item and are listed separately from intersection-wide upgrades. Intersection-wide upgrades ($150k–$250k) capture ADA ramps, APS, signal timing, and crosswalks. The sidepaths ($800k–$1.2M) represent major linear facilities that go beyond those baseline upgrades. Safety treatments ($200k–$400k) and median modifications ($150k–$250k) are also additional. This separation avoids underestimating costs and highlights the significant investment required for long-term sidepath construction.

Existing Conditions Photos:

Damaged and uneven pedestrian island, missing tactile warnings, and worn crosswalk across Howard Street at the intersection with West Michigan Avenue.

Uneven, non-ADA compliant curb ramp and deteriorated pavement at the north crosswalk of Howard Street at the intersection with West Michigan Avenue.

Wide south crosswalk of Howard Street at the intersection with West Michigan Avenue and the Western Michigan University entrance.



Concept plan showing a widened raised median, new sidepath, mountable aprons, driveway closures, and reconfigured crosswalks to improve safety and access near Western Michigan University.

Gull Road and Riverview Drive

Existing Conditions

The intersection of Gull Road and Riverview Drive serves as a connection between Ascension Borgess Hospital and surrounding medical facilities, adjacent residential neighborhoods, and the Kalamazoo River Valley Trail. The corridor accommodates a mix of local and regional traffic, including hospital access, commuter travel, and transit operations.

Gull Road functions as a principal arterial with multiple travel lanes and higher operating speeds. Pedestrian facilities are present but constrained; sidewalks are narrow, misaligned with crossings, and located close to the roadway with limited separation from traffic. Crosswalks are marked but extend across several lanes, and curb ramps exhibit inconsistent alignment with sidewalk approaches.

Bicycle facilities are not designated at the intersection. Conditions vary between shared-lane markings and segments without any marked accommodation. Connectivity between the roadway and the Kalamazoo River Valley Trail is limited, with no direct trail crossing or signed access from the intersection.

Transit service operates along Gull Road, providing access to nearby medical facilities and residential areas. Several stops lack boarding pads or connecting sidewalk links, creating accessibility constraints for users.

Crash data for the intersection indicate multiple turning-movement collisions and pedestrian-involved crashes, particularly near bus stop locations. Contributing factors identified in reports include turning conflicts and high traffic volumes along Gull Road. The combination of these characteristics results in complex multimodal operations at this key connection between medical, residential, and trail areas.

Key Challenges

- Long, uncomfortable crossing distances
- Non-compliant curb ramps and signalized crossings
- High-speed right turns and short signal phases
- No bicycle infrastructure despite demand from healthcare workers and residents
- Poor lighting and informal pedestrian movements

Recommendations

The recommendations for this location focus on shortening wide crossings, adding missing crosswalks, and improving hospital and trail access in an area with heavy pedestrian and transit use. Themes include slowing turning movements, filling ADA gaps, and enhancing bus stop access to better serve patients, employees, and neighborhood residents. Trail coordination is central, as improvements here can knit together medical facilities, neighborhoods, and the Kalamazoo River Valley Trail.

Intersection-Wide Recommendations

- Upgrade all curb ramps to ADA standards with directional ramps and accessible pedestrian signals.
- Install high visibility crosswalks on all legs.
- Adjust signal timing to include LPIs and extended crossing times.
- Upgrade bus stops with ADA-compliant pads and shelters where feasible.
- Add pedestrian-scale lighting to improve visibility.
- Coordinate with Kzoo County Parks and recreation to improve trail-street integration.

Specific Countermeasures

- Add Consider stop or signal controlled channelized right turn. Coordinate turning movement needs with nearby fire station.
- Add a crosswalk on the east leg to eliminate unsafe informal crossings.
- Reconfigure curb ramps and crosswalks to reduce crossing distances and improve tactile wayfinding.
- Implement centerline hardening on all legs to reduce turning speeds; coordinate with turning requirements.
- Install signal backplates for improved visibility.
- Construct mountable aprons at the northwest and southeast quadrants to shorten crossings and calm turns.
- Restrict right turns on red on the east leg by upgrading yield control to stop control.
- Evaluate lane reduction on the south leg to remove one southbound through lane; confirm with traffic study.
- Close driveways at the southwest quadrant to reduce and coordinate with land owner to solve challenges related to sidewalk encroachments.
- Implement protected left-turn phasing where permissive movements exist.

Supportive Infrastructure Considerations

Both Riverview Drive and Gull Road appear oversized for current traffic volumes. A corridor-wide evaluation should be pursued to assess road diet feasibility, reallocating space for separated multimodal facilities which would allow for reallocating space. This would strengthen trail connections, improve hospital access, and provide safer walking and biking options for surrounding neighborhoods.

Cost Estimates

The estimated cost for improvements at Gull Road and Riverview Drive is $800,000–$1.2 million.

- Intersection-wide upgrades (crosswalk restriping, APS, LPIs, lighting) represent $100,000–$200,000.
- New east-leg crosswalk and reconfigured curb ramps add $100,000–$150,000.
- Slip lane reconfiguration and raised crossings are the cost drivers, estimated at $300,000–$500,000.
- Centerline hardening, mountable aprons, and access closures contribute $150,000–$250,000.
- Transit stop upgrades are estimated at $25,000–$50,000 per stop.

Quick-build considerations: Temporary curb extensions, modular refuge islands, and bollard-based centerline hardening could reduce upfront costs by 40–60%. These pilot measures provide immediate benefits but would need replacement with permanent materials in future phases.

Clarification:

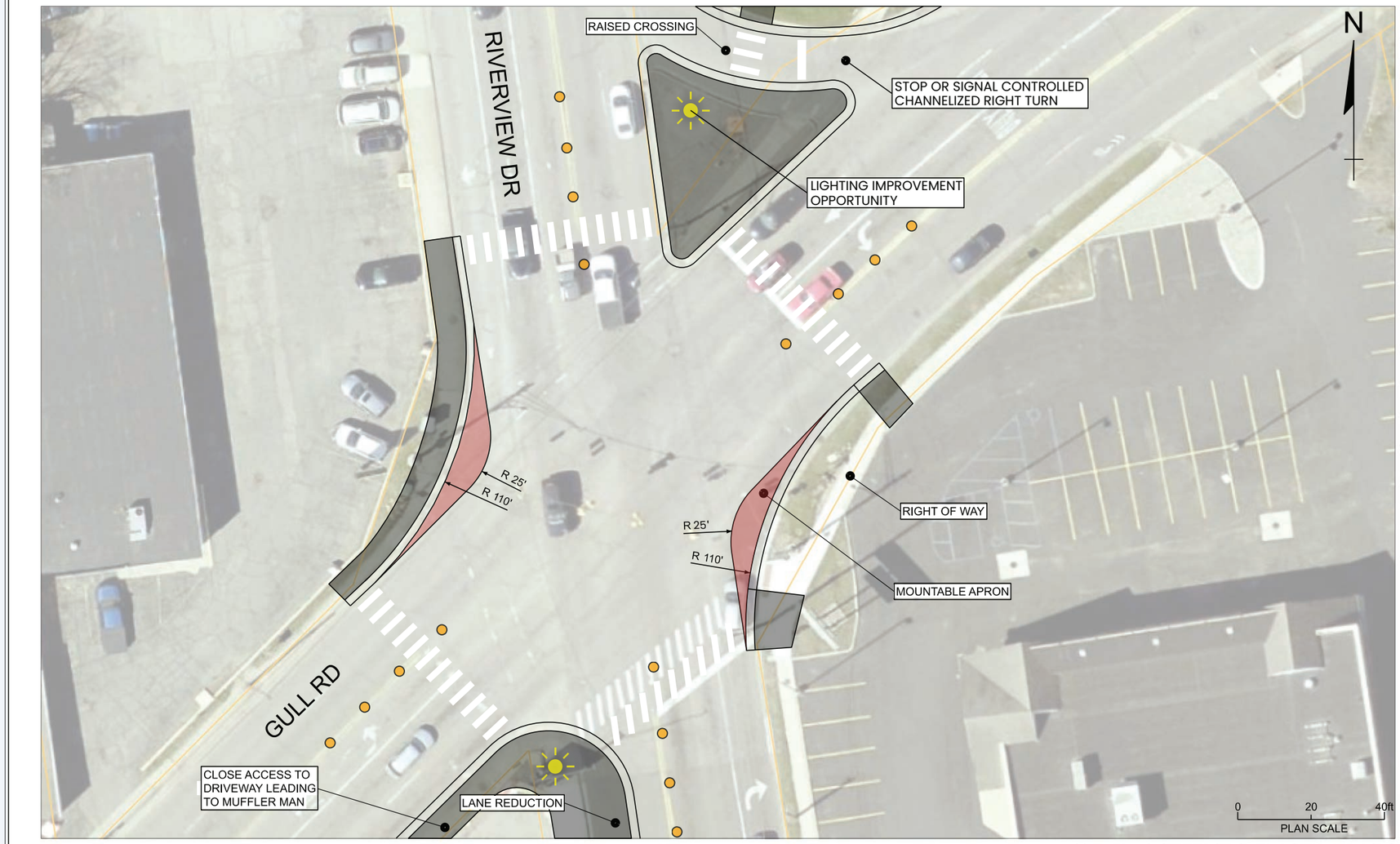
The slip-lane reconfiguration and raised crossings ($300k–$500k) are separated from intersection-wide upgrades ($100k–$200k) because they represent larger reconstruction efforts. Similarly, the new east-leg crosswalk and reconfigured ramps ($100k–$150k) are identified separately. Transit stop upgrades ($25k–$50k per stop) and driveway closures are also distinct. This breakdown distinguishes between baseline upgrades and additional construction needed to shorten crossings, improve visibility, and integrate trail and transit access.

Existing Conditions Photos:

Long crossing distance, missing curb ramps, and deteriorated sidewalks and crosswalk striping.

Wide and cracked pavement crossing at the south leg of Riverview Drive and Gull Road intersection in Kalamazoo. Also, faded crosswalk and non-directional curb ramp, very wide radius.

Large truck turning across pedestrian area at the southeast corner of Riverview Drive and Gull Road intersection.



Concept plan showing a raised crossing, no-turn-on-red restrictions, lane reduction, driveway closure, mountable aprons, and improved crosswalks to shorten crossings and improve pedestrian visibility

E Michigan Avenue and AmVets Memorial Parkway

Existing Conditions

The intersection of E Michigan Avenue and AmVets Memorial Parkway is situated in a corridor characterized by a mix of commercial and industrial land uses. The location accommodates both regional freight movement and local traffic circulation, with a notable presence of heavy vehicles and turning movements.

Pedestrian and bicycle infrastructure is limited. Sidewalks are present but exhibit surface wear, cracking, and sections of nonuniform width. Crosswalks extend across multiple lanes with long crossing distances, and pavement markings are faded. Pedestrian signal phases are present, but clearance times may not fully align with observed crossing distances. Bicycle facilities are not provided on any approach. Curb radii are wide, and multiple right- and left-turn lanes are present on several approaches, contributing to a large intersection footprint.

A below-grade trail crossing is located near the intersection, connecting to the adjacent path network. The underpass has experienced drainage and flooding issues, limiting use. Observations and stakeholder input indicate that the crossing is currently not consistently passable and exhibits visibility constraints near the entry points.

Crash data for this intersection show multiple incidents involving pedestrians, including injuries. Overall crash severity at this location is higher than the average for comparable intersections in the study area. Contributing factors noted in crash reports include angle and turning movements and rear-end collisions associated with queuing and signal timing.

Transit service operates along E Michigan Avenue, with stops located in proximity to the intersection. Access to these stops is provided via existing sidewalks but may require crossing multiple travel lanes. The intersection's geometry and traffic composition, combined with the limited pedestrian and bicycle facilities, result in complex multimodal operations.

Key Challenges

- No at-grade trail crossing or connecting bicycle infrastructure
- Long crossings and high-speed turns
- Excessive vehicle speeds on AmVets Memorial Parkway
- Unusable below-grade trail crossing

Recommendations

At this freight-heavy intersection, the recommendations balance freight operations with safer conditions for trail users, pedestrians, and transit riders. The main themes are bringing trail crossings up to grade, reallocating underutilized roadway space, and introducing traffic calming features to reduce turning conflicts. Coordination with MDOT's freight planning team is essential to ensure that long-term corridor upgrades incorporate Complete Streets elements while addressing the needs of vulnerable road users.

Intersection-Wide Recommendations

- Upgrade all curb ramps to ADA standards with directional ramps and accessible pedestrian signals.
- Install continental crosswalks on all legs, including trail connections.
- Update signals with LPIs, extended crossing times, and bicycle detection.
- Add bus stop boarding pads and shelters where feasible.
- Install pedestrian-scale lighting for visibility.
- Update wayfinding for trail realignment.
- Coordinate with MDOT to integrate Complete Streets features into freight and corridor planning.

Specific Countermeasures

- Provide at-grade trail connections to replace the unusable below-grade crossing; include queuing space at all quadrants.
- Reconfigure and widen crosswalks to shorten distances and accommodate shared use traffic.
- Construct a west-leg median with refuge and a nose to slow left turns and improve pedestrian safety; coordinate with turning needs.
- Remove the eastbound turn lane and second southbound through lane to reduce crossing distances; confirm with traffic study.
- Implement centerline hardening on the south and east legs to calm turning movements.
- Install signal backplates to improve visibility.
- Add a mountable apron at the southeast quadrant to shorten crossings and calm turns.
- Restrict right turns on red on the west leg to reduce conflicts with pedestrians; modify turning controls if lane reductions are infeasible.
- Implement protected left-turn phasing at the east leg where permissive turns currently exist.

Supportive Infrastructure Considerations

AmVets Memorial Parkway appears overbuilt for current traffic volumes. A corridor-wide road diet analysis should be conducted to identify opportunities for reallocating space to multimodal facilities, particularly along Michigan Avenue. This would improve connectivity to the Kalamazoo River Valley Trail and create safer east-west travel options.

Cost Estimates

The estimated cost for improvements at Michigan Avenue and AmVets Memorial Parkway is $1.6 million–$2.7 million.

- Intersection-wide upgrades (crosswalks, APS, signal timing) are $150,000–$250,000.
- At-grade trail connections to replace the below-grade crossing are estimated at $500,000–$700,000, including approach realignments.
- Median refuge and lane reductions on the west and south legs are estimated at $300,000–$500,000.
- Aprons, centerline hardening, and protected signal phasing add $150,000–$300,000.

Quick-build considerations: Painted or modular medians, bollard-based hardening, and striping for lane reductions could temporarily lower initial costs. These strategies could cut early investments by up to 40% but would require full reconstruction for long-term durability and freight accommodation.

Clarification:

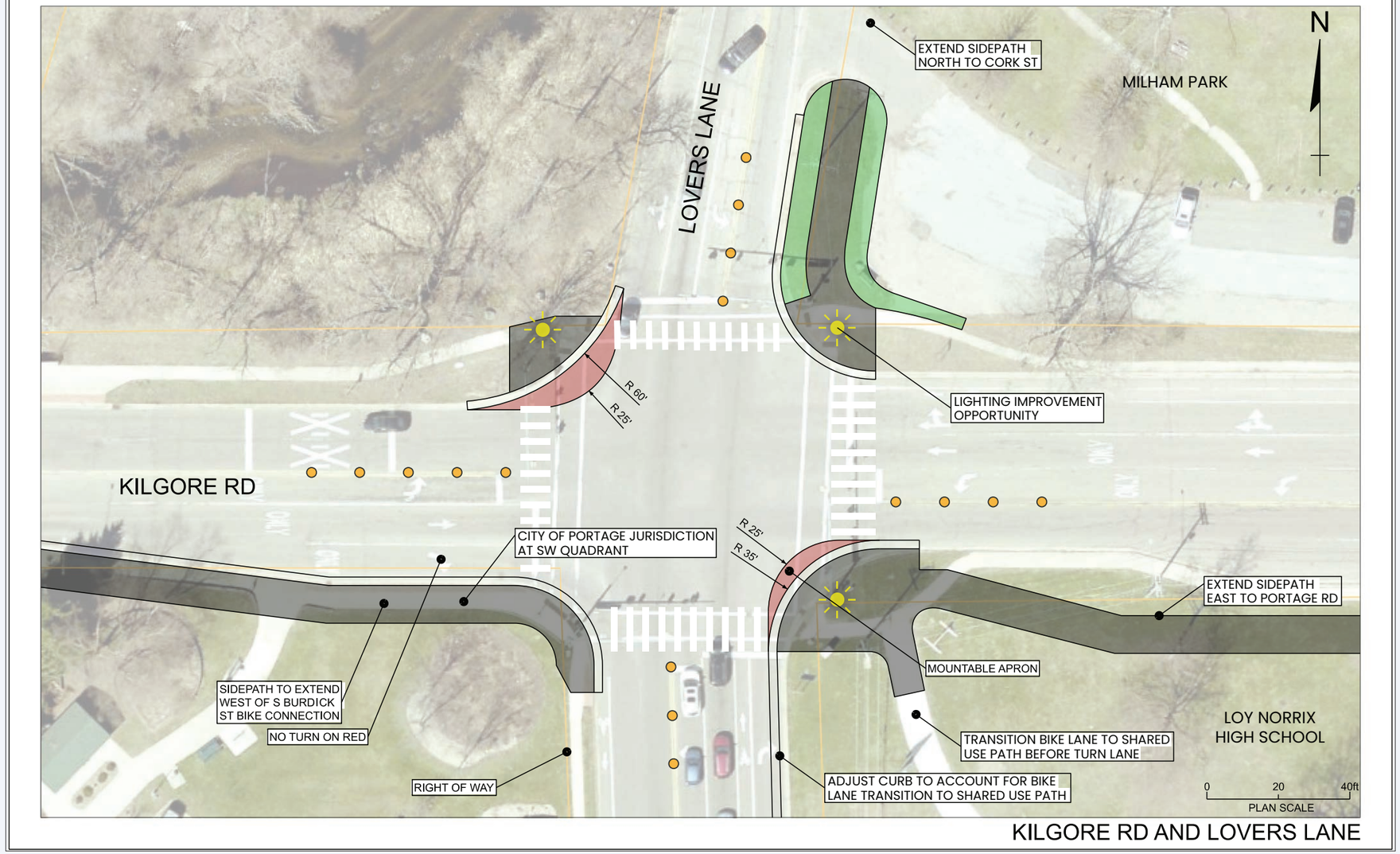
The at-grade trail connections ($500k–$700k) and sidewalk/queuing areas ($200k–$350k) are separate from intersection-wide upgrades ($150k–$250k). The trail connections are a major standalone project involving replacement of the underpass and approach realignments, while sidewalk/queuing areas require new pavement and reconstruction around quadrants. Medians/lane reductions ($300k–$500k) and safety features ($150k–$300k) are also listed separately. This layered approach ensures that larger construction costs are not bundled into the baseline upgrade package.

Existing Conditions Photos:

Wide view of the East Michigan Avenue and Amvets Memorial Parkway intersection, highlighting limited pedestrian accommodations and auto-oriented design.

Pedestrian crossing East Michigan Avenue at Amvets Memorial Parkway, illustrating long crossing distances and lack of ADA-compliant curb ramps and faded crosswalk striping.

Faded crosswalk and deteriorated curb ramp at East Michigan Avenue and Amvets Memorial Parkway, showing accessibility and visibility challenges.



Concept plan showing a pedestrian refuge island, sidepath, lane reductions, mountable apron, trail connections, and no-turn-on-red restrictions to support trail integration and safer crossings.

Kilgore Road and Lovers Lane

Existing Conditions

The intersection of Kilgore Road and Lovers Lane is located at the boundary between the City of Kalamazoo and the City of Portage, with the southwest quadrant situated within Portage. This location functions as a connector between nearby industrial and commercial employment areas and adjacent residential neighborhoods, resulting in a mix of local and regional travel activity. Coordination between the two jurisdictions will be required for future planning, design, or maintenance activities.

Pedestrian infrastructure is incomplete, with sidewalks provided on some but not all approaches. Sidewalk conditions vary, and several informal desire paths are visible near the intersection, indicating frequent pedestrian activity between surrounding land uses. Marked crosswalks are limited, and wide curb radii extend crossing distances and contribute to longer pedestrian exposure within the intersection area.

Bicycle facilities are minimal. No dedicated lanes or markings are provided at the intersection, and nearby facilities do not form a continuous network connection. Cyclists traveling through the area must generally operate in mixed traffic.

Crash data for this intersection include multiple pedestrian-involved and injury-related crashes. Common crash types involve turning movements and midblock activity near the approaches. The combination of high traffic volumes, multiple turning lanes, and limited nonmotorized infrastructure contributes to complex multimodal operations at this location.

Key Challenges

- Sidewalk gaps and limited, unsafe facilities
- Poor visibility near wide driveways and vegetated buffers
- Missing or non-compliant ADA features
- High turning volumes and long signal cycles
- Documented pedestrian and injury crashes

Recommendations

The focus here is on advancing bicycle connections identified in Imagine Kalamazoo 2025 while also addressing immediate accessibility and crossing issues. Themes include widening sidewalks, adding planned bicycle connections, and reconfiguring crossings to improve safety for students, neighborhood residents, and workers. Signal and phasing upgrades are paired with policies like eliminating right turns on red to support higher multimodal volumes at this busy crossroads.

Intersection-Wide Recommendations

- Upgrade all curb ramps to ADA standards with directional ramps and accessible pedestrian signals.
- Install continental crosswalks on all legs, including sidepath and trail crossings.
- Update signal operations to include LPIs, extended crossing times, and bicycle detection.
- Add pedestrian-scale lighting and address vegetation/sightline conflicts.
- Upgrade bus stop boarding pads and add shelters where feasible.

Specific Countermeasures

- Widen the southwest quadrant sidewalk to resolve ADA clearance issues and accommodate sidepath and trail transitions.
- Reconfigure east- and west-leg crosswalks to reduce crossing distances.
- Add sidepath/trail crossings on the south and east legs to support bicycle traffic.
- Construct a sidepath on the east side of Lovers Lane (north end), transitioning NB bike lanes to a separated path and reconfiguring SE/NE quadrants.
- Construct a sidepath on the south side of Kilgore Road to link schools, parks, and bike facilities; extend west to S Burdock Street and east through school property.
- Add mountable aprons at the northwest and southeast quadrants to shorten crossings and slow turning vehicles.
- Implement centerline hardening on all legs to calm turning movements.
- Add protected left-turn phasing to reduce conflicts.
- Prohibit right turns on red at all legs due to high multimodal volumes.
- Install signal backplates on the north and south legs to improve signal visibility.

Supportive Infrastructure Considerations

Imagine Kalamazoo 2025 identifies future bicycle connections along the north and east legs but not the west. Extending a west-leg sidepath would connect schools, parks, and neighborhoods across the railroad. These additions should be coordinated with citywide trail planning to create continuous, safe multimodal routes.

Cost Estimates

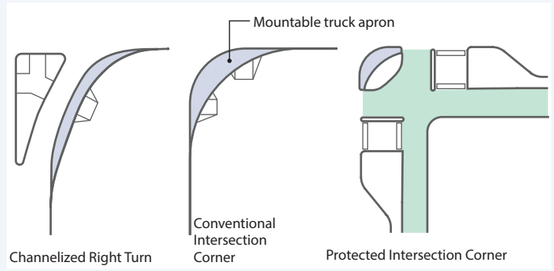
The estimated cost for improvements at Kilgore Road and Lovers Lane is $1.4 million–$2.2 million.

- Intersection-wide upgrades (crosswalks, APS, LPIs, lighting) are $150,000–$250,000.
- Sidepaths on the east side of Lovers Lane and the south side of Kilgore Road are the most significant cost, estimated at $900,000–$1.3 million.
- Trail crossings and bump-outs add $150,000–$300,000.
- Mountable aprons, centerline hardening, and signal phasing upgrades contribute $200,000–$350,000.
- No-turn-on-red restrictions are low-cost measures estimated at less than $10,000.

Quick-build considerations: Temporary striping, bollards, and tactical curb extensions could address crossings and hardening at a lower upfront cost, potentially cutting immediate investment needs by 30–50%. Permanent sidepath construction would remain a significant capital cost regardless of quick-build staging.

Clarification:

Trail crossings and bump-outs ($150k–$300k) are separate from both intersection-wide upgrades ($150k–$250k) and sidepath construction ($900k–$1.3M). Intersection-wide upgrades capture ADA ramps, APS, LPIs, and lighting, while sidepaths represent major linear facilities. Trail crossings and bump-outs are intersection-specific treatments to safely carry sidepath users across the roadway. Keeping them separate ensures the added investment for safe crossings is not underestimated. These estimates do not include potential railroad crossing improvements on the west leg of Kilgore Road. If pursued, a sidepath connection across the railroad would require separate coordination with the railroad and its own cost estimate.



What Are Truck Aprons?

Truck aprons are mountable corner or roundabout elements designed to tighten the turning path for passenger vehicles while still accommodating the wider turning needs of larger trucks and emergency vehicles. By creating a smaller effective turning radius, truck aprons slow turning speeds and reduce exposure risks for people walking and biking, improving safety and predictability at intersection corners.

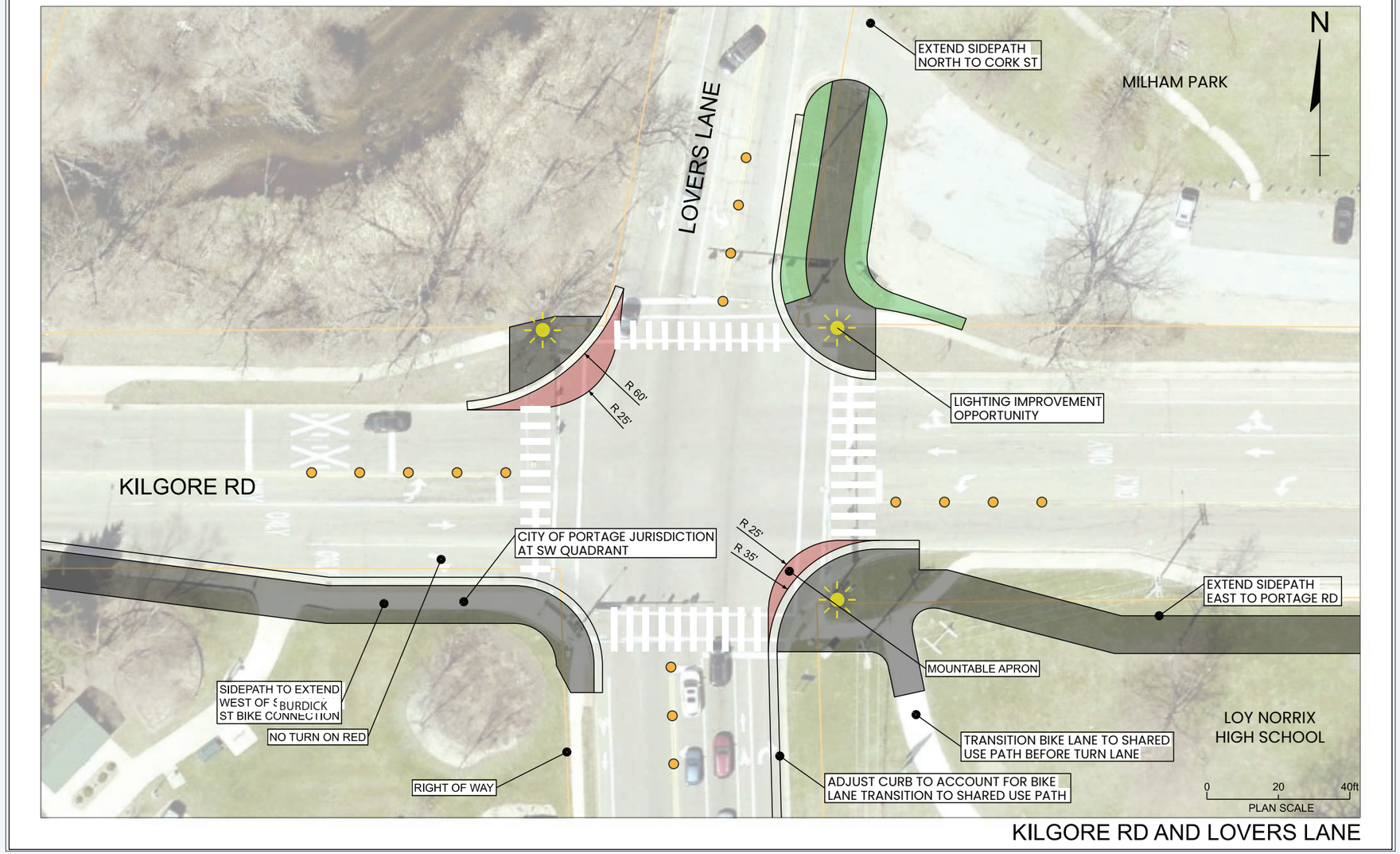
Source: Corner Design for All Users (Alta Planning + Design, 2020). See Section "Corner Design – Design Objectives & Typical Applications" for full guidance.

Existing Conditions Photos:

Wide view of the Kilgore Road and Lovers Lane intersection, illustrating long pedestrian crossing distances and a wide, auto-oriented layout.

Pedestrian push button at Kilgore Road and Lovers Lane, showing obstructions and limited accessibility at the curb ramp.

Curb ramp and crosswalk at Kilgore Road and Lovers Lane, illustrating deteriorated conditions and accessibility barriers for pedestrians.



Concept plan showing a pedestrian refuge island, sidepath, lane reductions, mountable apron, trail connections, and no-turn-on-red restrictions to support trail integration and safer crossings.

W Main Street and Picadilly Road

Existing Conditions

The intersection of W Main Street and Picadilly Road is located within the Westwood neighborhood, connecting nearby residential areas to retail destinations, schools, and community amenities. The intersection also provides a key access point to Frays Park, an important neighborhood recreational facility. This location is identified as a priority improvement area in the Westwood Neighborhood Plan, reflecting its role in supporting local connectivity and multimodal access.

Pedestrian infrastructure is fragmented, with sidewalks present along portions of the corridor but discontinuous across some frontages and approaches. Crosswalk markings vary in placement and visibility, and crossing distances are extended due to multiple travel lanes. Signalized pedestrian phases are present at some legs but are not consistently applied throughout the intersection.

Bicycle facilities are not currently provided, and the surrounding network offers limited connectivity for people biking to adjacent destinations. Cyclists generally share the travel lanes with vehicular traffic along W Main Street, a corridor characterized by higher operating speeds and numerous commercial driveways.

The intersection has a suburban roadway configuration with wide lanes, multiple driveways near the approaches, and turning activity associated with nearby retail uses. These conditions contribute to a high number of turning movements and potential points of conflict.

Crash data show a history of turning-movement and pedestrian-involved collisions, consistent with observed conditions such as high traffic volumes, driveway density, and inconsistent pedestrian facilities. The location's importance as a connector to Frays Park and its prioritization in the Westwood Neighborhood Plan highlight the need for coordinated planning to enhance access and connectivity for all travel modes.

Key Challenges

- Missing crosswalks and sidewalks, particularly on Piccadilly Road and Sage Street
- High-speed turns and lack of protected signal phasing
- Inaccessible transit stops requiring walking in streets or grass
- Informal crossings indicating unmet demand
- Driveway conflicts

Recommendations

Recommendations at this suburban-style intersection highlight the need for basic pedestrian infrastructure, safer crossings, and driveway management. Themes include closing conflict-prone access points, adding missing sidewalks and crosswalks, and reallocating space from high-speed turn lanes to safer facilities. Improvements here aim to provide more direct, accessible connections for nearby schools, senior housing, and retail destinations.

Intersection-Wide Recommendations

- Upgrade all curb ramps to ADA standards with directional ramps and accessible pedestrian signals.
- Install continental crosswalks on all legs.
- Update signal operations to include LPIs, extended crossing times, and bicycle detection.
- Leverage right-of-way on Piccadilly and Sage Streets to add sidewalks and sidepaths.
- Upgrade bus stops with ADA-compliant pads and shelters.
- Add pedestrian-scale lighting where gaps exist.

Specific Countermeasures

- Add sidewalk connections at the northeast and southeast quadrants to eliminate unsafe gaps; coordinate where encroachments exist.
- Add a north-south crosswalk on the east leg to provide safer access, contingent on removal of the deceleration lane on the north side and driveway on the south side.
- Remove the right-turn deceleration lane onto Piccadilly Road to reduce unsafe turning and free space for multimodal facilities.
- Close two driveways near the intersection to reduce conflicts and provide space for a new crossing.
- Implement centerline hardening on Main Street to reduce turning crashes.
- Add protected left-turn phasing to reduce conflicts with pedestrians.
- Install signal backplates to improve visibility.
- Replace the east-leg left-turn lane with a raised median and refuge to protect pedestrians and limit conflict-prone turns.

Supportive Infrastructure Considerations

Broader network gaps must be addressed for lasting impact. Piccadilly Road and Sage Street lack continuous facilities despite connecting to schools, senior housing, and parks. Main Street is fragmented for walking and biking. Extending sidewalks and sidepaths on these corridors will support intersection improvements and enhance community access. Coordination with property owners and city utilities will be required. In addition, the City of Kalamazoo is working with MDOT and Kalamazoo Township on a traffic study to determine whether W. Main Street can be transferred to City ownership and if roadway geometry changes can be made to better align with community needs and priorities.

Cost Estimates

The estimated cost for improvements at Main Street, Piccadilly Road, and Sage Street is $700,000–$1.1 million.

- Intersection-wide upgrades (crosswalks, APS, LPIs, lighting) are $75,000–$150,000.
- Sidewalk connections on the northeast and southeast quadrants add $100,000–$150,000.
- Median refuge island on the east leg is estimated at $200,000–$350,000.
- Driveway closures and deceleration lane removal contribute $150,000–$250,000.
- Centerline hardening, backplates, and protected left-turn phasing add $75,000–$150,000.

Quick-build considerations: Marked crosswalks, signal reprogramming, and bollard-based treatments could be deployed quickly at 20–40% of full reconstruction cost. These measures provide near-term safety while allowing higher-cost infrastructure changes to be phased in later.

Clarification:

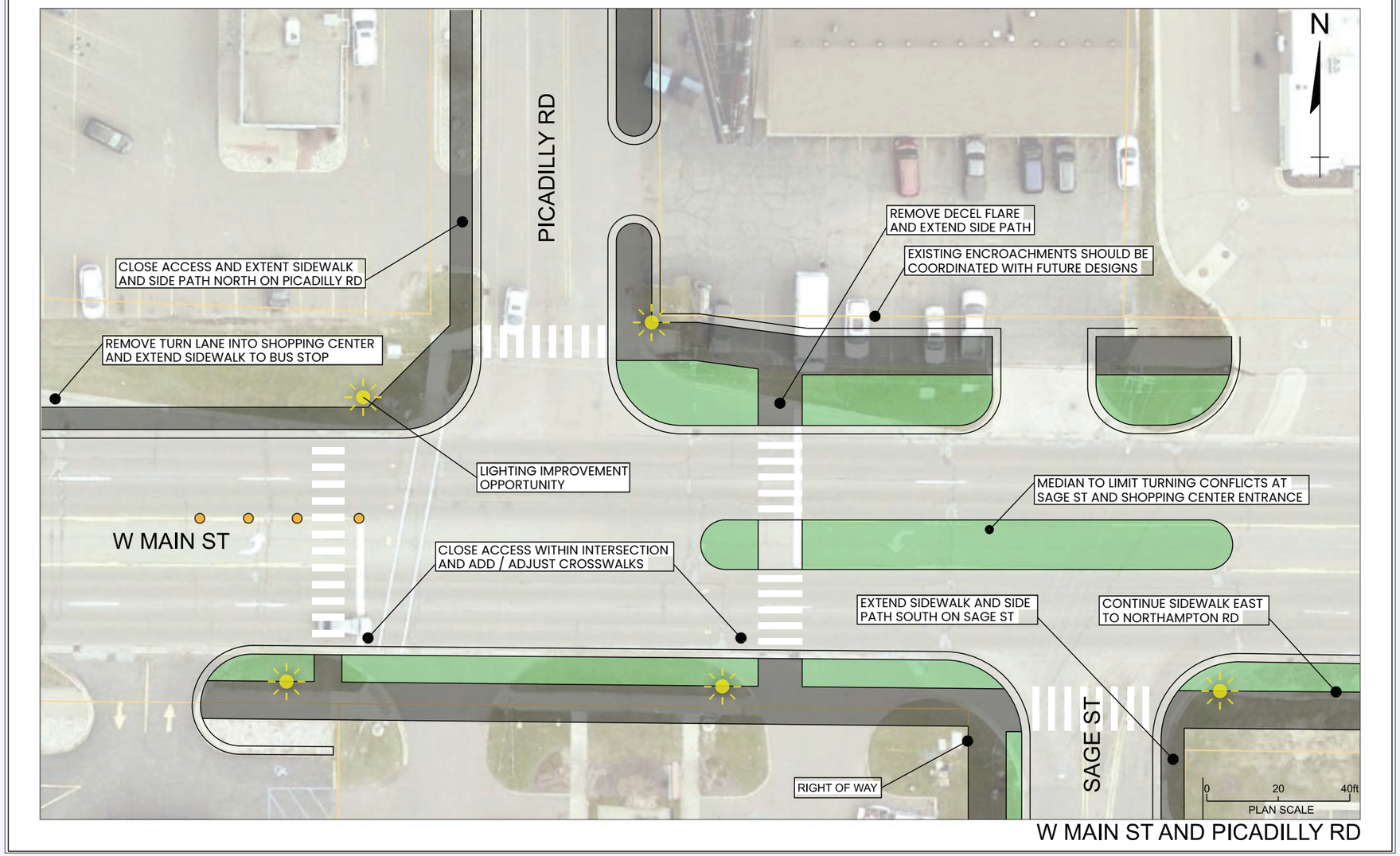
The median refuge ($200k–$350k) and driveway/access closures ($150k–$250k) are listed separately from intersection-wide upgrades ($75k–$150k) and sidewalk connections ($100k–$150k). This reflects the additional costs of reconfiguring traffic operations and extending multimodal access beyond baseline intersection treatments. Safety measures such as protected phasing and centerline hardening ($75k–$150k) are also identified separately. This breakdown distinguishes between basic accessibility improvements and higher-cost structural changes.

Existing Conditions Photos:

Intersection of West Main Street and Piccadilly Road, showing wide auto-oriented design and frequent driveways that contribute to turning conflicts and lack of connected and accessible pedestrian infrastructure.

Sidewalk near West Main Street and Piccadilly Road, illustrating deteriorated conditions and barriers to pedestrian access.

Wide view of West Main Street and Piccadilly Road, highlighting commercial driveways, wide crossing distances, and lack of pedestrian-scale infrastructure.

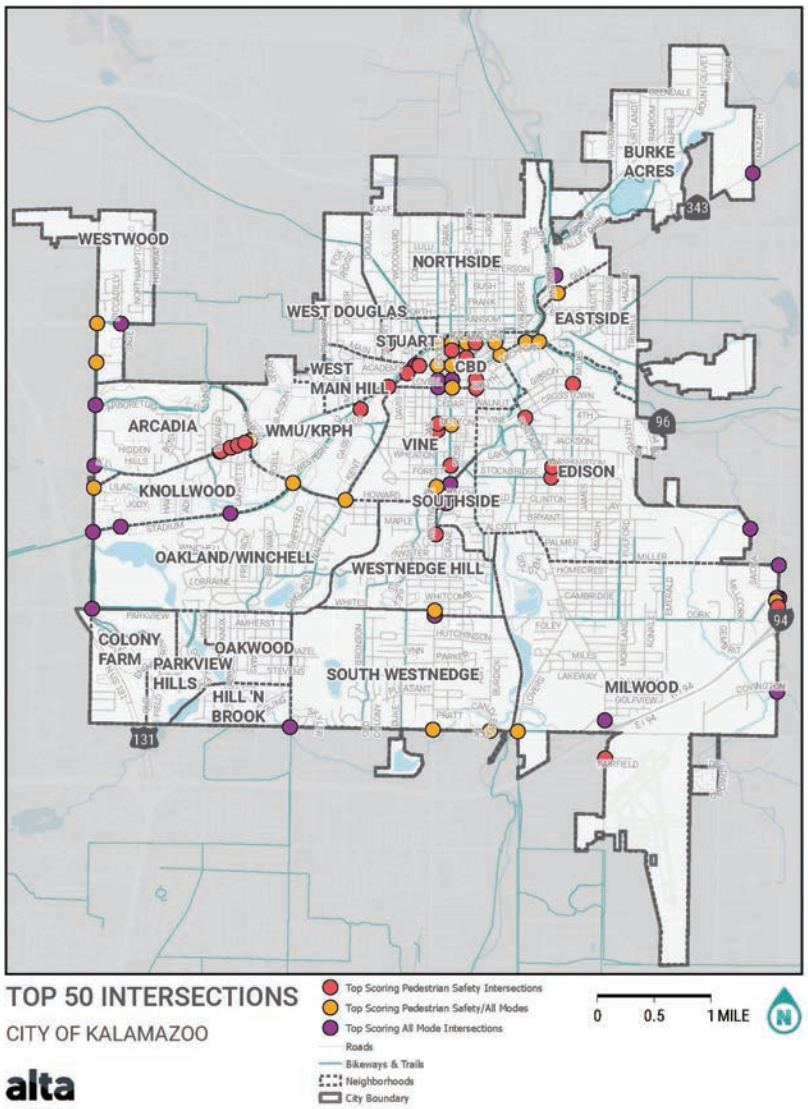


Concept plan showing driveway closures, sidewalk and sidepath extensions, removal of a deceleration flare, a median to manage turning conflicts, and reconfigured crosswalks to enhance pedestrian access.

Priority Intersections & Scoring

The following section presents the 50 highest-priority intersections in Kalamazoo for targeted safety improvements. These intersections represent the most critical locations for multimodal safety upgrades, as they rank within the top 50 based on both the severity-weighted all-crash index and the pedestrian-specific crash index developed through this analysis. By intersecting results from both indices, this list highlights intersections with consistently high crash severity and pedestrian safety concerns, as well as those located along corridors with high-stress walking conditions. These dual-ranking intersections are strong candidates for improvements that will have meaningful impacts on reducing crash risks, improving pedestrian comfort, and supporting equitable access across the city.

Figure 14. Priority intersections by scoring.



This map identifies Kalamazoo's top 50 high-risk intersections, prioritized for safety improvements based on crash data and multimodal analysis—with a focus on locations that present the greatest risks to pedestrians and all users.

Table 2. Top 50 Scoring Intersections

Latitude	Longitude	SS4A _ID	Number Legs	Total Number of Deaths	Total Number of Injuries	Number of PDO-Only Crashes	Number of Pedestrian Deaths	Number of Pedestrian Injuries	Neighborhood	All Modes Safety Score	Pedestrian Safety Score
42.29439	-85.589838	1201	5	0	87	168	0	3	CBD	1.988032	1.968801
42.29154	-85.589753	1118	4	0	50	215	0	2	CBD	1.984955	1.948417
42.26968	-85.64832	594	4	0	40	240	0	0	Oakland/Winchell	1.984186	1.408032
42.29159	-85.587298	1119	4	1	59	97	0	3	CBD	1.981878	1.972647
42.2763	-85.614206	742	4	0	81	341	0	1	Knollwood	1.968712	1.863327
42.29443	-85.587388	1203	4	0	92	269	0	1	CBD	1.967942	1.863327
42.27811	-85.648262	785	4	0	55	276	0	0	Arcadia	1.965635	1.387173
42.30098	-85.569343	1424	4	0	43	286	0	2	Eastside	1.964866	1.927558
42.29627	-85.648163	1289	4	0	47	268	0	2	Westwood	1.962558	1.927558
42.3166	-85.536197	1565	4	0	61	104	0	0	Burke Acres	1.96025	1.387173
42.24515	-85.589624	13	4	0	32	186	0	1	South Westnedge	1.957942	1.863327
42.2742	-85.589616	691	4	0	54	92	0	0	Southside	1.957173	1.387173
42.24666	-85.560229	28	3	0	45	109	0	0	Milwood	1.954866	1.387173
42.26032	-85.58961	307	4	0	29	152	0	2	South Westnedge	1.952558	1.927558
42.26253	-85.530686	344	4	0	17	92	0	0	Milwood	1.951878	1.408032
42.28875	-85.589582	1037	4	0	42	70	0	0	CBD	1.948712	1.387173
42.28161	-85.621641	878	3	0	19	160	0	6	WMU/KRPH	1.947942	1.963712
42.26218	-85.531207	338	4	1	4	118	1	0	Milwood	1.946494	1.976878
42.29457	-85.57992	1208	4	0	23	126	0	2	CBD	1.946404	1.927558
42.28586	-85.64822	989	4	0	29	98	0	0	Arcadia	1.94525	1.387173
42.29475	-85.572405	1215	3	0	28	95	0	3	Edison	1.938327	1.947942
42.24522	-85.614095	23	4	0	27	74	0	0	Hill 'n Brook	1.934096	1.387173
42.29302	-85.579009	1164	4	0	20	83	0	2	CBD	1.931789	1.927558
42.25991	-85.648279	313	5	0	14	48	0	0	Oakland/Winchell	1.912647	1.408032
42.2915	-85.59355	1116	5	0	42	179	0	1	West Main Hill	1.911015	1.814861
42.30324	-85.569781	1471	3	0	20	49	0	0	Burke Acres	1.909481	1.387173
42.27231	-85.624854	658	3	0	48	112	0	0	Knollwood	1.907938	1.338707
42.29164	-85.58477	1122	4	1	37	130	0	7	CBD	1.907168	1.917553
42.28874	-85.587189	1033	4	0	19	51	0	2	CBD	1.906404	1.942942
42.24509	-85.579839	11	4	0	18	48	0	1	South Westnedge	1.902558	1.863327
42.24509	-85.579839	722	4	0	26	144	0	2	Knollwood	1.902553	1.879092
42.27132	-85.535787	612	4	0	17	26	0	0	Edison	1.901494	1.408032
42.27132	-85.535787	1213	3	0	9	58	0	0	CBD	1.901494	1.408032
42.24508	-85.57511	8	4	0	32	94	0	5	Milwood	1.898707	1.912553
42.27041	-85.643611	615	3	0	25	114	0	0	Oakland/Winchell	1.896784	1.338707
42.27609	-85.589616	728	4	0	27	105	0	7	Southside	1.895245	1.919092
42.27609	-85.589616	1285	3	0	32	85	0	0	Westwood	1.895245	1.338707
42.27646	-85.587276	740	4	0	29	94	0	0	Vine	1.893707	1.338707

Latitude	Longitude	SS4A _ID	Number Legs	Total Number of Deaths	Total Number of Injuries	Number of PDO-Only Crashes	Number of Pedestrian Deaths	Number of Pedestrian Injuries	Neighborhood	All Modes Safety Score	Pedestrian Safety Score
42.27646	-85.587276	1067	4	0	36	66	0	0	CBD	1.893707	1.338707
42.27424	-85.605181	1205	4	0	27	100	0	7	CBD	1.891784	1.917553
42.27424	-85.605181	698	4	0	15	148	0	1	Oakland/Winchell	1.891784	1.814861
42.29468	-85.574642	1214	3	1	21	105	0	5	Edison	1.888707	1.912553
42.26256	-85.531093	345	4	0	4	82	0	0	Milwood	1.886789	1.387173
42.27402	-85.587907	684	3	0	9	59	0	0	Southside	1.882942	1.812173
42.2506	-85.530806	77	4	0	29	42	0	0	Milwood	1.881784	1.338707
42.26672	-85.530813	930	4	0	22	69	0	3	Vine	1.880245	1.899476
42.26672	-85.530813	465	4	0	19	81	0	0	Milwood	1.880245	1.338707
42.25968	-85.589609	284	3	0	16	91	0	0	South Westnedge	1.878707	1.338707
42.2913	-85.64819	1132	4	0	16	84	0	6	Westwood	1.876399	1.915245
42.28971	-85.587216	1069	4	0	21	63	0	0	CBD	1.875245	1.763707

Intersection Safety Countermeasure Support

A central objective of this Safety Action Plan is to move from analysis to action by identifying targeted, practical strategies that improve intersection safety across Kalamazoo. This section introduces the countermeasures recommended for implementation, grouped by common safety concerns and roadway conditions. The strategies are grounded in national best practices but tailored to Kalamazoo's unique crash patterns, roadway design, and community priorities.

These countermeasures form the basis of the Intersection Safety Countermeasure Toolbox (Appendix G), which serves as the technical reference for design and implementation. The Toolbox includes cost ranges, timelines, national guidance links, and local implementation notes for each treatment. To complement that resource, the Narrative Overview of Toolbox Countermeasures included in this chapter provides a plain-language description of the same strategies, organized into six categories. This dual structure ensures that staff, partners, and community members have both a quick-reference guide and a descriptive overview to support decision-making and engagement.

Intersection Safety Countermeasure Toolbox

The Toolbox in Appendix G presents a curated list of infrastructure countermeasures aligned with national safety standards and tailored to Kalamazoo's most common intersection challenges. Organized by safety issue—such as bicycle-related crashes, pedestrian visibility, turning conflicts, or excessive vehicle speeds—it provides a clear reference for selecting the right treatment for a given problem.

Each countermeasure entry in the Toolbox includes:

- A brief description of the treatment and its function
- The safety issue(s) it addresses
- Estimated cost range and implementation timeline (short-, medium-, or long-term)
- Links to national guidance (FHWA, NACTO, ADA, etc.)
- Local implementation notes

How to Use It:

The Toolbox is intended to support project scoping, capital planning, and grant applications. It is particularly useful for evaluating high-crash intersections and identifying solutions during corridor studies. By including planning-level costs and timelines, the Toolbox helps set realistic expectations for budgeting and phasing. Because it is grounded in Kalamazoo's crash data and field observations, it reflects local needs while maintaining flexibility for future updates as new treatments and technologies emerge.

Countermeasure Categories Explained

To make these strategies easier to understand at a glance, this chapter also provides a narrative overview of the Toolbox countermeasures. Organized into six categories, this section explains the broader purpose of each treatment type and how they can be combined to address multiple safety concerns at once.

The six categories are:

1. Pedestrian and Bicycle Infrastructure Enhancements
2. Transit Accessibility Improvements
3. Intersection and Crossing Safety Measures
4. Traffic Calming and Lane Adjustments
5. Intersection Design Modifications
6. Access Management Strategies

Each category is introduced with a short narrative describing its role in a Safe System approach. This format is especially useful when reviewing intersection concepts with non-engineering audiences, cross-departmental teams, or community stakeholders. By grouping countermeasures in this way, the section provides a plain-language framework for early-stage conversations about project goals, tradeoffs, and priorities.

This section is especially helpful when reviewing intersection concepts with non-engineering audiences or cross-departmental teams. It can guide early-stage conversations about project goals and tradeoffs and provide plain-language framing for public engagement. For example, if an intersection experiences both speeding and turning conflicts, referencing the relevant categories can highlight how complementary strategies—such as lane reductions, turn restrictions, and refuge islands—can work together to deliver more holistic safety outcomes.

For a full listing of design options and additional details, see the Countermeasure Toolbox in Appendix G, which includes expanded descriptions, references, and supporting resources.

Reviewing These Resources with Partners

When reviewing intersection safety strategies with staff, stakeholders, or agency partners, it is helpful to:

- Start with crash and comfort data: Use safety analysis and pedestrian level of traffic stress (PLTS) maps to identify the dominant concerns at each location.
- Use both the categories and the Toolbox: Categories provide a shared framework for discussing safety goals, while the Toolbox supports technical decision-making.
- Highlight costs and timeframes: Partners may have different constraints and understanding what's feasible in the short vs. long term can shape realistic next steps.
- Discuss constraints and opportunities: Consider right-of-way, drainage, utilities, and maintenance capacity when evaluating feasibility.

These resources should also be reviewed alongside:

- Intersection analysis map results (Appendix E)
- Community engagement input (Appendix B)
- Priority intersection maps (Appendix E)
- Priority intersection cut sheets (Pages 50-59)
- Sidewalk, lighting, and bus stop safety plans (Page 69-121)

By using these resources together, City staff and partners can build a shared understanding of what effective intersection safety looks like in Kalamazoo and take coordinated steps toward implementing projects that deliver meaningful outcomes for people walking, biking, riding transit, and driving.

Countermeasures Explained

Pedestrian and Bicycle Infrastructure Enhancements

Improving and Extending Buffered or Separated Bike Facilities

Upgrading shared bike lanes to separated or shared-use paths increases rider comfort and safety, especially along high-speed corridors such as Michigan Avenue and Howard Street. These facilities expand the network to serve a wider range of users and support planned connections in Imagine Kalamazoo 2025.

Sidepaths and Trail Connections

Sidepaths provide low-stress, two-way travel along arterials and fill critical gaps near schools, WMU, and the Kalamazoo River Valley Trail. At-grade trail crossings replace unusable below-grade crossings, making regional trails more accessible and better integrated into the street network.

Improving Pedestrian Crossings

High-visibility continental crosswalks standardize treatments and improve driver awareness at intersections. Relocating or reconfiguring crosswalks reduces crossing distances and provides safer refuge, especially where wide intersections currently expose pedestrians to high conflict.

Upgrading Curb Ramps and Accessible Pedestrian Signals

Directional curb ramps, tactile warnings, and APS improve navigation for individuals with disabilities while reducing confusion at intersections. Extended pedestrian signal timing and leading pedestrian intervals (LPIs) improve crossing safety.

Transit Accessibility Improvements

Enhancing Bus Stop Infrastructure

Many stops near priority intersections lack ADA-compliant boarding pads or shelters. Adding accessible platforms improves safety and comfort for all riders, particularly seniors and those with mobility challenges. Where possible, stops should be co-located with improved crossings to better connect transit and walking networks. Reference the Bus Stop Safety Plan later in this section for more detailed transit infrastructure safety improvement information.

Intersection and Crossing Safety Measures

Pedestrian Refuge Islands and Medians

Raised medians with refuge islands shorten exposure distances, provide a waiting area for two-stage crossings, and slow left-turn movements. Median noses further improve visibility and protect pedestrians waiting in the median.

Mountable Truck Aprons

Truck aprons on intersection corners reduce turning speeds while still accommodating larger vehicles. These features shorten pedestrian crossing distances and calm vehicle movements.

Raised Slip Lane Crossings and Channelized Turn Reconfiguration

Reconfigured slip lanes and raised crossings improve sightlines and reduce the speed of turning vehicles, addressing common conflicts between drivers and pedestrians.

Traffic Calming and Lane Adjustments

Optimizing Lane Configurations and Lane Reductions

Road diets or lane reductions remove underutilized lanes to shorten pedestrian crossings, reduce turning speeds, and provide space for multimodal improvements. These changes should be confirmed with traffic studies to ensure appropriate vehicle capacity.

Centerline Hardening

Physical delineators such as flexible bollards or curbing reduce risky turning behaviors by forcing drivers to slow and follow proper turning paths.

No Turn on Red Restrictions

Prohibiting right turns on red at multimodal intersections reduces conflicts between drivers and pedestrians or bicyclists in the crosswalk.

Signal Visibility and Operations

Signal Backplates

Retroreflective backplates improve visibility of traffic signals, especially in low-light or glare conditions.

Protected Left-Turn Phasing

Changing permissive left-turns to protected phasing reduces conflict between turning drivers and crossing pedestrians or bicyclists.

Bicycle Detection and Leading Intervals

Signal technology should include detection for bicyclists and provide leading intervals where possible, improving predictability and reducing conflicts.

Access Management Strategies

Minimizing Conflict Points Near Intersections

Closing or consolidating driveways near intersections reduces turning conflicts and improves pedestrian safety. These strategies also create space for added crosswalks, sidewalks, or refuge islands while improving traffic operations.

Intersection Improvement Evaluation

To encourage that safety improvements lead to measurable and lasting change, the Kalamazoo Safety Action Plan recommends a set of targeted evaluation metrics. These metrics will allow the City to monitor progress over time, assess the success of specific countermeasures, and adapt strategies as needed. Each metric is designed to be specific to safety goals, measurable using available tools and data, achievable within current resource capacities, relevant to the Plan's core objectives, and time-bound through suggested review intervals (e.g., 6 months, 1 year, 3 years post-implementation).

The following suggested metrics intend to provide a comprehensive framework for evaluating safety improvements at intersections across Kalamazoo. By committing to data collection before and after interventions, and using a blend of quantitative and qualitative measures, the City can track progress, build public trust, and continuously refine its approach to eliminating serious injuries and fatalities.

Crash Frequency and Severity

Metric: Reduce the total number of crashes, serious injuries, and fatalities at improved intersections by at least 30% within three years.

Why It Matters: This is the most direct indicator of whether safety improvements are working. Comparing pre- and post-intervention crash data (sourced from local police reports and state crash databases) helps determine if the implemented design changes are reducing risk.

Pedestrian and Bicycle Crash Trends

Metric: Achieve a measurable reduction (e.g., 20%) in pedestrian- and bicycle-involved crashes within two years at locations targeted for vulnerable road user improvements.

Why It Matters: Pedestrians and cyclists face the highest risk at intersections. Disaggregating crash data by mode and severity encourages that countermeasures are benefiting those most at risk.

Near-Miss and Conflict Observations

Metric: Identify and reduce conflict rates by 50% at treated intersections within one year through observational or video-based conflict studies.

Why It Matters: Many safety risks do not result in reported crashes but show up in frequent near-miss events. Conflict tracking allows the City to address potential problems proactively.

Driver Behavior Change

Metric: Decrease average vehicle speeds at target intersections by 10–15% and increase driver yielding rates at crosswalks to over 70% within one year.

Why It Matters: Slower speeds and higher yielding rates dramatically reduce the likelihood and severity of crashes. These behaviors can be measured using radar speed studies and compliance checks.

Pedestrian and Bicycle Volumes

Metric: Increase pedestrian and bicycle counts by at least 15% at improved intersections within two years.

Why It Matters: Growth in active transportation volumes is often a sign that people feel safer using the infrastructure. Counts can be conducted via manual methods or using sensor data.

Community Perception of Safety

Metric: Increase the percentage of residents who report feeling safe walking or biking through improved intersections by at least 25% in follow-up surveys.

Why It Matters: Public confidence is key to sustaining use and support. Surveys, intercept interviews, or focus groups should be conducted pre- and post-implementation to track changes in perception.

Infrastructure Condition and Maintenance

Metric: Maintain 100% functionality of key safety elements (e.g., signs, signals, markings) with no more than a 30-day delay in addressing maintenance issues.

Why It Matters: Infrastructure only improves safety if it remains visible and operational. Regular inspections and a responsive maintenance schedule are critical to long-term success.

People-Centered Safety Outcomes

Metric: Encourage that at least 40% of intersections receiving safety upgrades are in Justice40 or high vulnerability areas, and evaluate changes in crash and comfort data in those areas annually.

Why It Matters: Prioritizing historically underserved areas encourages the benefits of safety improvements are equitably distributed. Equity mapping and disaggregated data analysis can support this effort.

Sidewalk Safety Improvement Plan

Background Information

The City of Kalamazoo has received funding through the Safe Streets and Roads for All (SS4A) Planning Grant to support the development of targeted sub-plans aimed at enhancing roadway safety for all users. As part of this effort, a Sidewalk Safety Improvement Plan (SSIP) will be created to specifically address pedestrian infrastructure needs across the city.

The SSIP will serve as a critical tool to help the City advance its Vision Zero and Complete Streets goals. The Plan will identify locations of new sidewalk construction to eliminate gaps in the pedestrian network, particularly along major streets, key neighborhood streets, and corridors with Metro bus stops. These improvements will enhance connectivity to public transportation and key community amenities, thereby promoting safer and more accessible pedestrian travel throughout Kalamazoo.

Ultimately, the SSIP will not only guide strategic investment in sidewalk infrastructure but also strengthen the City's ability to compete for future SS4A implementation funding to carry out the recommended improvements.

Sidewalk Asset Management Data

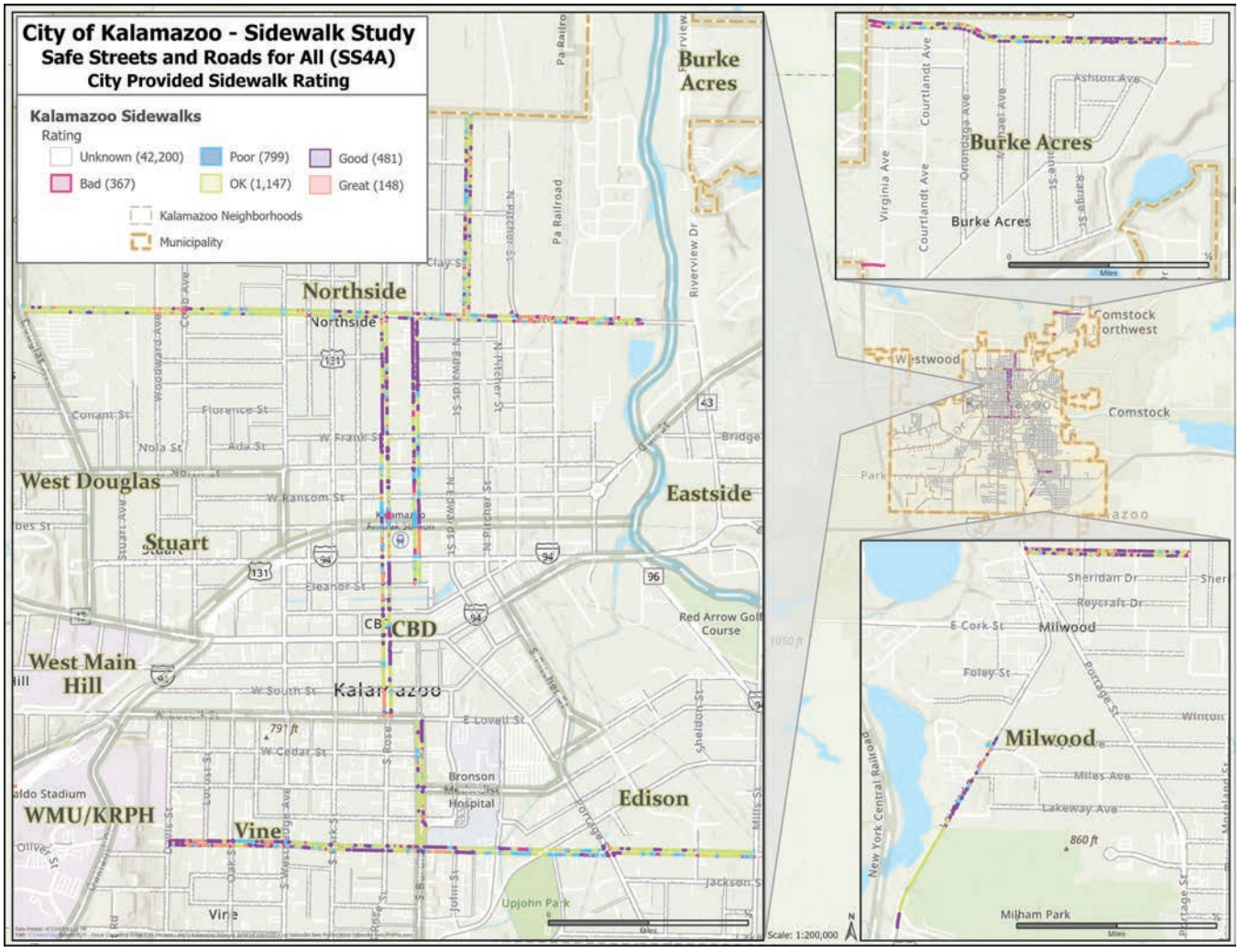
As part of the planning effort, the City provided a comprehensive sidewalk asset management dataset that included over 45,000 unique sidewalk segments. This dataset identified existing sidewalks along with condition ratings and indications of whether a segment should be removed or replaced. However, 93.5% of the segments had unknown condition data; collected data only covered parts of 6 of the 22 neighborhoods. Due to this high percentage of missing/uncollected information, the decision was made to focus this Plan on addressing gaps in the sidewalk network rather than replacement needs of existing segments.

Relying solely on the available condition data could result in skewed priorities, as unknown segments may be in worse condition than those that were rated. Moving forward, it is recommended that the City continue updating and maintaining the sidewalk asset management database to improve its reliability. With more complete data, future planning efforts can more effectively incorporate sidewalk replacement needs alongside gap-filling improvements.

Table 3. Sidewalk condition data.

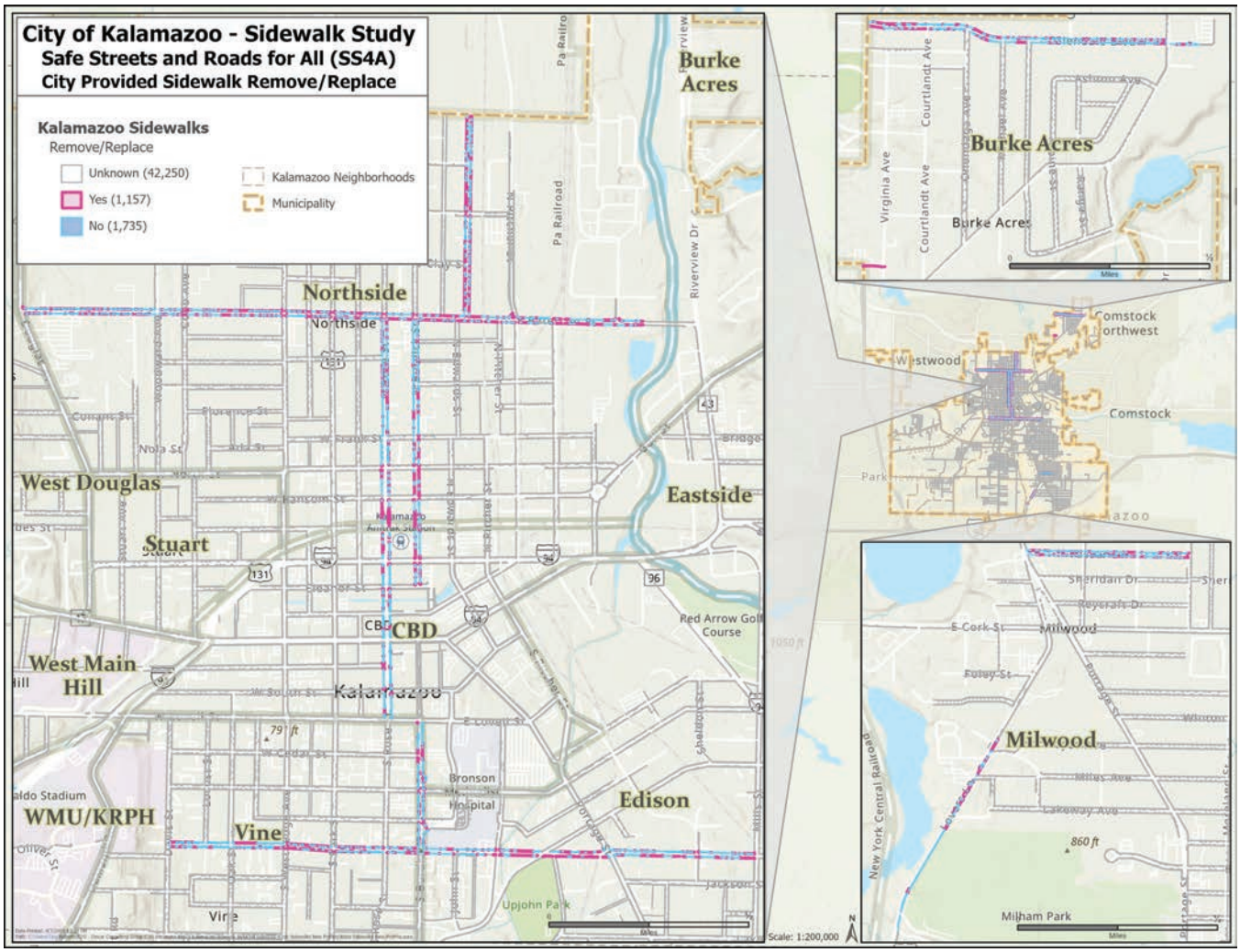
Condition	Remove/Replace		
	Unknown	Yes	No
Unknown	93.5%	0.0%	0.0%
Bad	0.0%	0.8%	0.0%
Poor	0.0%	1.7%	0.1%
Ok	0.1%	0.1%	2.4%
Good	0.0%	0.0%	1.1%
Great	0.0%	0.0%	0.3%

Figure 15. Map showing database sidewalk ratings.



This map presents sidewalk condition ratings throughout Kalamazoo, helping to identify maintenance needs and prioritize investments that support safe, accessible, and walkable neighborhoods

Figure 16. Map showing database for sidewalk segments to remove or replace.



This map highlights sidewalk segments across Kalamazoo evaluated by the City for potential removal or replacement, supporting data-driven decisions to improve pedestrian safety and accessibility through the SS4A Sidewalk Safety Improvement Plan.

Tree Data Analysis

The City provided a comprehensive inventory of over 22,000 trees across 136 species as part of this effort. This dataset was compared with the City's sidewalk segment data that had been labeled as needing removal or replacement to explore whether tree root systems may contribute to sidewalk deterioration. However, only a small subset—2,892 sidewalk segments, or approximately 6.4% of the total 45,142 sidewalk segments—had been assigned a remove/replace condition rating by the City. Of this subset, just 1,157 sidewalk segments (roughly 40%) were identified for removal or replacement.

When cross-referencing tree locations with this limited sidewalk condition dataset, only 349 trees (or 1.6% of the full tree inventory) were located within a 10-foot buffer of a sidewalk segment labeled for removal or replacement. Given the small size of this dataset, no major patterns or outliers were found among specific tree species that consistently aligned with damaged sidewalk segments.

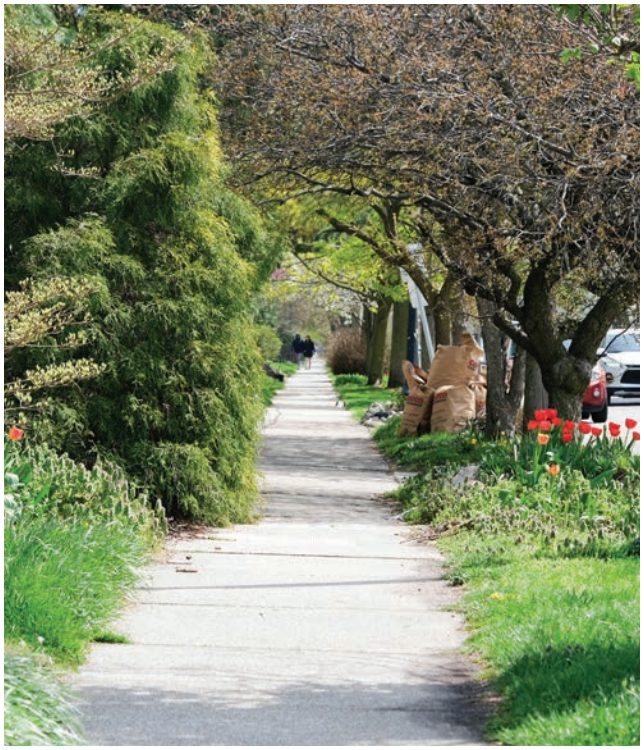
While no definitive correlation between tree species and sidewalk damage could be established at this time, the analysis underscores the importance of expanding and maintaining the City's sidewalk rating database. A more complete and up-to-date dataset would allow for stronger conclusions in future evaluations and support more targeted infrastructure management decisions.

Sidewalk Analysis

A comprehensive analysis of the pedestrian network was conducted to support the development of the SSIP. This effort aimed to identify areas of concern and prioritize locations for future sidewalk safety improvements. The analysis included multiple data layers to allow a well-rounded and equitable approach.

Categories/Parameters

Several parameters were considered in the sidewalk analysis including pedestrian crash history, crashes outside of sidewalk coverage, equity considerations, posted speed limit, and sidewalk network gaps. Based on the data range for each parameter the data was grouped into locations that had similar values to produce a range of scores that was eventually weighted into an overall score for prioritization.



Pedestrian Crash History

To identify areas with a history of pedestrian safety concerns, a citywide review of pedestrian-involved crash data from 2014 to 2023 was conducted. All pedestrian crashes reported during this 10-year period were included in the analysis, regardless of severity, for a comprehensive understanding of where pedestrian-vehicle conflicts have historically occurred. The data was aggregated by neighborhood, with each of the City's 22 neighborhoods evaluated based on the total number of pedestrian crashes.

This approach allowed the identification of locations that may have recurring safety issues due to roadway design, land use, or high pedestrian volumes. By examining crash counts across multiple years, the analysis accounts for consistent trends rather than isolated events. The findings help elevate neighborhoods with demonstrated crash history, which are often indicators of underlying infrastructure deficiencies or behavioral risks that may be mitigated through improved pedestrian accommodations, such as sidewalks, crossings, and traffic calming measures.

Pedestrian Crashes Outside of Sidewalk Coverage

This parameter specifically targets locations where pedestrians have been struck in areas without any nearby sidewalk infrastructure. Using GIS data, the presence of sidewalks within a 75-foot buffer from the road centerline was assessed. If no sidewalk was present on either side of the roadway at the location of a pedestrian crash, that crash was flagged and included in this dataset.

These crashes are particularly important to address, as they highlight situations in which pedestrians are forced to walk in the roadway or along narrow shoulders due to a complete absence of pedestrian facilities. In such environments, the likelihood of conflict with motor vehicles is significantly higher. The analysis prioritizes these locations for future sidewalk investment, with the intent to eliminate unsafe conditions by providing a dedicated space for people walking. This helps reduce exposure to moving vehicles and supports the creation of a safer, more connected network, especially in areas that are currently underserved by basic pedestrian infrastructure.

Equity Considerations

Equitable access to safe and reliable pedestrian infrastructure is a core component of the Sidewalk Safety Improvement Plan. The equity analysis draws on the 2010 Census Tracts with Disadvantaged Communities Data, developed to support the federal Justice40 Initiative. This dataset identifies census tracts that meet thresholds for both socioeconomic indicators (e.g., poverty rates, unemployment, low educational attainment) and environmental or climate burdens (e.g., exposure to pollution, flooding, or poor housing quality).

Each neighborhood was assigned an equity score based on the weighted average of its constituent census tracts, accounting for both the population within each tract and the proportion classified as disadvantaged. This method provides for larger and more densely populated disadvantaged areas to receive appropriate emphasis in the prioritization process. Elevating equity in the sidewalk analysis allows the City to target investments in communities where residents are more likely to rely on walking and transit due to limited vehicle access and where historical disinvestment may have led to unsafe or incomplete pedestrian infrastructure. By doing so, the SSIP supports broader goals of environmental justice, social inclusion, and transportation equity.

Posted Speed Limit

Vehicle speed is one of the most critical factors influencing pedestrian safety, especially in the event of a crash. Higher speeds not only increase the likelihood of a collision but significantly raise the risk of severe injury or death for vulnerable road users. Studies consistently show that the probability of fatality for a pedestrian struck by a vehicle rises dramatically with increasing impact speeds — for example, a pedestrian hit at 20 miles per hour (mph) has roughly a 10% chance of dying, whereas at 40 mph, that risk jumps to around 80%.

In this analysis, roadway segments were categorized based on their posted speed limit: 25 mph or less, 30–35 mph, 40 mph, 45 mph, and 55 mph. Segments with higher posted speeds were assigned greater emphasis in the analysis, as these corridors are inherently more dangerous for pedestrians — particularly where sidewalks or crossings are inadequate. While actual vehicle operating speeds or traffic volumes were not used in this assessment, posted speed limits offer a reliable baseline for evaluating pedestrian exposure risk. Addressing sidewalk needs along high-speed corridors can reduce crash severity by encouraging mode separation and allowing for additional design features such as setbacks, buffers, or protected crossings.

Sidewalk Network Gaps

Identifying and addressing gaps in the sidewalk network is essential for building a connected and safe pedestrian system. Using GIS data, street segments were analyzed to determine the percentage of sidewalk coverage on both sides of the roadway. Segments with 50% or less sidewalk coverage — such as a road with sidewalk on only one side — were flagged as deficient. These gaps often create barriers to pedestrian mobility and force people to walk on the shoulder, cross midblock, or avoid walking altogether.

While this parameter was not assigned a numeric score, sidewalk gap segments were qualitatively classified as low, medium, or high priority based on engineering judgment and contextual factors. These included proximity to schools, parks, bus stops, and whether the segment serves as a critical link between other existing sidewalks. This classification supports more nuanced decision-making beyond data scoring, allowing the City to incorporate on-the-ground knowledge and future planning goals. By focusing on strategically important gaps, the City can create a more continuous and accessible pedestrian network that supports all users and trip types.

Public Comment/Input

Community feedback was an integral component of the SSIP, helping to validate the technical analysis and bring forward localized concerns that may not have been fully captured through data alone. Multiple engagement tools were used to gather input from residents, including an online survey, interactive comment map, public meetings, and in-person outreach events. These efforts aimed to reach a broad cross-section of the community to allow the voices of people who walk regularly in Kalamazoo were represented in the planning process.

Comments received through these channels were tracked and geographically tagged, allowing them to be compared directly with sidewalk gap locations, crash data, and other prioritization factors. Many of the public comments reinforced existing findings—particularly in areas with low sidewalk coverage or high pedestrian crash rates—while others revealed issues that only local knowledge could provide, such as lack of right-of-way or perceived safety concerns.

Although public comment was not assigned a numerical score, it served as an important qualitative layer in the analysis. Input from the community was considered when refining project recommendations, especially in locations where comments aligned with data-driven priorities or highlighted unique needs. This helped create a more responsive and locally informed set of recommendations that reflect both measurable safety concerns and lived experience.

Parameters Summary

By layering these diverse data sources, the analysis provides a multidimensional view of sidewalk safety needs across Kalamazoo. Each parameter—ranging from pedestrian crash history and sidewalk coverage to social vulnerability and roadway speeds—offers a unique lens into the conditions affecting pedestrian travel. When combined, these layers form a comprehensive prioritization framework that highlights areas where sidewalk investments can have the greatest impact on safety, accessibility, and equity.

Rather than looking at any single factor in isolation, this approach integrates historic crash data, infrastructure gaps, and community demographics to allow decision-making that is data-informed, equitable, and aligned with broader city goals such as Vision Zero and Complete Streets. The results not only support transparent and defensible infrastructure planning but also create a strong foundation for pursuing future funding opportunities, including SS4A implementation grants.

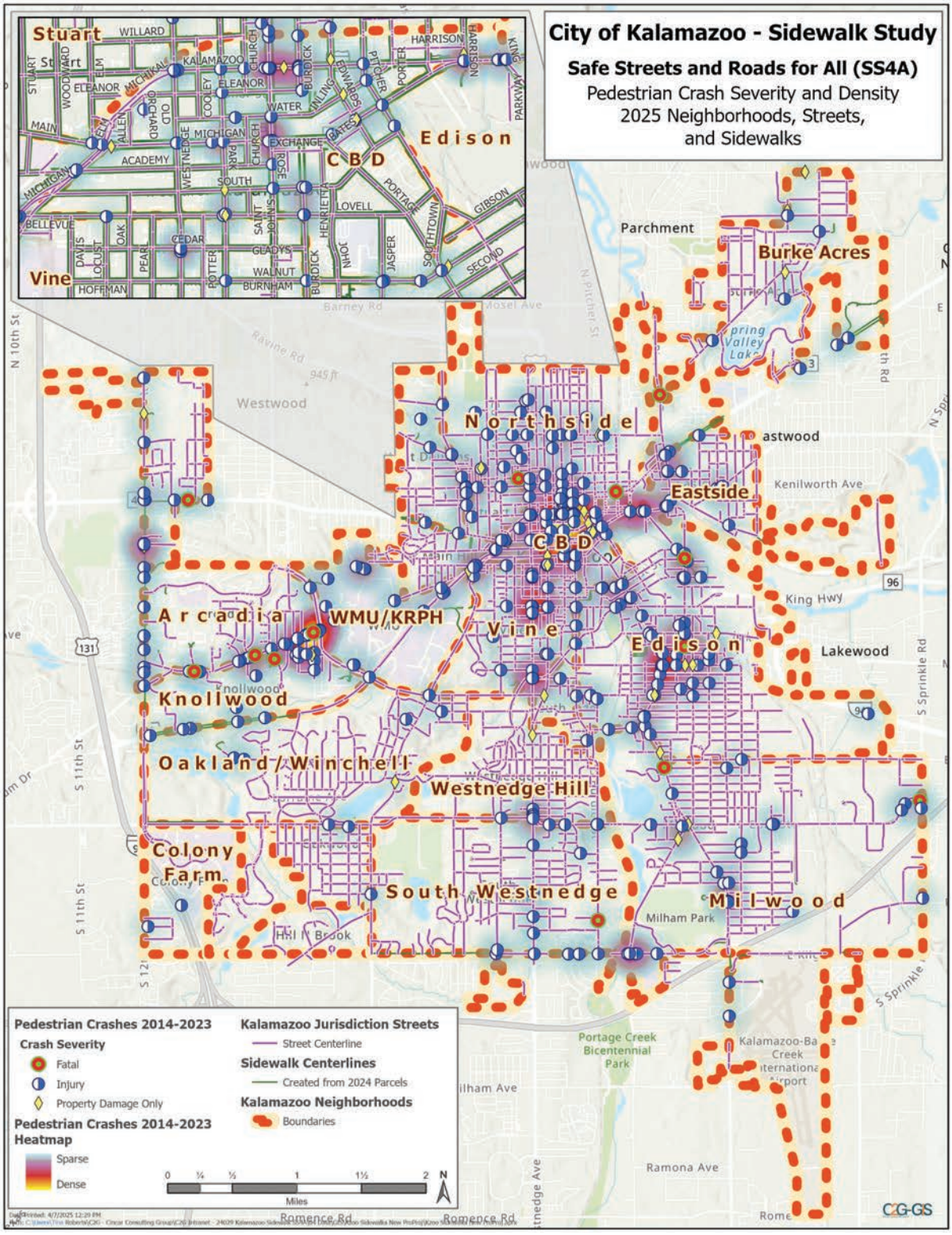
The following visuals provide spatial context for the key parameters analyzed, offering a geographic view of how pedestrian safety concerns and infrastructure needs are distributed across the city. Maps and graphics illustrate where sidewalk improvements may be most urgently needed, helping to guide policy discussions, budget planning, and coordination with community stakeholders. In particular, the maps help convey how overlapping risk factors—such as a lack of sidewalks, high-speed corridors, and disadvantaged communities—can elevate the urgency for targeted interventions in certain neighborhoods.

Together, the analysis and visual tools equip the City with a clear and actionable strategy for improving pedestrian safety, filling critical network gaps, and promoting a more walkable, inclusive transportation system for all Kalamazoo residents.

Table 4. Sidewalk prioritization scoring.

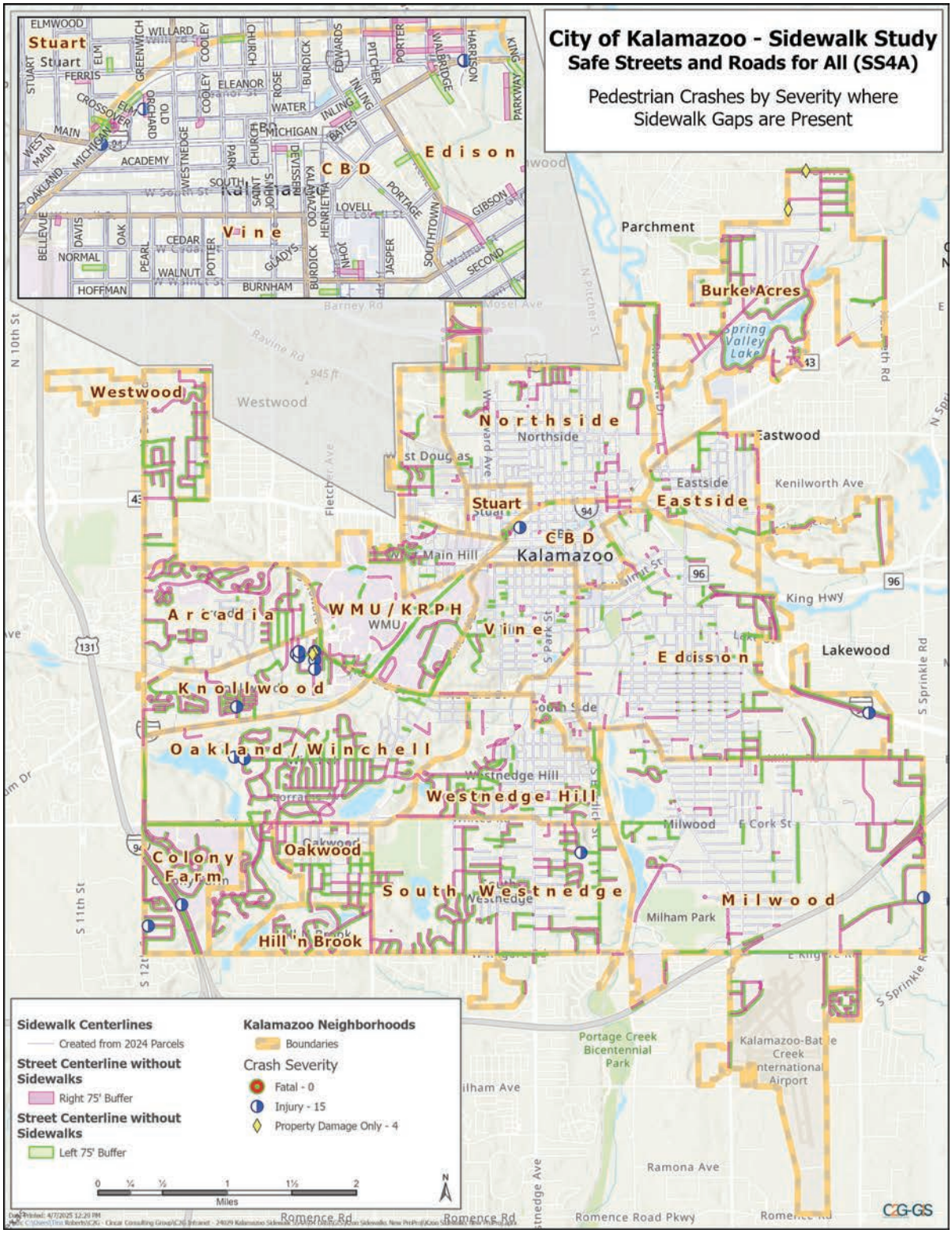
No.	Metric	Analysis	Thresholds	Score	Weights
1	Pedestrian Crashes	Assigned more points to neighborhoods with higher pedestrian crashes. Range: 0 - 137	0-15 15-25 25-60 60-115 >115	0 5 10 15 20	15%
2	Pedestrian Crashes Outside of 75' Sidewalk Buffer	Assigned more points to neighborhoods with pedestrian crashes outside of 75' sidewalk buffer. Range: 0 - 26	0 1-5 6-10 10-15 >15	0 5 10 15 20	40%
3	Equity Considerations	Assigned more points to neighborhoods in a Disadvantaged Census Tract. Range: 0 – 17.32	<1.0 1.1-5.0 5.1-10.0 10.1-15.0 >15.0	0 5 10 15 20	15%
4	Posted Speed Limit	Assigned more points to streets with higher posted speed limits. Range: 0 - 55	0-25 30-35 40 45 55	0 5 10 15 20	30%

Figure 17. Pedestrian crash severity and density.



This map visualizes nearly a decade of pedestrian crash data in Kalamazoo alongside sidewalk infrastructure, identifying areas with concentrated safety issues to inform targeted improvements through the SS4A Sidewalk Study.

Figure 18. Pedestrian crashes where sidewalk gaps present.



This map identifies where pedestrian crashes have occurred in Kalamazoo along streets lacking sidewalks—helping prioritize critical infill locations for safer, more walkable neighborhoods through the SS4A initiative

Prioritization

To guide the development of the Sidewalk Safety Improvement Plan, a data-informed prioritization framework was developed to identify locations where sidewalk improvements are most needed. This framework builds on the results of the network analysis and incorporates both safety and equity-focused criteria to support impactful decision-making. The approach focuses on highlighting areas where pedestrian infrastructure investments would address documented risk factors, improve access, and support citywide mobility goals.

Five key categories were used in the prioritization process:

- Pedestrian Crash Density: Neighborhoods with a higher concentration of pedestrian crashes were given greater priority, with particular focus on areas showing consistent crash patterns across the 10-year study period. These locations reflect areas where pedestrians are frequently exposed to risk and where targeted infrastructure improvements could address recurring safety issues.
- Pedestrian Crashes Outside of Existing Sidewalk Coverage: This category identified crashes involving pedestrians that occurred more than 75 feet from any existing sidewalk. These crashes are especially concerning, as they suggest pedestrians were forced to walk in or near the roadway due to a complete lack of infrastructure. These areas represent high-need locations where new sidewalks could have an immediate safety benefit.
- Equity Indicators: Neighborhoods with higher concentrations of disadvantaged populations were prioritized using the 2010 Census Tracts with Disadvantaged Communities Data developed under the Justice40 Initiative. This dataset considers multiple indicators—including environmental burdens and socioeconomic conditions—to identify communities that may face greater mobility challenges and fewer resources to advocate for infrastructure improvements.
- Posted Speed Limit: Higher posted speed limits were associated with increased pedestrian risk and were therefore prioritized in the scoring process. Roadways with speed limits of 40 mph or higher were given the greatest emphasis, recognizing that pedestrian crash severity increases sharply with impact speed. Addressing sidewalk needs along these corridors would help reduce the potential for severe or fatal outcomes, particularly where pedestrian volumes are present.
- Existing Sidewalk Coverage: This category focused on identifying sidewalk gaps using GIS data. Street segments with 50% or less sidewalk coverage across both sides of the roadway were flagged as deficient. These segments formed the basis of the prioritization. Weighted scores from the other four categories (crash density, crashes outside sidewalk coverage, equity, and speed) were applied to these gap segments to identify which locations should be prioritized for future sidewalk construction.
- Public Comment: Community input was gathered through online surveys, mapping tools, and public engagement events to capture local walking experiences and safety concerns. Comments often aligned with data-driven priorities and also revealed site-specific issues that only residents could identify. While not scored, public feedback helped refine sidewalk improvement recommendations and added critical context to the analysis.

Thresholds were established within each weighted category to create consistent, tiered scoring ranges across the city. This approach provided a transparent, repeatable method for comparing sidewalk needs across neighborhoods and corridors.

The outcome of this prioritization process is a clear, data-driven list of high-need locations for sidewalk investment. These results will guide near- and long-term planning efforts and strengthen the City's ability to pursue additional funding opportunities, including implementation support through the Safe Streets and Roads for All (SS4A) program.

Recommendations

Building upon the results of the sidewalk network analysis and prioritization framework, a draft project list was developed to identify specific sidewalk segments recommended for improvement. These candidate projects represent locations where the addition of new sidewalk infrastructure is expected to have the most meaningful impact on pedestrian safety, connectivity, and equity.

Each project on the list corresponds to a segment of roadway that was identified as having 50% or less existing sidewalk coverage and received a weighted prioritization score based on four key factors: pedestrian crash density, crashes outside of sidewalk coverage, equity indicators, posted speed limit, and public comment. This methodology allowed a focus on sidewalk gaps in areas where documented safety risks or vulnerable populations are present, or where the walking environment is made more dangerous by higher vehicular speeds.

In addition to prioritization scores, engineering judgment was applied to further refine the list by considering local context—such as proximity to transit stops, schools, parks, and other essential community destinations—as well as the potential for future coordination with planned capital projects. This added layer of review helps show that the project list is not only data-supported but also reflective of on-the-ground needs and opportunities for implementation.

The resulting project list provides a strategic starting point for advancing sidewalk improvements throughout Kalamazoo. It can be used to support near-term funding applications, long-range capital planning, and coordination with other safety or mobility initiatives. The following table summarizes the recommended projects, including location details, sidewalk gap information, prioritization scores, and qualitative priority tiers. A full map of these segments is also provided to illustrate their geographic distribution across the city.

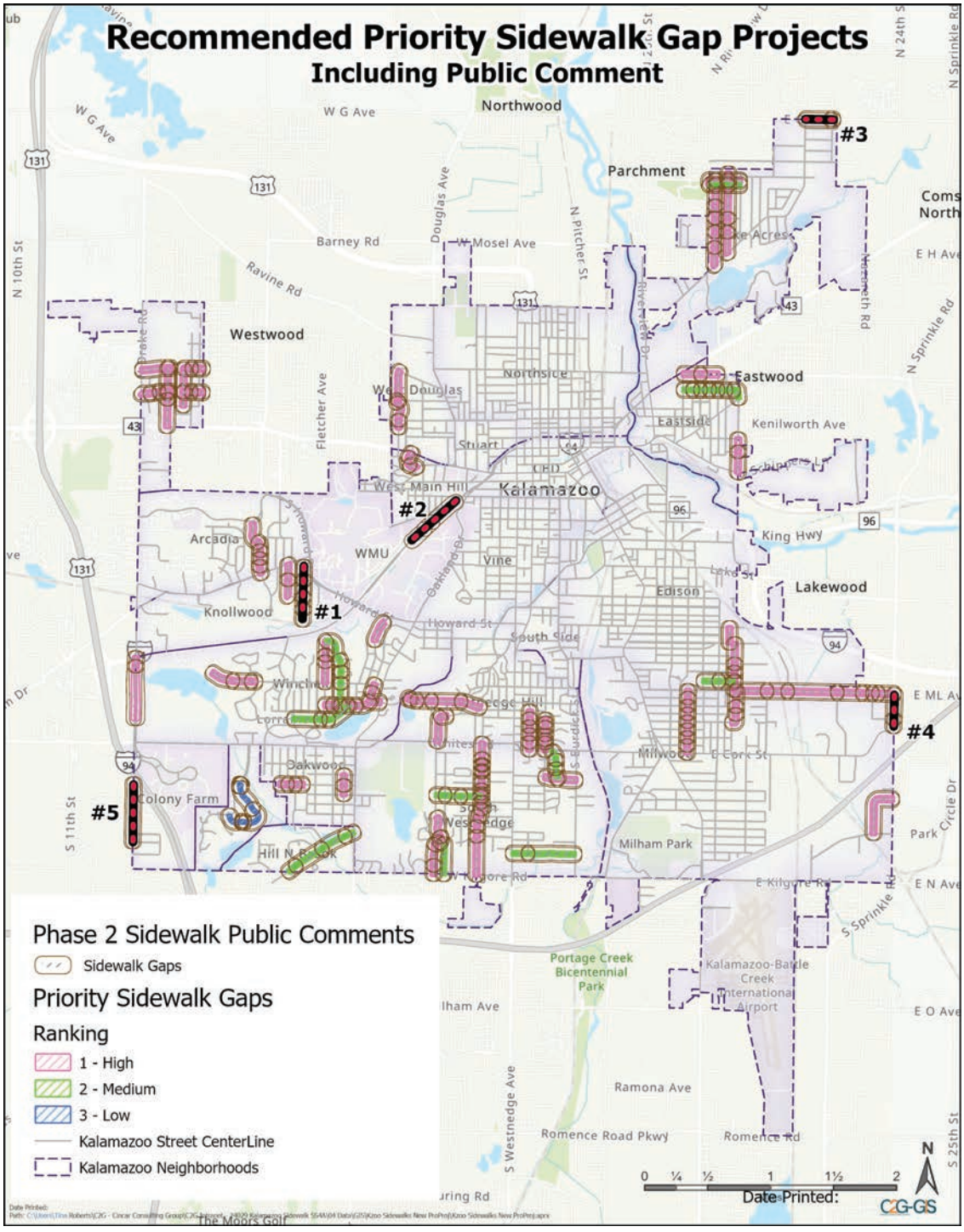
Table 5. Recommended sidewalk project list.

Rank	MDOT Full Street Name	Approx. Low Address	Approx. High Address	Neighborhood Name	Approx. Sidewalk Length (ft)	*Priority	Estimated Cost ($)
1	LAFAYETTE AVE	1107	1607	Knollwood	2400	1	89,880
2	STADIUM DR	1045	1903	WMU/KRPH	1300	3	48,685
3	E G AVE	2800	3716	Burke Acres	1100	1	41,195
4	S SPRINKLE RD	2400	2798	Milwood	1525	1	57,112
5	S 12TH ST	3800	4060	Colony Farm	3200	2	119,840
6	S DRAKE RD	2201	2501	Oakland/Winchell	1125	1	42,132
7	COURTLANDT AVE	2611	3525	Burke Acres	3325	1	124,522
8	PARK AVE	1801	1921	Burke Acres	525	1	19,662
9	VIRGINIA AVE	2501	3501	Burke Acres	3550	1	132,948
10	BIRCH AVE	1608	1920	Burke Acres	800	2	29,960
11	FACTORY ST	1836	2324	Edison	1075	1	40,259
12	BUENA VISTA ST	1623	1907	Edison	1050	2	39,323
13	BALKEMA DR	2401	2799	Milwood	1300	1	48,685
14	CANTERBURY AVE	3932	4299	Westwood	900	1	33,705
15	CROYDEN AVE	3925	4623	Westwood	1825	1	68,347
16	HARVARD ST	2401	3129	Milwood	2600	1	97,370
17	MILLER RD	2030	3830	Milwood	6600	1	247,170
18	PICCADILLY RD	600	904	Westwood	1475	1	55,239
19	STAFFORD RD	803	1203	Westwood	1525	1	57,112
20	VANRICK DR	3641	4099	Milwood	2050	1	76,773
21	BRONSON BLVD	4009	4425	South Westnedge	2600	1	97,370
22	HUMPHREY ST	1314	1912	Eastside	1950	1	73,028
23	BRONSON BLVD	2841	3029	South Westnedge	2600	1	97,370
24	DUKE ST	3510	4415	South Westnedge	2800	1	104,860
25	S PARK ST	2721	3025	South Westnedge	1275	1	47,749
26	HUTCHINSON	1	203	South Westnedge	1350	1	50,558

Rank	MDOT Full Street Name	Approx. Low Address	Approx. High Address	Neighborhood Name	Approx. Sidewalk Length (ft)	*Priority	Estimated Cost ($)
27	ASH ST	3200	3426	South Westnedge	1200	2	44,940
28	OLD COLONY RD	4163	4441	South Westnedge	1275	2	47,749
29	PARKER AVE	810	1232	South Westnedge	1875	2	70,219
30	PRATT RD	100	436	South Westnedge	2575	2	96,434
31	WALLACE AVE	305	405	Eastside	1700	1	63,665
32	CENTER ST	1510	1910	Eastside	1550	2	58,048
33	BENJAMIN AVE	1808	2000	Oakland/Winchell	825	1	30,897
34	BROADWAY AVE	2017	2325	Oakland/Winchell	1700	1	63,665
35	CHEVY CHASE BLVD	1819	2321	Oakland/Winchell	2300	1	86,135
36	WAITE AVE	2411	2525	Oakland/Winchell	725	1	27,152
37	WINCHELL AVE	3227	3705	Oakland/Winchell	1325	1	49,622
38	ABERDEEN DR	2007	2233	Oakland/Winchell	2050	2	76,773
39	LORRAINE AVE	2209	2709	Oakland/Winchell	2475	2	92,689
40	PRAIRIE AVE	609	1002	West Douglas	1425	1	53,367
41	PROSPECT ST	100	135	West Main Hill	250	1	9,363
42	ANGLING RD	2309	2739	Hill 'n Brook	3100	2	116,095
43	DOBBIN DR	807	1121	Arcadia	2250	1	84,263
44	EDGEMOOR AVE	822	1629	Westnedge Hill	3450	1	129,203
45	S ROSE ST	2801	3031	Westnedge Hill	850	1	31,833
46	KENT AVE	3606	3719	Oakwood	825	1	30,897
47	SPRINGMONT AVE	2601	2825	Oakwood	950	1	35,578
48	GREENLEAF CIR	3701	3799	Parkview Hills	4800	3	179,760

*Priority: 1 = High, 2 = Medium, 3 = Low; based on engineering judgment of surrounding area (school, park, major connectors, etc.)

Figure 19. Recommended sidewalk project locations.



This map highlights Kalamazoo's top sidewalk gap projects, prioritized using community feedback and data on safety and connectivity—guiding future investments in a more complete and walkable pedestrian network.

Sidewalk Cost Estimates

To support future funding requests and long-range planning efforts, planning-level cost estimates were developed for the sidewalk improvement segments identified in Table 5. These estimates are based on recent unit prices published in the 2025 MDOT Weighted Average Item Price Report, which aggregates awarded bid prices from across the state to reflect typical construction costs.

Two MDOT pay items were reviewed:

- Item 8030044 – Sidewalk, Conc, 4 inch, with an average cost of $6.29 per square foot
- Item 8030046 – Sidewalk, Conc, 6 inch, with an average cost of $6.81 per square foot

To provide a conservative estimate suitable for grant applications and early budgeting, the 6-inch sidewalk unit price was used. A 10% contingency was added to account for typical construction uncertainties such as grading, minor restoration, traffic control, or other incidental work that may be required but is not itemized separately at this stage. This results in a total planning-level cost of $7.49 per square foot.

In accordance with Section 33-35 of the City of Kalamazoo's Zoning Code, all new sidewalks are required to be a minimum of 5 feet wide. Based on that standard, the estimated construction cost is $37.45 per linear foot of sidewalk. This cost will be used to develop segment-level estimates by multiplying the unit rate by the total length of sidewalk identified for each gap segment in Table 5.

While this unit cost includes typical items such as sidewalk placement, grading, and minor restoration, it does not account for project-specific elements such as curb ramps, retaining walls, drainage work, or utility relocations, which would be refined during future design phases. As a result, the planning-level estimates should be considered conservative but appropriate for high-level investment planning and potential grant applications such as SS4A implementation funding.

Lighting Safety Improvement Plan

Introduction

One of the key objectives of the Safe System Approach is Safer Roads: roadway environments should be designed to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users. Street lighting is an important element in achieving this objective. In fact, the primary purpose of street lighting is to improve roadway safety and increase personal safety. This Lighting Safety and Improvement Plan provides a comprehensive street lighting plan for focus locations within the City of Kalamazoo upon review of existing corridor lighting throughout the city.

A well-designed lighting system within an urban setting is essential, not just for vehicular travel, but also for pedestrian activity and other modes of transportation. Successful urban lighting systems aesthetically complement the surrounding architecture and promote a safe and comfortable visual nighttime environment, encouraging pedestrian accessibility and movement within the community. Increasing nighttime visibility along streets and at pedestrian crossings, illuminating building facades, eliminating shadows, and minimizing glare are all important elements to achieving a successful urban lighting system.

Crashes in Dark Conditions

The nighttime fatality rate on the Nation's roadways is three times higher than the daytime rate, and 76% of pedestrian fatalities occur at night. Enhancing nighttime visibility where non-motorists mix with traffic during darkness will save lives.

Michigan traffic crash reports (UD-10 reports) include a field for recording the lighting conditions in which a crash occurred. The following options may be selected:

- Daylight
- Dawn
- Dusk
- Dark – Lighted
- Dark – Unlighted
- Other
- Unknown

For the purposes of this Lighting Safety Improvement Plan, only crashes in dark conditions (lighted and unlighted) were analyzed.

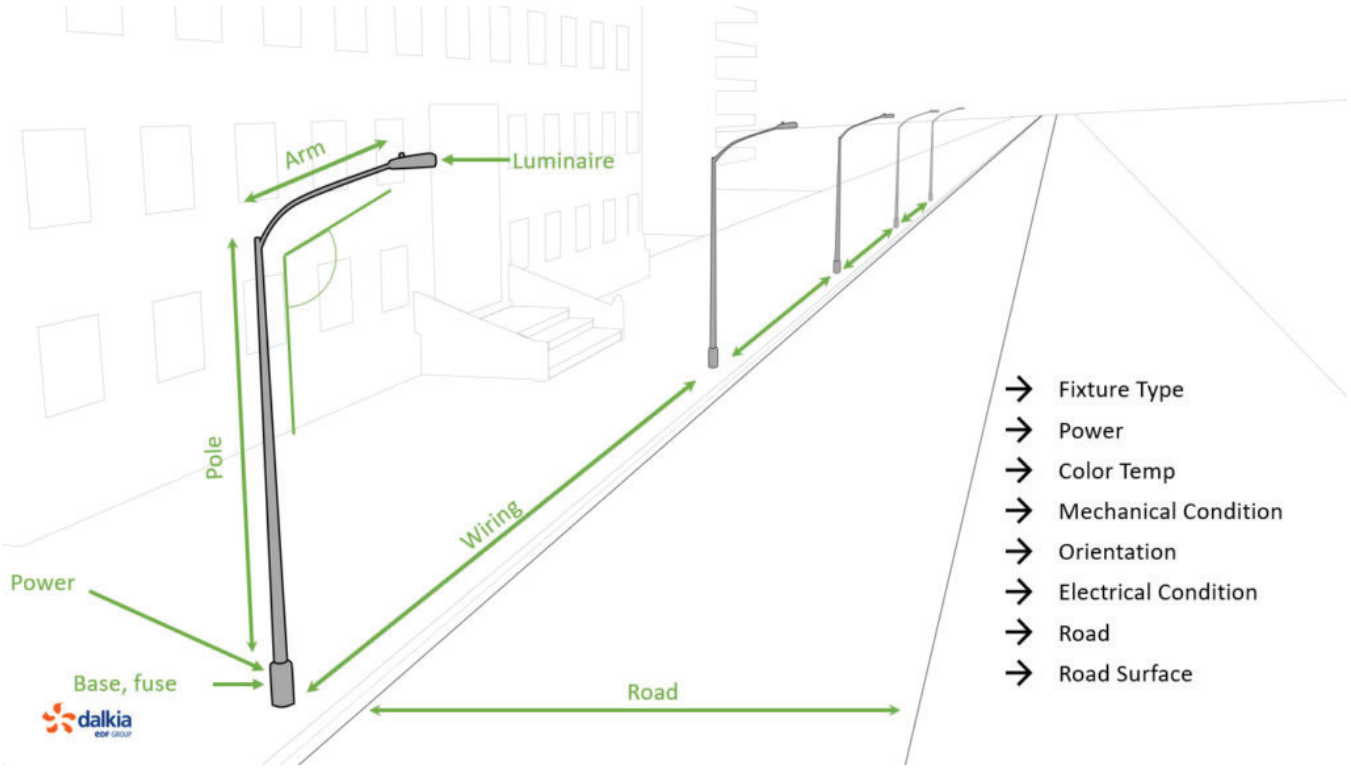
Based on 2014 to 2023 crash data, 19% of all traffic crashes in Kalamazoo occurred in dark-lighted conditions and 18% of those crashes resulted in a fatality or injury. In contrast, only five percent of all traffic crashes in Kalamazoo occurred under dark-unlighted conditions; still, 17% of those crashes resulted in a fatality or injury. This indicates that street lighting is prevalent across the city, but dark conditions make for dangerous conditions, regardless of the presence of street lighting.

About Street Lighting

To orient the reader to vocabulary and concepts used as the basis for this plan, this section provides an introductory explanation of street lighting.

Each street light has four main parts, as shown in the image below[1]:

- Luminaire: Complete lighting unit, consisting of one or more lamps (bulbs or tubes that emit light), along with the socket and other parts that hold the lamp in place and protect it, wiring that connects the lamp to a power source, and a reflector that helps direct and distribute the light.
- Arm: Connection between the pole and the luminaire which extends the luminaire horizontally over the street.
- Pole: Connection between the base and the arm which elevates the luminaire vertically above the street.
- Base: The bottom of the pole which connects the luminaire to a power source – typically an overhead or underground electrical source.



Parts of Street light

[1] Comprehensive Light Bulb Type Guide: https://www.bulbs.com/learning/hid.aspx#:~:text=HID%2C%20or%20high%2Dintensity%20discharge,a%20plasma%2C%20or%20ionized%20gas.

In general, street lights have five controllable factors[2]:

- Intensity: The brightness of light emitted by street lights typically measured in lumens, with higher lumens indicating a greater amount of visible light produced.
- Spectrum: The colors or wavelengths of light emitted by street lights, typically described using color temperature measured in Kelvin, ranging from warm (more of a red color) to cool (more or a blue color).
- Timing: When street lights turn on or off.
- Duration: How long street lights stay on.
- Spatiality: Where street lights are placed, how far they are spaced out from each other, and how they project light in space.

[2] FHWA Webinar: All About Adaptive Lighting (Every Day Counts Round 7 Series) https://www.fhwa.dot.gov/innovation/everydaycounts/edc_7/nighttime_visibility.cfm

Table 6. Impact of street light parts on controllable factors.

Controllable Factors	Impact of Street Light Part(s)
Intensity	Luminaire: The light standard type (conventional cobra head style, decorative, etc.) and light source (LED, HID, etc.) can affect lighting intensity or candlepower, measured in footcandles (fc). Cobra head fixtures have a high light dispersion. Light-emitting diode (LED) lighting can produce the same amount of light as other types of light sources with less energy. High-intensity discharge (HID) lighting is used primarily in applications where the most critical factor is creating as much visible light per watt as possible and are generally not used in applications where the aesthetic quality of light is important. Arm: Affects the direction of light distribution on the road. Pole: Height of the pole affects the lighting distribution intensity.
Spectrum	Luminaire: The quality and the quantity of the light fixtures affect the extent of visibility at night and how the human eye responds to the light wavelength.
Timing and Duration	Base (power source): Adaptive lighting can be deployed to turn street lights on or off depending on activity and sunlight to save electricity and money. Alternatively, a photocontrol that turns the light on based on a preset schedule or after a certain amount of time can be used instead.
Spatiality	General: Light standard placement (on one or both sides of the street, apparent spacing, etc.) is the greatest determinant of spatiality. Arm: Arm length changes which area of the roadway gets illuminated. Pole: Shorter poles may be used to bring luminaires closer to the ground to better illuminate the pedestrian environment (this is called pedestrian-scale lighting).

Other street light considerations include:

- Light standard accessories, including banners, signs, etc. attached to the arm and/or pole, which may integrate lighting into the character or aesthetic of the surrounding environment and/or increase the visibility of street lights.
- Overhead or underground electrical source, which may determine the difficulty of relocating or altering a street light.
- Street function/land use (major, collector, urban, commercial, residential, etc.), which may determine the type of street lighting employed.
- Vegetation and clear zones, which may either block or expose street lights.

Street Lighting in Kalamazoo

Data supplied by Consumers Energy, the electricity supplier for street lights in the City of Kalamazoo, was used to assess the existing conditions of street lighting within the city. The assessment revealed that:

- About 90% of street lights have "chip on board" (COB) fixtures, which means LED chips are mounted directly onto a single circuit board forming a single, bright light source. These COB lights are mostly horizontal arm-mounted cobra head fixtures.
- The predominant lamp type is High Pressure Sodium (HPS). HPS is an older technology and has an orange-yellowish warmer output that is not ideal for areas that need brighter light. Older lamp types should be replaced with LEDs.
- About 80% of street lights are between 46 and 100 watts, which are in the wattage range that is typically selected for moderate street light in neighborhoods. As expected, higher wattages are located along major roadways such as principal arterials and freeways.

Focus Locations

Selection Methodology

Focus locations for street lighting improvements related to safety were selected using separate methodologies for street segments and intersections. Locations within City, County, and MDOT jurisdiction are included with the intent of taking prioritized actions toward improvement at locations within the City's jurisdiction while informing advocacy with the County and MDOT for locations within their jurisdiction.

Street segments were prioritized based on street light spacing and crash frequency. Segments with an average distance of 100 feet or more between street lights within 70 feet of the segment and with 14 or more crashes in dark conditions within 15 feet of the segment were prioritized.

Intersections were prioritized based on the number of street lights present and crash frequency. Intersections with 0 or 1 street lights within 100 feet of the intersection and with 19 or more crashes in dark conditions within 100 feet of the intersection were prioritized.

Focus Locations

The following street segments and intersections were identified as focus locations for lighting improvements related to traffic safety.

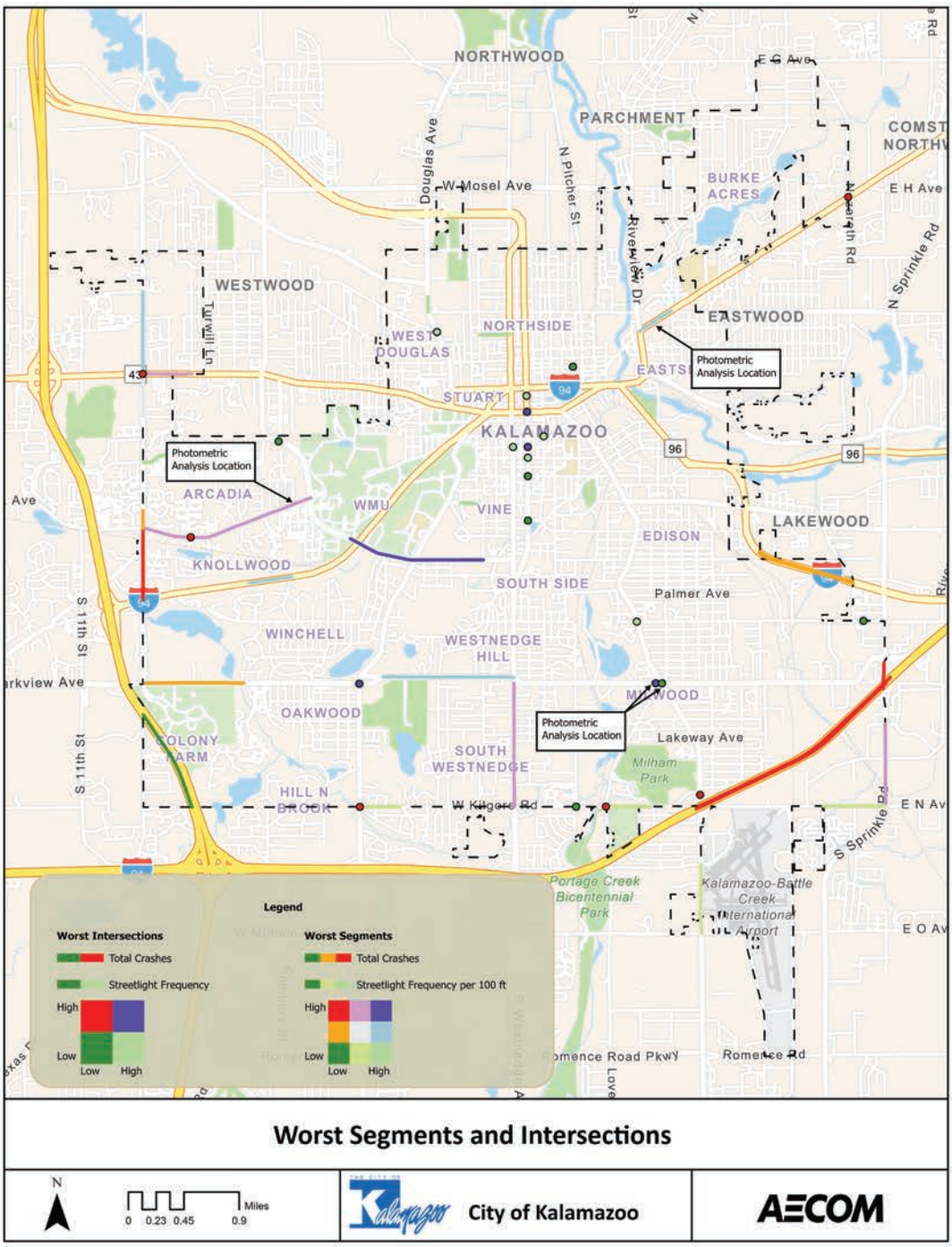
Table 7. Focus locations list – Segments.

Street Segment	From	To	Jurisdiction
Arboretum Pkwy	S Drake Rd	Wynding Oaks	City
Douglas Ave	Dennis Ct	W Paterson St	City
E Kilgore Rd	Lovers Ln	Milham Park Dr	City
Howard St	Western Ave	Merrill St	City
Mabel St	Cobb Ave	US-131	City
N Drake Rd	Beech Ave	W Main St	City
Parkview Ave	S Drake Rd	Tamsin Ave	City
Portage Rd	E Milham Ave	Winters Dr	City
S Drake Rd	W KL Ave	I-94	City
S Westnedge Ave	W Kilgore Rd	W Cork St	City
W Kilgore Rd	E Deadwood Dr	S Sprinkle Rd	City
W Kilgore Rd	Timberlane Dr	Skyler Dr	City
W KL Ave / W Michigan Ave	S Drake Rd	S Howard St	City
Wheaton Ave	Short Rd	Davis St	City
Whites Rd	Parkview Ave	S Westnedge Ave	City
S Drake Rd	Main St (M-43)	Stonebrook Ave	County
S Drake Rd	W KL Ave	Dover Hills Dr	County
S Sprinkle Rd	E Kilgore Rd	Vanrick Dr	County
Gull Rd (M-43)	Riverview Dr	Humphrey St	MDOT
I-94 (both directions)	Portage St	Sprinkle Rd	MDOT
I-94 BL (both directions)	Olmstead Rd	4200 ft west of Olmsread Rd	MDOT
Main St (M-43)	N Drake Rd	Northampton Rd	MDOT
SB US-131	1500 ft south of Parkview Ave	6000 ft south of south of Parkview Ave	MDOT
Sprinkle Rd	I-94	E Cork St	MDOT
Stadium Dr	Rambling Rd	Adios Dr	MDOT

Table 8. Lighting focus locations.

Intersection	Jurisdiction
Douglas Ave @ Alamo Ave	City
E Cork St @ Lovers Ln	City
E Cork St @ Portage St	City
E Kilgore Rd @ Lovers Ln	City
E Kilgore Rd @ Portage St	City
E Kilgore Rd @ S Burdick St	City
E Ransom St @ N Pitcher St	City
Miller Rd @ Saidla Rd	City
N Park St @ Eleanor St	City
Oakland Dr @ W Kilgore Rd	City
Park St @ W Michigan Ave	City
Parkview Ave @ Oakland Dr	City
Portage St @ Miller Rd	City
S Kendall Ave @ Solon St	City
S Park St @ Forest St	City
S Park St @ W Cedar St	City
S Park St @ W Vine St	City
S Park St @ W Walnut St	City
S Westnedge Ave @ W Cedar St	City
W Lovell St @ S Rose St	City
W Michigan Ave @ Emajean Cir	City
Main St (M-43) @ N Drake Rd	City/MDOT/County
Gull Rd (M-43) @ Nazareth Rd	MDOT/County

Figure 20. Lighting focus locations.



This map highlights Kalamazoo's top locations for future street lighting improvements, prioritized using community feedback and data on street light spacing and crashes in dark conditions—guiding future investments for a better lighted transportation network.

Public Input

The project team presented the lighting focus locations to the public to gather feedback on whether they are the right locations to focus on and the public's experiences at these locations. In general, the feedback received reinforced the focus locations as the proper locations to focus proposed improvements on.

In particular, the following locations received the most "likes" within the online feedback tool:

- S Drake Road segment from W KL Avenue to I-94
- Stadium Drive segment between Rambling Road and Adios Drive
- Douglas Avenue at Alamo Avenue
- Park Street at W Michigan Avenue
- W Michigan Avenue at Emajean Circle
- Gull Road (M-43) at Nazareth Road

A need for better lighting as well as improved traffic lane pavement marking visibility was noted at:

- S Drake Road at I-94
- Stadium Drive at Rambling Road

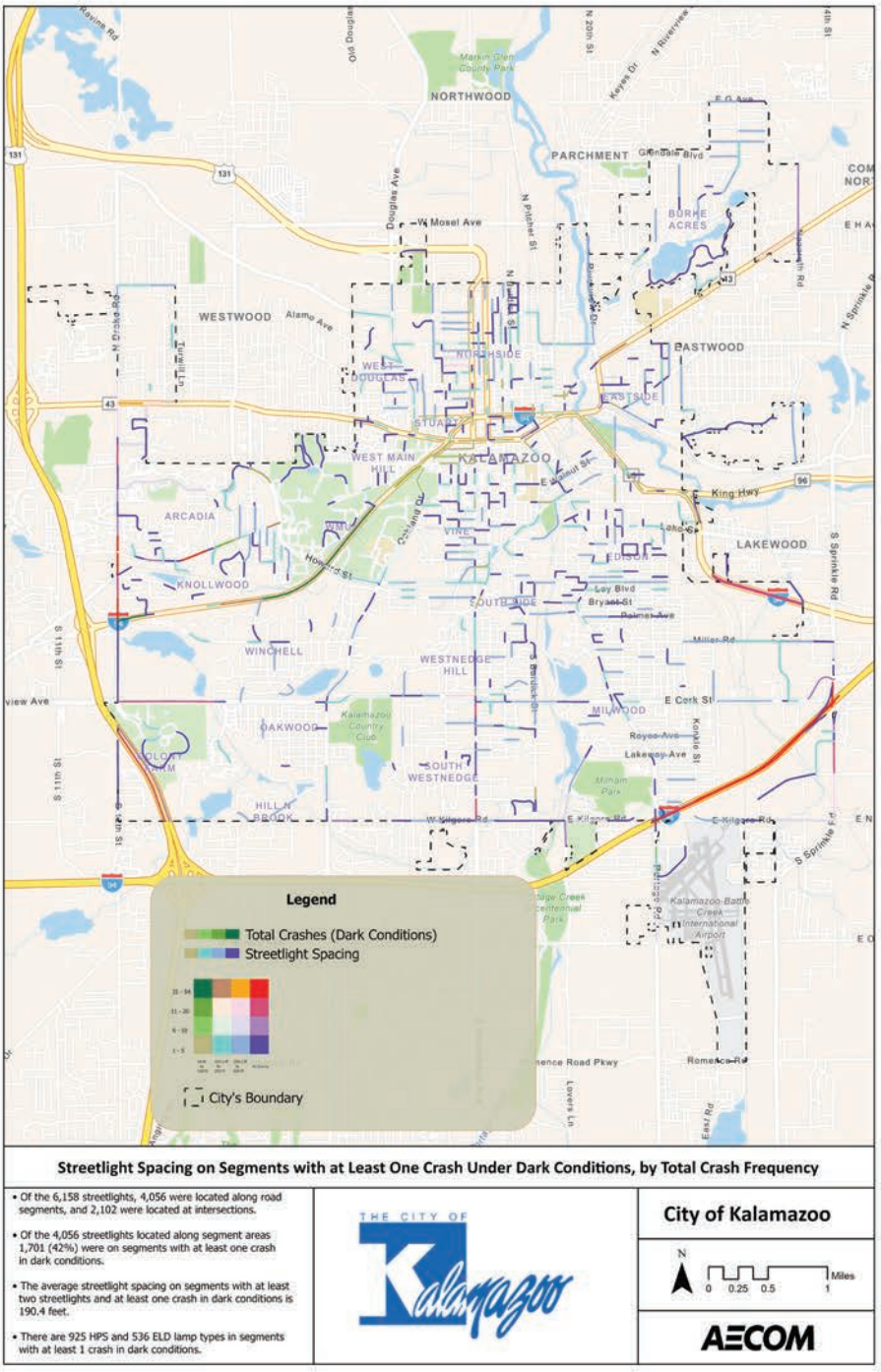
Photometric Analysis

To develop a deeper understanding of lighting at the focus locations and to inform proposed improvements, a lighting photometric analysis was performed on select locations within the city. The analysis was done using AGi32 software, with Figure 22 and Figure 23 illustrating examples of the roadway and lighting setup. The calculations were average, maximum, minimum, and uniformity street lighting values, as shown in Table 9 and Table 10 below, in accordance with ANSI/IES RP-8-2025 standards.

- The average value represents the mean footcandle (fc) level across the area and should ideally be above 1 fc.
- The maximum and minimum values indicate the brightest and dimmest points on the roadway, respectively.
- Uniformity reflects how evenly light is distributed, calculated by dividing the average by the minimum value. For sidewalks and alleys, a uniformity ratio between 3:1 fc and 6:1 fc is typically recommended.

For the analysis, a subset of "worst" lighting locations was selected from the full list of focus locations presented in the previous section of this plan using heat map analyses that highlighted areas with high crash frequency under dark conditions and limited existing lighting coverage. Notably, the segment along W KL Avenue/Michigan Avenue was identified in the "Street light Spacing on Segments with at Least One Crash Under Dark Conditions, by Total Crash Frequency" map (Figure 21) as having between 21 and 54 crashes under dark conditions, making it a significant segment for analysis. Although Gull Road reported fewer crashes overall, it was still selected as the "worst" lighting segment due to insufficient lighting and was included to serve as a comparative control against more critically impacted areas. Additionally, the intersections at E Cork Street and Lovers Lane, as well as E Cork Street and Portage Street, were selected.

Figure 21. Street light spacing on segments with at least one crash under dark conditions, by total crash frequency.



This map evaluates where nighttime crashes occurred in relation to street light spacing across Kalamazoo, helping identify segments with inadequate lighting coverage contributing to safety risks under dark conditions.

For a baseline comparison to the "worst" lighting locations, a set of "best" lighting locations were identified by ranking segments based on light density (number of lights per unit length) and intersections based on light frequency. The top 10 locations with either zero or one crash were then selected, and a subset from this list was selected at random for the photometric analysis.

Figure 22. Example Photometric Calculation for a "Worst" Location (E Cork Street and Lovers Lane)

Figure 23. Example Photometric Calculation for a "Best" Location (Oakland Drive Segment)

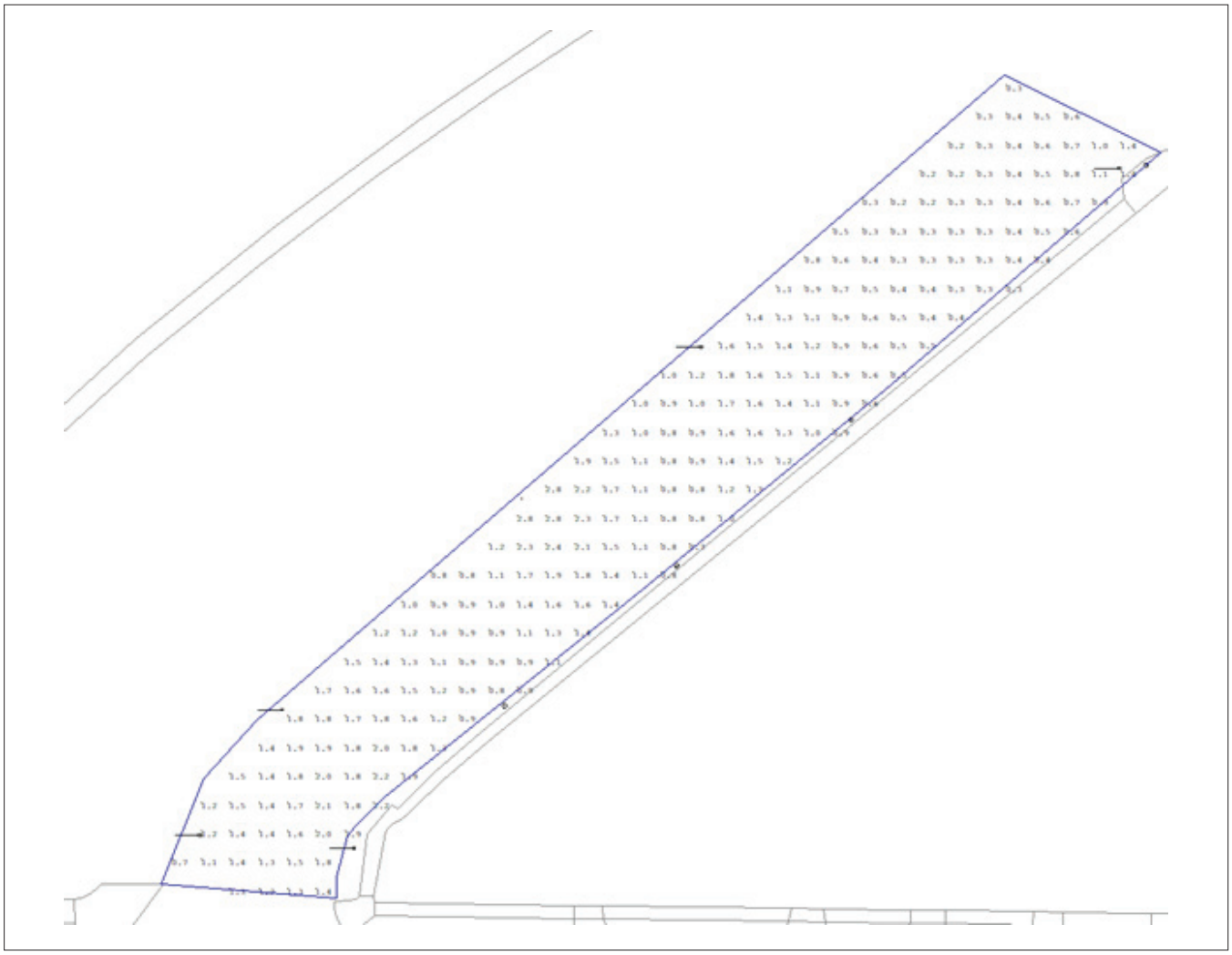


Table 9. "Worst" locations lighting level calculation.

Focus Location	Specific Location Analyzed	Average (fc)	Maximum (fc)	Minimum (fc)	Uniformity (avg/min) (fc)
Intersection	E CORK ST AND LOVERS LN	0.34	1.8	0.0	Not Applicable
Intersection	E CORK ST AND PORTAGE	0.03	0.4	0.0	Not Applicable
Segment: from Riverview Dr to Humphrey St	GULL RD	0.44	2.4	0.0	Not Applicable
Segment: from S Drake Rd Dr to S Howard St	W KL AVE/ MICHIGAN AVE	0.42	3.8	0.0	Not Applicable

Table 10. "Best" locations lighting level calculation.

Focus Location	Specific Location Analyzed	Average (fc)	Maximum (fc)	Minimum (fc)	Uniformity (avg/min) (fc)
Segment: from W Lovell St to W South St	OAKLAND DR	1.11	2.8	0.2	5.55
Intersection	PORTAGE ST AND E SOUTH ST	1.20	4.7	0.5	2.4
Segment: from Rogowski Ave to W Michigan Ave	HOWARD ST	0.55	2.1	0.0	Not Applicable

Table 9 and 10 summarize the lighting conditions at the selected "worst" and "best" lighting locations, respectively. Table 9 highlights locations with inadequate illumination and higher risk factors, while Table 10 includes sites that demonstrate stronger lighting performance and greater uniformity.

Among the locations in Table 10, Portage St and E South St is identified as the best-lit location, demonstrating high illuminance levels and well-distributed lighting coverage. Oakland Drive also performs reliably, contributing to safer and more visible roadway conditions. Howard Street's lighting level is below average. However, it is still low on traffic crashes under dark conditions. In contrast, Table 9 shows the most deficient sites, with the intersection of E Cork Street and Portage Street emerging as the worst-lit location, exhibiting very low overall illumination and areas of no detectable lighting levels. Other poorly lit areas, such as W KL Avenue/Michigan Avenue and Gull Road, contain similar gaps in lighting.

While the "best" locations are not without their own limitations, they generally maintain more consistent lighting coverage, reducing the likelihood of abrupt lighting transitions or completely dark zones. The analysis clearly indicates a disparity in lighting quality between the "best" and "worst" locations,

particularly regarding uniformity and minimum illumination. The "worst" locations consistently show zero minimum illuminance, highlighting the presence of dark spots that compromise nighttime visibility.

Proposed Improvements

It is recommended that all roadway segments, regardless of whether they are well lit or poorly lit, maintain an average illumination level of 1 footcandle (fc) in accordance with the Illuminating Engineering Society RP-8-25 guidelines. This can be achieved by:

- Reducing spacing between fixtures to improve light coverage.
- Installing additional fixtures in areas currently showing 0 fc (no lighting).
- Replacing post-top fixtures on wide segments like W KL Avenue/ Michigan Avenue (Rogowski Avenue to W Michigan Ave) with taller, higher-output fixtures such as cobra heads for better roadway illumination.
- Upgrading outdated fixtures (e.g., High Pressure Sodium) to LED for improved efficiency, brightness, and color rendering.
- Ensuring consistent fixture types along corridors to reduce lighting variability and simplify maintenance.
- Prioritizing lighting upgrades near intersections, crosswalks, and transit stops to enhance pedestrian and driver safety.

In addition, uniformity ratios should fall within the recommended range of 3:1 to 6:1 depending on the roadway type. This is to ensure consistent lighting and minimize lighting gaps. The photometric analysis indicates that areas with lower illumination levels often exhibit poor uniformity, which could be directly related to nighttime crashes. From both a safety and lighting design perspective, it is recommended that future improvements focus on increasing overall illumination levels while also achieving greater uniformity across both roadways and pedestrian pathways. Enhancing these factors will significantly improve visibility and reduce the risk of nighttime crashes. Additionally, well-lit and evenly illuminated corridors enhance perceptions of personal security and support broader community safety goals.

Upgrading Outdated Fixtures

As explained in the Lighting Safety Improvement Plan Introduction, the predominant lamp type in Kalamazoo is High Pressure Sodium (HPS) and should be replaced with LEDs. As shown in Table 11, 3,685 HPS lamps are recommended for replacement with LED lamps citywide.

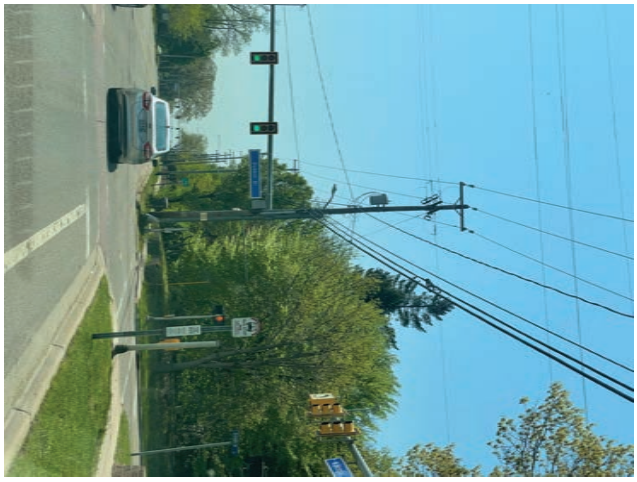


Table 11. Recommended lamp replacements citywide.

Lamp Type	Citywide Quantity	Percentage of Total
High Pressure Sodium (HPS)	3,685	60%
Metal-Halide (MH)	87	1%
Light-Emitting Diode (LED)	2,402	39%

Improving Fixture Spacing and Uniformity

Field observations and survey data indicate that the focus locations identified in Table 9 and Table 10 exhibit poor lighting uniformity. This is primarily due to spacing between light fixtures and, in some cases, the complete absence of fixtures. In contrast, the best-performing locations typically have fixture spacing of 100 feet or less, which has provided an average illumination level of 1fc.

To improve lighting conditions, it is recommended that street lights be spaced no more than 100 feet apart. Table 12 to the right summarizes the recommended number of additional fixtures needed to meet this standard. Segment start and end points can be found in Table 7, while Table 12 highlights each segment's existing lighting conditions. Interventions may include installing new fixtures, reducing spacing between existing ones, and standardizing fixture types to improve overall consistency. A total of approximately 509 additional light fixtures is recommended across all focus location segments. All fixture counts are preliminary estimates based on current field data and should be refined during final planning and design.

Table 12. Recommended lighting fixture improvements for focus location segments.

Rank	Street Segment	Light Fixture Placement Summary	Recommended Fixtures	Surveyed Fixtures	Additional Fixtures Recommended
1	Park St	Fixtures are spaced over 100 ft apart, reducing uniformity. A mix of post-top and cobra-head fixtures contributes to inconsistent lighting.	50	37	13
2	I-94	There are no fixtures on the road.	95	0	95
3	W KL Ave / W Michigan Ave	Fixtures exceed 100 ft spacing. Multiple fixture types (post-top and cobra-head) affect lighting consistency.	70	37	33
4	S Drake Rd	Fixtures are spaced more than 100 ft apart, affecting uniformity.	65	17	48
5	Sprinkle Rd	Insufficient number of fixtures, creating fully dark areas.	15	2	13
6	Main St (M-43)	Fixtures are spaced over 100 ft apart. The road is wide, and fixtures are only on one side, reducing coverage.	20	9	11
7	E Cork St	Inadequate fixture amount.	4	1	3
8	S Sprinkle Rd	The Fixture quantity is inadequate for the segment.	20	6	14
9	Howard St	Fixtures are spaced more than 100 ft apart, affecting uniformity.	55	21	34
10	Stadium Dr	Fixtures are spaced more than 100 ft apart, affecting uniformity.	17	14	3
11	Gull Rd (M-43)	Fixtures are spaced more than 100 ft apart, affecting uniformity.	15	12	3
12	S Drake Rd	Fixtures exceed 100 ft spacing; most of the segment is unlit.	7	2	5
13	S Westnedge Ave	Fixtures are spaced more than 100 ft apart, affecting uniformity.	50	18	32
14	N Drake Rd	Fixtures are spaced more than 100 ft apart, affecting uniformity.	35	12	23
15	Whites Rd	Fixtures are spaced more than 100 ft apart, affecting uniformity.	20	13	7

Rank	Street Segment	Light Fixture Placement Summary	Recommended Fixtures	Surveyed Fixtures	Additional Fixtures Recommended
16	S Drake Rd	Fixtures exceed 100 ft spacing, affecting uniformity and creating dark areas.	15	4	11
17	Parkview Ave	No fixtures are installed on this segment.	40	0	40
18	Mabel St	Fixtures exceed 100 ft spacing, affecting uniformity and creating dark areas.	13	4	9
19	W Kilgore Rd	Fixtures exceed 100 ft spacing, affecting uniformity and creating dark areas.	25	3	22
20	Douglas Ave	Fixtures are spaced more than 100 ft apart, affecting uniformity.	15	10	5
21	E Kilgore Rd	Fixtures exceed 100 ft spacing, affecting uniformity and creating dark areas.	30	4	26
22	W Kilgore Rd	Fixtures exceed 100 ft spacing, affecting uniformity and creating dark areas.	10	2	8
23	Arboretum Pkwy	Fixtures are spaced more than 100 ft apart, affecting uniformity.	40	16	24
24	Portage Rd	Fixtures exceed 100 ft spacing, affecting uniformity and creating dark areas.	30	6	24
25	Wheaton Ave	Fixtures are spaced more than 100 ft apart, affecting uniformity.	7	4	3

Additionally, to improve lighting conditions at intersections, each intersection is recommended to have at least two fixtures, placed diagonally to each other. The fixtures should be 100 ft apart. This approach ensures consistent, adequate illumination across the entire intersection. A total of approximately 35 additional light fixtures is recommended across all focus location intersections identified in Table 13. All fixture counts are preliminary estimates based on current field data and should be refined during final planning and design.

Table 13. Recommended lighting fixture improvements for focus location intersections.

Intersection	Recommended Fixtures	Surveyed Fixtures	Additional Fixtures Recommended
Douglas Ave @ Alamo Ave	4	1	3
E Cork St @ Lovers Ln	2	1	1
E Cork St @ Portage St	2	1	1
E Kilgore Rd @ Lovers Ln	2	0	2
E Kilgore Rd @ Portage St	3	3	0
E Kilgore Rd @ S Burdick St	3	0	3
E Ransom St @ N Pitcher St	2	0	2
Miller Rd @ Saidla Rd	3	0	3
N Park St @ Eleanor St	2	1	1
Oakland Dr @ W Kilgore Rd	3	0	3
Park St @ W Michigan Ave	2	1	1
Parkview Ave @ Oakland Dr	2	1	1
Portage St @ Miller Rd	2	0	2
S Kendall Ave @ Solon St	6	4	2
S Park St @ Forest St	2	0	2
S Park St @ W Cedar St	2	1	1
S Park St @ W Vine St	2	1	1
S Park St @ W Walnut St	2	1	1
S Westnedge Ave @ W Cedar St	2	1	1
W Lovell St @ S Rose St	2	1	1
W Michigan Ave @ Emajean Cir	2	1	1
Main St (M-43) @ N Drake Rd	2	2	0
Gull Rd (M-43) @ Nazareth Rd	2	0	2

Cost Estimates

The City will need to coordinate with Consumers Energy as specific projects are decided on in order to determine cost estimates. Consumers Energy costs for street lighting improvements vary and are specific to each project based on time, material, and labor.

Implementation Timeline

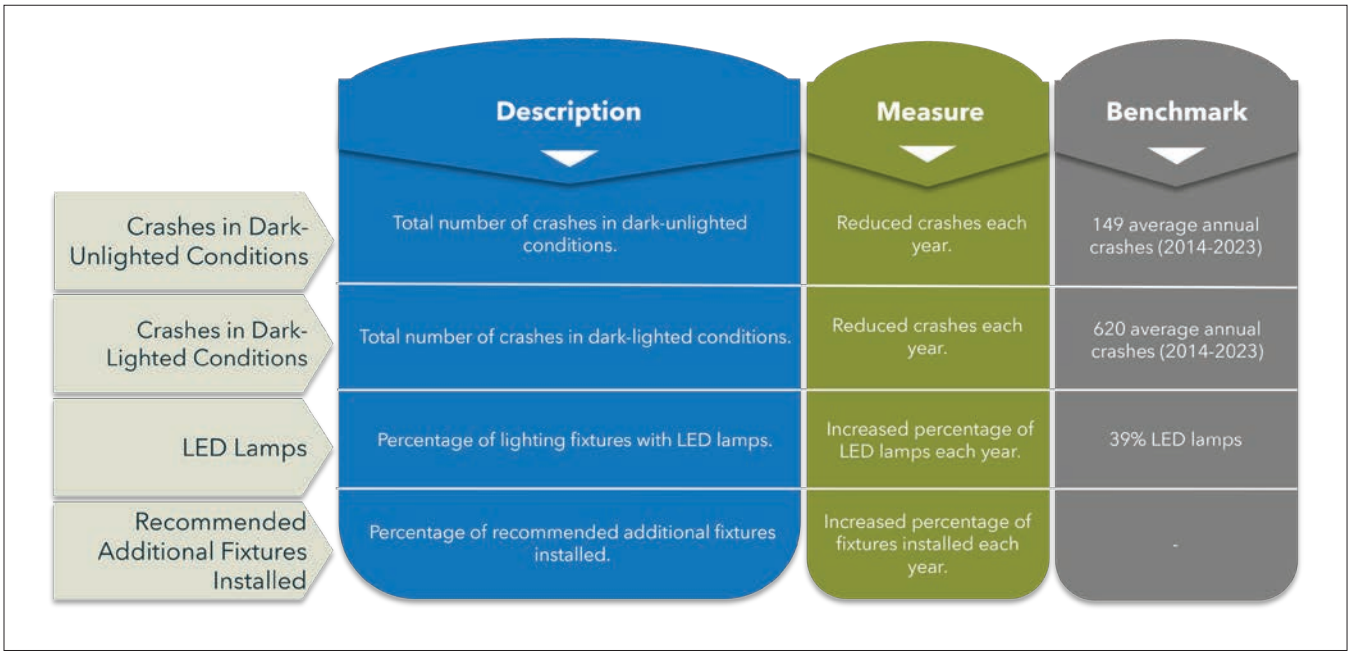
Implementing the recommended lighting improvements will require a phased approach, aligned with funding availability, coordination opportunities, and the complexity of each improvement. Wherever possible, improvements should be incorporated into ongoing or planned capital improvement projects to maximize efficiency, reduce costs, and minimize installation disruption. The following recommended timeline breaks down improvements into short-term, mid-term, and long-term phases.

Recommended Implementation Phases

- Short-Term (Within 3 Years): Upgrade outdated fixtures, starting with the focus locations in order of their rank. (Rank only applies to the focus location segments).
- Mid-Term (3-6 Years): Install recommended additional fixtures at the focus locations in order of their rank. (Rank only applies to the focus location segments.)
- Long-Term (7-10 Years): Install additional fixtures at other locations, reconducting analysis to identify new focus locations.

Monitoring and Evaluation

Progress monitoring and reporting uses metrics to evaluate the effectiveness of safety improvement strategies and countermeasures. By evaluating success, the City can demonstrate accountability, pursue funding opportunities, and maintain transparency with stakeholders and the public. The graphic below outlines metrics that can be used to measure progress toward improving lighting-related safety in the city of Kalamazoo. These metrics will assess crashes in dark conditions over time, demonstrating the impact of investments and strategies. The metrics are designed to provide information that can be easily collected, shared, and understood by funding agencies and the public. Each metric relates to the goals for safety and includes a description, a measure, and a benchmark for each measure.



Lighting Improvement Monitoring and Evaluation Metrics

Bus Stop Safety Improvement Plan

Introduction

Safe, accessible, and comfortable bus stops are essential to a reliable public transit system. In collaboration with the City of Kalamazoo and Kalamazoo Metro, AECOM has developed the Bus Stop Safety Improvement Plan to help enhance the safety, accessibility, and overall user experience at bus stops throughout the City of Kalamazoo.

This plan takes a systematic and data-driven approach to identifying safety concerns at existing bus stops and their surrounding environments. With input from Kalamazoo Metro and the public, and using available data on ridership, number of crashes, speed limit, and safety issues, the project team identified 50 focus locations for detailed evaluation.

For these focus locations, the plan outlines recommended safety improvement strategies—such as improved pedestrian crossings, better lighting, and enhanced signage—to encourage riders can safely access and wait for transit service. The memo also includes guidance on implementation and cost estimates. Metro staff were engaged at key milestones throughout plan development. Initially, the team consulted Metro to review and validate the methodology used to identify and rank bus stop safety needs. Following this, Metro was invited to provide input on the preliminary list of top-priority stops, ensuring that operational insights and maintenance considerations were fully reflected. Finally, Metro reviewed and commented on the draft recommendations, offering feedback to refine implementation strategies and ensure feasibility.

The coordination strengthened the plan's recommendations by aligning City infrastructure improvements with Metro's service operations and long-term planning priorities."

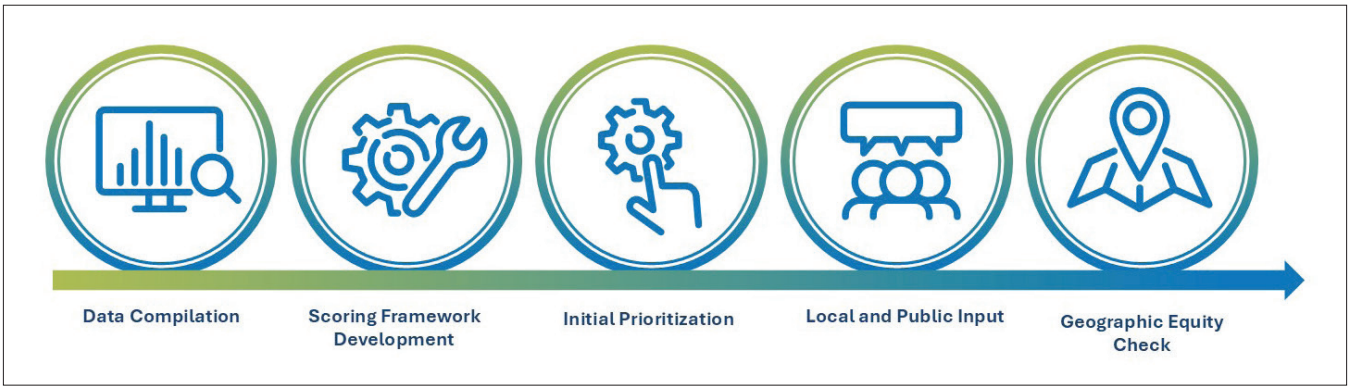
The recommendations presented in this memo aim to support a safer, more inclusive, and more efficient public transportation system for all Kalamazoo residents and visitors.

Focus Locations

Selection Methodology

The selection of focus locations followed a multi-step methodology that blended data-driven analysis with local knowledge and community voice. The steps included:

1. Data Compilation – AECOM worked with Kalamazoo Metro to compile GIS-based stop data, ridership figures, crash records, census demographic data, and roadway characteristics.
2. Scoring Framework Development – Six metrics were identified and weighted based on their contribution to bus stop safety and equity. Scoring thresholds were established for each metric to enable consistent and transparent ranking.
3. Initial Prioritization – A composite score was calculated for each stop using the weighted metrics. The top 34 stops were flagged as the highest-need locations.
4. Local and Public Input – Metro staff reviewed the results and provided feedback on stop selection. Community members shared comments through engagement efforts that helped validate and expand the list.
5. Geographic Equity Check – Stops were added to encourage that all city neighborhoods were represented.



This graphic summarizes the prioritization approach used in Kalamazoo's Bus Stop Safety Improvement Plan, combining data-driven analysis and public input to guide equitable investments in safer, more accessible transit stops.

This methodology rooted the final list of focus locations in data, while also grounding it in real-world experience and aligning it with community values. These 50 stops are the foundation for the improvement strategies and recommendations outlined in the remainder of the plan.

Data Compilation

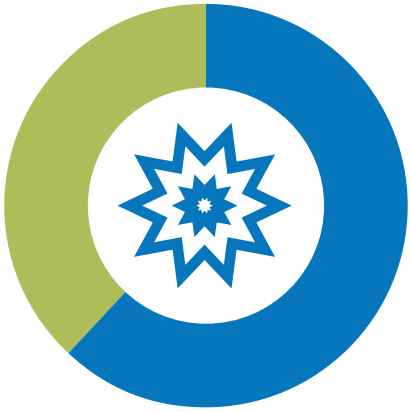
The development of the Bus Stop Safety Improvement Plan began with a comprehensive analysis of the factors that contribute to unsafe or inaccessible bus stops. A wide range of existing datasets was compiled and analyzed to assess the safety and accessibility of bus stops throughout the City of Kalamazoo. This included ridership levels, crash history, demographic and geographic indicators, and roadway conditions.

To complement the data analysis, field visits were conducted at 8 of the top 50 focus locations—selected to reflect a range of land use and transportation contexts. These on-site assessments allowed for a closer examination of conditions such as sidewalk connectivity, ADA accessibility, lighting, signage, and overall pedestrian safety.

Additionally, crash records from the Michigan UD-10 reports were reviewed to identify pedestrian-involved fatal and serious injury (FSI) crashes occurring within a 250-foot radius of bus stops between 2014 and 2023. This study of crash data helped uncover patterns of pedestrian risk near stops and informed the development of targeted safety improvements.

Kalamazoo Metro Transit bus stops range from high-ridership transit centers to local sidewalk shelters. These images reflect the diversity of infrastructure evaluated as part of the Bus Stop Safety Improvement Plan, focused on enhancing comfort, visibility, and access across the system.

38%
All other crashes



62%
Within 250 feet of a bus stop

Fatal and Serious Injuries: 348

Statistics on Crashes within 250 ft of Bus Stops in Kalamazoo

Bike and Pedestrian Crashes: 531

Scoring Framework Development

To encourage an objective and repeatable process, each bus stop was evaluated using a scoring matrix built around six prioritization metrics. These metrics were carefully selected to reflect the conditions that most directly affect bus riders' safety and accessibility:

- Ridership Activity – Stops with higher boarding and alighting volumes were prioritized because they serve more people and thus represent greater potential impact for safety improvements.
- Fatal and Serious Injury Vehicle Crashes – Locations near recurring severe vehicle crashes were flagged as high risk. These were identified using a 250-foot buffer around each stop to capture nearby roadway safety conditions.
- Bike and Pedestrian Crashes – Because most transit riders access stops on foot or by bicycle, crash history involving these modes within the same 250-foot buffer was included to reflect risks specific to these vulnerable road users.
- Equity Considerations – Stops located in census tracts identified as disadvantaged based on income, race, disability status, and other indicators, were assigned higher scores to encourage that investments address systemic inequities.
- Senior and Disabled Population – Using demographic data, the scoring gave higher priority to stops located near concentrations of older adults and individuals with disabilities, who may face greater difficulty navigating unsafe or inaccessible stops.
- Speed Limit – Stops on roadways with higher posted speed limits were considered riskier due to the increased likelihood and severity of crashes, particularly involving pedestrians.

Each metric was scored using defined thresholds and weighted to reflect its relative importance (see Table 14).

Table 14. Bus stop prioritization scoring.

No.	Metric	Analysis	Thresholds	Score	Weights
1	Ridership Activity	Assigned more points to stops with higher ridership. Range: 0 - 2987	0 1-4 5-9 >9	0 5 10 15	30%
2	Fatal and Serious Injury Vehicle Crashes	Assigned more points to stops with a greater frequency of severe crashes within 250 feet. Range: 0 - 6	0 1-2 3-4 >4	0 5 10 15	20%
3	Bike and Pedestrian Crashes	Assigned more points to stops with a greater frequency of bike and pedestrian crashes within 250 feet. Range: 0 - 13	0 1-2 3-4 >4	0 5 10 15	20%
4	Equity Considerations	Assigned more points to stops in a Disadvantaged Census Tract. Range: 0 - 1	0 1	0 5	15%
5	Senior and Disabled Population	Assigned more points to stops in a Census Tract with a higher density of vulnerable populations. Range: 0 - 1501	0 0-622 622-696 >696	0 5 10 15	10%
6	Speed Limit	Assigned more points to stops on streets with higher speed limits. Range: 0 - 45	<25 30-35 40 >40	0 5 10 15	5%
			Total Possible Score	90	100%

Initial Prioritization

The initial scoring process produced a ranked list of bus stops based on total scores. These scores reflected not only the individual risk factors at each stop but also the overall vulnerability faced by riders in different parts of the city. The top 34 stops—those with the highest combined scores—were selected as the initial group of focus locations for more detailed evaluation.

Local and Public Input

While the initial analysis identified 34 focus locations based on the data analysis, further input was necessary to create a complete picture. Kalamazoo Metro staff provided key insights into operational considerations, such as planned route changes, community feedback received outside of the formal engagement process, and known problem areas not captured by the data.

Equally important, feedback collected during the public engagement phase helped identify stops where riders felt unsafe, uncomfortable, or underserved. Community members highlighted stops lacking lighting or shelter, located near high-speed traffic, or difficult to access due to broken sidewalks or missing crossings.

Both Kalamazoo Metro and public input led to the addition of more focus locations to the 34 identified by the data analysis.

Geographic Equity Check

In response to both staff and public input—and to encourage that all parts of the city were considered—the list of focus locations was further expanded. At least one stop from each neighborhood in Kalamazoo was included to promote geographic equity. This resulted in a final list of 50 focus locations that represent a balanced, community-informed set of bus stops for improvement planning.

Focus Locations

The focus locations selected using the methodology described above are listed in Table 15 and shown in Figure 25.

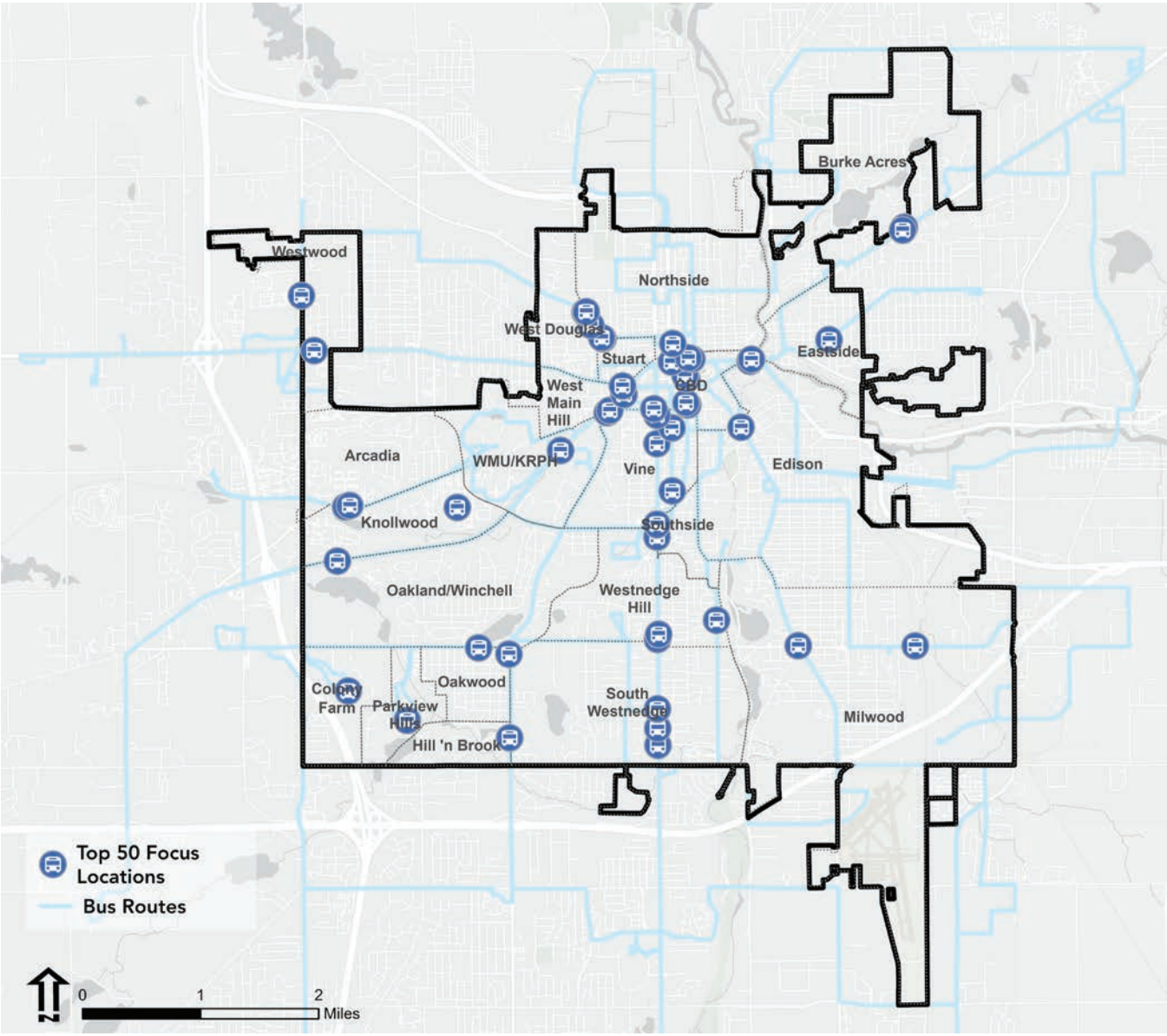
During the January 5th, 2026 City Commission Meeting, Commissioners discussed and voted to add the Bus Stop near Foxridge Apartments to be added to the Bus Stop Priority List. This is Bus Stop 268 and potentially the surrounding Bus Stops near Foxridge Drive.

Table 15. Bus stop focus locations list.

Rank	No.	Stop Name	Route(s) Serviced	Direction	Neighborhood
1	43	Westnedge at Whitcomb (SE Corner)	1	Inbound	Westnedge Hill
2	16	Westnedge at Whites (NW Corner)	1	Outbound	Westnedge Hill
3	185	E Michigan at Harrison (SE Corner)	5,9,10	Outbound	Edison
4	209	E Michigan at Harrison	5,9,10	Inbound	CBD
5	19	Westnedge at Denway (NW Corner)	1	Outbound	South Westnedge
6	138	Oakland at Eddies (NW Corner)	4	Outbound	West Main Hill
7	1	Rose at Water (NW Corner)	1,2,5,8,9,10,12,13	Outbound	CBD
8	3	Rose at South (SW Corner)	1,12,13	Outbound	CBD
9	52	Park at Walnut (NE Corner)	1	Inbound	Vine
10	184	Rose at Water (SE Corner)	1,4,12,13,14	Inbound	CBD
11	11	Westnedge at Maple (NW Corner)	1	Outbound	Westnedge Hill
12	1011	Kalamazoo Transit Center (Burdick Side)	A lot	Start and End	CBD
13	5	Westnedge at Lovell (SW side)	1	Outbound	Vine
14	137	Kalamazoo at Park (NE Corner)	14	Outbound	CBD
15	265	Douglas at Alamo (E Side)	7	Outbound	Northside
16	293	Douglas at Ogden (NW Corner)	7	Inbound	West Douglas
17	49	Park at Forest (SE Corner)	1	Inbound	Vine
18	7	Westnedge at Vine (NW Corner)	1	Outbound	Vine
19	181	Oakland at Lovell (SE Corner)	4	Inbound	Vine
20	294	Douglas at Cadillac (W Side)	7	Inbound	West Douglas
21	628	W Lovell at S Westnedge	16	Outbound	CBD
22	96	Portage at Walnut (SE Corner)	2,8	Inbound	Edison
23	10	Westnedge at Howard (NW Corner)	1	Outbound	Southside

Rank	No.	Stop Name	Route(s) Serviced	Direction	Neighborhood
24	21	Westnedge at Pratt (W Side)	1,13	Outbound	South Westnedge
25	369	Gull at Heatherdowns (NE Corner)	9	Inbound	Burke Acres
26	1104	Gull at Asbury (SW Corner)	9	Inbound	Burke Acres
27	1004	Kalamazoo Transit Center (Rose Side)	A lot	Start and End	CBD
28	264	W North at Hawley (NE Corner)	7	Outbound	Northside
29	517	S Rose at Kalamazoo Public Library	12,13	Inbound	CBD
30	1067	W. Michigan & Academy (W Side)	11	Outbound	West Main Hill
31	189	E Main at Horace (SW Corner)	5	Outbound	Eastside
32	20	Westnedge at Pleasant (NW Corner)	1,13	Outbound	South Westnedge
33	65	Portage at Cork (NW Corner)	2	Outbound	Milwood
34	788	W Ransom at N Park (NE Corner)	7,15	Outbound	Northside
59	295	W North at Hawley (S Side)	7	Inbound	Stuart
67	1068	Stadium at Oliver (NE Corner)	11	Inbound	WMU/KRPH
72	103	W. Michigan at Emajean (NE Corner)	3,16,25	Outbound	Arcadia
73	133	W. Michigan at Emma Jean (S Side)	3,16,25	Inbound	Knollwood
84	465	Stadium at Lakesedge	11	Inbound	Oakland/ Winchell
94	276	Drake at Croyden (NW Corner)	7	Outbound	Westwood
122	592	W Main at Drake	3,7,14	Inbound	Westwood
137	606	W Main at Railroad Crossing	14	Inbound	West Main Hill
178	668	Westbrook at Lafayette (SW Corner)	21	Outbound	Knollwood
257	529	S Budrick at Ridgewood (NW Corner)	13	Outbound	Westnedge Hill
272	1164	Parkview Campus at College Circle	25	Inbound	Colony Farm
291	148	Oakland at Logan (NW Corner)	4	Outbound	Oakwood
380	327	Cork at Mobile Home Park	8	Inbound	Milwood
388	171	Parkview at Barnard	4	Inbound	Oakwood
411	1029	Oakland at Angling	4	Outbound	Hill 'n Brook
416	157	Greenleaf Cir at Cedaridge (S Side)	4	Inbound	Parkview Hills

Figure 24. Bus stop focus locations map.



This map shows the top 50 priority locations identified for the Kalamazoo Bus Stop Safety Improvement Plan—spanning a range of neighborhoods and transit routes to guide targeted infrastructure upgrades citywide.

Proposed Improvements

Proposed Policy Improvements

Policy-level changes can help support a safer, more accessible, and more equitable transit network throughout the City of Kalamazoo. Based on findings from the data analysis, the following policy areas are recommended for further development and implementation:

- Maintenance – Routine maintenance of bus stops plays a critical role in promoting rider safety and comfort. Policies should clearly define maintenance responsibilities, establish regular inspection schedules, and set performance standards for cleanliness, snow and ice removal, lighting functionality, and repair of amenities such as shelters or benches. A proactive maintenance strategy can reduce hazards, improve visibility, and enhance the user experience, particularly for older adults and individuals with disabilities who may rely more heavily on supportive infrastructure. Metro oversees the ongoing maintenance of bus shelters and benches, including snow and ice removal, trash collection, and general upkeep in accordance with established service policies. The agency also has a defined process for responding to non-shelter stop requests and safety concerns, which are addressed in coordination with City staff. Continued collaboration between the City and Metro will help ensure that maintenance activities remain timely, equitable, and responsive to community needs.
- Driver Education – Motorist behavior is a major factor in pedestrian safety near bus stops. Public education campaigns aimed at encouraging safe driving around transit riders and pedestrians are recommended. Kalamazoo may consider adapting or partnering with programs such as the Grand Rapids Driving Change campaign (grdrivingchange.org), which successfully used outreach, media, and community engagement to promote safe driving practices. Topics might include yielding to pedestrians at crosswalks, respecting bus right-of-way, and awareness of transit stop zones. Driver education efforts can be coordinated with local law enforcement and community groups for broader reach.
- Access Management – Bus stops must be safely accessible by foot, bike, mobility devices, and connecting infrastructure. Adopting access management policies that address sidewalk connectivity, curb ramp placement, crosswalk locations, and traffic signal timing can improve safe access to transit. These policies should be integrated into broader land use and street design practices, promoting that access to stops is considered whenever changes are made to adjacent parcels, roadways, or developments. Particular attention should be paid to minimizing driveway conflicts and enhancing pedestrian priority at crossings near bus stops.
- Bus Stop Placement – A formalized policy for bus stop placement can help reduce safety risks and support operational efficiency. Such a policy should consider the following factors:
  - Proximity to intersections and crosswalks
  - Visibility and lighting
  - Avoiding placement directly in front of driveways or near sharp curves
  - Spacing guidelines based on ridership and land use context
  - Coordination with access to destinations like schools, senior housing, and employment centers

Standardized placement criteria will help encourage stops are located where they are both convenient and safe for users.

- Bus Stop Amenity Criteria/Thresholds – To encourage equitable provision of bus stop amenities (such as shelters, benches, trash receptacles, and lighting), a clear set of thresholds should be developed to guide when and where certain features are installed. These criteria should be considered:
  - Average daily ridership at the stop
  - Proximity to high-need populations (e.g., seniors, individuals with disabilities)
  - Weather exposure and wait times
  - Location in equity-priority or disadvantaged areas
  - Adopting a consistent policy for amenity upgrades will promote transparency and help guide future investment decisions, particularly as funding becomes available for infrastructure improvements.

Proposed Infrastructure Improvements

Creating safer and more accessible bus stops in Kalamazoo requires both enhancements to the physical features at bus stops and improvements to the streets and intersections surrounding them. This section outlines proposed infrastructure improvements in two parts:

1. Bus Stop Amenities – Recommended features to improve comfort, visibility, and accessibility at the stop.
2. Safety Countermeasures – Street- and intersection-level interventions to improve safety for pedestrians, bicyclists, and bus users accessing the stop as well as bus drivers and vehicular traffic navigating the bus stop area.

Both sets of recommendations are guided by the Kalamazoo Street Design Manual, which defines a set of street typologies based on their network function and surrounding land use context. Each street type responds to two primary needs:

- The role of the corridor within the broader city and regional transportation network
- The land use context and community characteristics along the street

By using these categories—Urban Center, Event/Festival, Main Street, Neighborhood Business, Commercial Business, City Connector, Network Neighborhood, Enhanced Neighborhood, and Local Neighborhood—the plan encourages that improvements are effective within their context.

Bus Stop Amenities

A tiered amenity framework was developed based on average daily boardings at each stop (Table 16). This approach allows for the thoughtful allocation of resources while promoting that every stop provides a baseline level of safety and accessibility.

Table 16. Bus Stop Amenity Framework.

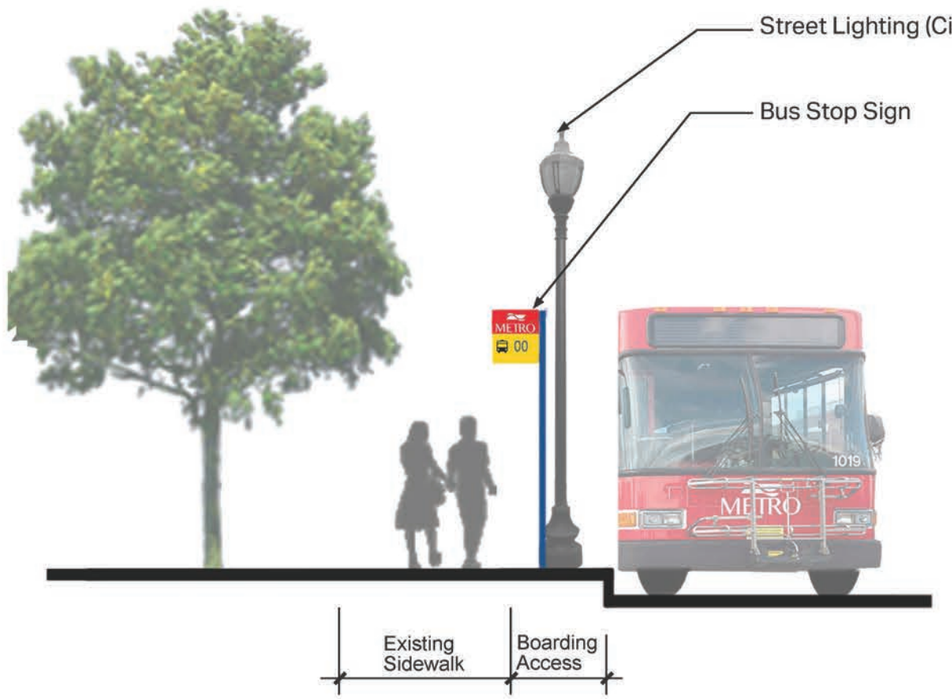
Amenity Tier	Features
Basic (≤10 boardings/day)	Accessible boarding area, bus stop sign, street lighting
Upgraded (11–20 boardings/day)	Includes all Basic features + bench, waste receptacle, pedestrian-scale lighting, real-time arrival signage
Premium (>20 boardings/day)	Includes all Upgraded features + shelter, emergency phone (blue light), landscape planters, public art, bike rack

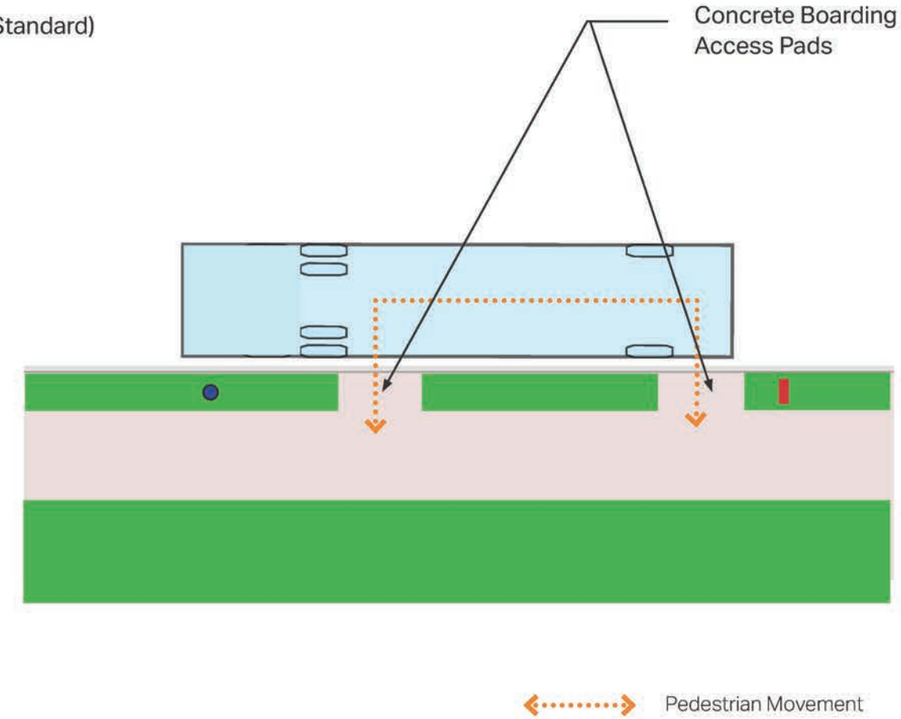
Bus Stop Amenities Prototypes

KMETRO BUS STOP *Prototype A - Basic*

Amenity Elements

- Accessible Boarding Area
- Bus Stop Sign
- Street Lighting



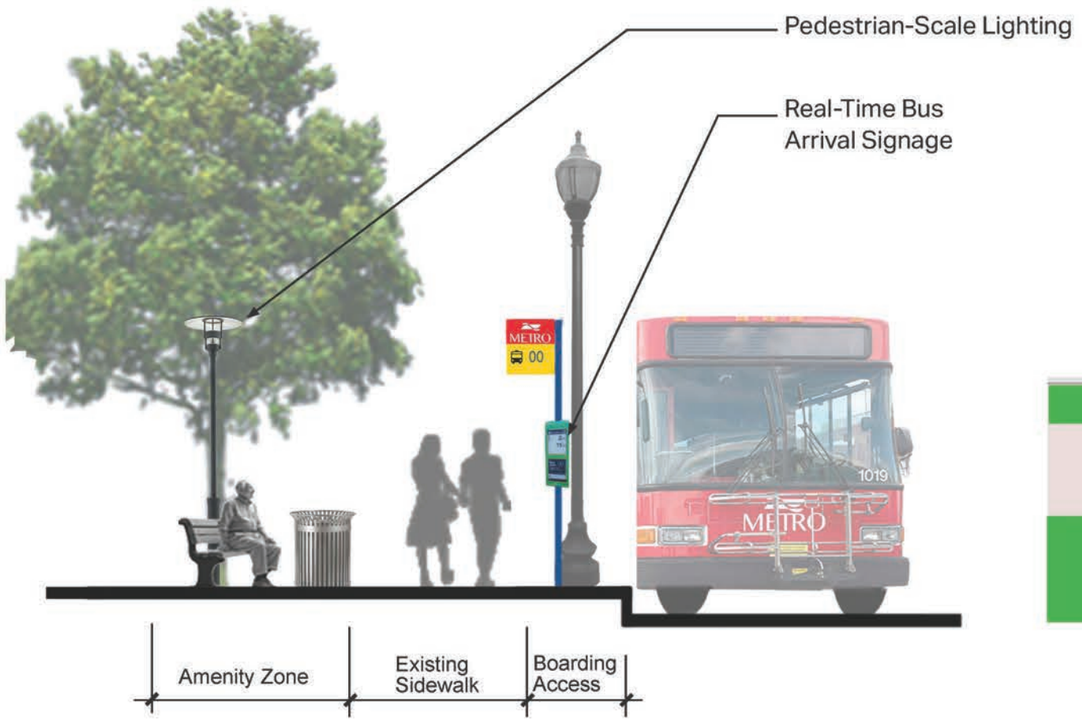


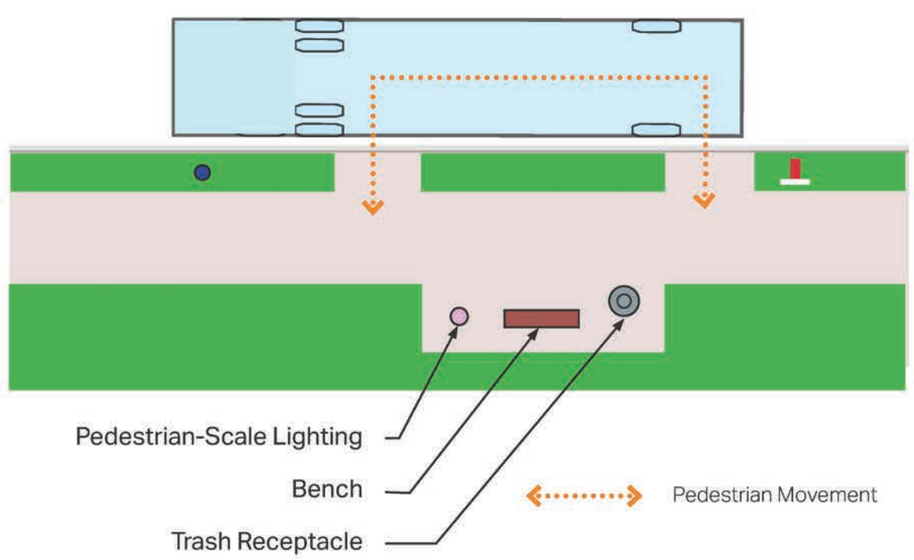
Prototype A represents the basic design for a KMETRO bus stop, including an accessible boarding area, street lighting, and signage—providing essential elements for safe and visible transit access in Kalamazoo's bus stop safety improvement plan.

KMETRO BUS STOP *Prototype B - Enhanced*

Amenity Elements

- Accessible Boarding Area
- Bus Stop Sign
- Street Lighting
- Bench
- Trash Receptacle
- Pedestrian-Scale Lighting
- Real-Time Bus Arrival Signage



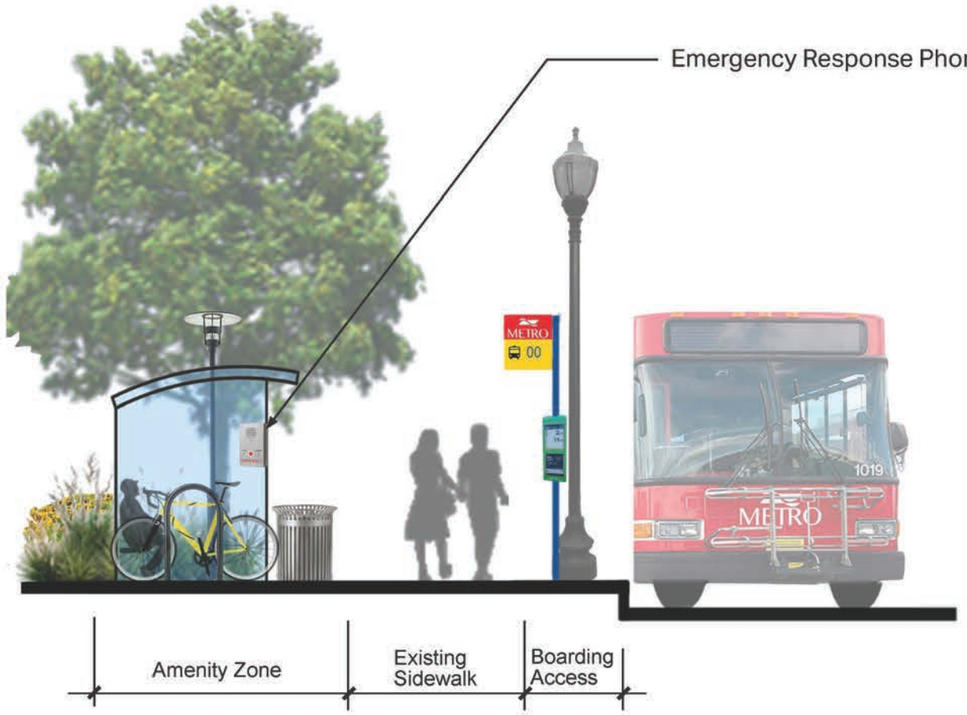


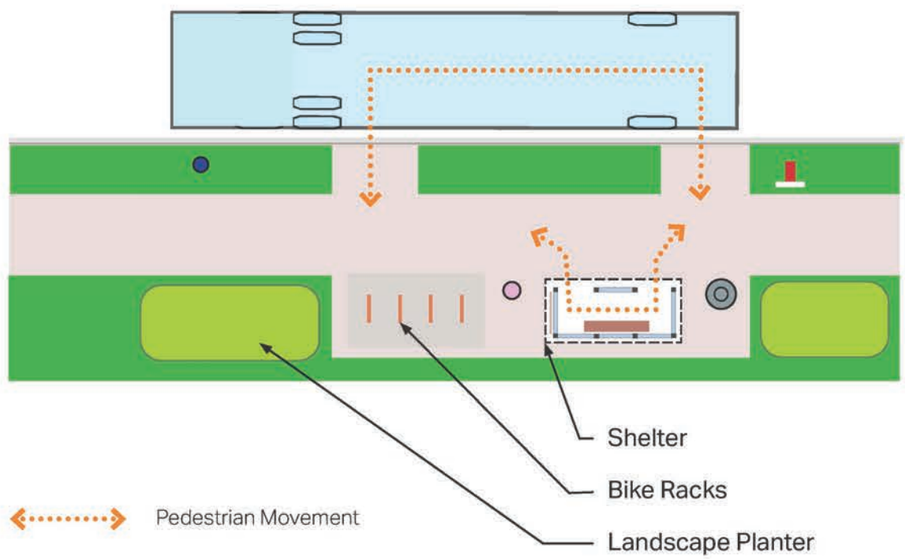
Prototype B illustrates an enhanced KMETRO bus stop with key features to improve rider comfort and safety, including a bench, trash receptacle, pedestrian-scale lighting, and real-time arrival signage—supporting a more informative and accessible transit experience

KMETRO BUS STOP *Prototype C - Premium*

Amenity Elements

- Accessible Boarding Area
- Bus Stop Sign
- Street Lighting
- Bench
- Trash Receptacle
- Pedestrian-Scale Lighting
- Real-Time Bus Arrival Signage
- Shelter
- Emergency Response Phone
- Landscape Planter
- Bicycle Racks
- Public Art

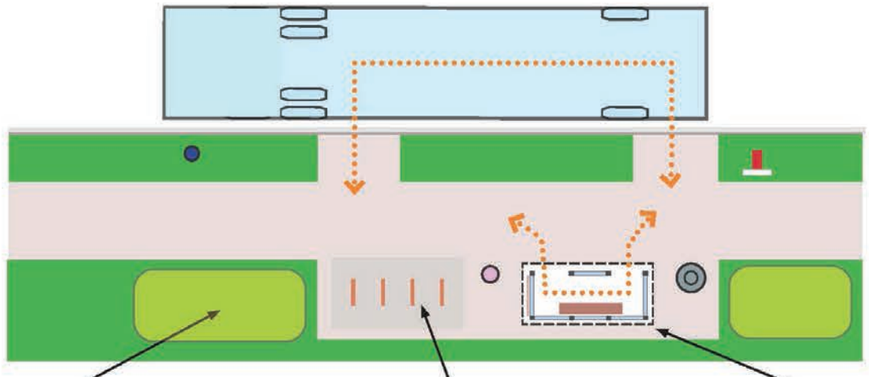




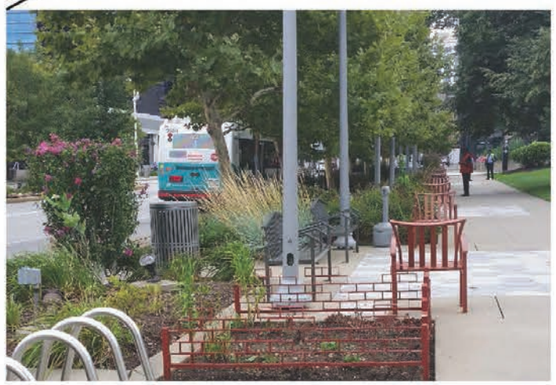
Prototype C represents a premium bus stop design that includes advanced safety, accessibility, and placemaking features such as a full shelter, emergency response phone, bicycle racks, pedestrian-scale lighting, and landscape planters to create a secure and welcoming environment.

KMETRO BUS STOP *Prototype C - Premium*

Key Amenities



Public Art - Windscreens
Encourage people to take transit, transform experience, feel safer and connect with their community



Landscape Planter

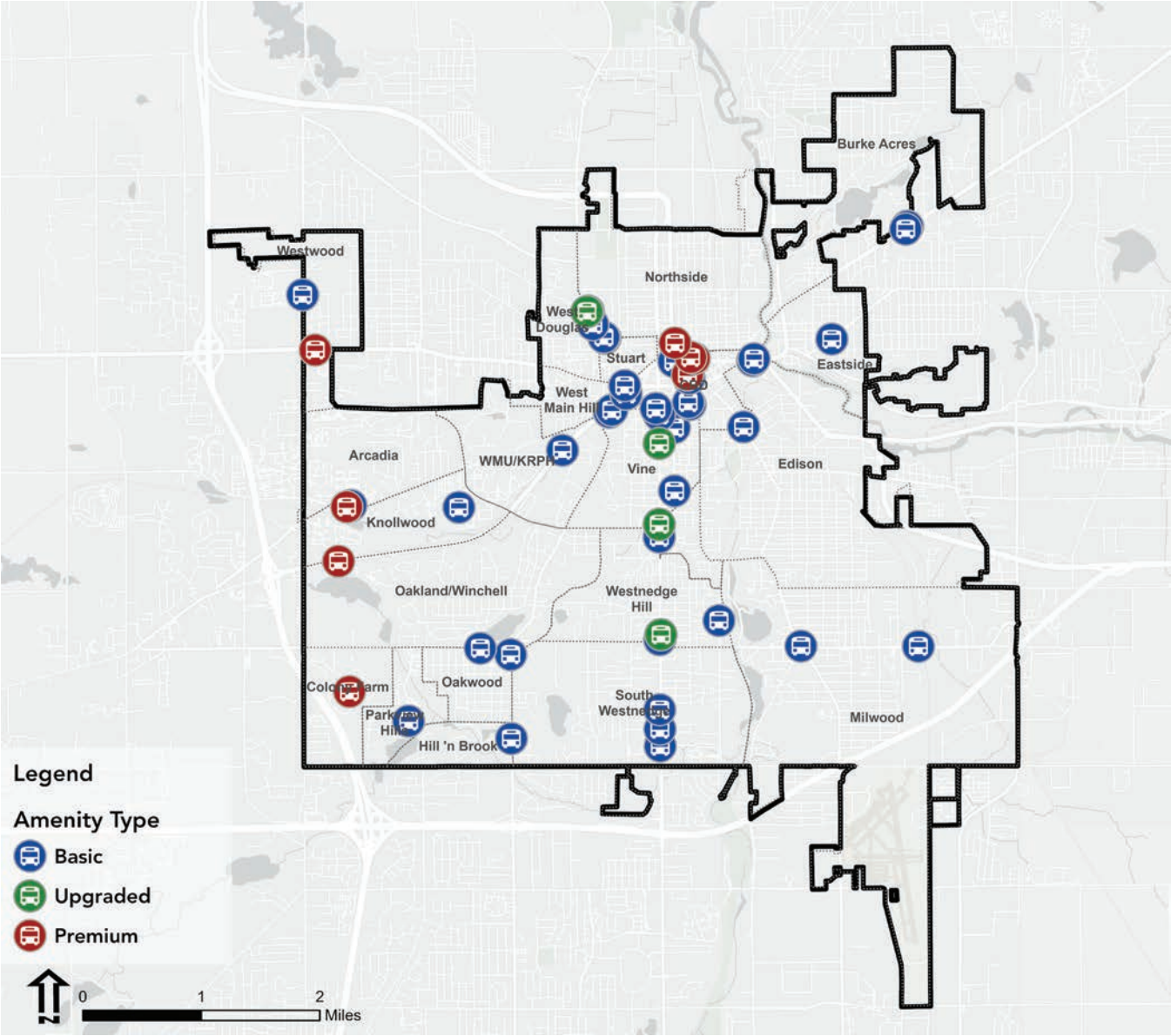
Bike Rack

Bus Shelter

Page 4

This breakdown of key amenities highlights how premium KMETRO bus stops integrate landscape planters, bike racks, and public art windscreens—features that enhance safety, promote multimodal access, and celebrate community identity.

Figure 25. Mapped bus stop focus locations by amenity type categorization.



This map displays the planned amenity levels for KMETRO's top-priority bus stop locations—ranging from Basic to Premium—based on ridership, safety needs, and community input to ensure equitable and effective transit infrastructure investments across Kalamazoo.

Safety Countermeasures

Beyond the stop itself, safe access to bus stops is essential. A wide range of safety countermeasures are recommended to address conflicts between vehicles, pedestrians, buses, and bicyclists. These strategies were selected based on best practices, local crash data (including UD-10 crash reports on pedestrian FSI crashes that occurred between 2014–2023 within 250 feet of bus stops), and the characteristics of different street types.

Vehicle-Bus Conflicts

These strategies reduce unsafe interactions between buses and general traffic, reducing crash risk. They also can improve transit service reliability by facilitating smoother bus navigation through intersections and decreasing delays due to traffic.

Table 17. Safety Countermeasures for Vehicle-Bus Conflicts

Countermeasure	Description and Benefit
Bus Bulb	Curb extension that lets buses remain in the travel lane, reducing merge delays
Bus Queue Jump	Short transit lane at intersections to bypass congestion
Transit Signal Priority	Signal changes that give buses early green lights
Far-Side Stop Placement	Reduces bus-vehicle rear-end crashes
Transit Lane	Dedicated bus-only lanes

Vehicle-Pedestrian Conflicts

These countermeasures improve visibility, reduce crossing distances, and calm traffic to protect pedestrians.

Table 18. Safety Countermeasures for Vehicle-Pedestrian Conflicts

Countermeasure	Description and Benefit
High-Visibility Crosswalk	Increases visibility of pedestrians
Pedestrian Refuge Island	Allows safer mid-road waiting during crossing
Raised Crosswalk	Slows vehicles and improves crosswalk visibility
APS / Extended Walk Time / LPI	Improves accessibility for all users
No Right Turn on Red	Reduces pedestrian-vehicle conflicts at corners
Daylighting / Vegetation Control	Improves driver sightlines
Pedestrian Warning Signage	Alerts drivers to crossings
PHB / RRFB	Signalized mid-block crossing controls
Designated Loading Zones	Improves boarding/alighting safety
Access Management	Reduces driveway conflicts
Near- or Far-Side Placement	Aligns stops with safe crossings and sightlines

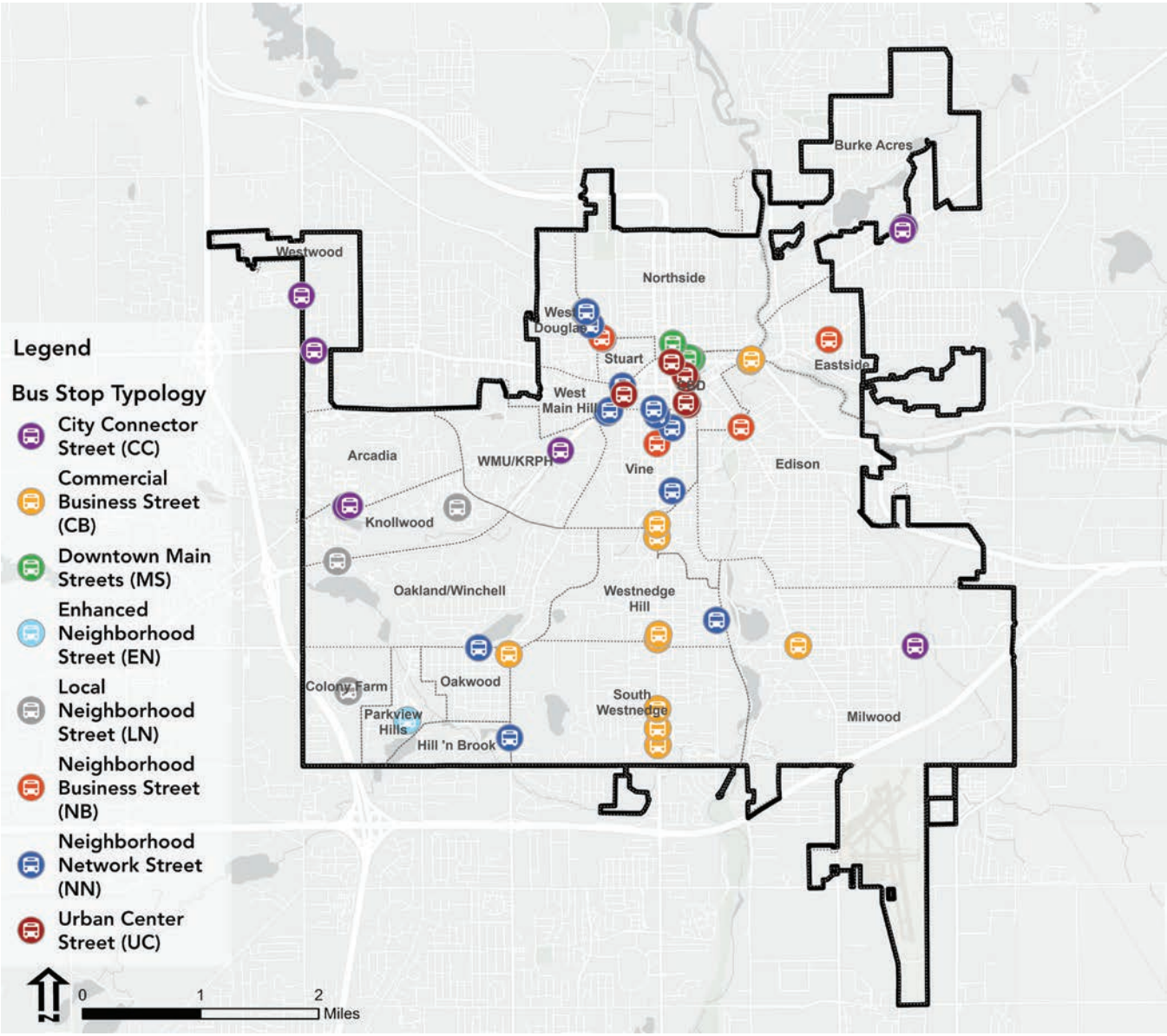
Bus-Bike Conflicts

These solutions reduce conflicts between buses and bicyclists in shared corridors.

Table 19. Safety Countermeasures for Bus-Bike Conflicts

Countermeasure	Description and Benefit
Floating Bus Stop	Bus island that keeps buses and bikes separated
Shared Bus-Bike Lane	Transit/bike shared facility, used at low speeds

Figure 26. Kalamazoo Priority Bus Stops by Street Typology



This map categorizes Kalamazoo's priority bus stops by street typology—helping guide design strategies that match the surrounding land use, travel patterns, and infrastructure context for more effective transit investments.

Implementation Strategy by Street Type

To support integration into existing plans and policies, the proposed infrastructure improvements are matched with the Kalamazoo Street Design Manual street types. This allows planners and engineers to apply appropriate countermeasures and amenities based on each corridor's function and context.

For example:

- Main Streets with small building setbacks and more pedestrian activity should prioritize pedestrian-scale amenities (e.g., benches, planters, real-time signage) and safety features that enable people to safely travel between destinations on either side of the street (e.g., raised crosswalks and curb extensions).
- City Connectors with high volumes of through traffic may be more suited to amenities such as shelters and real-time signage for commuters on higher capacity transit routes as well as safety features such as transit signal priority, bus queue jumps, and dedicated lanes to reduce vehicle-bus conflicts while enhancing transit reliability.
- Neighborhood Streets should emphasize accessibility, traffic calming, and mid-block crossings where appropriate.

Complete guidance for bus stop amenities by amenity tier and street typology is provided in Appendix I. Complete guidance for safety countermeasures by street typology is provided in Appendix J.

Cost Estimates

Planning-level, conceptual cost estimates were calculated for each bus stop amenity and safety countermeasure. These estimates are intended to inform future investments and for planning-level purposes. Unit costs for each amenity or countermeasure were derived from representative estimates or costs and inflated to current year (2025) dollars as appropriate, at a rate of 3.0% annually. Based on the implementation timeframe, these costs were again inflated to year of expenditure dollars at 3.5% per year:

- Short-term (within 5 years) at 2.5 years
- Mid-Term (5-10 years) at 7.5 years
- Long-Term (10-15 years) at 12.5 years

Additionally, a 30% contingency was then applied to each unit cost. All costs are construction or installation only and do not include design, infrastructure investments or relocations for utilities or technology, right-of-way acquisition, professional services, or other project development costs. For any bus stop amenity or countermeasure identified for implementation, a revised capital cost should be prepared in the current year dollars and year of expenditure to prepare an up-to-date estimate. For costs associated with amenities such as landscaping, public art, and technology, the costs may vary considerably given the variability in design, community preference, and local requirements. For costs associated with countermeasures, costs may be further influenced by jurisdictional design requirements and the length of the investment (i.e., per/mile). For these types of amenities and countermeasures it is recommended to engage early and often to plan for long-term construction and implementation costs.

A summary of high-level cost estimates is provided in Table 20 and Table 21 and organized by cost tier and proposed time-frame for the proposed amenity or countermeasure. Unless otherwise noted, each cost is per amenity or countermeasure implemented, such that costs should be multiplied based on quantity selected for implementation. Additional details for these estimates are provided in Appendices I and J.

Table 20. Planning-level capital cost estimates for bus stop amenities.

Bus Stop Amenities	Cost Tier	Timeframe
Bus Stop Sign	Less than $50,000	Short-term
Street lighting	Less than $50,000	Short-term
Bench	Less than $50,000	Short-term
Waste Receptacle	Less than $50,000	Short-term
Real-Time Bus Arrival Signage	Less than $50,000	Short-term
Public Art	Less than $50,000	Short-term
Bicycle Rack	Less than $50,000	Short-term
Landscape Planter	$50,001- $150,000	Short-term
Accessible Boarding Area	Less than $50,000	Mid-term
Shelter	Less than $50,000	Mid-term
Emergency Response Phone (Blue Light)	Less than $50,000	Mid-term
Pedestrian-Scale Lighting	Less than $50,000	Mid- to Long-term

Table 21. Planning-level capital cost estimates for bus stop safety countermeasures.

Safety Countermeasures	Cost Tier	Timeframe
Daylighting/Parking Restriction at Corner (per intersection)	Less than $50,000	Short-term
Far-Side Bus Stop Placement	Less than $50,000	Short-term
Hardened Centerline (per leg of intersection)	Less than $50,000	Short-term
High-Visibility Crosswalk	Less than $50,000	Short-term
Mid-Block Crossing	Less than $50,000	Short-term
Near-Side Bus Stop Placement	Less than $50,000	Short-term
Pedestrian Crossing Warning Sign	Less than $50,000	Short-term
Protected Left Turn	Less than $50,000	Short-term
Vegetation Control at Intersection (per acre)	Less than $50,000	Short-term
Countdown Pedestrian Signal (CPS)	Less than $50,000	Short- to Mid-term
Accessible Pedestrian Signal (APS)	Less than $50,000	Mid-term
Bus Bulb	Less than $50,000	Mid-term
Extended Pedestrian "WALK" Time	Less than $50,000	Mid-term
No Right Turn on Red	Less than $50,000	Mid-term
Pedestrian Area/Sidewalk (per square foot)	Less than $50,000	Mid-term
Raised Crosswalk	Less than $50,000	Mid-term
Rectangular Rapid Flashing Beacon (RRFB)	$50,001- $150,000	Short-term
Curb Extension/Bulb Out	$50,001- $150,000	Mid-term
Leading Pedestrian Interval (LPI)	$50,001- $150,000	Mid-term
Transit Signal Priority	$50,001 - $150,000	Long-term
Floating Bus Stop/Bus Stop Island	$150,001 - $300,000	Mid-term
Pedestrian Hybrid Beacon (PHB)	$150,001 - $300,000	Mid-term
Shared Bus-Bike Lane (per lane-mile)	$150,001 - $300,000	Mid-term
Designated Bus Loading Zone	$150,001 - $300,000	Mid- to Long-term
Pedestrian Refuge Island	$150,001 - $300,000	Long-term
Access Management	Greater than $300,000	Mid- to Long-term
Bus Queue Jump	Greater than $300,000	Mid- to Long-term
Designated Bus Loading Zone	Greater than $300,000	Mid- to Long-term
Transit Lane	Greater than $300,000	Long-term

Based on the per-unit cost estimates developed for each amenity and safety countermeasure, the cost of upgrading all 50 focus locations to incorporate the amenities and safety countermeasures categorized as "Required" for their respective amenity types and street types ranges from $82,400 to $247,7004. This is clearly a wide range that will require more detailed planning to narrow down.

Upgrading the 50 focus locations to incorporate their "Required" elements is certainly a start, but additional features categorized as "Recommended" will need to be installed to make more of a safety impact and reduce crashes near bus stops. The cost of incorporating amenities and safety countermeasures categorized as "Recommended" at the focus locations will depend on the specific package of features deemed most appropriate for each location; not all the elements categorized as "Recommended" need to be applied together.

Implementation Timeline

Implementing the proposed bus stop amenities and safety countermeasures will require a phased approach, aligned with funding availability, coordination opportunities, and the complexity of each improvement. The following recommended timeline breaks down improvements into short-term, mid-term, and long-term phases based on feasibility, cost, and potential to integrate with existing capital improvement efforts.

Wherever possible, improvements should be incorporated into ongoing or planned capital improvement projects to maximize efficiency, reduce costs, and minimize construction disruption. Leveraging scheduled roadway, sidewalk, or streetscape projects will help encourage that bus stop upgrades are integrated holistically into the transportation network.

Recommended Implementation Phases

- Short-Term (Within 5 Years):
  - Focus on implementing high-impact, lower-cost improvements that enhance safety and accessibility at the 50 focus locations. Examples include:
    - Amenities such as bus stop signage, lighting, benches, and waste receptacles
    - Safety countermeasures such as high-visibility crosswalks, pedestrian crossing warning signs, and rectangular rapid flashing beacons (RRFB)
    - Integration with scheduled infrastructure projects
- Mid-Term (5–10 Years):
  - Target more complex infrastructure upgrades that may require larger investments or coordination with significant roadway reconstruction. Examples include:
    - Raised crosswalks
    - Floating bus stops
    - Accessible Pedestrian Signals (APS)
    - Expansion of shelters and enhanced lighting
- Long-Term (10–15 Years):
  - Address projects requiring more substantial redesign or larger capital programs, or those that are dependent on long-range corridor planning efforts. Examples include:

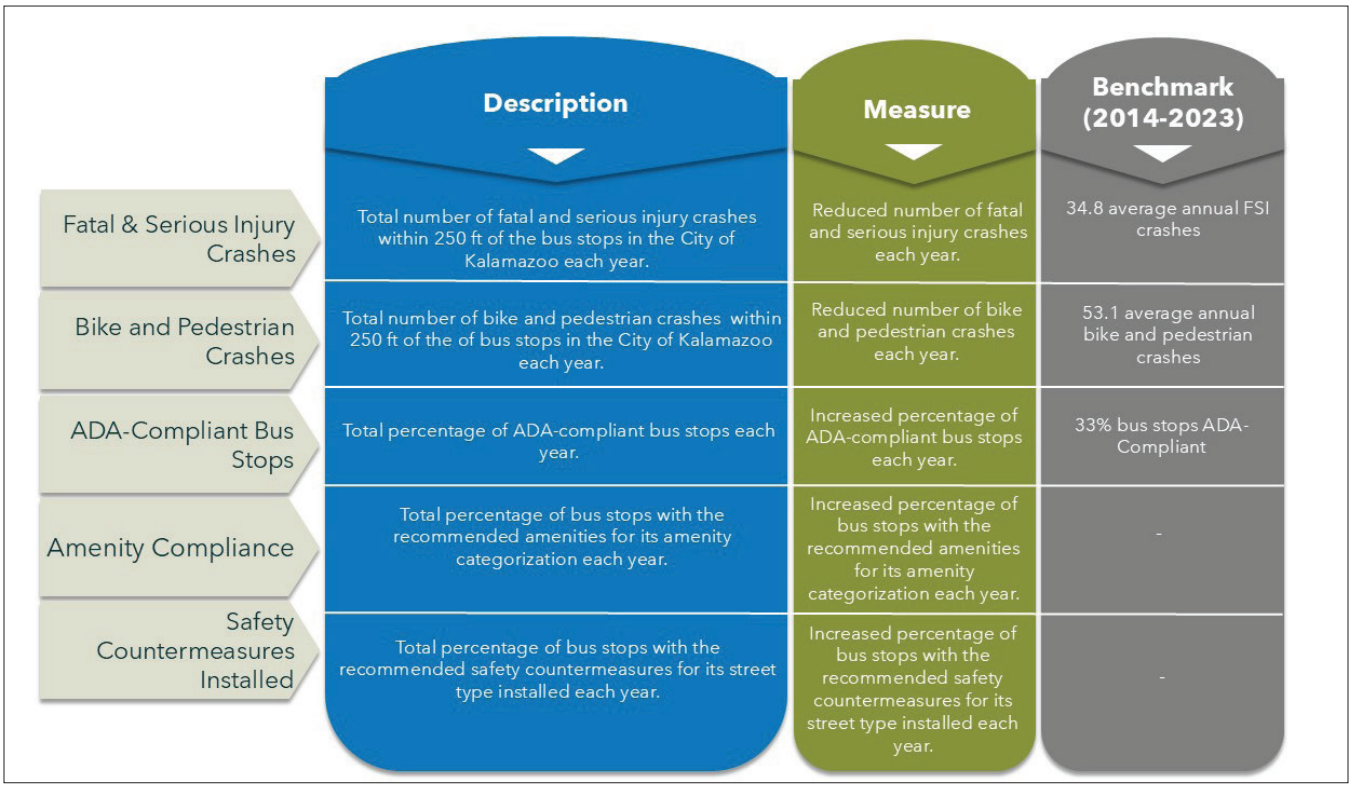
- New or realigned sidewalks to close major gaps in pedestrian access
- Major streetscape redesigns
- Dedicated transit lanes or shared bus-bike facilities in key corridors
- Broader application of amenities like pedestrian-scale lighting

Detailed implementation timelines by bus stop and safety countermeasure type are provided in Appendices I and J. These appendices offer high-level guidance on the anticipated timeline for each improvement, categorized by short-, mid-, or long-term feasibility.

Monitoring and Evaluation

Progress monitoring and reporting uses metrics to evaluate the effectiveness of safety improvement strategies and countermeasures. By evaluating success, the City can demonstrate accountability, pursue funding opportunities, and maintain transparency with stakeholders and the public. The figure on the next page outlines metrics that can be used to measure progress toward improving safety around the bus stops in the city of Kalamazoo. These metrics will assess fatal and serious injury crashes over time, demonstrating the impact of investments and strategies. The metrics are designed to provide information that can be easily collected, shared, and understood by funding agencies and the public. Each metric relates to the goals for safety and includes a description, a measure, and a benchmark with the average for each measure from the years 2014 through 2023.

Figure 27. Bus Stop Performance Framework



This performance framework outlines key safety, accessibility, and infrastructure metrics used to monitor progress on Kalamazoo's Bus Stop Safety Improvement Plan—establishing benchmarks and targets to reduce crashes and enhance rider experience citywide.

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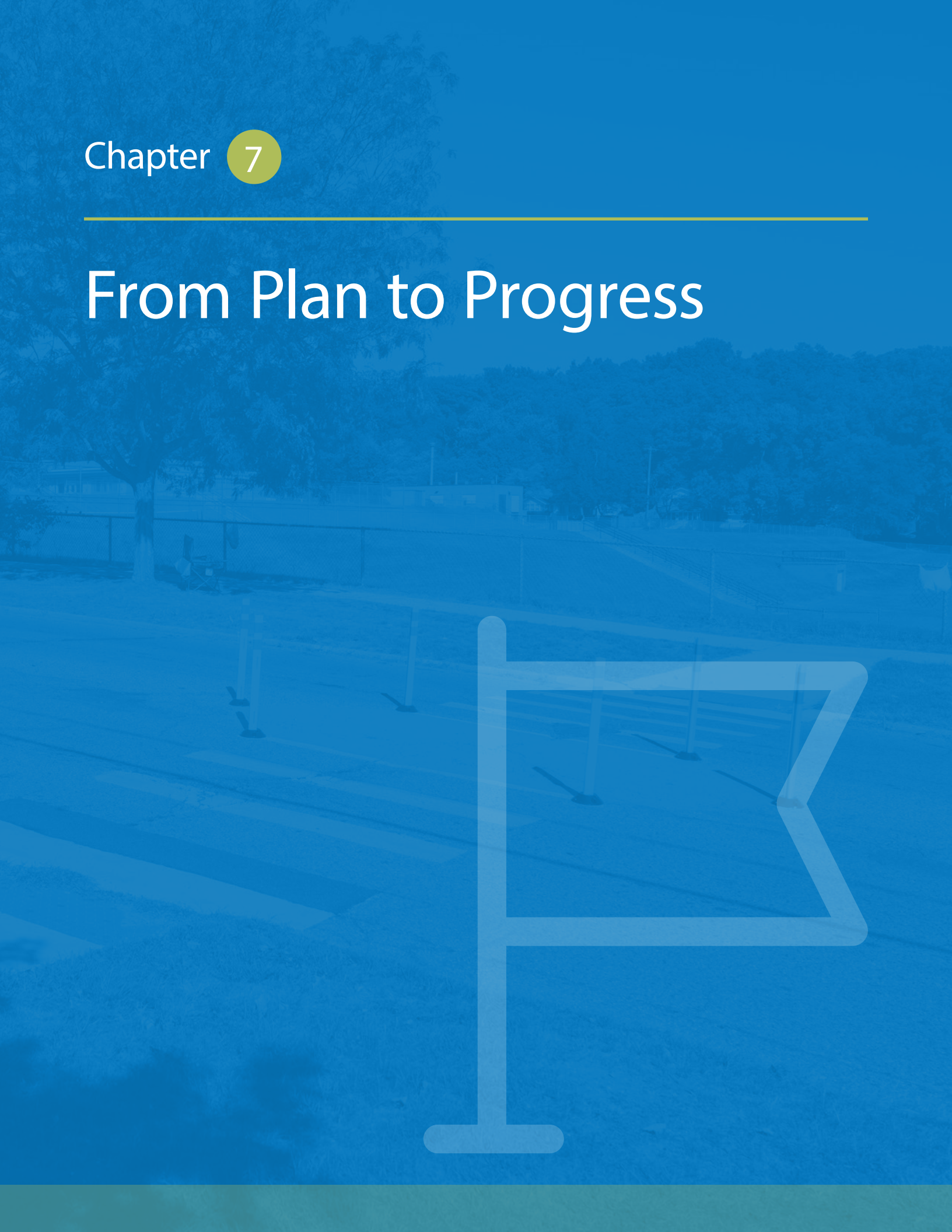
Chapter 7

From Plan to Progress



From Purpose to Process: Laying the Foundation for Change

The Kalamazoo Safety Action Plan marks a significant step forward in the City's ongoing effort to eliminate traffic-related fatalities and serious injuries. Developed through the U.S. Department of Transportation's Safe Streets and Roads for All (SS4A) program, this Plan represents a culmination of data analysis, field research, public input, and technical expertise—all anchored in a shared commitment to building safer, more equitable streets for everyone.

The primary purpose of the Safety Action Plan is to guide strategic investments that make Kalamazoo's streets safer for people walking, biking, using mobility devices, riding transit, and driving. The planning process was rooted in the Safe System Approach, which acknowledges human vulnerability and error, and promotes system-wide changes that prevent serious harm. Community engagement was central to this effort, and lived experiences and neighborhood priorities shaped the Plan's recommendations.

Throughout the planning process, the City worked closely with local and regional partners, technical consultants, and a dedicated Safety Task Force. The project team combined crash data, equity mapping, and infrastructure assessments with two phases of public outreach to identify and validate focus areas that represent both the highest need and greatest opportunity for improvement.

What We Learned: Summary of Key Findings

The Safety Action Plan addresses four key focus areas (intersections, sidewalks, street lighting, bus stops), in addition to taking a closer look at pedestrian level of comfort via a citywide pedestrian safety study. Each study area revealed critical safety needs and clear opportunities for investment:

- Pedestrian Safety Plan: A citywide Pedestrian Level of Traffic Stress (PLTS) analysis showed that while 74% of streets are low stress, high-stress corridors disconnect neighborhoods, especially in underserved areas. These corridors correlate with crash risk and equity gaps, highlighting the need for targeted redesigns to support walkability.
- Intersection Safety: A dual-index scoring system identified 50 priority intersections, with detailed recommendations developed for five of the highest-risk locations. Improvements such as high-visibility crosswalks, signal enhancements, and geometry changes aim to reduce turning conflicts and improve visibility. Of the top 50, these were selected by the project team based on crash data review and gathered community priorities.
- Sidewalk Safety: A data-driven prioritization framework pinpointed where sidewalk gaps align with pedestrian crashes, high speeds, and vulnerable populations. These findings informed a list of high-priority sidewalk segments that will guide future investments and support grant applications.
- Lighting Safety: Crash data and photometric analysis revealed key corridors and intersections with insufficient lighting, often in high-crash and high-need areas. Proposed improvements include upgraded fixtures, reduced spacing, and enhanced uniformity to improve nighttime visibility and personal safety.
- Bus Stop Safety: A systematic evaluation of 50 bus stops—based on ridership, crash data, equity, and accessibility—led to recommended policy and infrastructure improvements. These include boarding pads, shelters, lighting, and pedestrian crossings that support safer and more dignified transit access.

Moving Forward: High-Level Recommendations and Next Steps

This Plan provides Kalamazoo with an implementation-ready framework for advancing its Vision Zero goals. Recommended next steps include:

- Advance near-term projects identified in the Plan, especially in neighborhoods facing the highest risk and historical underinvestment.
- Leverage the Safety Action Plan to pursue SS4A and other federal, state, and local implementation funding.
- Embed equity and safety performance metrics into project evaluation, budgeting, and reporting.
- Use the provided toolkits and prioritization frameworks to guide decisions, build transparency, and support ongoing planning.
- Expand partnerships and data collection efforts to continuously refine strategies and measure success.
- Institutionalize public and stakeholder engagement in all future phases of implementation to build trust, accountability, and momentum.
- Review the Kalamazoo SS4A Plan every six months for continuing implementation as well as to provide updates to the City Commission and Residents on progress.

Deep Appreciation for Our Partners and Community

This Plan was made possible through the collaboration and dedication of many partners. The City of Kalamazoo led the process in partnership with their consulting team, with ongoing support from the Kalamazoo Area Transportation Study (KATS) and Metro Transit. Most importantly, community members—through surveys, map comments, events, and focus groups—shared critical insight that shaped every recommendation.

Special thanks go to the Safety Task Force, whose diverse perspectives helped the Plan reflect the realities of Kalamazoo's neighborhoods and streets.

A Lasting Commitment to Safety and Connectivity

The Kalamazoo Safety Action Plan is more than a planning document—it is a declaration of values. It affirms that every person deserves to travel safely, regardless of how they move or where they live. It recognizes the historical inequities and system design flaws that have left too many people at risk. And it provides a clear, actionable roadmap for building a transportation system that protects and connects all Kalamazooans.

As the City looks ahead, this Plan offers a strong foundation for deeper institutional commitment to eliminating traffic fatalities and serious injuries. By continuing to embed Safe System principles into policy, design, and investment decisions—and by aligning future efforts with Vision Zero best practices—Kalamazoo can position itself as a leader in people-centered street safety.

With sustained leadership, investment, and community partnership, Kalamazoo can turn this vision into reality—transforming today's challenges into tomorrow's progress, and paving the way toward a safer, more just future for all.

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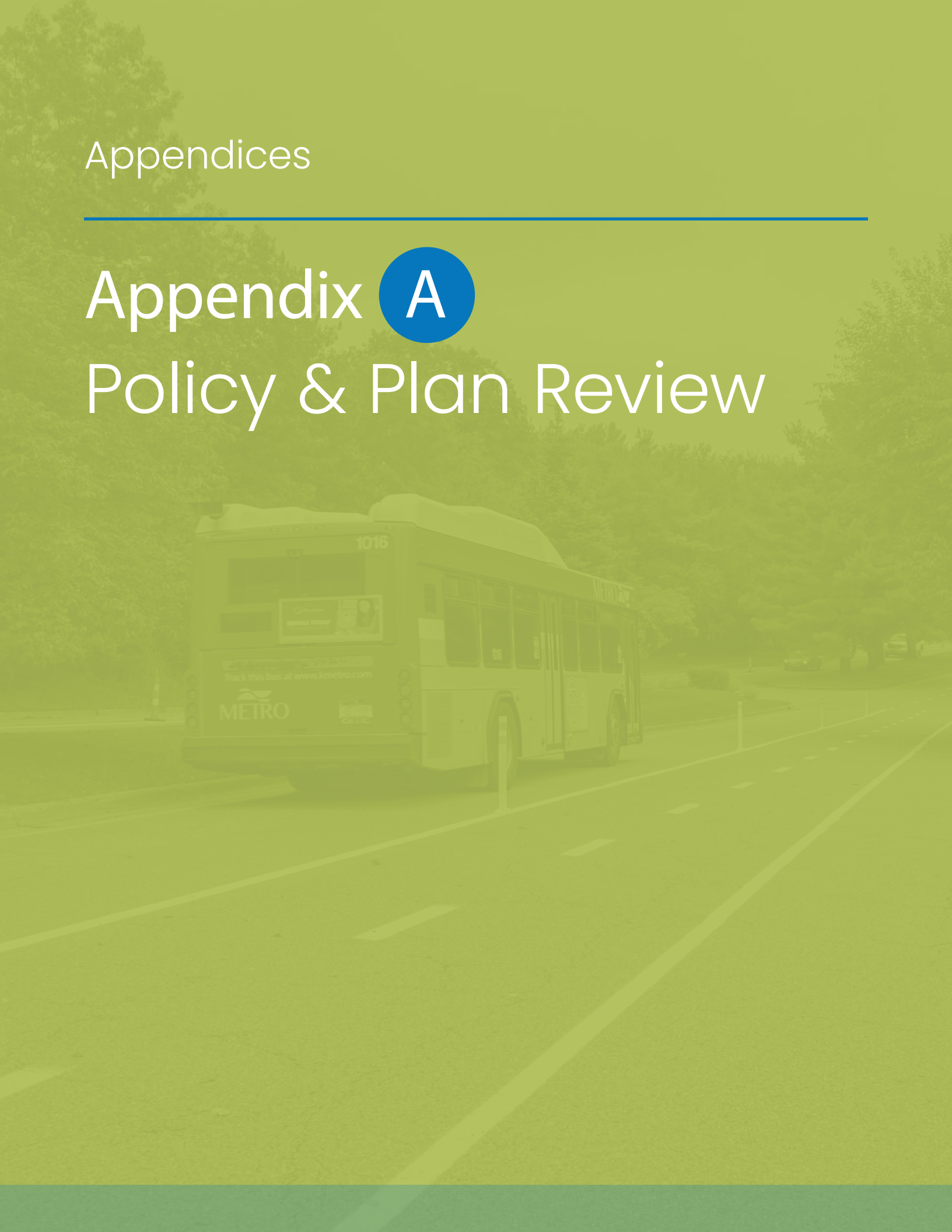
Appendices

Appendix A
Policy & Plan Review



MEMORANDUM

APPENDIX A

Kalamazoo, MI Safety Action Plan – Plan and Policy Review

Contents

Introduction

This Plan and Policy Review aims to identify opportunities for enhancing the Kalamazoo Safety Action Plan development by analyzing existing plans, policies, and initiatives. The findings will inform strategies that prioritize safety for all users, especially vulnerable road users such as pedestrians, bicyclists, and transit users.

This document summarizes key findings from a review of Kalamazoo's existing safety-related plans and policies. It highlights critical areas of focus, including infrastructure improvements, policy alignment, funding opportunities, and community engagement. The recommendations aim to guide efforts in creating a safer and more connected transportation network that serves all users equitably.

Existing safety initiatives, policies, and programs in Kalamazoo and the surrounding region were reviewed to understand existing safety strategies used in engineering, education, evaluation, equity, and enforcement. This memo presents key takeaways from the plan and policy review.

Plans and policies reviewed include:

- City of Kalamazoo Strategic Vision
- City of Kalamazoo Master Plan – Imagine Kalamazoo 2025
- City of Kalamazoo Street Design Manual
- 2050 Metropolitan Transportation Plan
- KATS Pedestrians, Greenways, and Transit Plan
- Kalamazoo Complete Streets Policy
- City of Kalamazoo Neighborhood Plans

Funding Context Setting

The City of Kalamazoo, Michigan, utilizes several key funding sources to support, maintain, and enhance its transportation network, ensuring safe and efficient travel for all residents. In addition to other potential funding opportunities, the most significant sources—described in detail below—include Act 51, the Michigan Transportation Fund (MTF), the Transportation Improvement Program (TIP), and the Foundation for Excellence (FFE).

Act 51

Public Act 51 of 1951, commonly referred to as Act 51, is a crucial piece of legislation that governs the distribution of transportation funds in Michigan. This act established the Michigan Transportation Fund (MTF), which aggregates revenues from various sources, including fuel taxes, vehicle registration fees, and other transportation-related sources. The funds collected under Act 51 are distributed to state and local road agencies, including cities, villages, and county road commissions. These funds are used for a wide range of transportation-related expenditures, such as road maintenance, construction, and improvements. Act 51 ensures that local governments receive a fair share of transportation funding to address their specific needs.

Michigan Transportation Fund (MTF)

The Michigan Transportation Fund (MTF) is the primary source of transportation funding in the state. It collects revenues from fuel taxes, vehicle registration fees, and other transportation-related sources. The MTF is designed to provide a stable and predictable source of funding for transportation projects across Michigan. The funds are allocated to various transportation projects, including road maintenance, construction, and improvements. The MTF plays a critical role in ensuring that Michigan's transportation infrastructure remains safe and efficient, benefiting both residents and businesses.

Transportation Improvement Program (TIP)

The Transportation Improvement Program (TIP) is a federally mandated program that outlines transportation projects to be funded over a four-year period. The TIP includes projects that receive federal funding and those that are regionally significant. It is developed by metropolitan planning organizations (MPOs) in collaboration with state and local agencies. The TIP ensures that transportation projects are planned and implemented in a coordinated manner, aligning with regional and national transportation goals. By including projects in the TIP, Kalamazoo can secure federal funding and ensure that its transportation network meets the needs of its residents.

Foundation for Excellence (FFE)

The Foundation for Excellence (FFE) is a unique public-private partnership in Kalamazoo, established to provide financial stability and support for city initiatives. Created through generous donations from private donors and philanthropic organizations, the FFE aims to reduce property taxes, invest in community projects, and support city services, including transportation infrastructure improvements. The FFE has played a crucial role in funding projects that enhance community safety and well-being. By leveraging FFE's resources, Kalamazoo can implement extensive safety measures, including pavement markings, ADA sidewalk improvements, bump-outs, and pedestrian refuge islands, significantly enhancing the city's transportation infrastructure.

City Plan and Policy Review

City of Kalamazoo Strategic Vision

The City of Kalamazoo Strategic Vision was developed in 2017 as part of the Imagine Kalamazoo 2025 planning process. The vision includes ten strategic goals, three of which include Connected City, Safe Community, and Complete Neighborhood. These three goals reference transportation safety as part of the overarching goal. The Safe Community strategic goal includes a direction to focus on Safe Transportation, with part of the goal that "the city invests in safety for the most vulnerable road users, such as pedestrians, bicyclists, and transit users."

Funding Guidance

The City of Kalamazoo Strategic Vision outlines overarching goals for economic vitality, community well-being, and infrastructure improvement. Funding guidance includes:

- Foundation for Excellence: Grants and local funding streams aimed at enhancing public infrastructure and services.
- Public-Private Partnerships (P3s): Collaborations with local businesses and organizations to fund strategic projects.
- General Fund Allocations: Prioritized city budgets for infrastructure and active transportation initiatives.

City of Kalamazoo Master Plan – Imagine Kalamazoo 2025

The Imagine Kalamazoo 2025 Master Plan includes four sections: Connected City, Downtown Life, Great Neighborhoods, and Imagine Kalamazoo at Work. The city-wide document guides Kalamazoo's growth and development, primarily focusing on land use and transportation.

The Future Land Development Plan designates Commercial and Neighborhood Nodes at key intersections or along specific blocks to promote walkability. Nodes have specific street and intersection design guidelines. Design recommendations include pedestrian safety improvements such as reduced traffic speed; pedestrian-scale lighting; pedestrian-activated crossing lights; bulb-outs, curb extensions, or on-street parking that buffers pedestrians from vehicles.

The Transportation Framework of Street Types outlines five street types and primary non-motorized routes and describes bicycle and pedestrian safety improvements, including intersection improvements, for each. These street types and routes are mapped onto Kalamazoo's Street grid. The plan also includes maps of Kalamazoo's existing sidewalks and existing and planned bicycle network.

Funding Guidance

Imagine Kalamazoo 2025 integrates sustainability, connectivity, and equity into planning efforts. Key funding mechanisms include:

- Tax Increment Financing (TIF): Tools to capture future tax revenue increases for project funding.

- Grants and Loans: Opportunities from state and federal sources such as the Michigan Department of Transportation (MDOT) and the U.S. Department of Transportation (USDOT).
- Community Contributions: Involvement of residents and local organizations in funding and decision-making.

In Development: City of Kalamazoo Master Plan Update (Kalamazoo 2035)

Currently in development, the Kalamazoo 2035 Plan, also known as Imagine Kalamazoo 2035, is a community-driven initiative designed to guide the city's long-term growth, development, and investment priorities. Rooted in extensive public engagement, the plan reflects the collective vision of residents, businesses, and stakeholders to create a more connected, equitable, and sustainable Kalamazoo. A key focus of the plan is improving transportation safety and accessibility by aligning infrastructure investments with community needs. The city's ongoing commitment to public involvement promotes that Imagine Kalamazoo 2035 remains adaptable and responsive to evolving challenges, including efforts to enhance multimodal connectivity, reduce traffic-related injuries and fatalities, and promote safe, accessible transportation options for all users.

Coordinating efforts between Imagine Kalamazoo 2035 and this Safety Action Plan is essential to promoting a unified, strategic approach to transportation planning and safety improvements. Aligning goals, funding priorities, and implementation strategies will help maximize resources, create a seamless transportation network, and reinforce a shared commitment to eliminating serious injuries and fatalities on Kalamazoo's roadways. By integrating safety considerations into broader city planning efforts, the community can work toward a future where all residents can travel safely and efficiently, regardless of their mode of transportation.

2050 Metropolitan Transportation Plan

The Kalamazoo Area Transportation Study (KATS, the Metropolitan Planning Organization (MPO) for the Kalamazoo urbanized area) 2050 Metropolitan Transportation Plan was approved in November 2021. The Metropolitan Transportation Plan discusses the goals, investment decisions, policies, and priorities for the transportation system in the KATS Metropolitan Planning Area. The plan includes a vision and goals, existing conditions, non-motorized transportation existing and proposed facilities, and their overlap with Metro routes. There are also chapters about public engagement, consultation, congestion and operational management, financial analysis, implementation, and evaluation.

Vision and Goals

Safety is one of the five community goals identified through stakeholder and public engagement. The other four goals are system preservation, multimodal mobility & accessibility, partnership & funding, and environmental stewardship.

Each goal includes objectives and measures. For Goal 1: a safe and secure transportation system for all users, the objectives are:

- Enhance safety by integrating and connecting the transportation system, across and between modes, for people and freight.
- Promote a balanced transportation system that stimulates and supports long-term economic vitality, travel and tourism, global competitiveness, productivity, and efficiency through directed investments across modes.

- Implement strategies to promote efficient and reliable system management and operation that result in the reliable and safe movement of people and freight.
- Increase security of the transportation system by incorporating applicable emergency relief and disaster preparedness plans, strategies and policies that support homeland security, as appropriate, to safeguard the security of all motorized and non-motorized users.

The measures are:

- 5-year rolling average of the total number and rate of fatal and serious (type A) injuries for the number of serious car crashes.
- 5-year rolling average of the total number and rate of fatal and serious (type A) bicycle and pedestrian crashes for the number of serious non-motorized crashes.

Local governments are advised to use the Congestion Management Process to develop their capital improvement programs.

Existing Conditions

The plan includes a map and description of crash history from 2010-2019, including high-frequency crash locations ranked by intersection. The Kalamazoo Area Transportation Study supports the State of Michigan's Strategic Highway Safety Plan. The number of fatal and incapacitating injury crashes in the region increased from 2010 to 2019, while the number of drinking-involved crashes hovered around 30.

Non-Motorized Transportation

The non-motorized transportation chapter includes a map of existing non-motorized facilities, a future network map of proposed non-motorized projects developed by the KATS Non-Motorized Subcommittee, and a compilation of non-motorized transportation funding options.

Funding Guidance

This long-term vision for regional transportation emphasizes sustainability and multimodal systems. Funding opportunities include:

- Federal and State Transportation Funds: Access to funds such as the Transportation Alternatives Program (TAP) and Highway Safety Improvement Program (HSIP).
- Regional Collaboration: Partnerships with the Kalamazoo Area Transportation Study (KATS) for pooled regional funding.
- Innovative Financing: Exploration of tolls, bonds, and green infrastructure grants.

KATS Moves Pedestrian, Greenways and Transit Plan

The KATS Moves Pedestrian, Greenways and Transit Plan, completed in September 2017, was initiated to identify new connections between the existing transit network and the non-motorized infrastructure in the region. New non-motorized facility locations were identified through a three-step process. Step 1 identified potential new greenway locations to build out the greenway network and Step 2 identified on-street connections to further develop the non-

motorized transportation network. Step 3 located areas with concentrations of bicycle and pedestrian crashes ("Safety Focus Areas") and recommending specific improvements.

The plan includes safety countermeasures from the Federal Highway Administration's (FHWA) "Pedestrian and Bicycle Safety Guide and Countermeasure Selection System and the National Association of City Transportation Officials' (NACTO) "Urban Street Design Guide."

Each Safety Focus Area includes a description of the crash characteristics and recommended safety improvements, and an aerial map depicting them.

The plan's recommendations are prioritized based on the scoring methodology used in the KATS 2045 MTP, incorporating the KATS Moves goals and objectives as scoring criteria. The evaluation is focused on four areas of improvement: Safety Improvements, Transit Connections, Opportunities and Needs, and Greenway Connections. Safety Improvements and Transit Connections are worth more points because they were prioritized by the Steering Committee and the public. A cost/feasibility analysis helped develop an implementation timeline of recommended improvements, which can be revisited to measure progress over time.

The plan lists several funding opportunities and the types of non-motorized transportation projects they can be applied to, including infrastructure, programs (education), and planning. There is also a suggestion to coordinate with the region's Transportation Improvement Program (TIP) to stretch the region's non-motorized funding farther and include pedestrian and bicyclist safety improvements.

Funding Guidance

This plan focuses on enhancing pedestrian and transit networks and preserving greenways. Funding mechanisms include:

- Greenway Grants: State and federal programs like the Land and Water Conservation Fund (LWCF).
- Transit-Specific Programs: Federal Transit Administration (FTA) funds for operational and capital transit projects.
- Trail Development Funding: Partnerships with nonprofits and local initiatives for trail connectivity.

City Design Guidelines

City of Kalamazoo Street Design Manual

The City of Kalamazoo Street Design Manual was completed in November 2021. It includes street design values and goals, a street typology with design considerations for each street type, a section outlining the street design process, and a compilation of street design elements.

Street Design Values and Goals

The Street Design Values and Goals emphasize safety, especially for pedestrians, bicyclists, and transit users. One of the guiding street design values is "Safe Community," which includes safety and comfort for all users and prioritizing

the safety of vulnerable users above vehicle level of service. There are 13 Street Design Goals, three of which explicitly focus on transportation safety, and the rest of which support safety indirectly.

Explicit focus on transportation safety

- Design streets and provide mobility options that will change how people move through the city, prioritizing pedestrians, creating safe bicycle networks, and better access to transit to drive a shift in mode share for a more resilient, safe, and affordable city.
- Engineer streets for reliable, slow but steady traffic movement that prioritizes pedestrian and bicycle safety and multi-modal connectivity while minimizing traffic congestion.
- Create a comfortable and safe pedestrian environment, regardless of the street type and designation.

Focus on personal safety or other related safety concepts

- Support an expansive public transportation system that is safe, reliable, accessible, affordable, and expanded for more efficient use.
- Implement street designs that respect and support adjacent land uses, strengthening the safety and character of neighborhoods and business areas.
- Encourage that residents and visitors can safely find their destinations through easily understood signage, pavement markings, and route configurations throughout the city for every mode of transportation.

Street Typology Framework

The Street Typology Framework includes nine street types, based on the network function of the street and its predominant land use context. Each Street Typology description includes a description, a cross-section drawing, a user priority chart as a starting point for modal hierarchy, and design considerations. The modal hierarchy and resultant design considerations consider the vulnerability, safety, and comfort of different users.

Process Overview

This section describes how to use the Street Typology Framework to design a Complete Streets Project that aligns with community values and goals, existing plans and policies. It contains several diagrams showing inputs and outcomes of the process at stages from Planning & CIP through project development, design and engineering, and construction. It describes how to establish a modal hierarchy for a project location, incorporate equity considerations and community engagement, and test changes through tactical projects (quick build).

Section 3.3 includes a values-based checklist to help focus data and analysis tasks to “support defensible decision-making aligned with best practices.” The checklist is guided by values including complete streets and prioritizing safety for vulnerable users.

The section also includes a design element checklist, identifying how design elements (covered in chapter 4) apply to each street typology. An element can be required, recommended, optional/situational, or limited/restricted for each typology.

Street Design Elements

Chapter 4 contains detailed guidance for individual physical design elements within the roadway, including pedestrian elements, curbside elements, bicycle elements, transit elements, roadway elements, and streetscape and infrastructure elements. Many of these elements can provide transportation safety benefits when used in accordance with best practices.

Funding Guidance

This document provides guidelines for creating multimodal, safe, and sustainable streets.

Kalamazoo Complete Streets Policy

The Kalamazoo City Commission approved the city's Complete Streets policy in January 2019. The policy mandates that the city "[...]make Complete Streets practices a routine part of everyday operations including but not limited to site plan review, maintenance activities, and after evaluation," and "[...]to the maximum extent practical, design, construct, maintain, and operate all streets to provide for a comprehensive and integrated network of streets, trails, and rights-of-way for people of all ages and abilities throughout the city[....]" The policy also promotes implementation:

- "The City of Kalamazoo shall develop and maintain a comprehensive inventory of pedestrian and bicycle facility infrastructure that will prioritize projects to eliminate gaps in the sidewalk and bikeway network[....]"
- "The City of Kalamazoo will evaluate Capital Improvement Projects prioritization to encourage implementation of Complete Streets."
- "The City of Kalamazoo will seek out appropriate sources of funding and grants for implementation of Complete Streets policies."

Funding Guidance

The Complete Streets Policy encourages that transportation projects consider all users. Funding sources outlined include:

- Local Improvement Districts: Specific district funds for targeted improvements.
- Safe Routes to School (SRTS): Federal and state grants supporting infrastructure improvements for student safety.
- Developer Contributions: Requirements for private developers to contribute to street improvements during new developments.

Key themes and Findings from City Plan and Policy Review

Infrastructure Improvements

City of Kalamazoo Street Design Manual

The manual emphasizes safety and comfort for vulnerable road users through its Street Typology Framework and values-based checklists. Immediate opportunities exist to implement tactical urbanism projects, such as quick-build safety measures, to address high-risk areas.

Design elements such as pedestrian-scale lighting, curb extensions, and buffered bike lanes should be prioritized based on data-driven crash analyses.

KATS Pedestrian, Greenways, and Transit Plan

Safety Focus Areas provide a critical framework for reducing crashes involving pedestrians and bicyclists. These areas should be expanded and revisited periodically to incorporate new data and public feedback.

Policy Alignment

Imagine Kalamazoo 2025 Master Plan

The plan's focus on Connected City, Downtown Life, and Great Neighborhoods aligns well with safety objectives. However, measurable safety metrics should be introduced to evaluate progress, such as crash reduction rates and improvements in pedestrian and cyclist comfort.

2050 Metropolitan Transportation Plan

The plan's safety objectives align with regional and state goals, yet the increase in fatal crashes highlights a need for more aggressive implementation of safety countermeasures.

Complete Streets Policy

The policy's mandate to integrate Complete Streets practices into everyday operations is commendable. Enhanced tracking and public reporting of implementation progress will increase accountability and community trust.

Community Engagement

Robust community input mechanisms, such as surveys and workshops, are essential to understanding local safety concerns. Expanding public engagement, particularly in underserved communities, will encourage equitable outcomes.

Funding Considerations

Existing plans outline various funding streams, including grants and local investments. By actively securing state and federal grants, the city has been able to accelerate safety improvements for pedestrians and bicyclists. Strategic use

of funding has supported key redesign and reconstruction projects, making streets safer and more accessible for everyone. The City of Kalamazoo has successfully leveraged multiple federal grant programs to reimagine and modernize its downtown street network and beyond, enhancing multimodal connectivity and improving overall safety. By securing funding through the Safe Streets and Roads for All (SS4A) program and the Highway Safety Improvement Program (HSIP), the city has been able to implement targeted interventions that address high-risk corridors and intersections, further advancing its commitment to Vision Zero and a more sustainable transportation system.

The following tables highlight important themes organized by various key planning documents in the City of Kalamazoo. They also outline critical considerations to help promote effective use of funding and alignment with community goals.

City of Kalamazoo Strategic Vision

Funding Source/Strategy	Considerations
Foundation for Excellence	Encourage alignment with strategic goals and equity focus.
Public-Private Partnerships (P3s)	Identify mutually beneficial opportunities and risks.
General Fund Allocations	Maintain budget flexibility for urgent priorities.

City of Kalamazoo Master Plan – Imagine Kalamazoo 2025

Funding Source/Strategy	Considerations
Tax Increment Financing (TIF)	Evaluate long-term revenue impacts and feasibility.
Grants and Loans	Stay informed about deadlines and eligibility criteria.
Community Contributions	Foster strong community engagement and transparency.

City of Kalamazoo Street Design Manual

Funding Source/Strategy	Considerations
Capital Improvement Program (CIP)	Prioritize projects with significant community impact.
Federal Funding Programs	Comply with federal reporting and audit requirements.
Local Development Funds	Encourage equitable distribution across neighborhoods.

2050 Metropolitan Transportation Plan

Funding Source/Strategy	Considerations
Federal and State Transportation Funds	Meet matching fund requirements and application timelines.
Regional Collaboration	Develop clear agreements on resource sharing.
Innovative Financing	Assess public acceptance and economic sustainability.
Foundation for Excellence	Encourage alignment with strategic goals and equity focus.

KATS Pedestrians, Greenways, and Transit Plan

Funding Source/Strategy	Considerations
Greenway Grants	Demonstrate environmental and recreational benefits.
Transit-Specific Programs	Address operational funding needs post-implementation.
Trail Development Funding	Secure long-term maintenance commitments.

Kalamazoo Complete Streets Policy

Funding Source/Strategy	Considerations
Local Improvement Districts	Engage stakeholders to encourage support and participation.
SRTS (SRTS)	Coordinate with schools and parents for maximum impact.
Developer Contributions	Monitor compliance with development agreements.

Summary of Common Strategies

Funding Source/Strategy	Considerations
Federal Programs (e.g., STBG, CMAQ)	Encourage compliance with all federal guidelines.
State Grants	Maintain relationships with state agencies.
Local Funding	Balance between immediate needs and long-term goals.
Partnerships	Clearly define roles and responsibilities.
Innovative Mechanisms (e.g., Bonds)	Conduct feasibility studies and public outreach.

Kalamazoo Neighborhood Plans

The following reviews neighborhood plans within Kalamazoo, focusing on transportation-related goals and initiatives. While these neighborhood plans address a broad range of community goals, this review specifically focuses on themes related to mobility that are most aligned with the City of Kalamazoo Safety Action Plan—including safety for all modes, sidewalks, lighting, transit, and complete streets improvements. By homing in on these elements, we can identify how the neighborhood plans can best inform targeted recommendations for this planning effort.

Imagine Eastside Neighborhood Plan (2019)

Connectivity

One of the primary goals is to create safe and accessible infrastructure for all road users. The Plan outlines goals to install bike lanes and other cycling infrastructure along E. Main, Charlotte, Sherwood, and Michigan, providing safer and more connected routes for cyclists.

Additionally, the Plan looks to install sidewalks that meet ADA compliance standards, prioritizing areas around St. Mary's and the E. Main Commercial Node to improve walkability for all residents. Recognizing the need for safer crossings, the plan also includes improvements at Gull Road and Riverview, with a focus on designated bike routes, clear pedestrian pathways, and advocacy for safer non-motorized crossings on major roads.

The Imagine Eastside Neighborhood Plan envisions sidewalks that serve the entire neighborhood. Residents have prioritized improvements that enhance sidewalk safety, accessibility, and connectivity—particularly:

- Connections to other areas of Kalamazoo
- Improved access to neighborhood amenities
- Better links to transit stops

Improved Lighting

Improving neighborhood lighting is another key focus area. Plans include repairing, installing, and upgrading streetlights, particularly within a quarter-mile radius around St. Mary's and the E. Main Node, to enhance visibility and safety. Additionally, a community-driven effort will encourage residents to leave porch lights on at night and participate in a program to install solar or electric pedestrian-scale lighting in front yards.

Enhancing lighting is a priority in the Imagine Eastside Neighborhood Plan, as it fosters a stronger sense of safety. Key focus areas for lighting improvements include:

- Pathways leading to St. Mary's, East Main, and transit stops
- Residential streets, where the plan recommends pedestrian-scale lighting for a more inviting atmosphere

Enhanced Bus Stops and Transit Amenities

To improve public transportation access, bus stops throughout the neighborhood will receive much-needed upgrades. This includes installing clear signage with schedule and route information to assist transit riders. Furthermore, an

initiative led by community groups will support the installation of benches and shelters at bus stops, promoting a more comfortable experience for those waiting for transit services.

The plan emphasizes making transit stops more accessible, comfortable, and user-friendly by adding:

- Benches, shelters, lighting, and clear signage
- Improved wayfinding to help residents navigate the transit network more easily

Traffic Calming and Complete Streets Treatments

Recognizing the importance of traffic safety, the neighborhood is also implementing traffic calming measures to slow speeds and create more pedestrian-friendly streets. These measures will prioritize Sherwood, Charlotte, Hotop, and Dwight, using interim solutions such as tactical urbanism to test and implement effective calming strategies. Additionally, long-term plans include designing and installing pedestrian-friendly infrastructure along Riverview and the E. Main Node, incorporating streetscape improvements and placemaking elements to enhance the overall experience for pedestrians and cyclists.

Residents support traffic calming and complete streets improvements to enhance connectivity and safety. Prioritized locations for these treatments include:

- E. Main, Riverview, and the southeast corner of the neighborhood
- Commercial corridors, to strengthen both internal and external neighborhood connectivity
- Beyond improving mobility, these enhancements can make the neighborhood feel safer, more welcoming, and more vibrant.

Figure 1: Map Identifying Locations of Prioritization from the Imagine Eastside 2019 Plan

Edison Neighborhood Plan (2019)

The Edison neighborhood is embarking on several key infrastructure projects to enhance accessibility, safety, and overall community vibrancy. These initiatives involve collaboration between the Edison Neighborhood Association, local businesses, and the city to encourage effective planning and implementation.

The Edison neighborhood is undertaking several key infrastructure projects to enhance accessibility, safety, and overall community vibrancy. These initiatives involve collaboration between the Edison Neighborhood Association, local businesses, and the city to encourage effective planning and implementation.

Portage Street Reconstruction

One of the primary efforts focuses on reconstructing Portage Street to create a more inclusive and pedestrian-friendly corridor. This project includes installing ADA-compliant sidewalks, crosswalks, and bike lanes, as well as incorporating historic light posts, landscaping, trees, and public art. The Edison Neighborhood Association is working with partners to install murals and landscaping, while encouraging community participation in design and feedback meetings. The city's Public Services Department is leading efforts to redesign Portage Street, prioritizing improved visibility at crosswalks for increased safety, particularly in the commercial area and near schools. The design and bidding process took place in 2019, with construction scheduled for 2020.

Gateway Signage

To improve wayfinding and neighborhood identity, the neighborhood is installing gateway signage at key locations, including Miller Road, Portage Street, Michigan Avenue, King Highway, Lake Street, Mills Street, Mayors' Riverfront Park, Burdick Street, and Stockbridge Avenue. The Edison Neighborhood Association is guiding sign design, while the city's Public Services and Planning departments encourage proper placement and alignment with local regulations. This project was planned for 2019, with funding sources being evaluated, including the possibility of using quick win funds for implementation.

Neighborhood Lighting Improvements

Another critical focus area is neighborhood lighting improvements to enhance safety, particularly in high-traffic and pedestrian areas. The neighborhood is prioritizing increased lighting along Miller Road, Portage Street, Michigan Avenue, King Highway, Lake Street, Mills Street, Mayors' Riverfront Park, Burdick Street, and Stockbridge Avenue. The Edison Neighborhood Association is promoting a reporting process for residents to notify the city of streetlights in need of repair. The city's Public Services Department is overseeing the installation of new lighting, promoting alignment with broader infrastructure improvements. This project is expected to take place over a mid-to-long-term timeline.

Accessibility and Connectivity

ADA Accessibility

The plan emphasizes making all trails, parks, and the Kalamazoo Farmers Market ADA accessible. This involves improving signage and safety measures to encourage public spaces are welcoming and usable for everyone, including those with disabilities.

Rights-of-Way

The plan focuses on creating rights-of-way that safely link residents to Mayor's Riverfront Park and the Kalamazoo County Fairgrounds. This requires collaboration with the Michigan Department of Transportation to enhance sidewalks and bike infrastructure along US 131 and working with township officials to establish safe connections from downtown neighborhoods to the fairgrounds.

Trail Connections

Additionally, the plan aims to create connections from Edison to the Kalamazoo Valley River Trail and between the Portage Creek Trail and other regional trails like Kal-Haven and Bicentennial. This involves designing trail expansions and connections as part of the Portage Creek design project.

SRTSs

The plan addresses the need for increased SRTSs in the Edison neighborhood. It proposes developing a program to identify walking school bus routes for elementary school students, particularly those crossing major streets or dangerous intersections. This initiative includes studying SRTS (SRTS) for Edison schools, such as Washington Writers' Academy and Edison Environmental Science Academy. Finally, the plan calls for implementing a walking school bus program at Washington Writers' Academy to encourage students have a safe and supervised way to walk to school.

Northside Neighborhood Plan (2018)

The Northside Neighborhood Plan outlines several goals aimed at improving transportation connectivity, safety, and accessibility by segmented areas of the neighborhood.

Northside Cultural Business District Authority Priorities

The primary focus is on improving infrastructure, sidewalks, and streetscaping within the District to enhance the overall environment and support local businesses.

Figure 2: Designation of the Northside Cultural Business District from the 2018 Northside Neighborhood Plan

Planning Area 1

In Planning Area 1, the goals include installing better street signs and historical lighting along Westnedge and Park. There is also a need for a speed bump by the highway, increased lighting, and improvements to the walking area on Willard near the railroad tracks.

Planning Area 2

For Planning Area 2, the plan emphasizes increased lighting, improved curb cuts for wheelchairs, and the development of a walking trail to enhance accessibility and safety for residents.

Planning Area 3

The primary goal for Planning Area 3 is to increase lighting to improve visibility and safety in the area.

Planning Area 4

In Planning Area 4, the focus is on developing bicycle trails, upgrading sidewalks, improving handicapped curb cuts, and increasing lighting. Additionally, the plan aims to provide a safe place for seniors and children to walk and encourage the upkeep of bus stops.

Planning Area 5

The goals for Planning Area 5 include installing signs and directions, adding more streetlights, and improving sidewalks on Frank Street to enhance navigation and safety for residents.

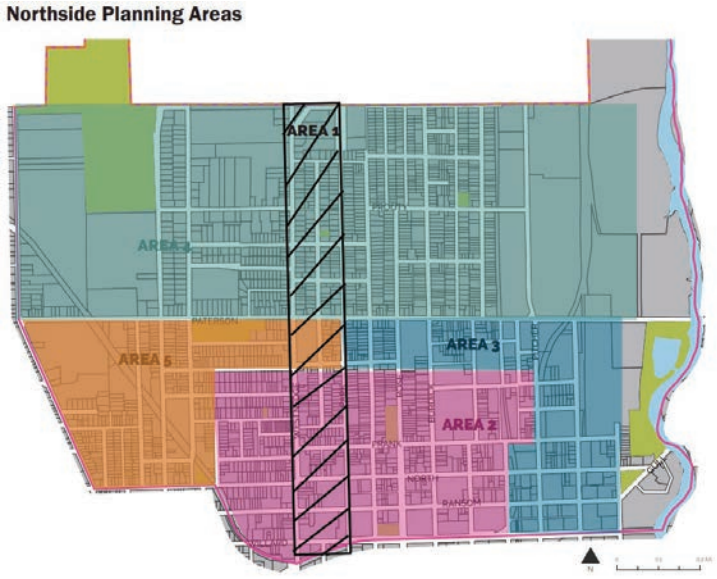


Figure 3: Designation of the Northside Planning Areas from the 2018 Northside Neighborhood Plan

Oakwood Neighborhood Plan (2018)

Improve Walking Conditions

To enhance walking conditions, the Oakwood Neighborhood Plan proposes creating safe pedestrian sidewalks by working with the Oakwood Park Committee and Public Works Department. Additionally, the plan includes repairing damaged or unsafe sidewalks, with the Public Works Department addressing these issues in the short term. The plan also advocates for improved standards for new sidewalk construction, emphasizing pedestrian safety and involving community input through meetings and partnerships with local schools and businesses.

The Oakwood Neighborhood Plan outlines goals to improve connections to neighborhood amenities, including James McDivitt Springmont Tot Lot and the Oakwood Neighborhood Center. It emphasizes promoting safe walking routes to major neighborhood amenities such as Oakwood Plaza, Memorial Book, and Woods Lake Elementary. This involves working with partners to create SRTS to Woods Lake. Additionally, the plan focuses on improving intersections and lighting at crossings. This includes studying intersections and crossings to identify areas where lighting can be enhanced, placing additional crossing infrastructure or signage at key locations, and increasing lighting near crosswalks.

Figure 4: Sidewalk Conditions From the 2018 Oakwood Neighborhood Plan

Improve Street and Intersection Design to Promote Traffic Safety

The Oakwood Neighborhood Plan aims to improve general street and intersection safety to enhance travel for all modes within and outside the neighborhood. It encourages slowing speeds on key corridors and improving connectivity for all ages and abilities. The plan also aims to create SRTS programs by collaborating with local schools to identify areas needing crosswalks and pedestrian signals.

To improve street and intersection design, the plan focuses on creating safer intersections by installing traffic signals or stop signs at high-risk locations. This involves collaboration with local authorities and the Public Works Department for implementation. To promote traffic safety, the plan proposes slowing traffic on Kilgore by reducing lane widths. This involves creating recommendations based on study results and working with partners to design road diets, which reduce lanes of traffic and add bike lanes and sidewalks. The plan also includes studying the Parkview and Oakland corridors to determine ways to slow traffic, with the Public Services Department identifying long-term projects.

Additionally, the plan includes studying and redesigning intersections to accommodate bicycles, pedestrians, buses, and vehicles. It also focuses on neighborhood streets, with a primary emphasis on Bernard Street and additional interest in areas like Madison Woods and Hopkins Road.

Make Bicycling Safer

Improving biking accessibility and connectivity to nearby amenities, parks, and trails was highlighted as a goal. The plan includes studying road conditions to determine the feasibility of adding bike lanes or making other improvements.

Improve Existing Transit Infrastructure and Fill Gaps in Service

The plan highlights goals to improve access to affordable transportation options and connectivity to transit stops by improving sidewalk and crosswalk quality and availability. The plan aims to improve bus stop amenities by adding shelters, benches, lighting, and signage.

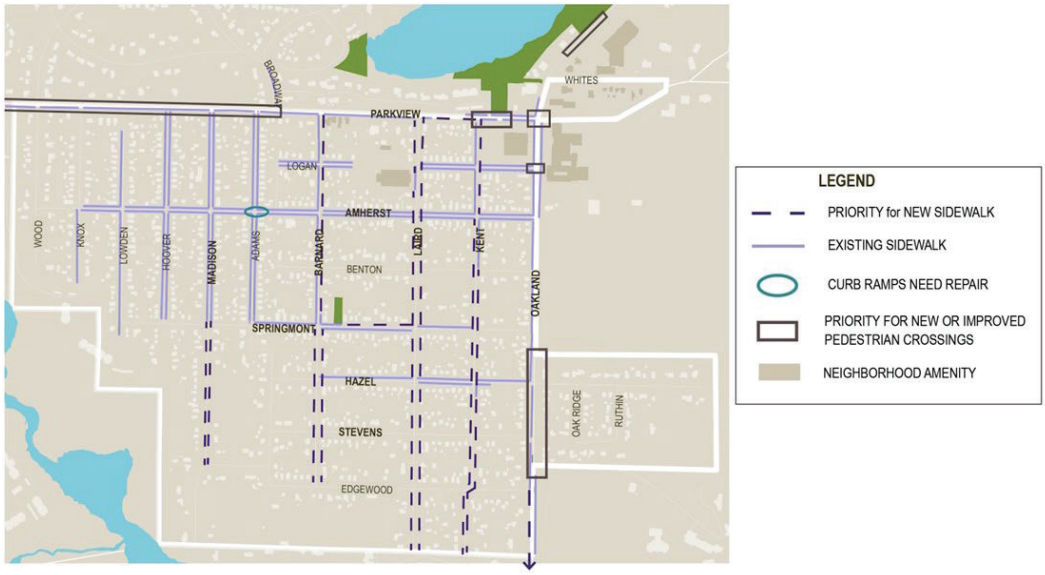


Figure 5: Pedestrian Priorities from the 2018 Oakwood Neighborhood Plan

Figure 6: Street Priorities from the 2018 Oakwood Neighborhood Plan

Parkview Hills Neighborhood Plan (2020)

Create a Safe and Accessible Pedestrian Network

The Parkview Hills Neighborhood Plan prioritizes improving pedestrian connectivity along key corridors such as Greenleaf Boulevard and Greenleaf Circle. Recognizing the need for dedicated pedestrian space, the Plan highlights pedestrian lanes as a promising solution, referencing FHWA design guidelines for implementation. Additionally, the inclusion of raised crosswalks is encouraged to enhance ADA accessibility and pedestrian safety.

A key objective is to complete the sidewalk network on both the north and south sides of Parkview, promoting continuous, accessible pathways for all users. To further encourage walking, the neighborhood aims to foster a pedestrian-friendly culture by incorporating information on walking routes in newsletters and welcome packets. The potential for a wayfinding signage system is also being explored to promote walking as a convenient and enjoyable travel option.

Beyond sidewalks, the Plan emphasizes the importance of improving trail connectivity by evaluating trailheads and identifying opportunities for enhanced crossings. Establishing a safe pedestrian link to Parkview—whether through additional trails, sidewalks, or shared-use paths—is another priority to encourage seamless movement throughout the community.

Create Safe Network for Cycling and Other Non-Motorized Transportation Modes

Currently, the neighborhood lacks dedicated bicycle infrastructure, making cycling less accessible and safe. The Plan calls for investment in key corridors, particularly Greenleaf Boulevard and Greenleaf Circle, as they serve as important connectors within the neighborhood and beyond to the broader Kalamazoo area.

To improve cycling conditions, the neighborhood seeks to create a dedicated bicycle lane on Greenleaf Boulevard to provide a safer route for cyclists. Additional efforts include evaluating modifications to Greenleaf Circle to integrate bicycle-friendly design features, such as dedicated space for cyclists or a potential off-street path. There is also strong support for widening or adding bike lanes on Parkview Avenue to enhance safety and accessibility for cyclists commuting along this corridor.

Beyond infrastructure, the Plan promotes awareness and education around cycling safety. This includes community outreach efforts, such as newsletters and potential events focused on bike safety and responsible riding. Maintaining clear visibility of traffic signs by trimming overgrown vegetation is another priority, promoting cyclists have unobstructed access to signage and safer passage. The neighborhood also aims to explore traffic-calming measures along Greenleaf Boulevard and Greenleaf Circle to create a safer environment for cyclists sharing the road.

Make a Clear and Safe Road Network

The Parkview Hills Neighborhood Plan addresses safety concerns related to speeding and aggressive driving on Greenleaf Boulevard, where wide, unmarked lanes contribute to unsafe speeds, and on Greenleaf Circle, which is narrower but still experiences traffic issues. To improve safety for all road users, the Plan advocates for infrastructure changes that encourage safer speeds and better road navigation. Specific countermeasures under consideration include radar speed signs, curb bump-outs, speed humps, and chicanes.

Another major challenge is road maintenance responsibility, particularly with a planned development creating uncertainty over who is responsible for tasks such as snow plowing, tree trimming, and traffic enforcement. Addressing these concerns will require clear coordination between stakeholders to encourage that maintenance is effectively managed.

To improve wayfinding and accessibility, the neighborhood plans to clearly mark and sign trail entrances, increasing awareness for both pedestrians and drivers. Additional efforts are underway to enhance road crossings, particularly between the south and north sides of Parkview, making them safer for both pedestrians and cyclists. Lastly, the feasibility of expanding pedestrian space along Greenleaf Circle is being explored to encourage that future designs align with safety needs and community preferences. Achieving these improvements will require ongoing resident engagement and collaboration with funding partners.

Promote Use of Transit

The Plan emphasizes the need to increase transit accessibility and ridership by improving both the physical infrastructure of bus stops and the overall transit experience. A key focus is evaluating existing bus stops for enhancements such as benches, shelters, and sidewalk connections to improve comfort and accessibility for riders.

In addition, the neighborhood seeks to gather resident feedback to better understand their experiences using transit and identify areas for improvement.

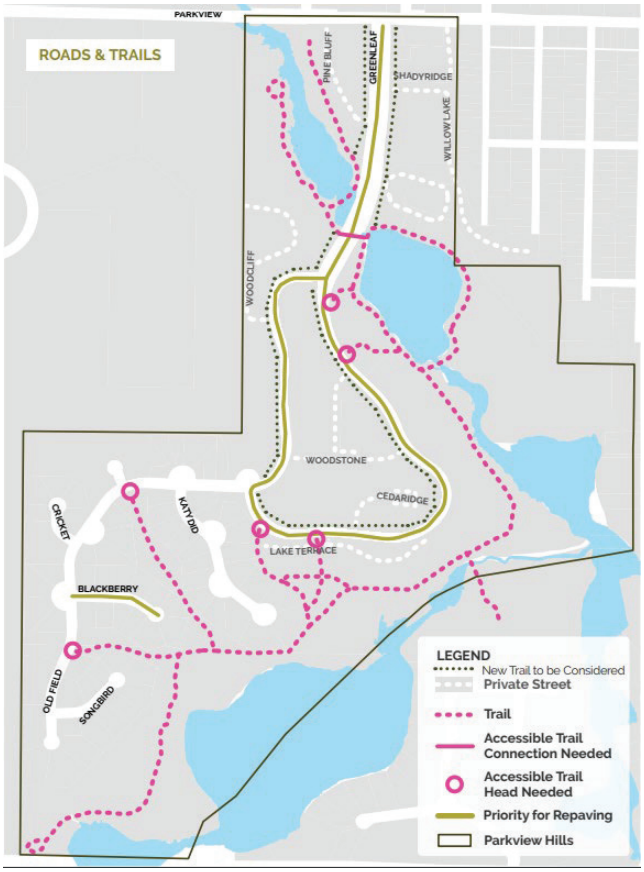


Figure 7: Road and Trail Considerations from the 2020 Parkview Hills Neighborhood Plan

Imagine Stuart Neighborhood Plan (2023)

Pedestrian Safety and Traffic Calming

The Stuart Neighborhood Plan emphasizes the need for improved pedestrian safety and traffic calming measures to address concerns about speeding and difficult crossings. To enhance safety, the plan calls for the installation of Rectangular Rapid Flashing Beacons (RRFBs) or raised crosswalks at key intersections, particularly at Woodward and West Main and Woodward and Kalamazoo. Additionally, traffic calming measures such as speed humps or diverters are recommended along Elm and Stuart streets to reduce cut-through traffic. The long-term goal of converting Kalamazoo Avenue to two-way traffic aims to slow vehicle speeds, enhance pedestrian safety, and improve connectivity between the northern and southern sections of the neighborhood.

Sidewalk & Non-Motorized Network Improvements

Promoting a well-maintained and accessible sidewalk network is a critical component of the neighborhood's transportation priorities. The plan highlights the need to repair or replace damaged sidewalks, particularly near

Woodward School and along Kalamazoo Avenue, to encourage ADA compliance and improve pedestrian access. Additionally, underutilized traffic islands at Main-Douglas and Douglas-Kalamazoo are slated for removal, to be replaced with pedestrian-friendly T-intersections that enhance walkability. The plan also envisions transforming the space along Michikal Street into a greenway, with the potential for a pedestrian crossover to strengthen connections between Stuart and downtown, creating a safer and more appealing route for non-motorized users.

Bicycle Infrastructure & Connectivity

Bicycle infrastructure improvements are a significant focus of the neighborhood's transportation vision. Plans include the installation of new bike lanes along W. Main Street and W. Michigan Avenue as part of their conversion to two-way streets. The plan also calls for evaluating Douglas Avenue as a corridor that could accommodate both on-street parking and bike lanes, promoting that bicycle facilities are integrated into the neighborhood's transportation network. By strengthening non-motorized connections between Stuart, downtown, adjacent neighborhoods, and college campuses, the neighborhood aims to create a safer and more convenient cycling environment.

Wayfinding & Visibility Enhancements

To improve navigation and visibility, the plan recommends the installation of branded wayfinding signage along major corridors, helping both residents and visitors better understand and access the neighborhood's key destinations. Repainting crosswalks and adding guidance lines at intersections such as Douglas Avenue and North Street will further improve pedestrian safety, addressing concerns about visibility and traffic patterns. These enhancements will contribute to a more navigable and welcoming environment for all users.

Public Transit & Parking Adjustments

Public transit access and parking management are critical considerations for Stuart residents. The plan proposes the creation of a designated bus loading zone in front of Woodward School to improve traffic circulation during school drop-off and pick-up times. Pavement markings and signage would be added to clearly define loading areas and enhance safety for students and pedestrians. As downtown development increases, parking demand is expected to rise, prompting the neighborhood to explore a residential parking permit system that balances the needs of residents and visitors. A review of existing parking regulations and enforcement strategies is also recommended to encourage that parking remains accessible and manageable within the neighborhood.

Trail & Green Space Connectivity

The Kalamazoo River Valley (KRV) Trail is a vital recreational and transportation asset for the Stuart neighborhood. The plan highlights the need for trail enhancements, including improved lighting, wayfinding signage, and safety features, to encourage more residents to use the trail for walking and biking. Placemaking initiatives, such as public art installations and landscaping improvements, are also proposed to create a more welcoming and enjoyable trail experience. Strengthening connections between the trail, surrounding green spaces, and the broader transportation network will further integrate the neighborhood into the city's multimodal system.

Figure 8: Transportation Routes from the Imagine Stuart 2023 Neighborhood Plan

Imagine Vine Neighborhood Plan (2019)

Pedestrian Safety and Traffic Calming

The Vine Neighborhood Plan prioritizes improving pedestrian safety and reducing vehicle speeds along major corridors. Many streets in the neighborhood experience high vehicle speeds, making crossings dangerous for pedestrians. To address this, the plan proposes the installation of traffic calming measures, including planted medians at Westnedge and Park, curb bump-outs in the commercial district, and speed tables or elevated crosswalks at key intersections. Additionally, an enhanced pedestrian crossing with a refuge island is recommended at Crosstown and Park, and a safer pedestrian and cyclist crossing is needed at the busy Michigan, Oakland, Stadium, and Lovell intersection.

Sidewalk & Non-Motorized Network Improvements

Despite a comprehensive sidewalk network, many sidewalks in Vine are in poor condition, creating accessibility challenges for pedestrians, particularly those using wheelchairs or strollers. The plan calls for prioritizing repairs along key routes, including those leading to the new grocery store, schools, and downtown. Additionally, a rapid response flashing beacon or other crossing signals are proposed along Howard Street to create a safer connection to Maple

Middle School. The neighborhood also plans to pursue SRTS funding to enhance pedestrian safety near El Sol Elementary and Maple Middle School.

Bicycle Infrastructure & Connectivity

Enhancing bicycle infrastructure is a key component of Vine's transportation vision. The plan calls for implementing buffered bike lanes along Westnedge and Park, installing standard bike lanes on Vine and Lovell, and exploring the possibility of a protected bike lane or shared-use path on Howard Street. In addition, branded wayfinding signage directing cyclists to downtown, the Farmer's Market, Vine Corners, and local campuses is proposed to improve route clarity. The neighborhood also aims to install bike route signage on Forest, Merrill, Davis, and Wheaton and increase bike racks in commercial areas to support multimodal transportation.

Wayfinding & Visibility Enhancements

To enhance wayfinding and improve pedestrian and cyclist navigation, the plan recommends installing directional signage pointing to key destinations such as downtown, commercial nodes, and local institutions. Improved pedestrian crossings, including painted crosswalks and pedestrian crossing signs, are identified as necessary in areas connecting to schools, parks, and commercial zones. Additionally, crosswalk reflectors are recommended at major intersections to improve nighttime visibility and safety.

Public Transit & Parking Adjustments

Vine's residents rely on public transit, and the plan calls for upgrading bus stops to include seating, lighting, and route signage. It also suggests researching potential improvements to transit routes, transfers, and frequency to better serve neighborhood needs. Parking regulations in the neighborhood are inconsistent, with 22 different regulations making it difficult for residents and visitors to navigate. To address this, the plan proposes working with the city and traffic board to develop a more uniform and understandable parking system, followed by installing new signage to reflect updated regulations.

Trail & Green Space Connectivity

The Vine Neighborhood Plan emphasizes the importance of improving access to local parks and recreational spaces. It calls for increased connections to nearby green spaces, particularly Axtell Creek Park and Crosstown Parkway Ponds, and suggests programming initiatives to encourage outdoor activity. Additionally, incorporating placemaking elements such as trees, public art, and decorative crosswalks along key corridors is identified as a strategy for improving neighborhood identity and pedestrian experience.

Imagine Winchell Neighborhood Plan (2020)

Pedestrian Safety and Traffic Calming

The Winchell Neighborhood Plan prioritizes improving traffic safety by addressing unsafe driving behaviors such as speeding, failure to comply with stop signs, and distracted driving. Many neighborhood streets are used as cut-throughs, exacerbating these issues. To mitigate these concerns, the plan calls for traffic calming strategies, including design changes that slow vehicles and create safer conditions for pedestrians and cyclists. Intersection safety is also a

priority, particularly at key crossings where the neighborhood's winding roads meet at challenging angles. Measures such as improved visibility, better signage, and potential redesigns are proposed to enhance safety and navigability.

Figure 9: Pedestrian Safety Priorities from the Winchell 2020 Neighborhood Plan

Sidewalk & Non-Motorized Network Improvements

While the neighborhood has many amenities within a walkable distance, gaps in pedestrian and bicycle infrastructure create challenges for non-motorized users. Many streets lack sidewalks, forcing pedestrians and cyclists to share the roadway in unsafe conditions. The plan prioritizes filling key gaps in the sidewalk network, particularly along major pedestrian routes connecting to schools, parks, and commercial areas. Enhancements to pedestrian crossings, including painted crosswalks, pedestrian islands, and signalized crossings, are also recommended to improve accessibility and safety.

Bicycle Infrastructure & Connectivity

The plan envisions a comprehensive network of bike lanes, shared-use paths, and bike boulevards to improve connectivity and encourage safe cycling. Proposed improvements include widening or buffering existing bike lanes on Oakland Drive and Parkview Avenue and adding designated bike routes on key neighborhood streets. The plan also emphasizes the importance of maintaining bike lanes by keeping them clear of debris and promoting they are well-marked. Connecting to larger citywide and regional bike networks is a long-term goal, with a focus on safe and efficient access to Western Michigan University and commercial districts.

Wayfinding & Visibility Enhancements

To improve navigation and awareness, the plan recommends installing wayfinding signage that directs pedestrians and cyclists to key destinations such as parks, commercial nodes, and schools. Enhanced crosswalks, including ladder-patterned markings and signalized pedestrian crossings, are identified as critical improvements. Increased pedestrian-scale lighting and public art at intersections are also proposed to improve visibility and create a more welcoming streetscape.

Public Transit & Parking Adjustments

Winchell residents rely on public transit, and the plan includes recommendations for improving bus stop infrastructure, such as adding shelters, seating, and lighting. The plan also proposes enhancing transit service along major corridors to provide more reliable and frequent access. Parking regulations are another focus area, particularly around commercial nodes and schools. The neighborhood aims to work with the city to develop a clear and consistent parking strategy that balances the needs of residents, visitors, and businesses.

Trail & Green Space Connectivity

Access to green spaces such as Asylum Lake Preserve, Woods Lake Park, and Kleinstuck Preserve is a significant neighborhood priority. The plan seeks to improve pedestrian and bicycle connections to these natural areas through better trail infrastructure, designated bike routes, and improved crossings at major roadways. Additionally, wayfinding and placemaking elements, including signage and landscaping, are proposed to enhance the experience of moving between these spaces.

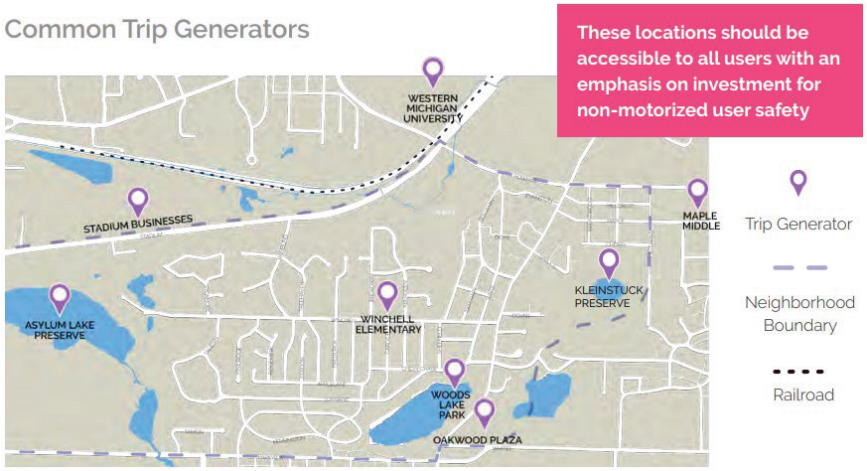


Figure 10: Common Trip Generators from the Winchell 2020 Neighborhood Plan

Imagine Westwood Neighborhood Plan (2024)

Pedestrian Safety and Traffic Calming

The Westwood Neighborhood Plan aims to enhance pedestrian safety and reduce traffic-related issues. One of the primary goals is to upgrade crosswalks, particularly at key intersections such as Solon & W Main, near King-Westwood school, Tiffany's Village Plaza, and bus stops along W Main Street. To address traffic calming, the plan proposes measures like speed humps, raised crosswalks, and additional speed limit signs on streets such as Piccadilly, Turwill, Nichols, and Clarendon. Improving visibility is also a priority, with plans to trim trees and brush that obscure traffic control signage and install LED-lit stop signs near schools.

Sidewalk & Non-Motorized Network Improvements

To improve the non-motorized network, the plan focuses on enhancing sidewalks and promoting ADA accessibility. This includes replacing damaged sidewalks and installing new ones, especially on streets like Nichols, Solon, and Cherokee. Additionally, the plan aims to enhance bike route signage and lane markings on main routes such as Grand Prairie, Nichols, and Alamo, to improve wayfinding and safety for cyclists.

Bicycle Infrastructure & Connectivity

The plan envisions a comprehensive network to support safe cycling. This includes installing bike racks and repair stations at neighborhood parks and bus stops, providing secure storage and maintenance options for cyclists. The plan also encourages local businesses to become designated Bike Friendly Businesses through the League of American Bicyclists, promoting a bike-friendly environment throughout the neighborhood.

Wayfinding & Visibility Enhancements

To improve navigation and awareness, the plan recommends installing wayfinding signage that directs pedestrians and cyclists to key destinations like parks, commercial nodes, and schools. Enhanced crosswalks, including ladder-patterned markings and signalized pedestrian crossings, are also proposed to improve safety and visibility for non-motorized users.

Trail & Green Space Connectivity

To enhance access to green spaces, the plan focuses on improving pedestrian and bicycle connections to natural areas such as Asylum Lake Preserve and Woods Lake Park. This includes better trail infrastructure and designated bike routes. Wayfinding and placemaking elements, such as signage and landscaping, are also proposed to enhance the experience of moving between these spaces.

Public Transit Improvements

The Westwood Neighborhood Plan emphasizes the importance of public transit as an environmentally friendly and sustainable way to travel. Despite the neighborhood featuring a major commercial corridor and several large multifamily complexes, public transit ridership is relatively low. To address this, the plan includes strategies to improve public transit infrastructure along bus routes and educate users about local public transit options. Promoting all bus stops have consistent signage and improving the user-friendliness of public transit maps will help prospective riders plan their commuting and shopping trips more easily. The plan also highlights the Youth Mobility Pass for Kalamazoo Central students to increase youth ridership and proposes installing a demo bus bike rack near the plaza for commuters to practice.

The plan includes recommendations for improving public transit and parking infrastructure. This involves adding shelters, seating, and lighting at bus stops to enhance the user experience. Additionally, the plan proposes improving transit service along major corridors to provide more reliable and frequent access. A clear and consistent parking strategy around commercial nodes and schools is also a focus, aiming to balance the needs of residents, visitors, and businesses.

Electric Vehicle (EV) Charging Infrastructure

Another goal of the plan is to support the adoption of electric vehicles by incentivizing the installation of EV charging stations along the W Main St. Corridor. This initiative aims to make it more convenient for EV owners to charge their vehicles while shopping or running errands, thereby promoting the use of environmentally friendly transportation options.

Semi-Truck Traffic Management

The plan addresses the issue of semi-truck traffic on residential streets by encouraging alternative routes for semi-truck traffic from Grand Prairie Ave. This strategy aims to reduce noise pollution and excessive wear on streets in residential areas, improving the overall quality of life for resident

Key Takeaways from Neighborhood Plans

By examining the specific strategies and actions outlined in each neighborhood plan, we can identify key takeaways that seek to inform the Kalamazoo transportation safety action plan.

- **Pedestrian Safety and Traffic Calming:** Many neighborhood plans prioritize improving pedestrian safety through traffic calming measures, upgraded crosswalks, and enhanced visibility.
- **Sidewalk & Non-Motorized Network Improvements:** Promoting ADA-compliant sidewalks and enhancing non-motorized networks are common goals to improve accessibility and connectivity.
- **Bicycle Infrastructure & Connectivity:** Developing comprehensive bike networks, including bike lanes, shared-use paths, and bike-friendly businesses, is a key focus.
- **Wayfinding & Visibility Enhancements:** Installing wayfinding signage and improving visibility at intersections are essential for better navigation and safety.
- **Public Transit & Parking Adjustments:** Enhancing public transit infrastructure and developing consistent parking strategies are critical to improving accessibility and convenience.
- **Trail & Green Space Connectivity:** Improving connections to green spaces and trails is a priority to promote outdoor activities and enhance the quality of life.

Recommendations for the City of Kalamazoo Safety Action Plan

In summary, the key themes outlined below provide a roadmap for achieving these goals in Plan development and encouraging that all residents and visitors can move through the city safely and comfortably. By prioritizing Vision Zero principles, utilizing data-driven decision-making, fostering collaborative partnerships, and implementing tactical interventions, the City can create a safer, more inclusive, and better-connected transportation system. These efforts aim to address current safety challenges while positioning Kalamazoo as a leader in sustainable and equitable mobility.

Planning and Process Considerations

Category	Considerations
Policy and Practice Enhancements	Integrate Vision Zero principles into all transportation planning processes.
	Conduct regular safety audits to identify and mitigate high-risk locations.
Data-Driven Decision Making	Use crash data and performance metrics to prioritize safety projects.
	Implement a public dashboard to monitor safety outcomes and project progress.
Community and Regional Collaboration	Foster partnerships with neighboring municipalities to share resources and align safety strategies.
	Engage advocacy groups and residents to co-develop solutions for identified safety issues.
Tactical Interventions	Deploy quick-build projects in Safety Focus Areas to test improvements before full-scale implementation.
	Use temporary measures like pop-up bike lanes and painted curb extensions to demonstrate benefits to the public.

Countermeasure Considerations

The key takeaways from the neighborhood plans provide valuable insights that can be leveraged to enhance the citywide transportation safety action plan. The following table outlines considerations to promote that neighborhood-level priorities and goals are referenced and included in the citywide safety action plan.

Category	Countermeasure/Improvement	Application Consideration
Intersection Safety	Upgraded Crosswalks	Recommend high-visibility crosswalks at key intersections across the city. Encouraged in areas with high pedestrian traffic, such as near schools, commercial nodes, and transit stops.
	Traffic Calming	Recommend traffic calming strategies like speed humps, raised crosswalks, and curb bump-outs to slow down vehicles and create safer conditions for pedestrians. Prioritize these measures in neighborhoods with documented speeding issues and high pedestrian activity.
	Improved Visibility	Recommend improvement of visibility at intersections by trimming trees and brush that obscure traffic control signage and installing LED-lit stop signs near schools and other critical areas. This will help encourage that drivers are more aware of pedestrians and other road users.

Street Lighting	Enhanced Lighting	Recommend installing or upgrading streetlights in areas with poor visibility, focusing on pathways leading to schools, transit stops, and commercial areas. Encourage pedestrian-scale lighting to create a more inviting and safer atmosphere for residents.
	Engage the Community	Encourage community participation in lighting improvements by promoting programs where residents can install solar or electric pedestrian-scale lighting in their front yards.
Sidewalks	ADA Compliance	Prioritize approach for recommendations to replace damaged sidewalks and install new to encourage ADA accessibility. Focus on key routes that connect residents to schools, parks, commercial areas, and transit stops.
	Network Enhancements	Plan to fill gaps in the sidewalk network, particularly in neighborhoods with identified deficiencies.
Bus Stops	Infrastructure and Amenities	Focus recommendations to upgrade bus stops with shelters, seating, lighting, and clear signage to improve the user experience. Encourage that all bus stops have consistent and easily readable route information to help riders plan their trips more effectively.
	Parking Strategy	Recommend a parking strategy around transit stops and commercial nodes to balance the needs of residents, visitors, and businesses. This can include designated parking areas, time-limited parking, and residential parking permits.

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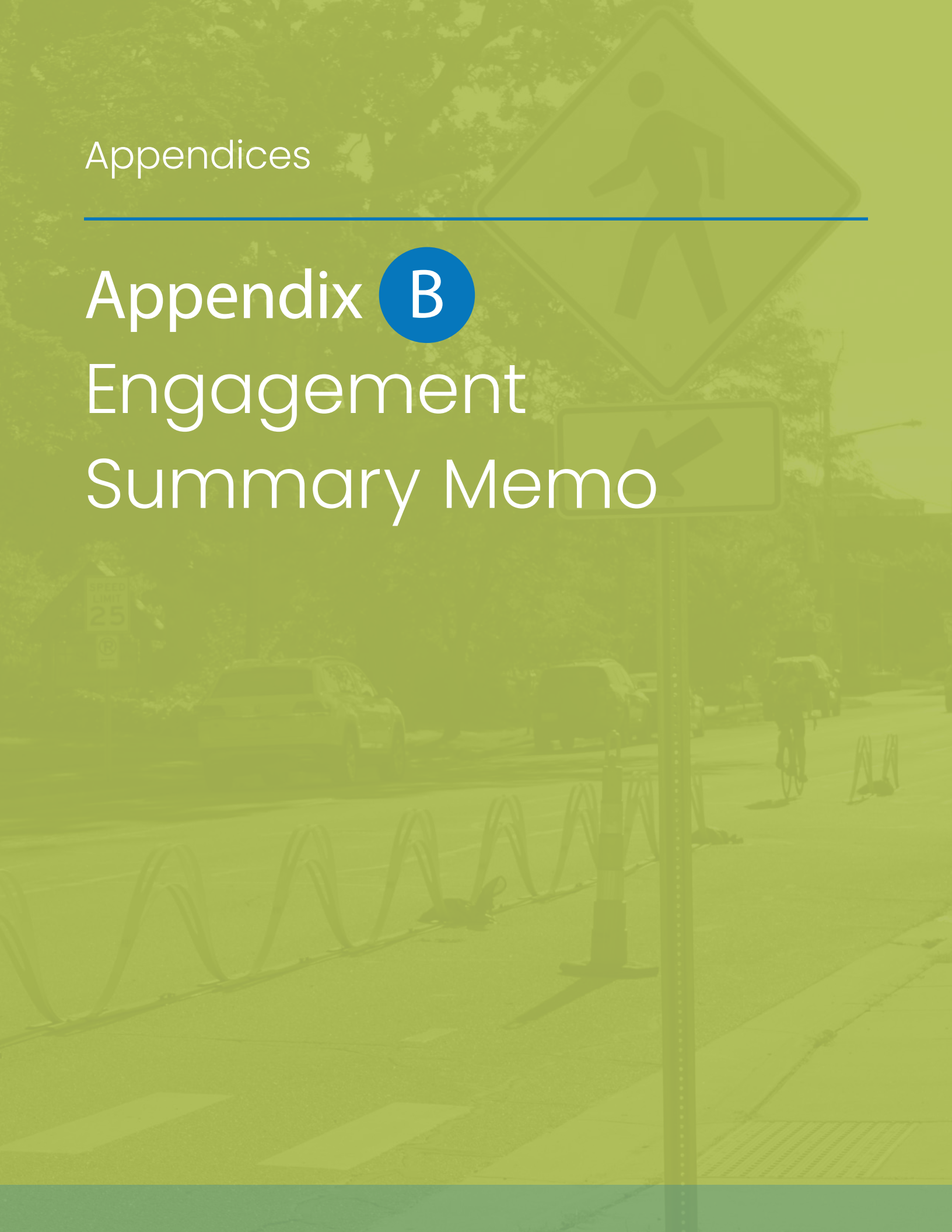
Appendices

Appendix B
Engagement Summary Memo



MEMORANDUM

APPENDIX B

Kalamazoo, MI Safety Action Plan – Engagement Summary

Contents

Executive Summary

The City of Kalamazoo's Safety Action Plan (SAP) engaged residents through a two-phase public outreach process to better understand community transportation safety concerns and identify priority locations for improvement. Phase 1 included an online survey and interactive web map, while Phase 2 involved in-person engagement at a community event and a follow-up input map focused on draft priority locations. Feedback collected through these tools will directly inform the Safety Action Plan's recommendations to encourage that they reflect local needs and lived experiences.

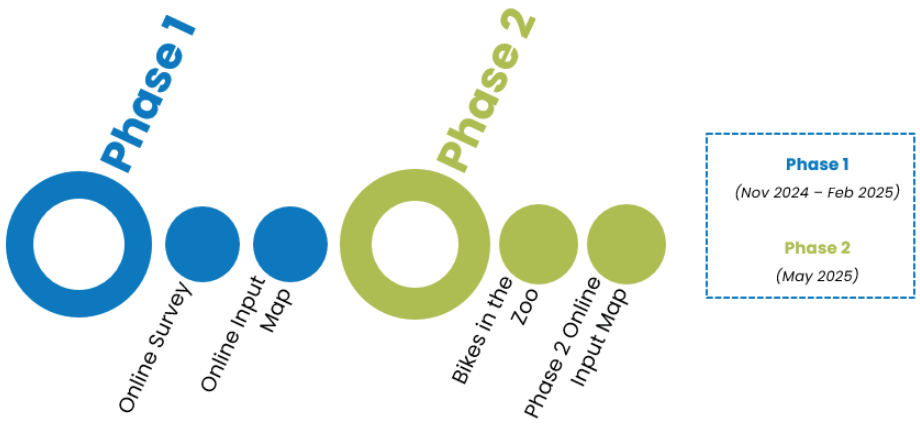


Figure 1: Figure Outlining a Two-Phased Engagement Schedule

Overlapping Themes from Both Phases of Engagement

Across both phases of engagement, several consistent concerns and priorities emerged:

- Vehicle Speeds and Driver Behavior: Excessive vehicle speeds and aggressive or distracted driving were top concerns, particularly in areas with pedestrian activity or limited enforcement.
- Pedestrian and Bicyclist Safety: Participants expressed discomfort walking or biking due to unsafe crossings, missing sidewalks, or lack of protection from traffic.
- Infrastructure Gaps: Missing, deteriorating, or disconnected sidewalks and bike facilities were reported citywide, limiting safe mobility options.
- Intersection Challenges: Poor signal timing, confusing layouts, and unsafe crossings at key intersections were frequently flagged.
- Lighting and Visibility: Inadequate lighting, especially in the Edison neighborhood and near bus stops, was linked to feelings of unsafety during non-daylight hours.
- Transit Access: Residents highlighted dangerous or inaccessible bus stops due to sidewalk gaps, poor crossings, or lack of shelter.

- Desire for Multimodal Improvements: There was strong support for infrastructure that supports walking, biking, and transit—especially traffic calming measures, connected bikeways, and safer crossings.

Community-Identified Priority Areas

Participants repeatedly identified specific corridors and intersections requiring attention, including:

- Michigan Avenue, Stadium Drive, Westnedge Avenue, and Park Street for speeding, confusing bike facilities, and pedestrian barriers.
- Downtown Kalamazoo for road diets, bike lane design, and congestion concerns.
- Milwood Neighborhood and Cork Street/Lovers Lane for speeding near schools and sidewalk needs.
- Key intersections such as Main & Park, Portage & Cork, and Howard & Michigan for crossing safety and traffic signal issues.

Participation Highlights

- Online Survey (Nov 2024–Feb 2025): 668 responses representing 24 zip codes.
- Online Input Map – Phase 1: 551 comments, 1,568 likes, and 178 dislikes.
- Bikes in the Zoo Event (May 2025): In-person validation of draft focus areas and collection of new comments.
- Online Input Map – Phase 2: 127 participants submitted 631 votes and 98 comments.

Implications for the Plan

The engagement findings point to a community-wide demand for safer, more inclusive streets. The City of Kalamazoo is encouraged to prioritize investments where overlapping issues—such as speed, crossings, lighting, and transit access—converge. Aligning technical analysis with public input will help promote the Safety Action Plan advances equity, comfort, and accessibility for all users.

Phase 1 of Engagement: Online Input Gathering

Purpose

The online public engagement for Kalamazoo's Safety Action Plan, including an online survey and online input map, aimed to identify key transportation safety concerns and gather community-driven insights to shape effective solutions. By sharing their experiences navigating Kalamazoo's streets and trails, participants provided valuable input to help prioritize safety improvements.

The following describes input collected through these online tools, which will directly inform the development of infrastructure and policy recommendations, encouraging that the Safety Action Plan reflects the community's needs.

Overlapping Key Findings

The Kalamazoo Safety Action Plan's online survey and input map revealed several overlapping safety concerns, reinforcing the need for targeted improvements. Both engagement tools highlighted high vehicle speeds, unsafe pedestrian crossings, missing or deteriorating sidewalks, and inadequate bike infrastructure as key issues across the city. Many of the same corridors and intersections emerged as priority locations for safety interventions, suggesting widespread agreement on where improvements are most needed.

A major shared concern was the perception of unsafe road conditions for pedestrians and bicyclists, particularly due to aggressive drivers or fast-moving traffic and poorly designed or maintained infrastructure. Many survey respondents noted feeling uncomfortable walking or biking in certain areas, while online input map comments pinpointed specific locations where these concerns were most acute.

Additionally, both engagement methods showed strong public support for safety improvements, particularly for making walking and biking safer, slowing down traffic, and improving intersection design. While the online input map provided granular, location-specific feedback, the survey confirmed widespread discomfort with current infrastructure and high interest in multimodal safety improvements.

These overlapping findings reinforce the need for targeted investments in key corridors and comprehensive strategies that address both infrastructure and enforcement to create a safer transportation network for all users.

Common Themes

- High vehicle speeds
- Unsafe pedestrian crossings
- Missing or deteriorating sidewalks
- Inadequate bike infrastructure
- Priority corridors and intersections for safety interventions
- Perception of unsafe road conditions for pedestrians and bicyclists, particularly due to aggressive drivers and fast-moving traffic
- Poorly designed or maintained infrastructure
- Public discomfort with walking or biking in certain areas
- Strong support for safety improvements, especially for walking and biking
- Desire to slow down traffic and improve intersection design
- Support for multimodal safety improvements across the city

Common Locations of Concern

- Downtown Kalamazoo: Strong opinions on road diets, bike lanes, and traffic flow changes, with concerns about business impacts and congestion.
- Michigan Avenue: Two-way bike lanes on a one-way street were criticized as confusing and unsafe, with both survey respondents and online input map users flagging this as a critical issue.
- Westnedge Avenue & Park Street: Many want these streets redesigned to be more like Oakland Drive, citing safety concerns.
- Milwood Neighborhood: Residents called for speed bumps, sidewalk repairs, and increased traffic enforcement in both the survey and online input map.
- Cork Street & Lovers Lane: High speeds near a school raised safety concerns, with calls for better speed control and safer crossings.
- Stadium Drive: While some praised recent improvements, others expressed concerns about traffic flow and pedestrian safety.
- Portage Road: Suggestions included consideration of a road diet and better speed enforcement to improve safety.
- Oakland Drive & Edgewood: Identified as a dangerous pedestrian crossing needing improvements.
- Veterans Parkway near Michigan Ave: The broken bridge and unsafe bike/pedestrian crossing were noted by both survey respondents and online input map users.
- KRVT Trail near Kalamazoo River/Gull Road: Personal security concerns related to unhoused population.
- West Main (Berkley light): Reports of rampant red-light running and a lack of enforcement.

Key Findings: Online Survey

The Kalamazoo Safety Action Plan Survey was open from November 13, 2024-February 3, 2025. The intent for this survey was to acquire community perspective on existing conditions and experiences surrounding transportation safety in Kalamazoo. See Appendix A for the online survey results.

Participant Locations and Demographics

Since the online survey respondents' demographics do not fully represent the geographic, racial, age, and socioeconomic diversity of the city, additional or future engagement should focus on outreach to neighborhoods on Kalamazoo's Northside, residents who are people of color, young people (including college students and potentially including youth), and lower-income residents. If possible, participants should be compensated for their time or participation in engagement and alternative forms of engagement should be offered for residents who prefer a different format or have different literacy levels.

- The survey received 668 responses.
- Respondents who provided their location information represented 24 zip codes.
- The three most reported neighborhoods—Oakland Drive-Winchell, Milwood, and Westnedge Hill—accounted for one-third of all survey participants.

- The two most represented zip codes were 49008 and 49001, together making up 47% of respondents. ZIP code 49008 includes the neighborhoods of Westnedge Hill, Oakwood, Parkview Hills, Hill 'N' Brook, and Oakland/Winchell. ZIP code 49001 includes Edison, Milwood, Eastside, and Southside.
- 73% of respondents were White, 6% identified as another race, and the rest did not answer. In comparison, Kalamazoo's population is 67% White, 20% Black, 7% Hispanic/Latino, 6% multiracial, 3% other, 3% Asian, and 0.5% Native American.
- 40% of respondents identified as female, 27% as male, 1% as nonbinary, and the rest did not answer.
- Respondents skewed older, while Kalamazoo has a significant youth and young adult population.
- One-third of respondents had a household income of $101,000 or more, while 18% did not disclose. In 2022, 35% of Kalamazoo residents earned under $35,000, and 19% earned over $100,000.

Survey Trends

- Most respondents drove daily and walked a few times a week, but many wanted to use alternative modes like biking, public transit, and carpooling more often.
- Driving and walking were the most common daily activities, while biking, carpooling, and using taxis or rideshares were less frequent. Wheelchair use, scooters, and buses were rarely or never used by most respondents.
- Most respondents felt comfortable driving, while biking was the least comfortable mode. Walking was in between, and many were neutral about using a wheelchair or mobility device, likely due to lack of experience or need.
- There was strong support for improving walking conditions along roads and intersections. While slowing traffic and enhancing bike safety also received support, these measures were slightly less favored.
- Walking, driving, and biking were the most desired daily transportation modes. Specifically, 293 respondents wanted to walk daily, 369 wanted to drive, and 112 wanted to bike or use an e-bike. These preferences highlight a need for infrastructure and policies supporting all modes.

Top Safety Concerns

- Poorly maintained roads, sidewalks, and bike lanes (potholes, cracks, snow/ice removal).
- Dangerous intersections for pedestrians and bicyclists.
- Missing or inadequate sidewalks.
- Top concerns for pedestrians and bicyclists:
    - Aggressive and speeding drivers.
    - Distracted driving.
    - Failure to obey traffic laws and signs.
- Open-ended responses also mentioned traffic law enforcement, dangerous driving, confusing roadway design, congestion, crime, and public safety issues.

Key Findings: Phase 1 Online Input Map

Online engagement also featured an online input map. This online map allowed community members to place pins at spot locations for improvements or draw lines along routes they identified as barriers. The online input map was open for the same duration of the survey and received 551 comments, 1568 "likes," and 178 "dislikes" on provided comments. See Appendix B for the online input map results and Appendix C for screenshots of the online input map.

Community members used the webmap to provide input about safety concerns, but also about general observations or preferences about the transportation system—for example, suggesting bus routes, indicating wildlife crossing areas, noting other obstacles such as trash bins in travel lanes or cars parked in the bike lane, and comments about where parking is permitted, paid, etc.

A few of the categories were used interchangeably by respondents, like No Sidewalk and Missing/Unsafe Sidewalk, or Challenging or Unsafe Intersection and Lack of Crossing Facilities. Desired Route was used to provide feedback on several transportation modes, including desired bus routes, bike routes, etc.

Trends

- The highest engagement was in downtown and southern Kalamazoo.
- Main Street/Michigan Avenue had multiple flagged intersections for safety issues.
- Every intersection along Main St. between Stuart Ave. and Elm Pl. were part of the top ten most-engaged-with intersections on the online input map.
- Major roads and arterials were the most frequently cited for safety improvements.
- Some comments suggested transit-related improvements, such as bus shelters and bike parking.

Most Reported Issues

- Missing/unsafe sidewalks.
- High vehicle speeds making roads unsafe.
- Unsafe or missing bicycle facilities.
- Poor lighting along key routes.
- Lack of pedestrian crossings at key intersections.

Most Frequently Commented Corridors

- Oakland Drive: Lacks sidewalks, has high vehicle speeds, poor lighting, and unsafe bike facilities.
- W Main Street: Missing sidewalks, unsafe vehicle speeds, poor bike infrastructure, and lack of pedestrian crossings.
- Stadium Drive: Mixed feedback on recent improvements, unsafe speeds, inadequate bike lanes, and poor lighting.
- Michigan Avenue: Confusing two-way bike lanes, traffic congestion, unclear signage, and pedestrian safety concerns.

- Portage Street: Needs a road diet, poorly enforced speed limits, missing crosswalks, and inconsistent sidewalks.
- Burdick Street: Lacks bike infrastructure, has dangerous intersections, speeding concerns, and insufficient shade.
- Rose Street: Unsafe crossings, poorly maintained sidewalks, inadequate lighting, and lack of bike parking.
- Lovers Lane: High speeds, unsafe crossings (especially at E Cork St), need for traffic calming, and pedestrian safety issues.

Most Frequently Commented Intersections

- Lovers Lane & E Cork Street: Highest engagement, concerns about unsafe crossings.
- Howard St & Merrill St: Lack of safe crossing facilities.
- Kilgore Rd & Lovers Ln: Dangerous midblock crossing near high school.
- Portage St & E Michigan Ave: Traffic safety concerns.

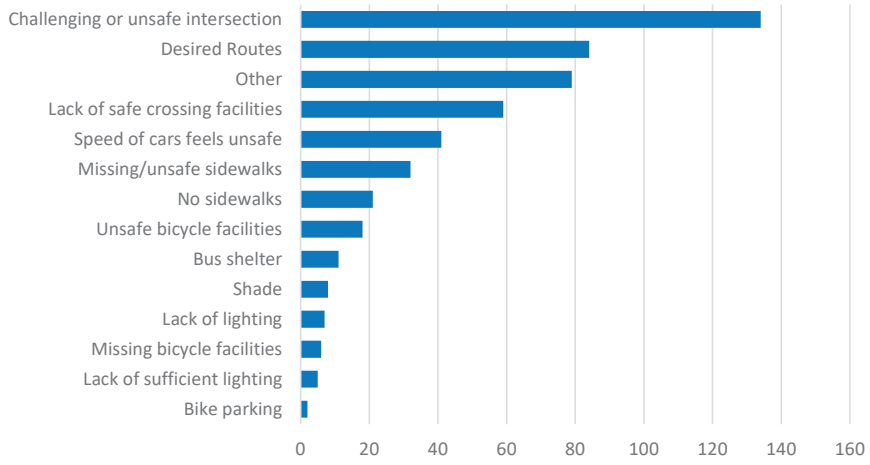


Figure 2: Trends Presented Graphically

Table 1: Corridors with the highest number of public comments, by comment type

Number	Corridor	Comments	Likes	No sidewalk	Missing/ unsafe sidewalk	Speed of cars feels unsafe	Desired Routes	Unsafe bicycle facilities	Missing bicycle facilities	Lack of sufficient lighting	Lacks shade	Other
1	Oakland Ave	9	27	1		1	4	1	1			1
2	W Main St	9	20	2	2	4						1
3	Stadium Dr	6	18	1			1	3				1
4	Michigan Ave	5	20			2	3					
5	Howard St	4	14	1		1	1		1			
6	Portage St	3	41			2	1				1	
7	Burdick St	3	25				2		1			
8	Rose St	3	7				3					
9	W North St	3	0			1	2					
10	Lovers Ln	2	17		1	1						

Table 2: Intersections with the highest number of public comments, by comment type

Number	Intersection or location	Comments	Likes	Challenging or Unsafe Intersection	Lack of Safe Crossing Facilities	Bus shelter	Bike parking	Lack of lighting	Other
1	Lovers Ln and E Cork St	6	59	6					
2	Howard St and Merrill St	6	21		6				
3	Kilgore Rd and Lovers Ln (midblock--driveway to Loy Norrix High School)	5	26	2	2				1
4	W Maple St and Oakland Dr	4	18	1	2			1	
5	Portage St and E Michigan Ave	4	11	3					1
6	Main St and Woodward Ave	3	40	1	1	1			
7	W Main St and Elm St	3	16	2					1
8	Oakland Dr and Howard St	3	10	3					
9	W Main St/W Michigan Ave and Elm Pl	3	6	2					1
10	W Main St and Stuart Ave	2	23		2				

Phase 2 of Engagement: Proposed Priority Location Review

Purpose

Following Phase 1 of public engagement for the Kalamazoo Safety Action Plan—which included a kickoff webinar hosted as part of the City of Kalamazoo's webinar series, an online public survey focused on residents' transportation experiences, and an interactive input map gathering feedback on the comfort and condition of citywide infrastructure—project staff participated in the Bikes in the Zoo event on May 10, 2025, as a supplemental opportunity to confirm and refine key findings. While not formally part of the Safety Action Plan's engagement process, this high-visibility community event provided a valuable chance to connect with residents in person. The purpose of this outreach was to validate proposed priority locations and gather additional comments across the plan's four study areas: intersection safety, bus stop safety, lighting safety, and sidewalk safety. Participants reviewed draft focus areas on a printed map and contributed input both visually and in writing. The table that follows summarizes this feedback, organized by location and corresponding safety issue.

Key Findings: In-Person Engagement

On May 10, 2025, project staff participated in the Bikes in the Zoo event as a strategic public engagement opportunity to connect with community members in person. Though not formally affiliated with the event organizers, the tabling effort allowed for broad visibility and meaningful one-on-one conversations. Representatives from the City of Kalamazoo, Alta Planning + Design, Value Engineering, and AECOM facilitated the booth, which featured large-format posters for each of the study areas. Each poster included proposed focus locations, fast facts, and key planning context, as well as anticipated next steps in the Safety Action Plan process. Attendees were encouraged to review the maps, add comments or new locations directly on the poster, and discuss their transportation safety concerns with staff. This engagement opportunity proved valuable for both affirming the relevance of existing analysis and gathering site-specific observations to inform the plan. See Appendix D for the in-person map results.

134 residents spoke with project representatives at the Bikes in the Zoo event.

Comments collected during the event reinforced several draft focus areas and revealed additional locations of concern. Intersection safety was a dominant theme, with repeated feedback about signal timing and turning conflicts at high-volume locations such as Main & Park, Drake & KL, and Howard & Michigan. Participants also highlighted the need for improved bus stop safety and access, especially at Walnut & Park, Portage & Cork, and Michigan & Academy, where sidewalk gaps, lighting deficiencies, and challenging crossings were cited. Lighting concerns were particularly concentrated in the Edison neighborhood, with multiple mentions of Linton, Wells, Division, and Olive streets. Gaps in sidewalk connectivity were noted along corridors like John Street, Cork Street, and Cherry Street, often in relation to access to childcare or transit stops. Overall, the feedback affirmed many of the proposed priority locations while offering critical community insight into localized safety needs and conditions.

Table 3: In-Person Engagement Feedback

Location	Comments
Oakland Drive	Bike lane ends at Whites Rd – needs to connect south. Hard to turn left onto trail onto Oakland.
Westnedge Ave (Grant to McCourtie)	Drivers are aggressive. Bike path gap. Speeding and crashes near Glenwood/Parkwood.
Lovell Street / Crosstown	Need safer east-west bike route across 131.
Howard St near WMU	Too many close calls with cars – students need better facilities. Signal timing too short at Michigan.
Davis Street	Good candidate for traffic calming + bike priority.
Portage Road corridor	Need protected lanes. Bikeway should meet Reed Ct. Issues at Cork: bus stop, lighting, bike access.
Downtown Kalamazoo	Need better bike parking. Confusing markings – where can we ride safely?
Vine Neighborhood	Too many one-way streets – hard to bike safely.
Stadium Drive (Oliver to Rambling)	High-speed traffic. Great path near Oliver. Crossing at Rambling needs protection.
Burdick Street	Great north-south route – should be extended. Blind corner at Alcott.
W. Michigan Ave (WMU to Downtown)	Heavily used by students – needs more bike-friendly design.
Kalamazoo River Valley Trail connections	Need better signage to/from trail.
Parkview Ave (Knox to western boundary)	Add signals or safer crossings. Speed limit and bike safety concerns.
Main Street (Hilbert to Michigan)	Road diet request. Enforcement request. Signal timing issues at Park and Westnedge.
Intersection of Main @ Michigan	Needs longer crossing time.
Intersection of Main @ Park / Westnedge	Signal timing concerns.
Intersection of Kalamazoo @ Stuart	Approach warning or move crosswalk.
Intersection of Michigan @ Lovell	Important connection to Western.
Intersection of Michigan @ Academy	Crossing by bus stop needs improvement.
Intersection of Walnut @ Park	Multiple pedestrian events.
Intersection of Drake @ KL / Croyden	Signal doesn't detect cyclists. Left turners not alert to bikes/peds.
Intersection of Ravine @ Douglas	Maintain raised bike crossing.
Train tracks near Bell's Brewery	Potential conversion area?
Cherry Street	Bad sidewalk conditions.
John St (Lake to Crosstown)	Sidewalk needed – bus stop to childcare.
Cork Street	Bike lane break + steep hill. Failed island project.
Lovers Lane	Narrow bike lane and speeding concerns. Recent improvement at Cork.
Kilgore Road	Bike lane dead zone. Missing lane south of city boundary.
Miller Road	Heavy truck traffic and speeding.
Rankin-Goldsworth-Dormitory area	Narrow with gutters – challenging for bikes.
Lighting – Edison Neighborhood	Linton, Wells, Division, Olive – lighting needed.
Kent Ave / Oakland Dr area	Needs repaving and lighting.
Oakwood Neighborhood	Sidewalk not needed – not enough space.

Key Findings: Phase 2 Online Input Map

In tandem with the in-person engagement activities, the project team launched an interactive input map during Phase 2 to gather additional community feedback on the draft focus areas. This web-based tool enabled residents to review proposed locations across each study area, express agreement or disagreement, add detailed comments, or draw new points and corridors where they believed safety improvements were needed. The map received 127 participants, who collectively submitted 631 votes, 98 comments, and contributed to 439 visits from 380 unique visitors since its launch on May 1. See Appendix E for screenshots of the online input map.

The input map was actively promoted during the Bikes in the Zoo event, as well as through the City of Kalamazoo's social media channels and project website. This approach allowed for broader participation from individuals unable to attend in-person events, helping to promote greater geographic and demographic diversity in the responses. The insights gathered through the map complemented feedback received at in-person events and played a key role in identifying network gaps, reinforcing community priorities, and validating the direction of the plan's recommendations.

Intersection-Related Concerns

Several commenters flagged intersections as points of confusion, conflict, or general discomfort—particularly for pedestrians and bicyclists. A key example is the area near S Park Street and W Crosstown Parkway, where a participant noted incorrect map labeling. While not a safety issue per se, this feedback points to a need for better wayfinding and more accurate mapping in public documents or engagement tools.

The intersection at Ravine and Nichols was called out for its poor traffic flow, with a resident specifically recommending the installation of a roundabout. This indicates the perception of inefficiency or conflict at that location and suggests the community is open to design-based solutions.

Walnut and Park was noted for high student usage, underscoring the importance of providing safe pedestrian crossings in this area. Similarly, a comment describing Oakland's crosswalk and pedestrian island as awkward and dangerous highlights pedestrian vulnerability in areas that likely experience regular foot traffic.

Several other comments potentially referencing intersections mentioned concerns about confusing layouts, safety at mid-block crossings, or complicated signal interactions. Although these were not always specific in naming exact junctions, the common thread is a desire for better design, predictability, and comfort for non-drivers navigating key nodes in the transportation network.

Importantly, while these comments raised valid concerns, none directly referenced the officially proposed priority intersections identified in the Kalamazoo Safety Action Plan. This highlights a potential disconnect between technically prioritized sites and those perceived as problematic by the public.

Bus Stop Conditions

Public feedback also revealed notable issues regarding bus stop conditions. One comment mentioned a frequently used bus stop with no sidewalk access or crossing infrastructure, illustrating a dangerous gap in

multimodal design. Riders—especially those with mobility limitations—are left to navigate poorly designed or incomplete pedestrian environments to reach transit service.

Additionally, a comment cited a stop that serves both sides of a busy road without a crosswalk, reinforcing the need for coordinated investment between pedestrian safety improvements and transit access. These insights suggest that bus stop planning should be tightly integrated with sidewalk and crossing upgrades to promote safe first- and last-mile connections.

Sidewalk Conditions and Gaps

Numerous comments identified sidewalks as unsafe, uncomfortable, or altogether absent. A recurring concern was the lack of buffer space between sidewalks and high-speed roads, particularly along corridors posted at 40 mph. Walkers felt too close to traffic, especially in areas without trees, furniture zones, or protective elements like guardrails.

In some areas, sidewalks were either missing or in poor condition, forcing pedestrians to walk in grass or along the road shoulder. A comment specifically highlighted Oakland Drive between Whites and Howard as lacking comfortable or consistent walking infrastructure—an issue compounded by traffic speed and volume.

These observations suggest that continuous, buffered sidewalks are a top priority for many community members, particularly on corridors serving schools, residential areas, and commercial destinations.

Lighting and Visibility

Though fewer in number, some comments alluded to poor lighting conditions contributing to discomfort or safety concerns during early morning or evening travel. Dark corridors, particularly those without high pedestrian volumes or near isolated transit stops, were perceived as unsafe.

While no individual location was repeatedly called out for poor lighting, the general theme points to an opportunity for proactive nighttime safety assessments and lighting audits, especially where existing infrastructure may not account for vulnerable users traveling during off-peak hours.

Other Safety and Behavioral Concerns

A strong theme throughout many comments was the failure of drivers to yield at crossings. One user plainly stated, “Scary to cross. No one stops,” which, although brief, powerfully captures a feeling of vulnerability common in pedestrian environments where yield compliance is low.

Other comments described chaotic or unpredictable conditions at 4-way stops, especially for people walking or biking. This confusion often stems from unclear right-of-way expectations or a lack of visible multimodal infrastructure such as marked bike lanes, crosswalks, or pedestrian signals.

Additionally, some concerns related to speeding vehicles and the general feeling of being unsafe as a pedestrian or cyclist, even in areas where infrastructure was technically present. This disconnect between

infrastructure presence and actual user experience may reflect the need for context-sensitive traffic calming and more aggressive enforcement or design-based speed mitigation strategies.

Summary and Implications

Across all themes—intersections, bus stops, sidewalks, lighting, and general safety—residents expressed a strong desire for safer, more predictable, and more human-centered transportation environments. Key insights include:

- Intersections are perceived as unsafe or confusing, even if they are not on the current list of priority locations.
- Bus stop access remains incomplete and dangerous in many cases.
- Sidewalk gaps and proximity to traffic are major deterrents to walking.
- Lighting conditions may not support safe evening travel in some areas.
- Driver behavior, particularly failure to yield or observe pedestrian right-of-way, significantly undermines perceived safety.

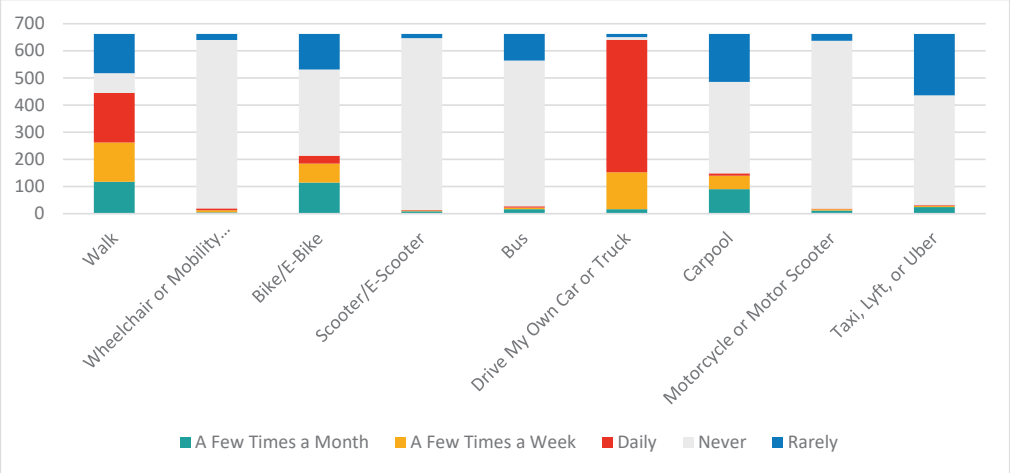
To align technical prioritization with public concern, future planning steps may include validating data-driven intersection scores against lived experiences, conducting walk audits at flagged locations, and integrating bus stop and sidewalk improvements into corridor-wide safety projects. Prioritizing locations where multiple issues intersect—such as areas with high pedestrian volume, missing sidewalks, and bus service—will also help promote equitable and effective investments.

Appendices

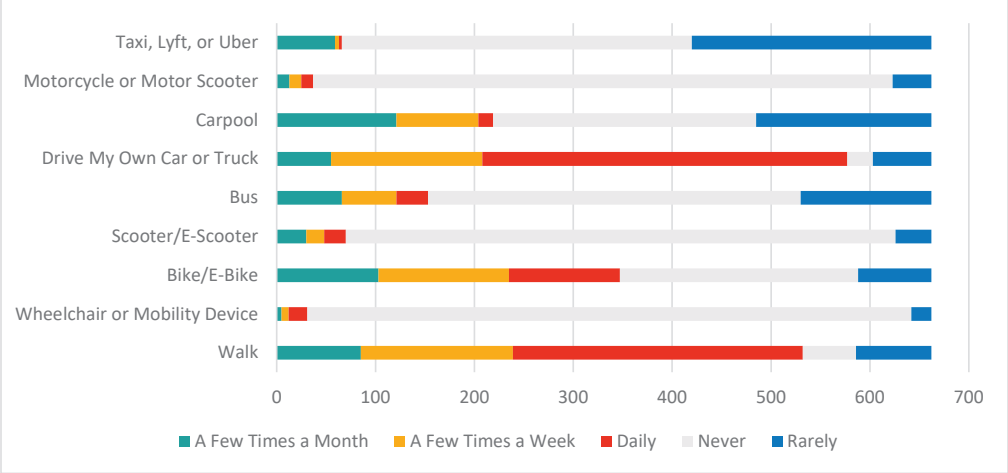
Appendix A: Survey Questions and Responses

Since the online survey respondents' demographics do not fully represent the geographic, racial, age, and socioeconomic diversity of the city, additional or future engagement should focus on outreach to neighborhoods on Kalamazoo's Northside, residents who are people of color, young people (including college students and potentially including youth), and lower-income residents. If possible, participants should be compensated for their time or participation in engagement and alternative forms of engagement should be offered for residents who prefer a different format or have different literacy levels.

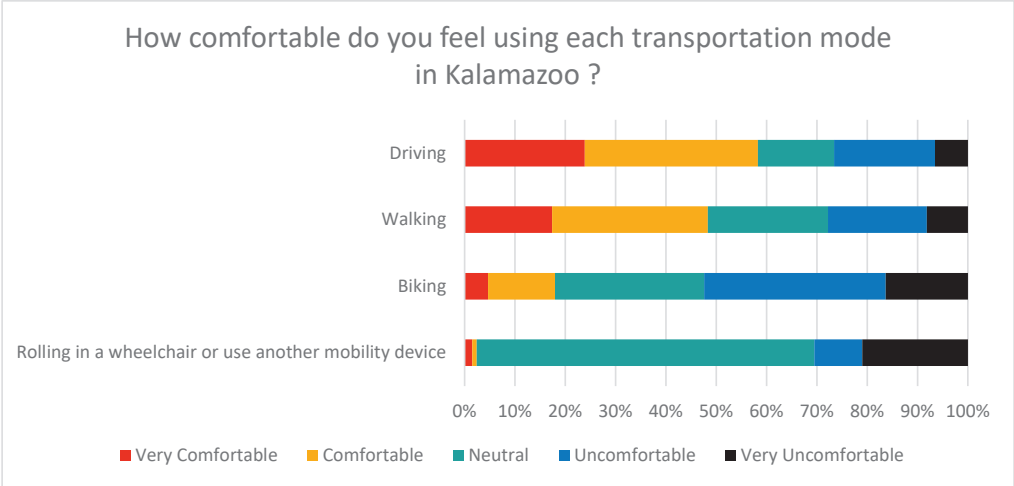
How frequently do you use the following transportation options to get places you need to go or for recreation?



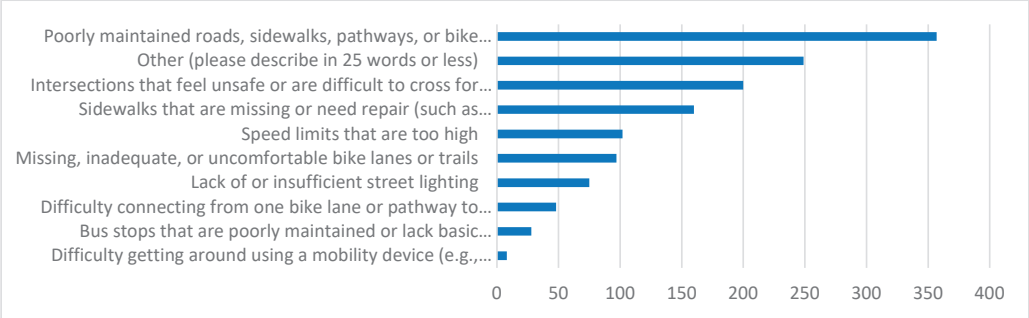
How frequently do you WANT to use the following transportation options?



How comfortable do you feel using each transportation mode in Kalamazoo ?



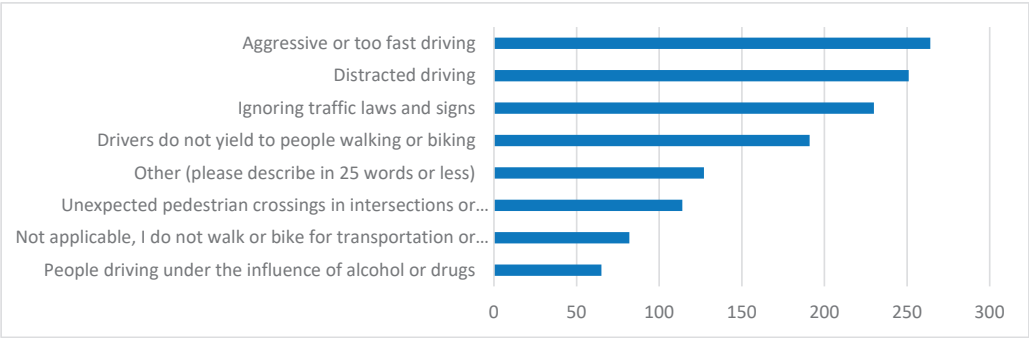
In general, what are your top safety concerns related to transportation systems (like roads, sidewalks, bike lanes, and public transit)? Please choose up to three.



The additional safety concerns related to transportation systems in Kalamazoo include:

- Driver behavior and enforcement: Many respondents highlighted issues with reckless driving, speeding, running red lights, and the lack of traffic law enforcement.
- Bike lanes: There were numerous complaints about the design and placement of bike lanes, with concerns that they create confusion, reduce road space, and are often unused.
- Road and infrastructure design: Respondents mentioned poorly designed roads, confusing lane markings, and the negative impact of recent road changes, such as roundabouts and narrowed lanes.
- Public safety and crime: Concerns about crime, homeless individuals, and public violence affecting the safety of transportation systems were noted.
- Maintenance and conditions: Issues with potholes, poorly maintained roads, and inadequate snow removal were frequently mentioned.
- Traffic congestion: Many respondents were concerned about increased traffic congestion due to road changes and the reduction of driving lanes.

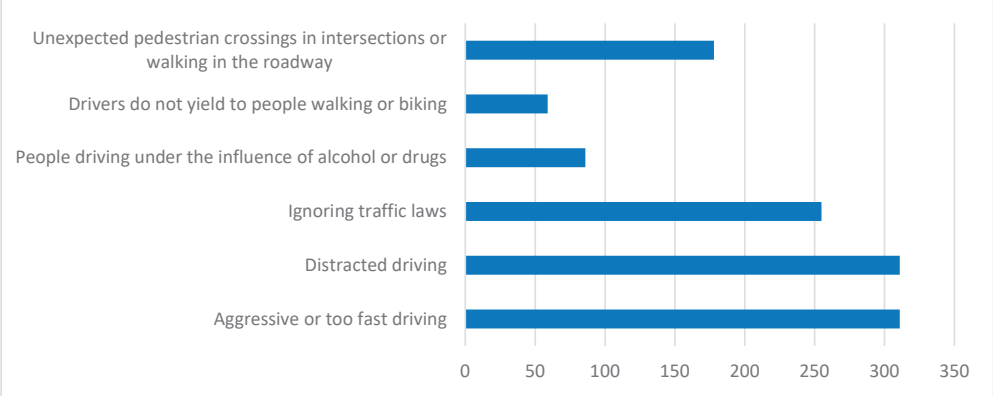
As a pedestrian and/or bicyclist, what are your top two safety concerns related to transportation behavior? Please choose up to two.



The additional safety concerns for pedestrians and bicyclists in Kalamazoo include:

- Bike lanes: Many respondents feel bike lanes are poorly designed, often relegated to the worst parts of the road, and create confusion and danger for both cyclists and drivers.
- Driver behavior: Concerns about aggressive driving, speeding, and drivers not yielding to pedestrians and cyclists were frequently mentioned.
- Traffic law enforcement: There is a significant concern about the lack of enforcement of traffic laws, including speeding, distracted driving, and failure to follow traffic signals.
- Infrastructure issues: Respondents noted inconsistent street markings, poorly maintained sidewalks, and the need for more sidewalks rather than bike lanes.
- Public safety: Issues with crime, harassment by homeless individuals, and general safety concerns while walking or biking were highlighted.
- Road design: Complaints about confusing road designs, such as roundabouts and narrowed lanes, were common, with many feeling these changes have made driving and biking more dangerous.

As a driver or passenger of a motor vehicle, what are your top two safety concerns related to transportation behavior? Please choose up to two.



The additional safety concerns for drivers and passengers of motor vehicles in Kalamazoo include:

- Narrow lanes: Many respondents feel that the lanes are too narrow, especially after the addition of bike lanes, making driving difficult and unsafe.
- Traffic law enforcement: There is a significant concern about the lack of enforcement of traffic laws, including speeding, running red lights, and distracted driving.
- Bike lanes: Numerous complaints were made about bike lanes, with concerns that they create confusion, reduce road space, and are often unused.
- Road design and infrastructure: Respondents mentioned poorly designed roads, confusing lane markings, and the negative impact of recent road changes, such as roundabouts and narrowed lanes.
- Traffic congestion: Many respondents were concerned about increased traffic congestion due to road changes and the reduction of driving lanes.

- Public safety: Issues with crime, harassment by homeless individuals, and general safety concerns while driving were highlighted.
- Pedestrian behavior: Concerns about pedestrians walking in the roadway or crossing unexpectedly were noted.

What types of places would you like to be able to reach by walking, biking, or rolling (using a wheelchair or other mobility device), but cannot do so today due to existing barriers?

Many locations were identified with this open-ended question, but the most mentioned are listed and categorized below:

General Destinations

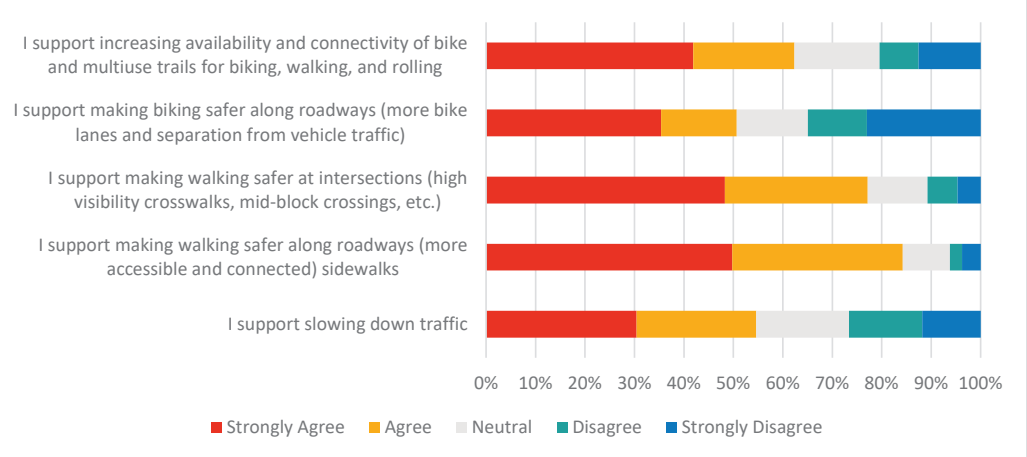
- Grocery Stores: Many respondents wish to access grocery stores like Meijer, Aldi, and other large grocery centers more easily.
- Restaurants and Cafes: There is a desire for safer routes to various dining establishments.
- Parks and Trails: Access to parks, trail systems, and open spaces is a common request.
- Downtown Areas: Many respondents want better access to downtown Kalamazoo and its amenities, including businesses, entertainment, and the Kalamazoo River Valley Trail (KRVT).
- Neighborhoods: Desire for better connectivity between neighborhoods and safer routes within them.
- Schools: Safe routes for children to walk or bike to school. Access to Western Michigan University was frequently mentioned.
- Public Transit: Improved access to bus stops and more efficient public transit routes.

Specific Street Connectivity

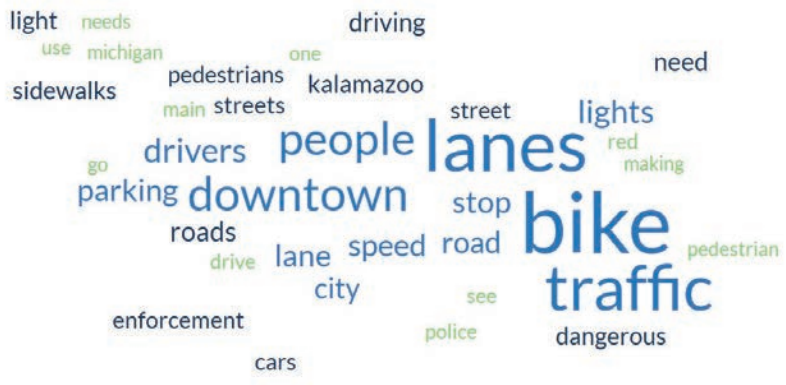
- Stadium Drive: Safer routes to stores along Stadium Drive, including protected bicycle facilities.
- Westnedge Avenue: Improved access to shopping centers along Westnedge, including better bike lanes and sidewalks.
- Gull Road: Easier access to destinations along Gull Road.

- West Main Street: Better bike lanes from Douglas to Michikal and safer crossings, especially from the Stuart Historic District to K College campus.
- Lovers Lane: A need for bike lanes and safer walking paths, particularly near the golf course and Kilgore.
- Portage: Improved connections to Portage, including safer routes along Oakland Drive.

Share your level of interest for the following safety strategies.



Do you have any other comments or ideas about improving transportation safety in the city?



This question prompted many thoughts on current safety issues and thoughts for improvement. The responses have been summarized and categorized below:

- Driver Behavior and Enforcement
  - Reckless Driving: Many respondents noted issues with reckless driving, speeding, and running red lights.

  - Traffic Law Enforcement: There is a strong call for increased enforcement of traffic laws, including speeding, distracted driving, and yielding to pedestrians.
  - Education: Suggestions include educating drivers about traffic laws and the importance of safety enhancements.

- Bike Lanes and Infrastructure
  - Design and Placement: Concerns about the design and placement of bike lanes, with many feeling they are poorly implemented and create confusion and danger.
  - Maintenance: Issues with bike lanes being full of debris, snow, and ice, making them unsafe.
  - Connectivity: Calls for better connectivity and continuous bike lanes that do not abruptly end.

- Public Transit
  - Frequency and Routes: Many respondents want more frequent bus services and better routes to make public transit a viable alternative to driving.
  - Bus Stops: Suggestions for better-maintained bus stops with amenities like seating, shelter, and lighting.

- Pedestrian Safety
  - Crosswalks: Need for more and safer crosswalks, including pedestrian-activated signals and better lighting.
  - Sidewalks: Calls for continuous, well-maintained sidewalks, especially in neighborhoods and along major roads.

- Traffic Calming Measures
  - Speed Humps: Many respondents support the use of speed humps to slow down traffic in residential areas.
  - Roundabouts: Mixed opinions on roundabouts, with some supporting their use to slow traffic and others finding them confusing.

- Public Safety and Crime
  - Homelessness: Concerns about safety related to homeless individuals, especially in downtown areas and along trails.
  - Crime: General concerns about crime affecting the safety of transportation systems.

- Road Design and Maintenance
  - Narrow Lanes: Complaints about lanes being too narrow, especially after the addition of bike lanes.
  - Road Conditions: Issues with potholes, poorly maintained roads, and the need for better snow and ice removal.

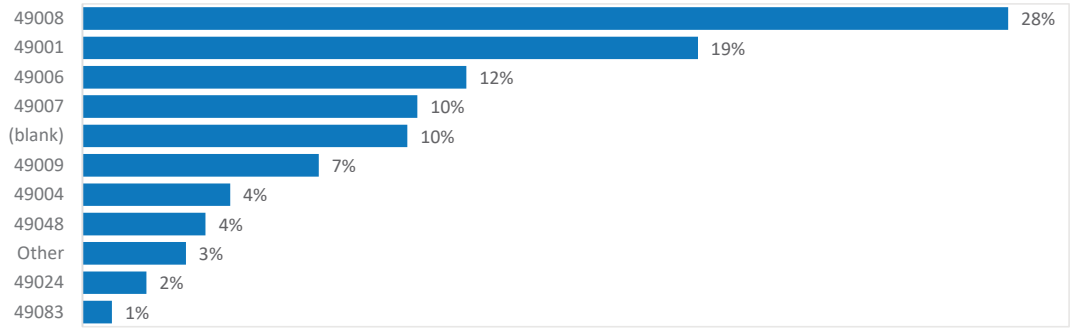
- Community and Connectivity
  - Neighborhoods: Desire for better connectivity between neighborhoods and safer routes within them.

- Schools: Safe routes for children to walk or bike to school.

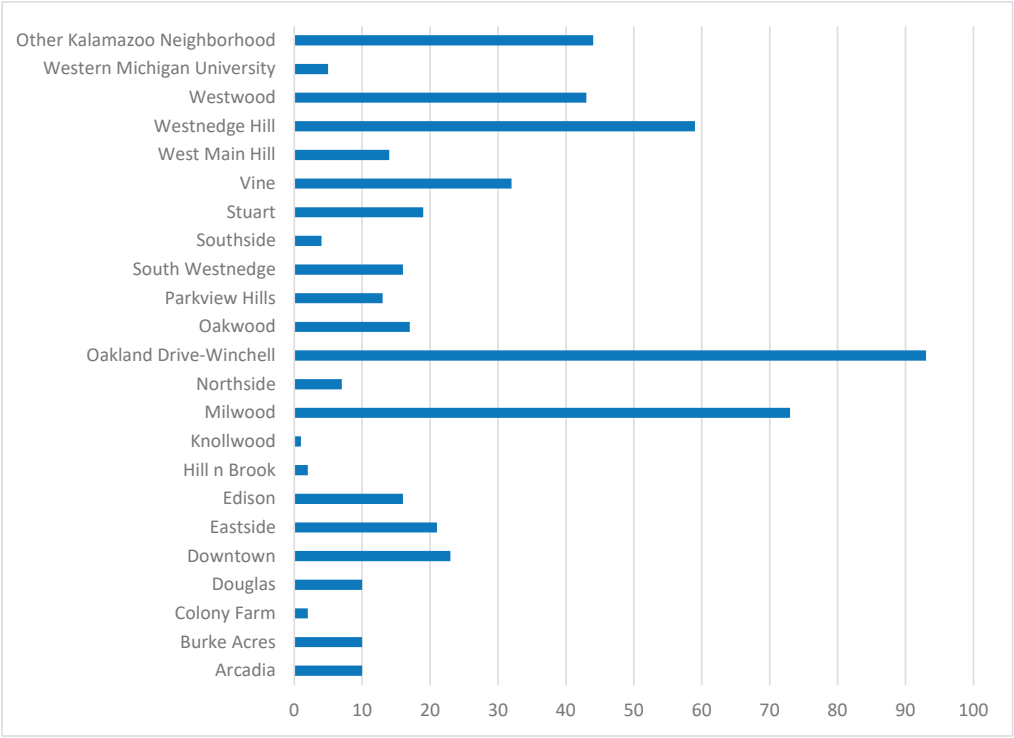
- General Suggestions
  - Public Involvement: Calls for involving the community in planning and decision-making processes.
  - Pilot Programs: Support for pilot programs to test new ideas and gather feedback before making permanent changes.
  - Public Education Campaigns: Suggestions for campaigns to raise awareness about traffic laws and safety measures.

Beginning of Optional Survey Questions & Responses

What is your zip code?



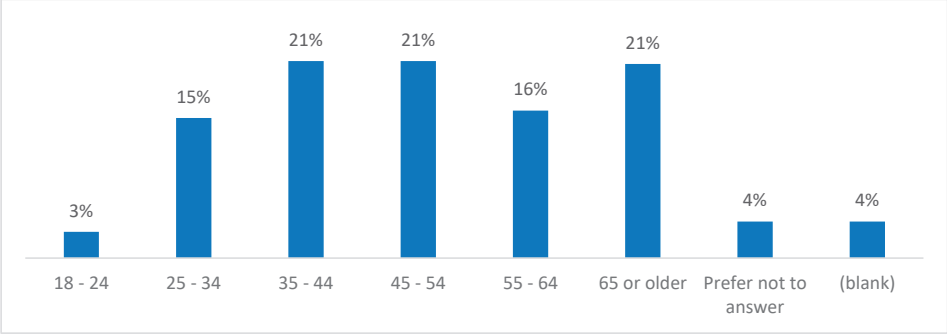
If you live in the City of Kalamazoo, what neighborhood do you live in? (Skip if you do not live in the City of Kalamazoo)



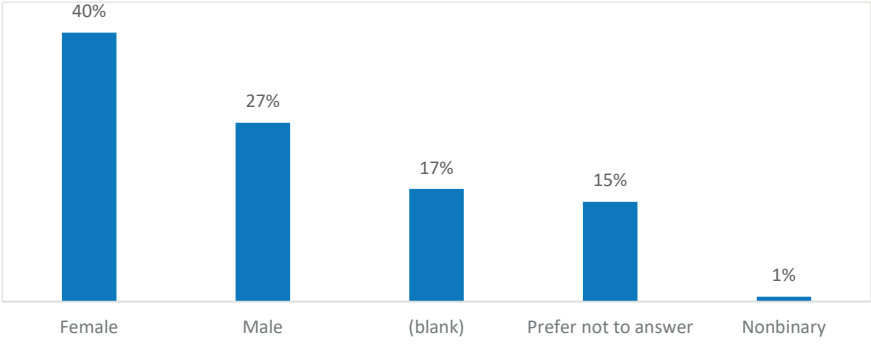
Other neighborhoods provided include:

- West Main Hill
- Oakland/Winchell
- Hillcrest (Oakland Drive-Winchell)
- Winchell
- Kalamazoo College area
- South Street Historic District
- Fairmont/Stuart/West Main Hill
- Denway Duke
- Bronson Blvd
- South Town
- Lakewood
- Orchard Hill
- Whites Road area
- Bronco Club

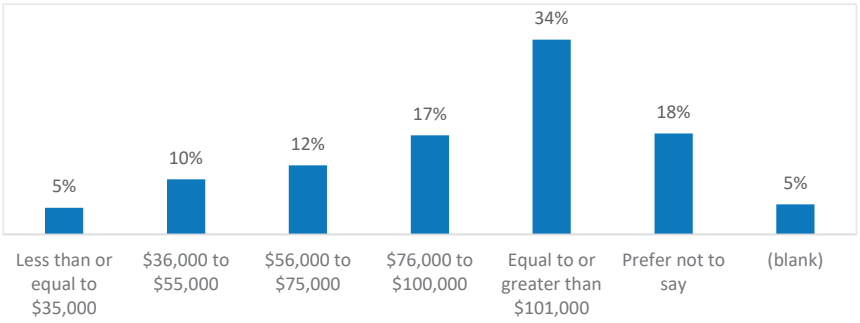
What is your age?



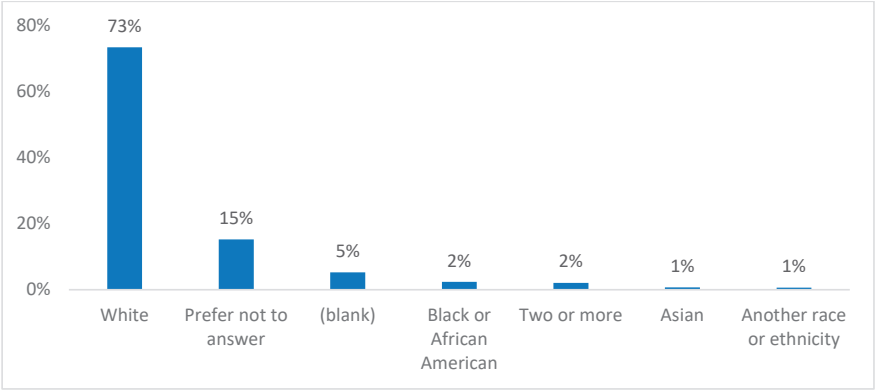
What gender do you most identify with? If you prefer not to answer, type NA.



What is your household income?



What is your race or ethnicity?



Appendix B: Kalamazoo Neighborhood Boundaries

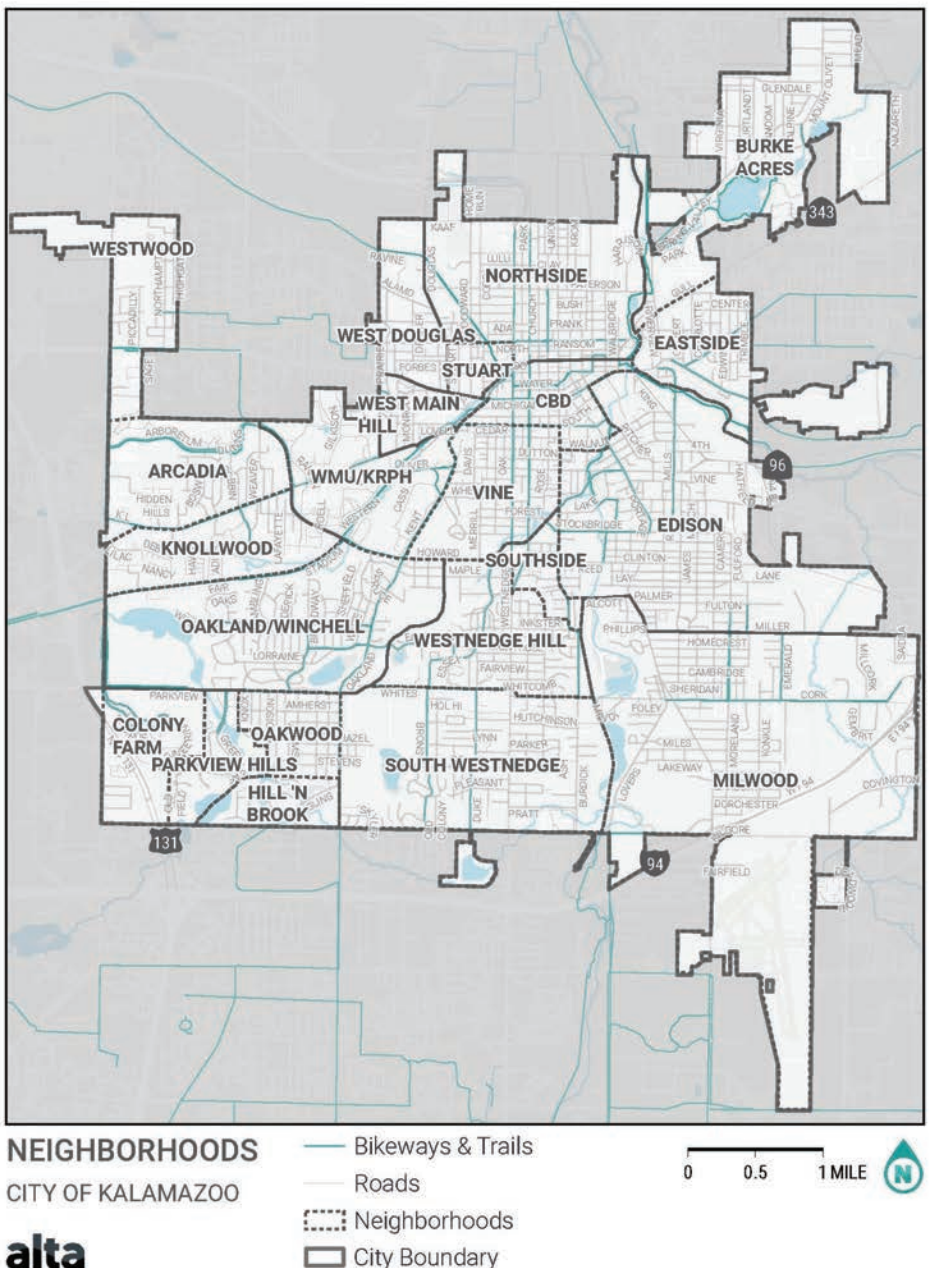


Figure 3: Kalamazoo Neighborhood Boundaries

Appendix C: Kalamazoo's zip codes and neighborhoods

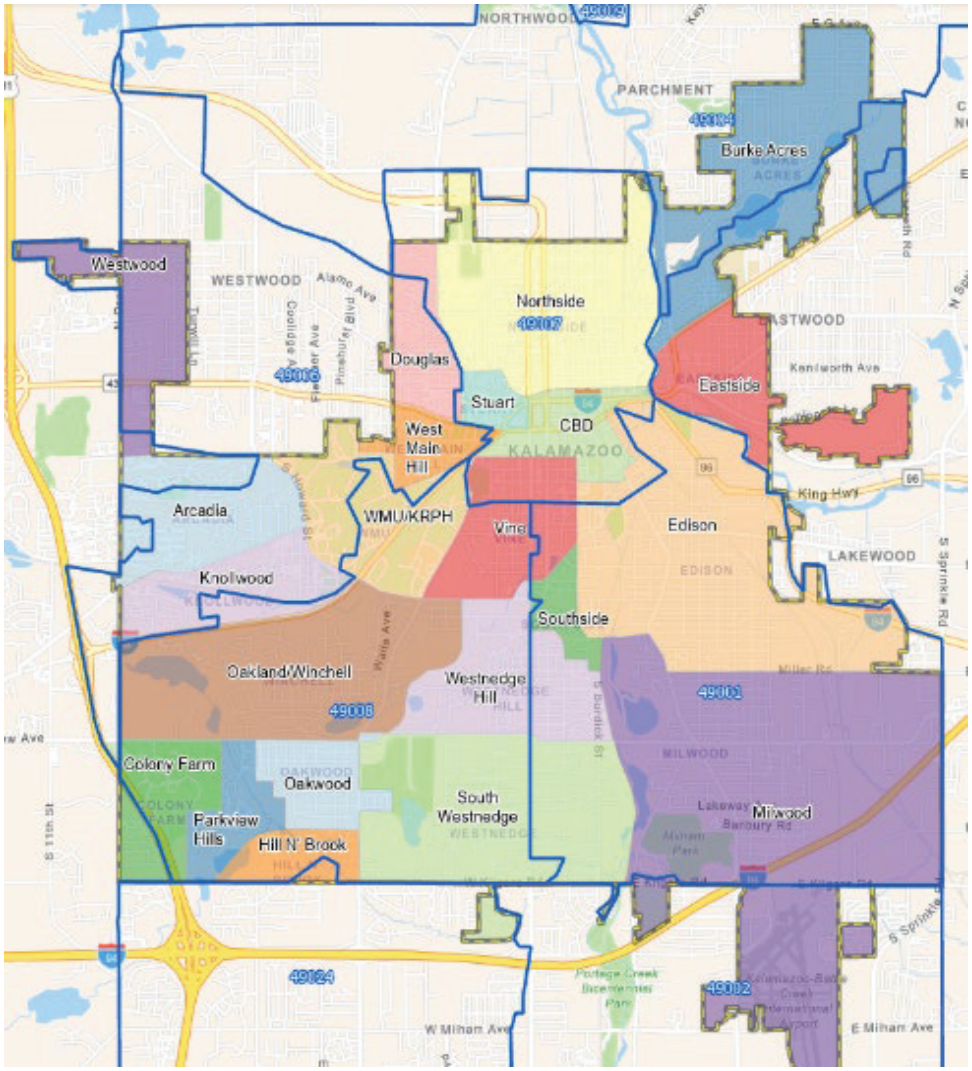


Figure 4: Kalamazoo's zip codes and neighborhoods

Appendix D: GIS Mapping of Phase 1 Online Input Map Responses

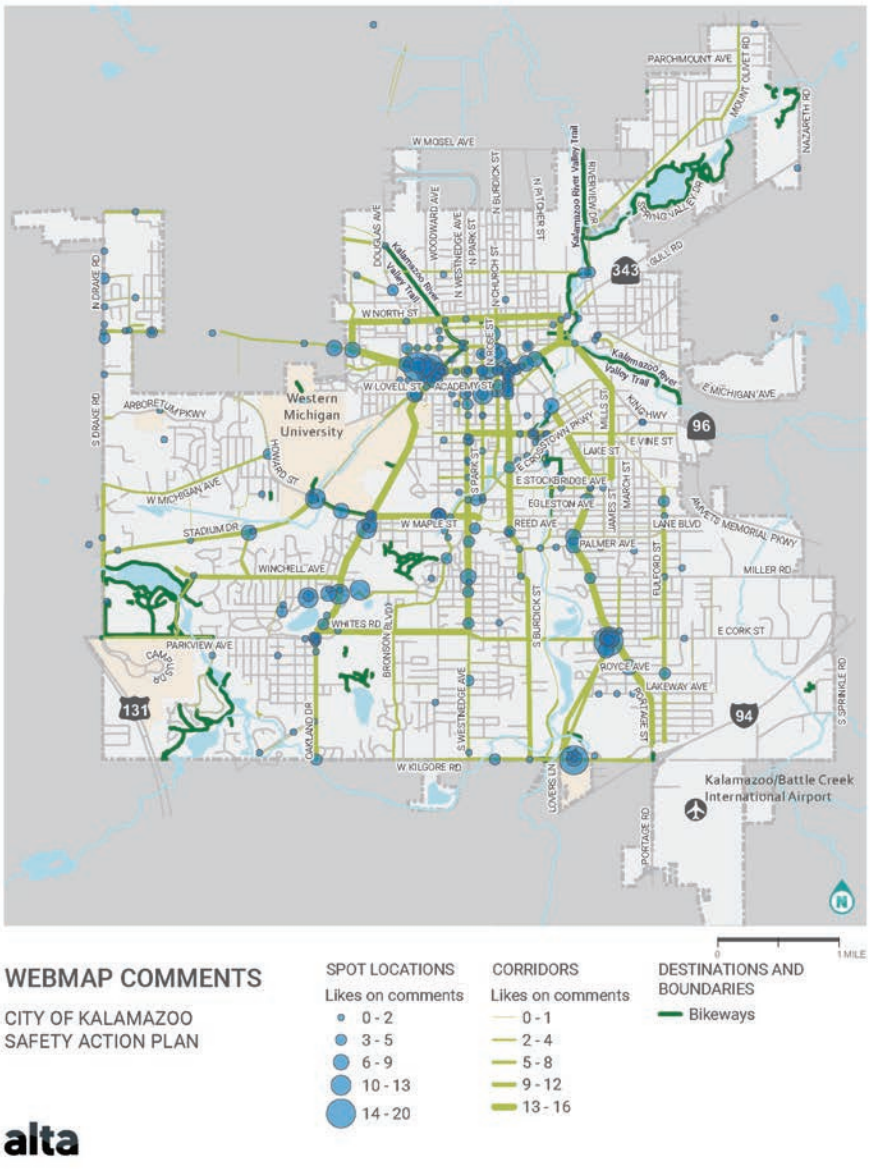


Figure 5: GIS Mapping of Phase 1 Online Input Map Responses

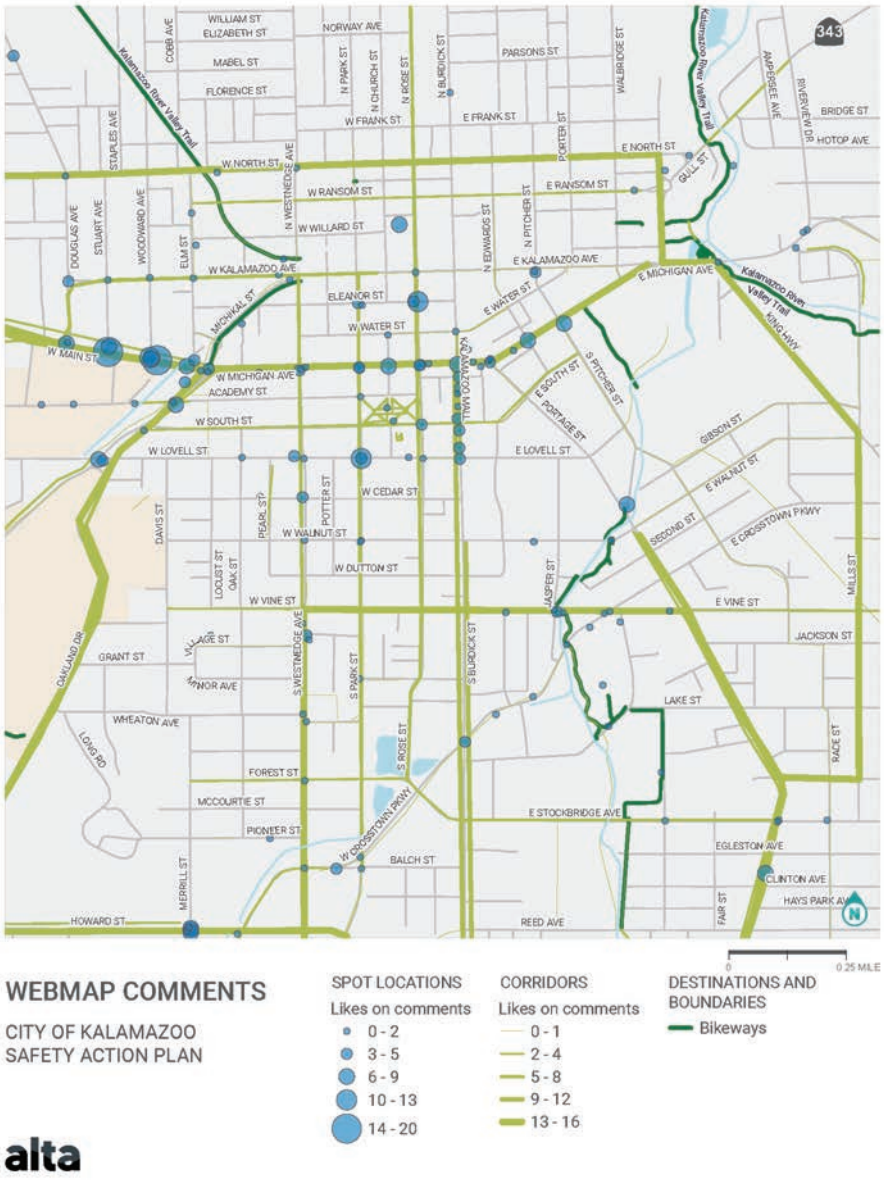


Figure 6: GIS Mapping of Phase 1 Online Input Map Responses

Clusters of comments on intersections and corridors were visually inspected to identify trends. The locations with the most comments were identified, and the types of comments for each location were tracked. Webmap comments and likes were imported into ArcGIS. Comments were sorted by the number of likes on each comment, and the top 50 comments for both corridors and intersections were reviewed.

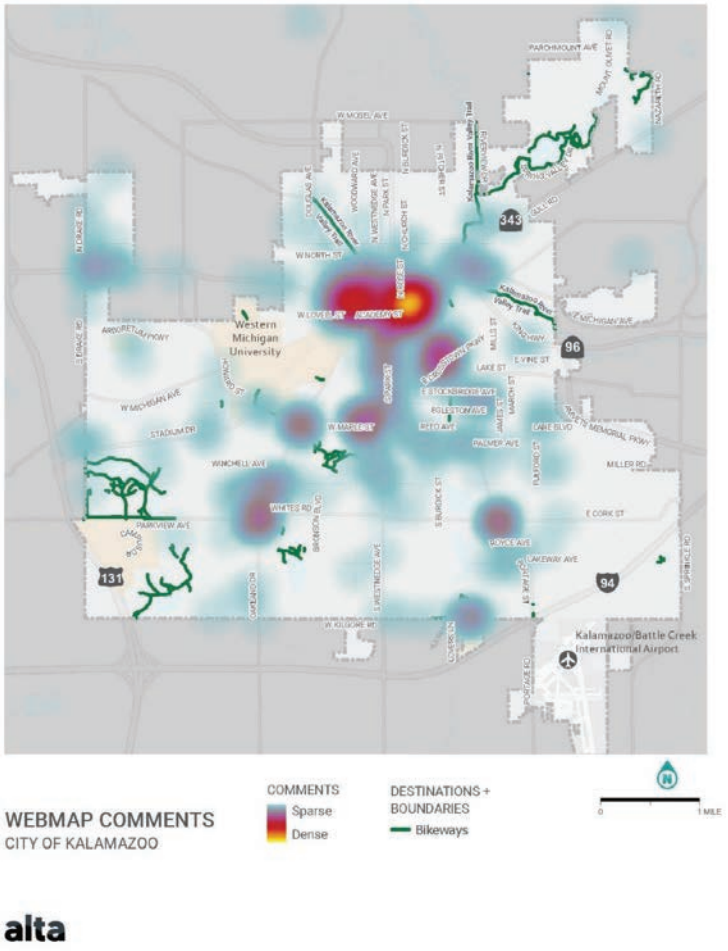


Figure 7: GIS Heat Map of Phase 1 Online Input Map Responses

Appendix C: Screenshots from the Phase 1 Online Input Map

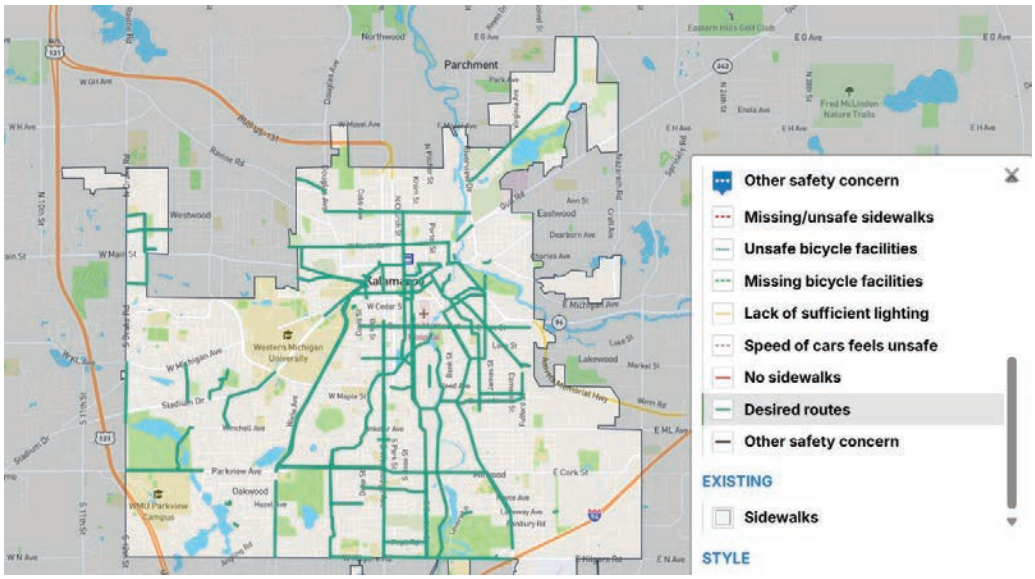


Figure 8: Screenshot of online input map showing responses in the "Desired routes" category

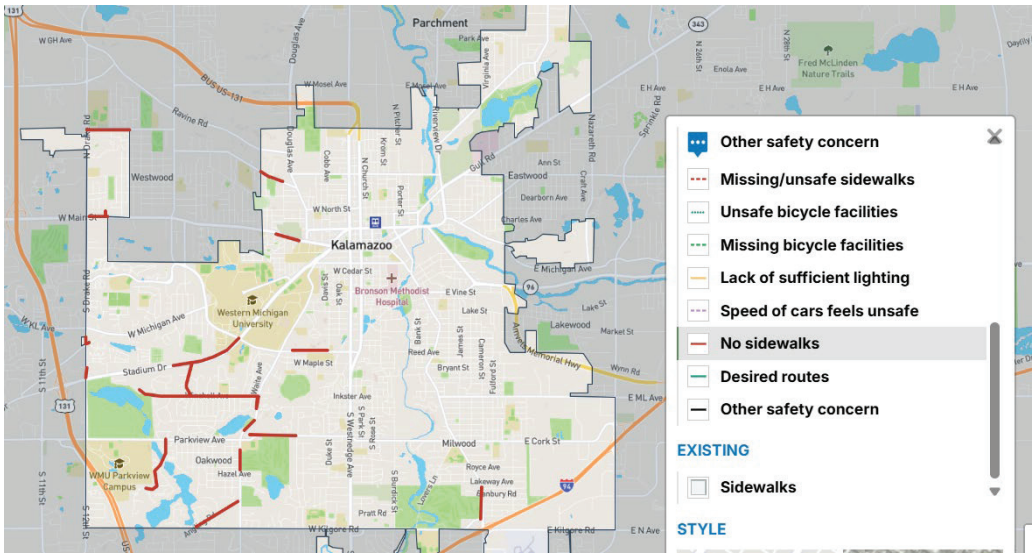


Figure 9: Screenshot of online input map showing responses in the "No sidewalks" category

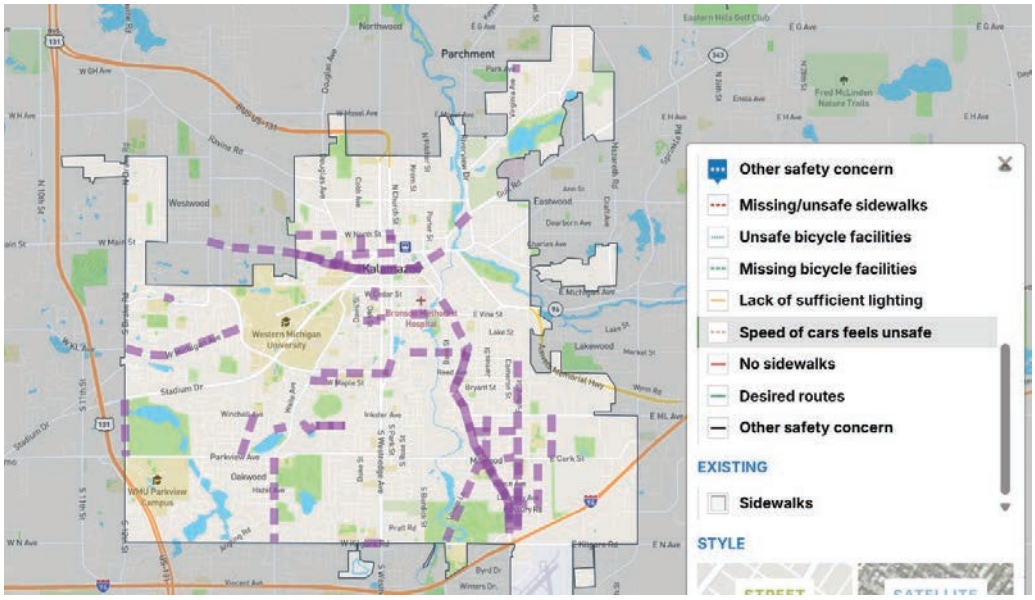


Figure 10: Screenshot of online input map showing responses in the "Speed of cars feels unsafe" category

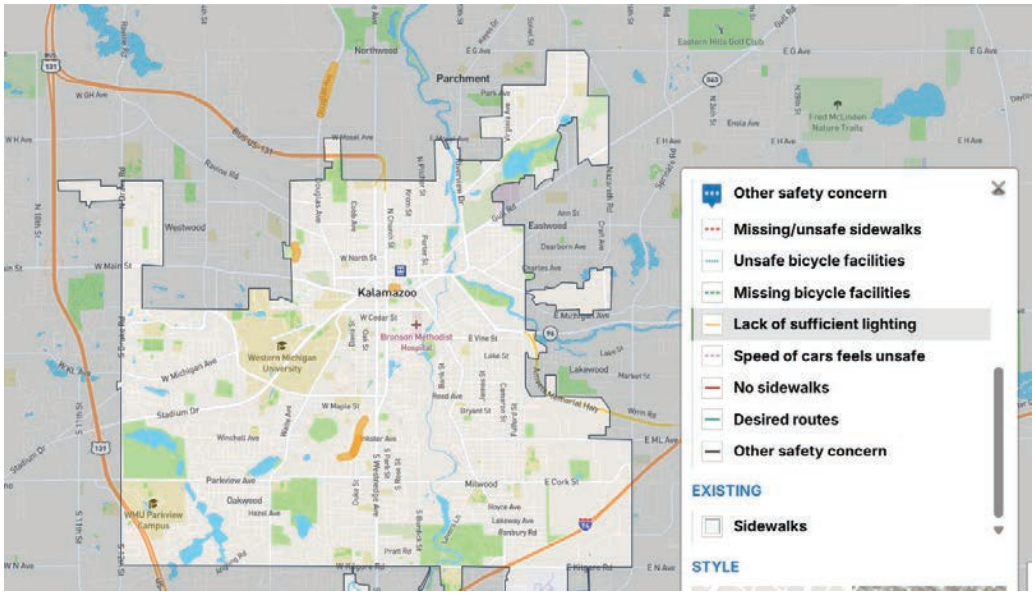


Figure 11: Screenshot of online input map showing responses in the "Lack of sufficient lighting" category

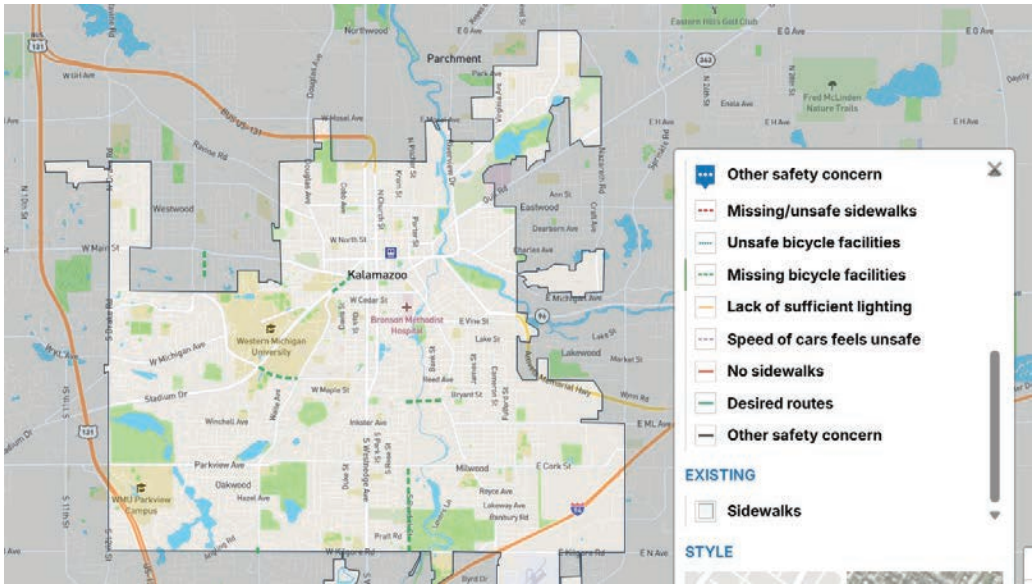


Figure 12: Screenshot of online input map showing responses in the "Missing bicycle facilities" category

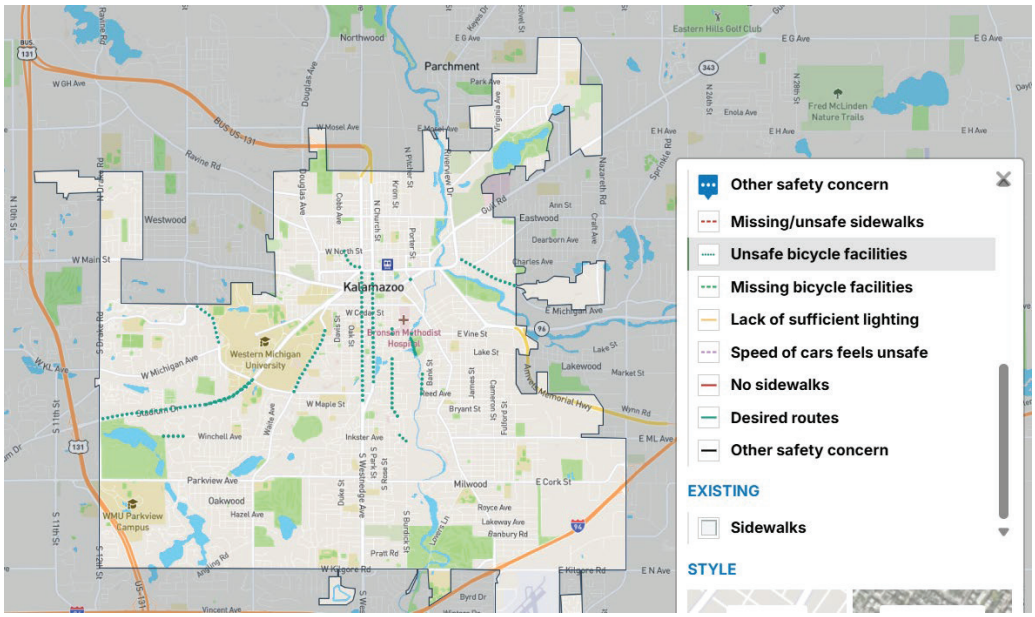


Figure 13: Screenshot of online input map showing responses in the "Unsafe bicycle facilities" category

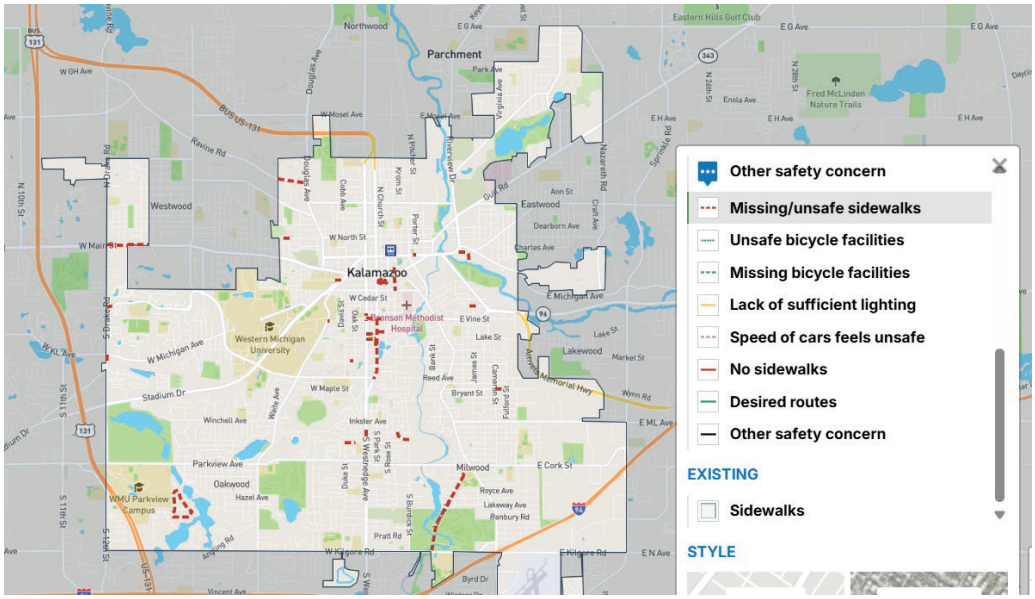


Figure 14: Screenshot of online input map showing responses in the "Missing/unsafe sidewalks" category

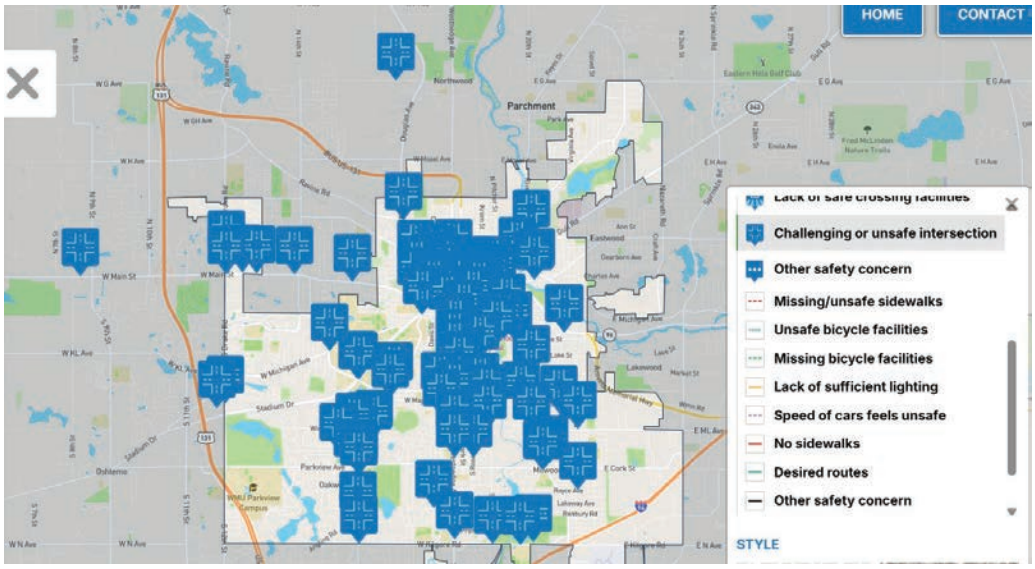


Figure 15: Screenshot of online input map showing responses in the "Challenging or unsafe intersection" category

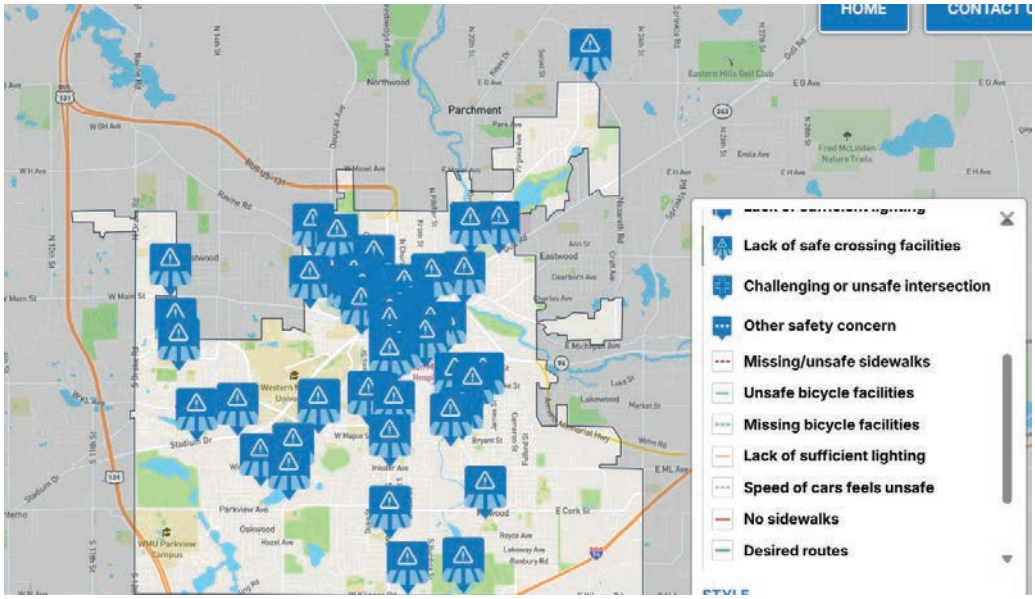


Figure 16: Screenshot of online input map showing responses in the "Lack of safe crossing facilities" category

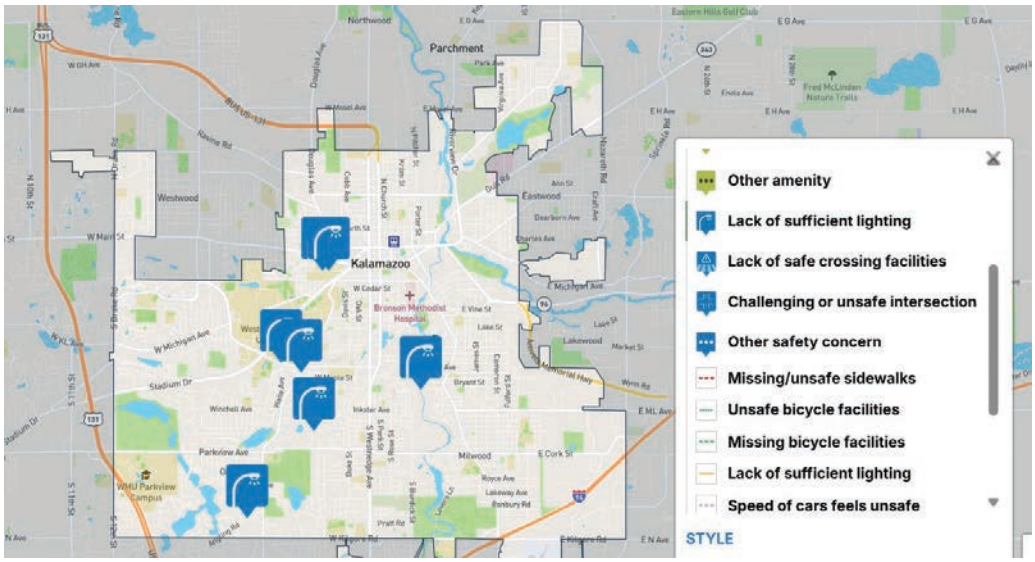
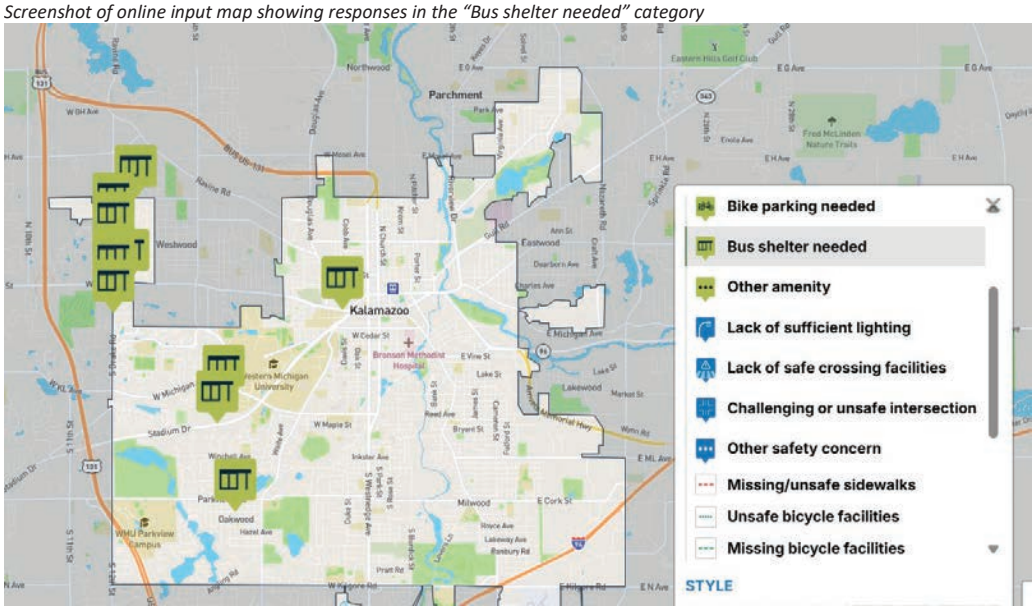
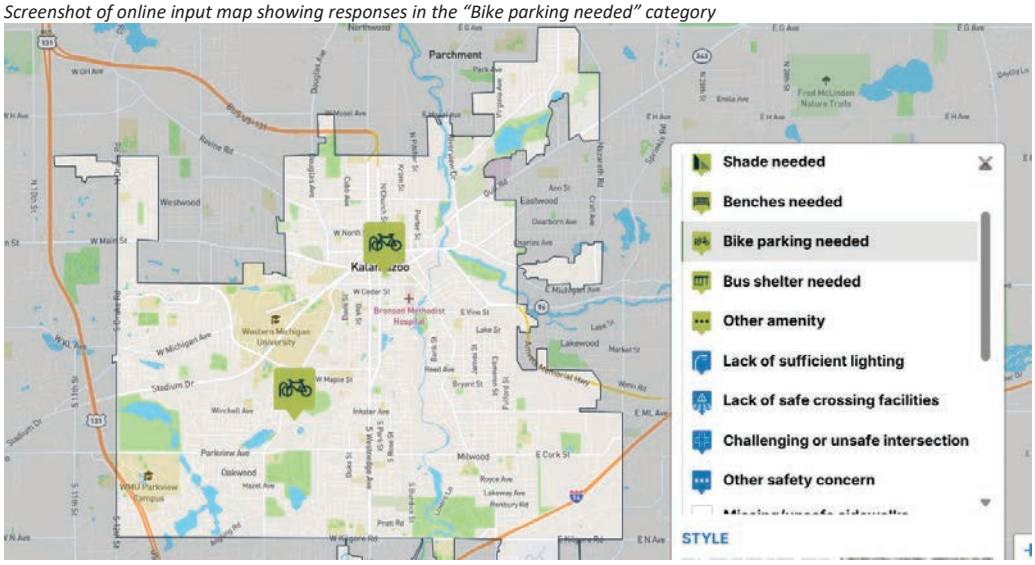


Figure 17: Screenshot of online input map showing responses in the "Lack of sufficient lighting" category

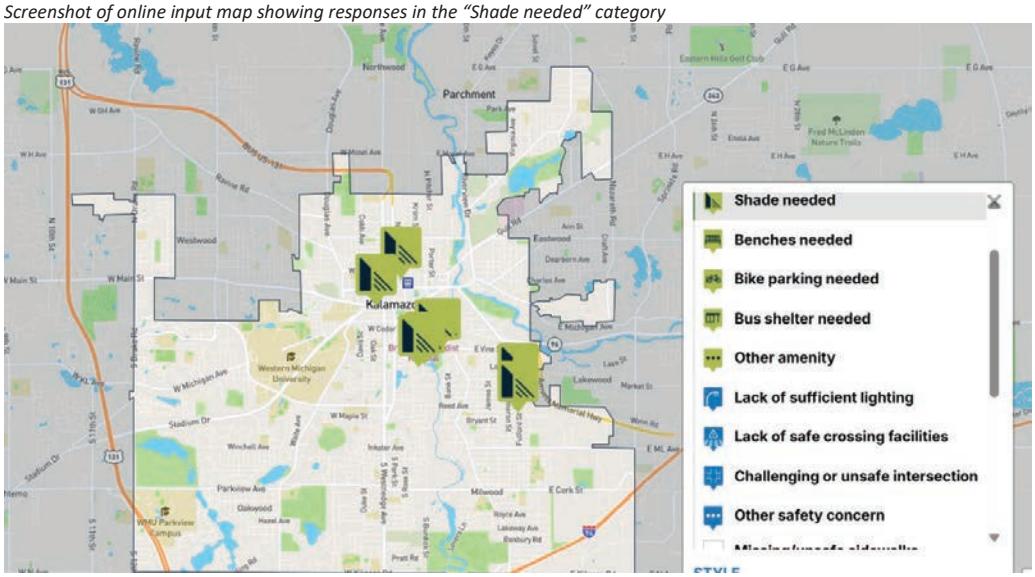
Screenshot of online input map showing responses in the "Bus shelter needed" category



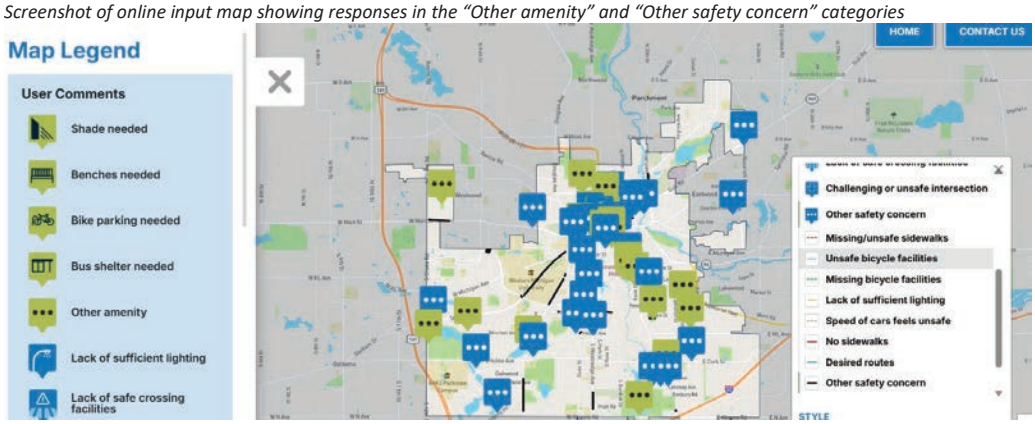
Screenshot of online input map showing responses in the "Bike parking needed" category

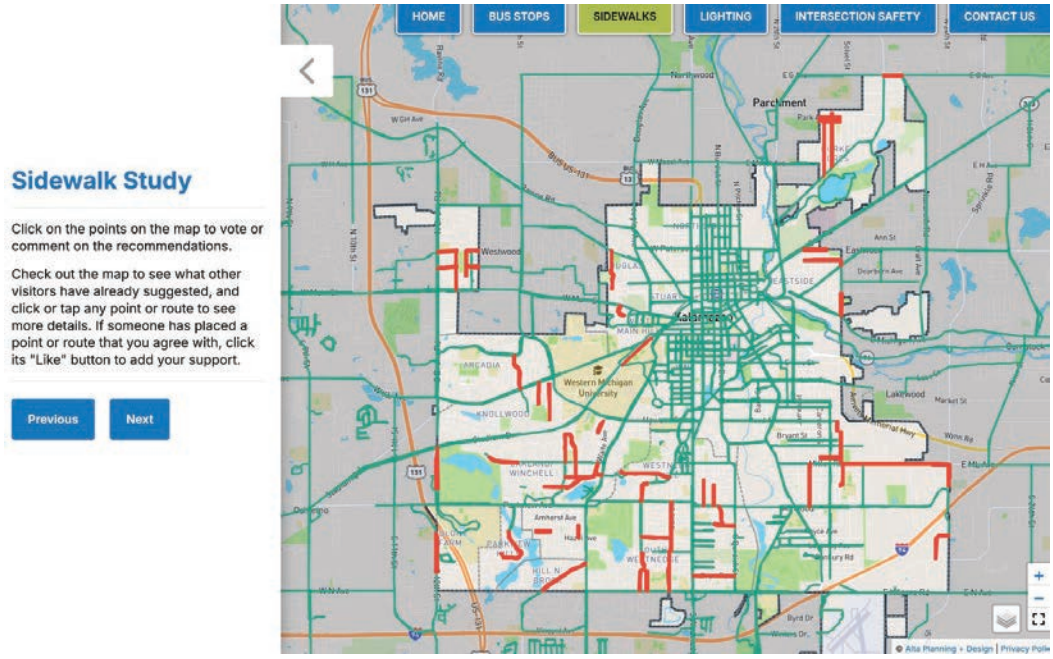


Screenshot of online input map showing responses in the "Shade needed" category

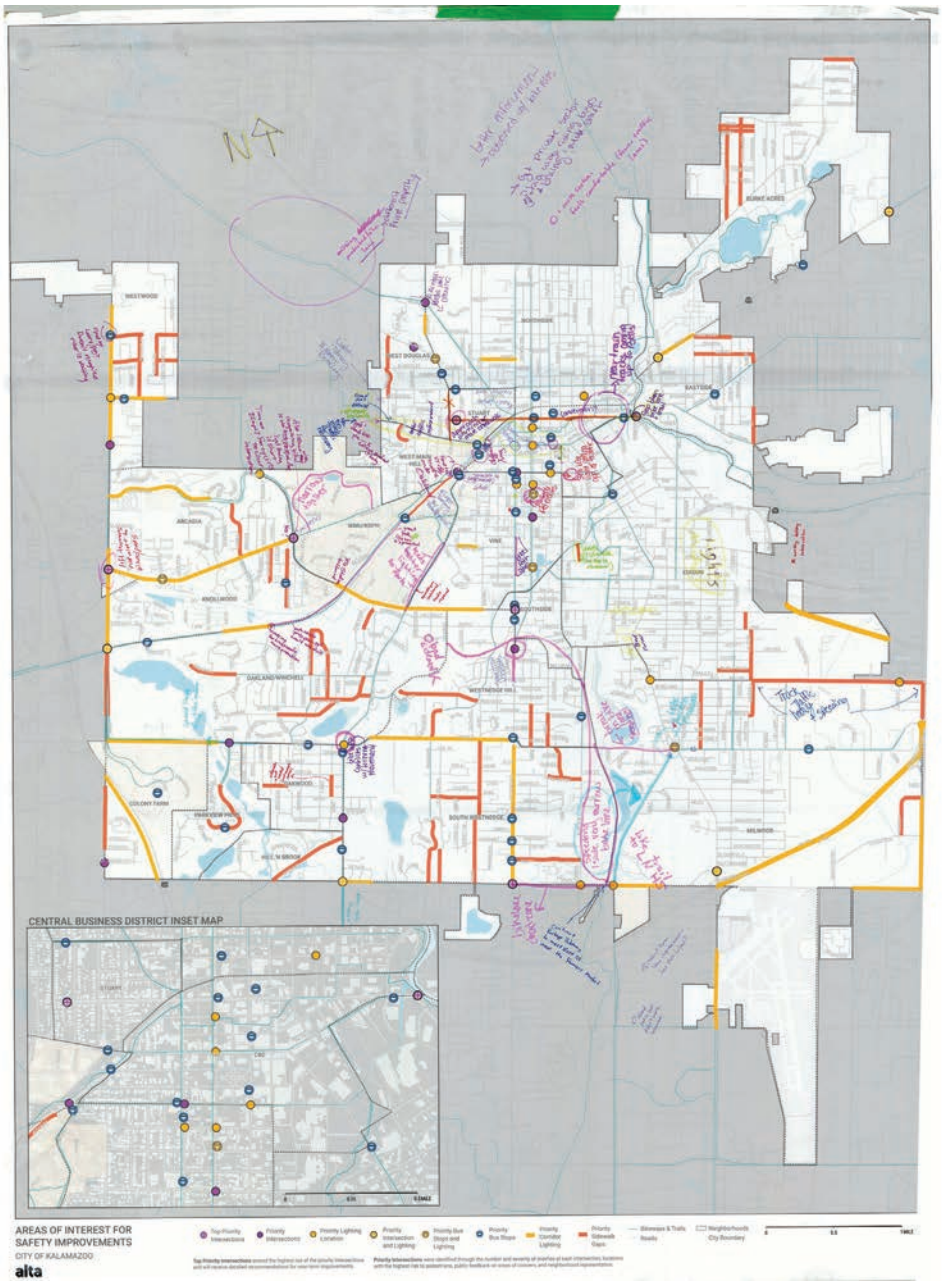


Screenshot of online input map showing responses in the "Other amenity" and "Other safety concern" categories



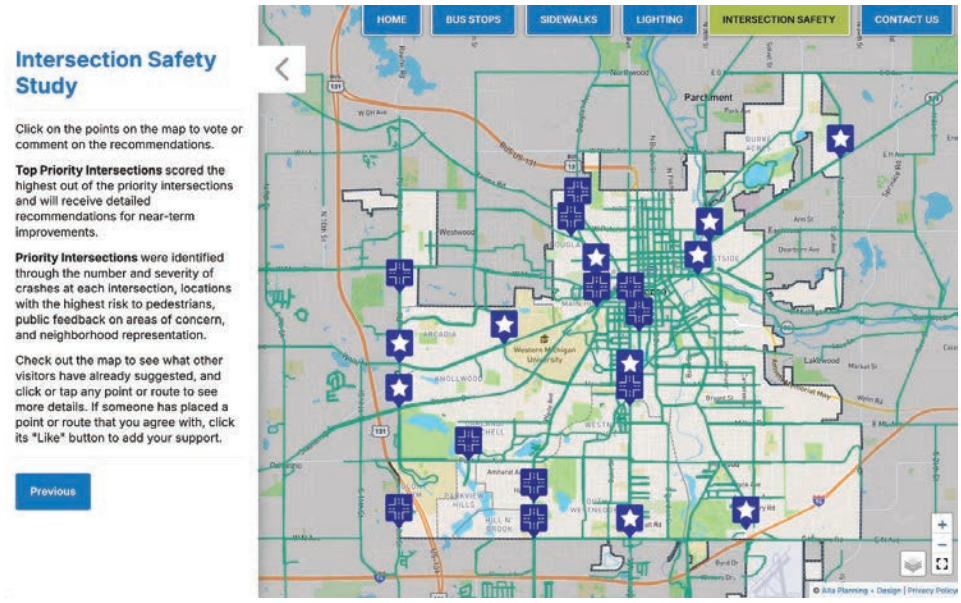

Sidewalk Study
Click on the points on the map to vote or comment on the recommendations.
Check out the map to see what other visitors have already suggested, and click or tap any point or route to see more details. If someone has placed a point or route that you agree with, click its "Like" button to add your support.
Previous
Next
HOME
BUS STOPS
SIDEWALKS
LIGHTING
INTERSECTION SAFETY
CONTACT US
Parchment
Kalamazoo
Western Michigan University

Appendix D: Image of the Plotted Map from In-Person Engagement at Bike the Zoo (Phase 2)

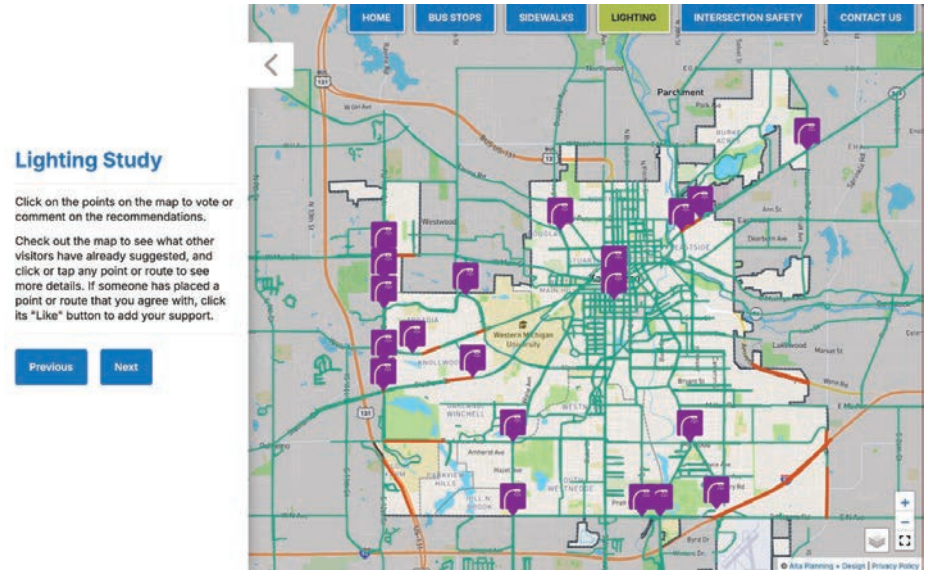


Appendix E: Screenshots from the Phase 2 Online Input Map

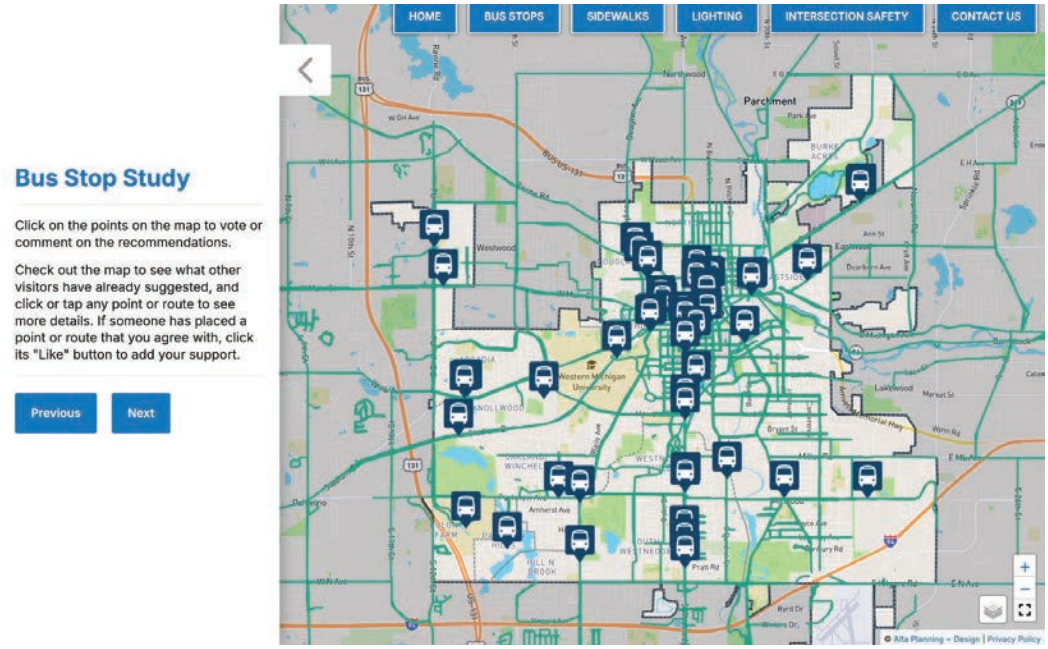
Screenshot of online input map showing proposed priority locations for the "Intersection Safety Study" category



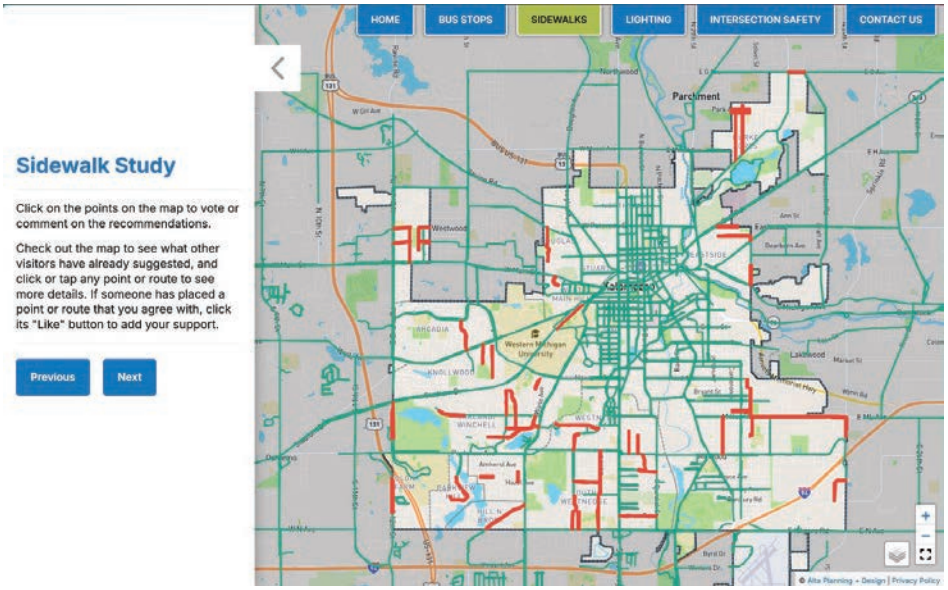
Screenshot of online input map showing proposed priority locations for the "Lighting Study" category



Screenshot of online input map showing proposed priority locations for the "Bus Stop Study" category



Screenshot of online input map showing proposed priority locations for the "Sidewalk Study" category



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Appendix C
Pedestrian Level of Traffic Stress Results & Methodology

MEMORANDUM

APPENDIX C

Kalamazoo, MI Safety Action Plan – Pedestrian Level of Traffic Stress Analysis Results & Methodology

Contents

Kalamazoo Pedestrian Level of Traffic Stress Executive Summary

This memorandum presents the findings of a Pedestrian Level of Traffic Stress (PLTS) analysis conducted by Alta Planning + Design, Inc. for the City of Kalamazoo, MI. The analysis aims to evaluate the comfort level for pedestrians on various roadway segments within the city, identifying gaps and deficiencies in the pedestrian network.

About the Pedestrian Level of Traffic Stress (PLTS) Analysis

A Pedestrian Level-of-Traffic stress (PLTS) analysis estimates the level of comfort for people walking on a given roadway segment. The PLTS analysis identifies where "gaps" or deficiencies in a pedestrian network exist and provides a measure of how likely pedestrians are to use the facility, based on ability and comfort level. Alta completed a PLTS analysis for Kalamazoo's pedestrian network, ranking streets from low stress (LTS 1, suitable for children) to high stress (LTS 4, suitable only to "strong and fearless" pedestrians).

Data sources, which included Kalamazoo Street Centerlines, Sidewalk Polygons, Tree Sites, Michigan DOT Centerlines, and OpenStreetMap (OSM), were collected and cleaned to encourage accuracy. Missing data for certain inputs were supplemented with educated assumptions. A more detailed account of data collection is provided below in the Data Collection and Analysis section of this memo. The appendix also includes methodology details

Results Overview

The PLTS analysis provides a comprehensive overview of pedestrian comfort levels across Kalamazoo's street network. While many areas offer low-stress environments, significant high-stress corridors present challenges to pedestrian connectivity. Addressing these high-stress areas through targeted improvements can enhance the overall pedestrian experience in Kalamazoo.

Key Findings

- Most of the streets in Kalamazoo are low-stress pedestrian environments: 41% of Kalamazoo's streets were classified as LTS 2 (124 miles), and 33% as LTS 1 (101 miles).
- High-stress streets (LTS 3 and LTS 4) accounted for 26% of the network, primarily consisting of highways – including restricted access highways – and arterial roads.
- Key high-stress corridors include Kalamazoo Avenue, Michigan Avenue/Main Street, and Westnedge Avenue, which create barriers to pedestrian connectivity.

Data Collection and Analysis

Data Inputs

PLTS is determined by characteristics of a given roadway segment that affect a pedestrian's perception of safety and comfort including sidewalk presence and width, sidewalk buffer width and type, posted speed limit, and number of travel lanes. Alta received or collected the data described in Table 1 to model these characteristics.

Table 1. Data sources and collection details.

Data Source	Collection Details
Kalamazoo Street Centerlines	Received from AECOM.
Kalamazoo Sidewalk Polygons	Received from AECOM.
Kalamazoo Tree Sites	Received from AECOM.
Michigan DOT Centerlines	Downloaded from MDOT GIS Open Data Portal on 11/6/24.
OpenStreetMap (OSM)	Downloaded and processed from OSM on 10/29/24.

Alta used Kalamazoo Street Centerline data as the baseline network to which the PLTS analysis output was conflated. Alta calculated this PLTS output using attributes from the Kalamazoo Street Centerlines, as well as Kalamazoo Sidewalk Polygons, Kalamazoo Tree Sites, Michigan DOT Centerlines, and OpenStreetMap (OSM). Alta matched data sources to PLTS analysis inputs as detailed in Table 2. Note that there is no data source listed for several of the PLTS inputs. Where there is no data source, Alta used default values, as described in Table 2. To attempt to find data for the PLTS inputs that were missing data, or to find better data sources for PLTS inputs utilizing OSM data, Alta searched for data in the following publicly accessible locations:

- Michigan Department of Transportation GIS Open Data
- State of Michigan GIS Open Data
- Kalamazoo County Parcel Viewer
- City of Kalamazoo Open Data

Table 2. Pedestrian Level-of-Traffic Stress (PLTS) data inputs and sources.

PLTS Input	Data Source	Attribute	Description
Number of Lanes	Michigan DOT Centerlines	MIREThroughLanes	Michigan DOT's version 24 Roads & Highways Centerline Attribution Data (MDOT RH 2024 GDB) contains an attribute for the number of lanes is assumed to be authoritative and complete.
Posted Speed Limit	Kalamazoo Street Centerlines	MPH	Kalamazoo's centerline data contains an assumed speed limit attribute that is complete across the network.
One-Way Number	Kalamazoo Street Centerlines	ONEWAY	Kalamazoo's centerline data contains an assumed one-way attribute that is complete across the network.
Centerline Presence	OSM	centerline_pres	There is no other data source available for this input, and the OSM data appears to be distributed realistically across the network.
Right Parking Lane Width	No data		Alta will use a default value of zero.
Left Parking Lane Width	No data		Alta will use a default value of zero.
Sidewalk Status	Kalamazoo Sidewalk Polygons	Derived	Kalamazoo's sidewalk location data is assumed to be authoritative and complete. Alta used the sidewalk data to derive a sidewalk status attribute (sidewalk presence on both, one, or neither side of the road) on the Street Centerlines baseline network.
Sidewalk Width	Kalamazoo Sidewalk Polygons	Derived	There is no apparent width attribute on the sidewalk data, nor in any other data source available. Since Kalamazoo's sidewalk data are polygons, Alta derived a segment-level average width estimate based on the width of the polygon data and set a minimum value of 5 feet.
Sidewalk Buffer Width	Kalamazoo Sidewalk Polygons	Derived	There is no buffer width data available. Alta derived the presence of sidewalk buffers from a subset of sidewalk polygon features and set a minimum value of 5 feet where a buffer was present.

PLTS Input	Data Source	Attribute	Description
Sidewalk Buffer Type	Kalamazoo Tree Sites, Kalamazoo Sidewalk Polygons	Derived	There is no buffer type data available. Alta derived the presence of sidewalk buffers from a subset of sidewalk polygon features and derived the presence/absence of trees in the buffer area. Alta assigned buffers with trees present a value of 3 (landscaped buffer with trees) and set a minimum value of 2 (landscaped buffer) where a buffer was present, but no trees were present.
Sidewalk Condition	No data		According to City of Kalamazoo IT/GIS personnel, the Kalamazoo Sidewalk Polygons' "Rating" attribute is not comprehensive enough to model sidewalk condition across the network (<5% coverage), so Alta used a default value of 4 (Good).

Data Preparation

Alta prepared the source data for PLTS analysis, including cleaning and engineering. For each dataset, tasks included:

- Kalamazoo Street Centerlines
  - Subset based on ROAD_CLASS attribute. These attributes are assumed to provide detailed roadway classification information. Since the City of Kalamazoo does not have control over private roads, Alta removed these roadways from the network.
  - Reclassify ONEWAY values (B, TF, FT) to 0 (B is assumed to be bidirectional) and 1 (TF and FT are assumed to be unidirectional); reclassify features labeled N (assumed to be travel not permitted) to 0, as pedestrians are assumed to be able to travel on these roadways.
  - Process dual carriageways by merging divided roads of the same functional class within 100 feet of each other, labeling these segments as dual carriageways, correcting the number of lanes, and removing one-way designation.
  - Reclassify inaccurate speed limit values based on examination of street-level imagery.
  - Extend and planarize segments intersecting the City of Kalamazoo boundary.
- Kalamazoo Sidewalk Polygons
  - Sidewalks
    - Subset data based on the WalkSeg attribute. WalkSeg values 1 and 4 were considered part of the sidewalk network, while WalkSeg values 2 and 3 were excluded from the sidewalk network, based on initial exploration that indicates these features represent driveways, parking lot entrances, and similar roadway features.
    - Reclassify WalkSeg value 0 to 1. Based on initial exploration, most sidewalk features classified as WalkSeg value 0 could be assumed part of the sidewalk network.
    - Alta derived sidewalk_status (sidewalk presence on both, one, or neither side of the road) and sidewalk_width (segment-level average width estimate based on multiple width samples) using a custom automated process and conflate these attributes to Kalamazoo Street Centerlines.
  - Sidewalk Buffers

        - Subset data based on WalkSeg attribute. WalkSeg value 3 were considered to represent driveway entrances adjacent to the sidewalk, and therefore the existence of buffer distance between the sidewalk and the roadway.
        - Alta derived the presence/absence of sidewalk buffers using a custom automated process to conflate this attribute to Kalamazoo Street Centerlines and assumed minimum values for sidewalk_buffer_type and sidewalk_buffer_width where a sidewalk buffer was present (detailed in Table 2).
- Kalamazoo Tree Sites
    - Alta derived the presence/absence of trees in sidewalk buffers using a custom automated process to conflate this attribute to Kalamazoo Sidewalk Polygons, and reclassified sidewalk_buffer_type to 3 (landscaped buffer with trees) where trees were present (detailed in Table 2).
- Michigan DOT Centerlines
    - Reclassify segments where the number of lanes is zero to 2 lanes.
- OSM
    - Subset data based on the highway attribute. Roadways are tagged with a wide variety of highway tags in OSM. Alta will exclude features with tags that indicate the feature is not a roadway.

After preparing the source data, Alta conflated input attributes (Table 2) to the Kalamazoo Street Centerlines data by converting the Kalamazoo Street Centerlines segments into points, joining attributes from the source data feature with the closest spatial relationship with each point, and joining the attributes from the points back to the Kalamazoo Street Centerlines segments.

Additionally, in the iterative process of running the PLTS analysis and examining the results for outliers and inaccuracies, Alta applied manual edits to the input attributes of over 150 features. These edits were based on examination of the original data against the most recent Google street-level imagery. Alta's goal in making these edits was to make the data more closely reflect the reality on the ground.

Data Analysis

Alta completed a PLTS analysis through an assessment of street segments. Each segment of the roadway was evaluated based on its characteristics; if multiple scores are present within a segment, the highest (most stressful) score was used as the overall segment score.

PLTS considers elements of the pedestrian environment both individually (e.g., buffer type), and in combinations that are known to influence each other (e.g., sidewalk width and pavement quality). The analysis uses the following overall guiding principles:

- The presence of a complete sidewalk serves as the foundation of the pedestrian network.
- As the sidewalk width increases and sidewalk condition improves, the level of stress of the pedestrian environment decreases.
- Buffering width is the total distance between the sidewalk and motor vehicle travel lanes, including parking lanes, bike lanes, and landscaping. As width increases, the amount of separation between pedestrians and motor vehicles increases, and the pedestrian environment becomes less stressful.
- Buffer type describes the quality of the buffer that separates the sidewalk from the travel lanes. The presence of a buffer itself provides both actual and perceived safety benefits for the pedestrian, thus decreasing the stress of the pedestrian environment. A buffer with vertical elements is especially effective at increasing the safety of the pedestrian. Landscaping serves to enhance the pedestrian's travel experience.

Scores for each element of the pedestrian environment are assigned to each segment of the centerline, and the worst (highest scoring) of the elements is used. If two sidewalks are present on a street, the worst (highest scoring) result is mapped to the centerline. Appendix A: Pedestrian Level of Traffic Stress Methodology describes the full explanation of the PLTS analysis.

City of Kalamazoo PLTS Results

Overall, 41 percent of Kalamazoo's streets were considered LTS 2 (124 miles), followed closely by LTS 1 (33 percent, 101 miles), meaning a vast majority of Kalamazoo's streets are low stress places to walk (Figure 1). These streets typically had fewer lanes and lower speed limits. The lowest stress streets also had wider sidewalks, on one or both sides of the street, with wider sidewalk buffers that included trees. The best examples of these streets were downtown Kalamazoo's complete streets (Figure 3) - especially the Kalamazoo Mall - and some of the residential areas on the south and east side of the city (Figure 2). However, many areas with otherwise low stress characteristics had narrow sidewalks, lacked sidewalks altogether, or had no sidewalk buffer, increasing the level of traffic stress. This was common in some of the residential areas on the southwest side (Figure 2).

Where marginal or missing pedestrian facilities were combined with more lanes and higher speeds, Kalamazoo's streets were LTS 3 (27 miles, 9 percent) and LTS 4 (53 miles, 17 percent) (Figure 1). These are almost exclusively highways and arterial roads. As seen in Figure 2, these higher stress roadways create many disconnected "islands" of lower stress pedestrian environments across the city and may act as barriers to the overall pedestrian connectivity of Kalamazoo.

High-stress corridors like Kalamazoo Avenue, Michigan Avenue/Main Street, Lovell Street, Westnedge Avenue, and Park Street converge in downtown Kalamazoo to create islands of low-stress connectivity only a few square blocks in size (Figure 3) and continue to be stressful corridors outwards to the city's border. Corridors like Gull Road, King Highway, Pitcher Street/Portage Street, and Stadium Drive present high-stress barriers radiating from downtown. Howard Street and Parkview Avenue/Whites Road/Cork Street split up the southern part of the city (Figure 2).

Limitations

This analysis analyzed the level of comfort for people walking on a given roadway segment across Kalamazoo's roadway network, but the analysis has a few limitations worth considering:

- **Missing Input Data:** While Alta found or derived as many of the data inputs for PLTS as possible, this analysis was limited by the data inputs available, especially related to pedestrian facilities. Alta made significant assumptions about sidewalk width (set a width minimum of 5 feet) and sidewalk buffer type (assumed at least landscaped, derived the presence of trees) and width (set a width minimum of 5 feet), which typically erred on the side of lowering LTS. Missing data for bikeways, street parking, and sidewalk condition also created gaps in modeling the pedestrian environment – and therefore pedestrian comfort – accurately.

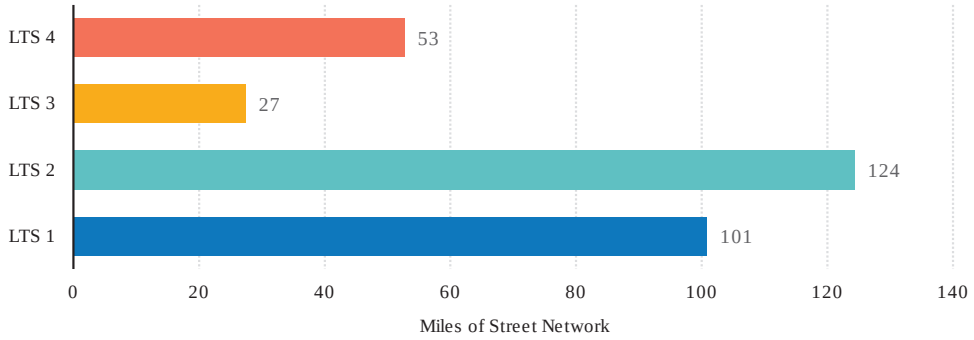


Figure 1. Miles of street network in Kalamazoo by PLTS.

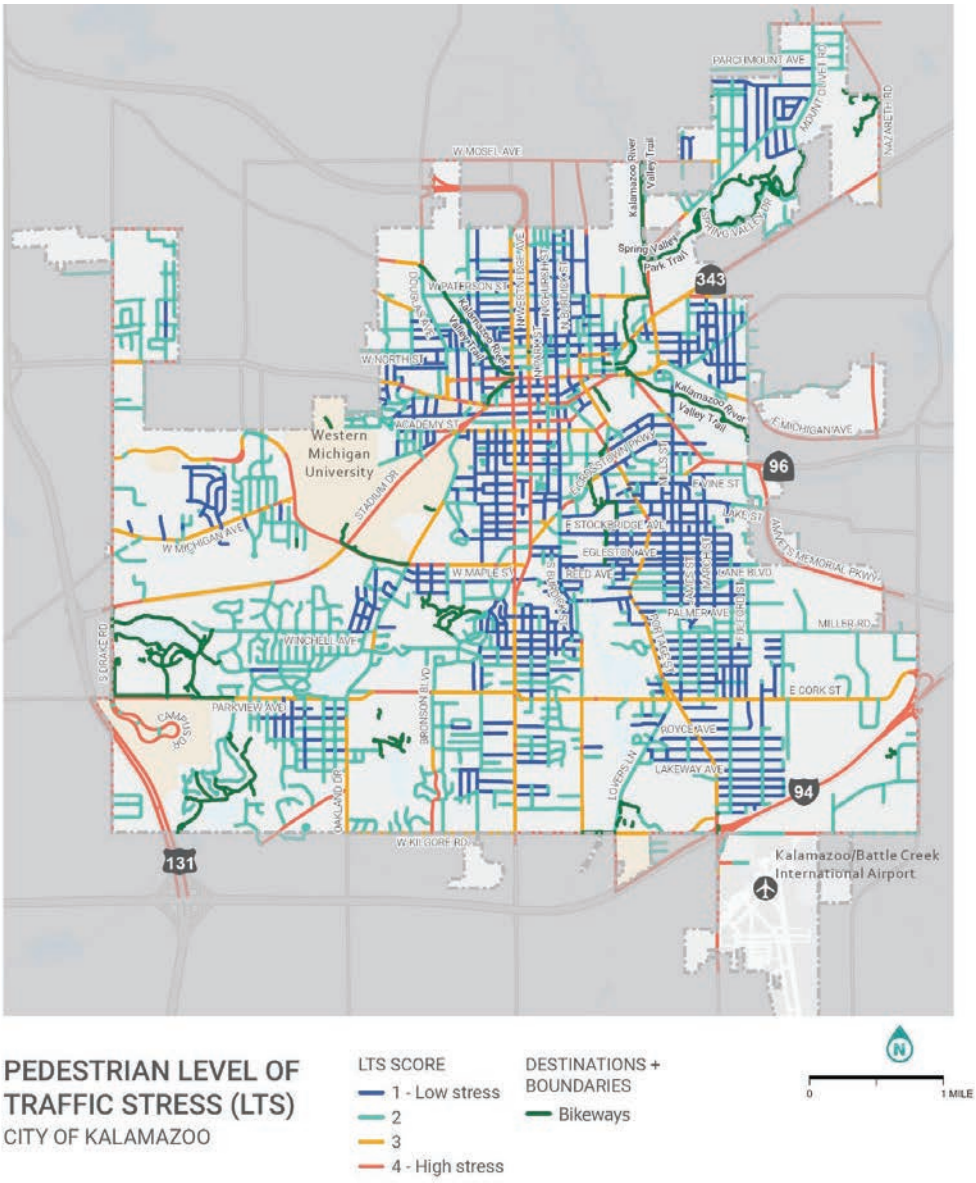


Figure 2. Pedestrian Level of Traffic Stress in Kalamazoo.

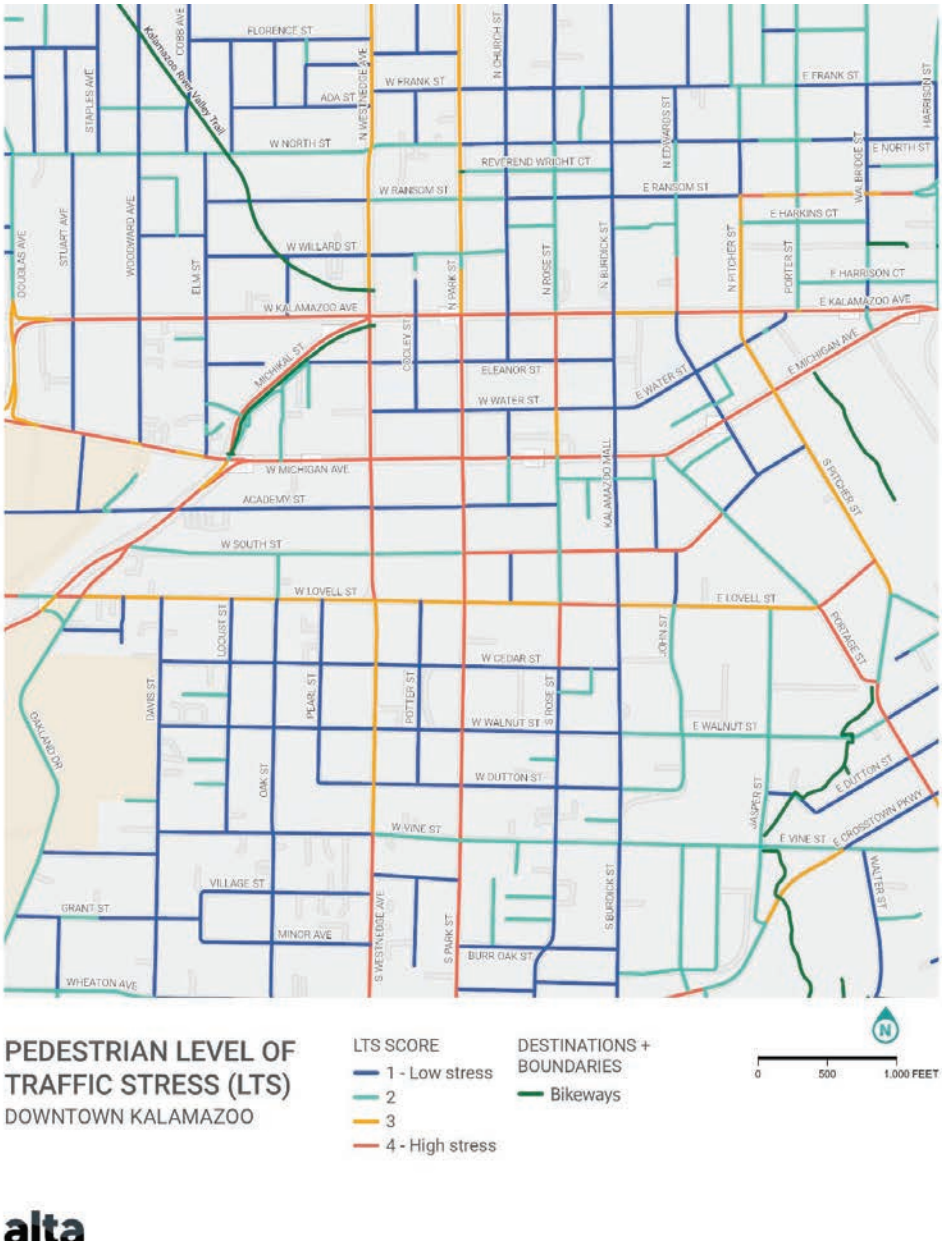


Figure 3. Pedestrian Level of Traffic Stress in downtown Kalamazoo.

Appendix A: Pedestrian Level of Traffic Stress Methodology

Pedestrian Level of Traffic Stress (PLTS) Overview

The pedestrian level of traffic stress (PLTS) analysis estimates the level of comfort for people walking on a given roadway segment. The PLTS analysis identifies where "gaps" or deficiencies in a pedestrian network exist, and provides a measure of how likely pedestrians are to use the facility, based on ability and comfort level.

Alta's PLTS analysis methodology is adapted from the Oregon Department of Transportation's *Analysis Procedures Manual*[1] and is intended as a companion for bicycle level of traffic stress (BLTS). PLTS is determined by characteristics of a given roadway segment that affect a pedestrian's perception of safety and comfort including sidewalk presence and width, sidewalk buffer width and type, posted speed limit, and number of travel lanes. PLTS scores classify road segments into one of four levels of traffic stress and, while similar to BLTS scores, PLTS considers the level of attention required in addition to the user experience:

- PLTS 1 represents roadways where pedestrians of all ages and abilities would feel comfortable walking and require little attention to traffic.
- PLTS 2 represents slightly less comfortable roadways that require more attention to traffic and are suitable for children over 10, teens, and adults.
- PLTS 3 represents moderately uncomfortable roadways, where most able-bodied adults would feel uncomfortable but safe.
- PLTS 4 represents high traffic stress and would be used only by able-bodied adults with limited route choices.

The results of the PLTS analysis identifies existing areas that are low-stress for pedestrians, as well as the degree to which roadways must be improved in order to provide a comfortable experience for pedestrians of all ages and abilities. Additionally, scenario testing can be used to determine how a roadway or route's level of stress may change with improvements. The analysis is intended for use in urban areas specifically; while it can be used in rural conditions where pedestrian facilities exist, the methodology will yield a high PLTS score (greatest discomfort) where high-speed traffic is present.

Methodology

PLTS analysis is completed through an assessment of street segments using spatial data obtained from the client or from aerial imagery. Each segment of the roadway is evaluated based on its characteristics; if multiple scores are present within a segment, the highest (most stressful) score is used as the overall segment score.

[1] Oregon Department of Transportation, Transportation Development Division Planning Section: Transportation Planning Analysis Unit. 2020. *Analysis Procedures Manual* Version 2. https://www.oregon.gov/odot/Planning/Pages/APM.aspx.

PLTS considers elements of the pedestrian environment both individually (e.g., buffer type), and in combinations that are known to influence each other (e.g., sidewalk width and pavement quality). The analysis uses the following overall guiding principles:

- The presence of a complete sidewalk serves as the foundation of the pedestrian network.
- As the sidewalk width increases and sidewalk condition improves, the level of stress of the pedestrian environment decreases.
- Buffering width is the total distance between the sidewalk and motor vehicle travel lanes, including parking lanes, bike lanes, and landscaping. As width increases, the amount of separation between pedestrians and motor vehicles increases, and the pedestrian environment becomes less stressful.
- Buffer type describes the quality of the buffer that separates the sidewalk from the travel lanes. The presence of a buffer itself provides both actual and perceived safety benefits for the pedestrian, thus decreasing the stress of the pedestrian environment. A buffer with vertical elements is especially effective at increasing the safety of the pedestrian. Landscaping serves to enhance the pedestrian's travel experience.

Scores for each element of the pedestrian environment are assigned to each segment of the sidewalk centerline, and the worst (highest scoring) of the elements is used. If two sidewalks are present on a street, the worst (highest scoring) result is mapped to the centerline.

Figure 1 illustrates the overall PLTS scoring process. Notes on data inputs and assumptions are found in Table 1. Segment scores are assigned as shown in Table 2 through Table 5.

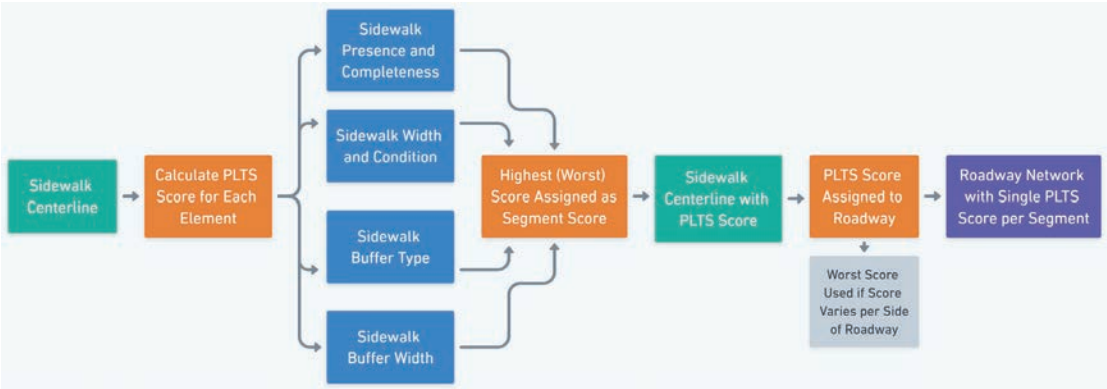


Figure 1: The Pedestrian LTS Scoring Process

Table 1. Data Inputs and Assumptions

Pedestrian Element	Rationale	Data Inputs
Sidewalk Presence and Completeness (Table 2)	The presence and completeness of sidewalk facilities is the baseline for measurement. At a minimum, sidewalks should be present and complete on most roadways to facilitate pedestrian travel.	Based on OpenStreetMap (OSM) data and supplemented by manual review within study area.
Sidewalk Width and Condition (Table 3)	The width of the sidewalk can have an impact on the associated comfort level. Wider sidewalks provide greater comfort, especially on high-speed roadways. The condition of the sidewalk is primarily based on concrete quality.	Based on OSM data and supplemented by manual review within the study area.
Sidewalk Buffer Type (Table 4)	The buffer type changes the pedestrian experience as it can offer a range of perceived and actual levels of protection. High-speed roadways are considered to be less comfortable, and a more substantial buffer increases pedestrian comfort.	Based on OSM data and supplemented by manual review within the study area.
Sidewalk Buffer Width (Table 5)	Total buffering width is the summation of the width of buffer, width of parking, width of shoulder, width of curb and gutter, and width of the bike lane on the same side of the roadway as the pedestrian facility being evaluated.	Based on OSM data and supplemented by manual review within the study area.

Table 2 through Table 5 specify the scoring criteria based on sidewalk presence, sidewalk width and condition, buffer type, and buffer width, in relation to the existing roadway condition (factors such as speed and number of lanes). The criteria are adapted from the Oregon Department of Transportation *Analysis Procedures Manual*. These tables are used in combination to assign an overall PLTS score; if multiple scores are present within a segment, the highest (most stressful) score is used as the overall segment score.

Table 2: Pedestrian Level of Traffic Stress Based on Sidewalk Presence and Completeness

Number of Travel Lanes	Posted or Prevailing Speed					
	≤ 25 mph		30–35 mph		≥ 40 mph	
	2 Lanes	> 2 Lanes	2 Lanes	> 2 Lanes	2 Lanes	>2 Lanes
Complete Sidewalk on Both Sides[1,2]	LTS 1	LTS 1	LTS 1	LTS 1	LTS 1	LTS 1
Complete Sidewalk on One Side	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
No Sidewalk[3]	LTS 2	LTS 4	LTS 4	LTS 4	LTS 4	LTS 4

1. This deviation from the ODOT Methodology enables more deference to buffer accommodations identified in Table 4 and Table 5 while scoring network completeness.
2. Partial sidewalk coverage on a block is not considered complete.
3. Residential (OSM Highway class local) roadways without sidewalk default to LTS 2; roadways without sidewalk default to LTS 4.

Table 3: Pedestrian Level of Traffic Stress Based on Sidewalk Width and Condition

		Sidewalk Condition[3]			
		Good	Fair	Poor	Very Poor
Actual/Effective Width (feet)[1,2]	< 4	LTS 4	LTS 4	LTS 4	LTS 4
	≥ 4 to < 5	LTS 3	LTS 3	LTS 3	LTS 4
	≥ 5	LTS 2	LTS 2	LTS 3	LTS 4
	≥ 6	LTS 1	LTS 1	LTS 2	LTS 3

1. Effective width is the available/usable area for the pedestrian clear of obstructions. Effective width does not include areas occupied by storefronts or curbside features.
2. For analysis purposes, a standard width of five feet was assumed for all sidewalks. For segments with sidewalks on one side, width is evaluated based on the width of the existing sidewalk to avoid conflicting with other tables.
3. Sidewalk condition is assumed to be good unless other information is available.

Table 4: Pedestrian Level of Traffic Stress Based on Physical Buffer Type

Buffer Type[1]	Prevailing or Posted Speed			
	≤ 25 mph	*30 mph*	*35 mph*	*≥ 40 mph*
No Buffer (curb tight)	LTS 2[2]	LTS 3	LTS 3	LTS 4
Solid Surface	LTS 2[2]	LTS 2	LTS 2	LTS 2
Landscaped	LTS 1	LTS 2	LTS 2	LTS 2
Landscaped with Trees	LTS 1	LTS 1	LTS 1	LTS 2
Vertical	LTS 1	LTS 1	LTS 1	LTS 2

1. Combined buffer: If two or more of the buffer conditions apply, use the most appropriate (typically the lower-stress type).
2. If no centerline is present (residential street) or the street is traffic calmed (including sporadic vertical separation such as street furniture, street trees, lighting, planters, surface change, and so on), then the PLTS can be lowered by one PLTS level.

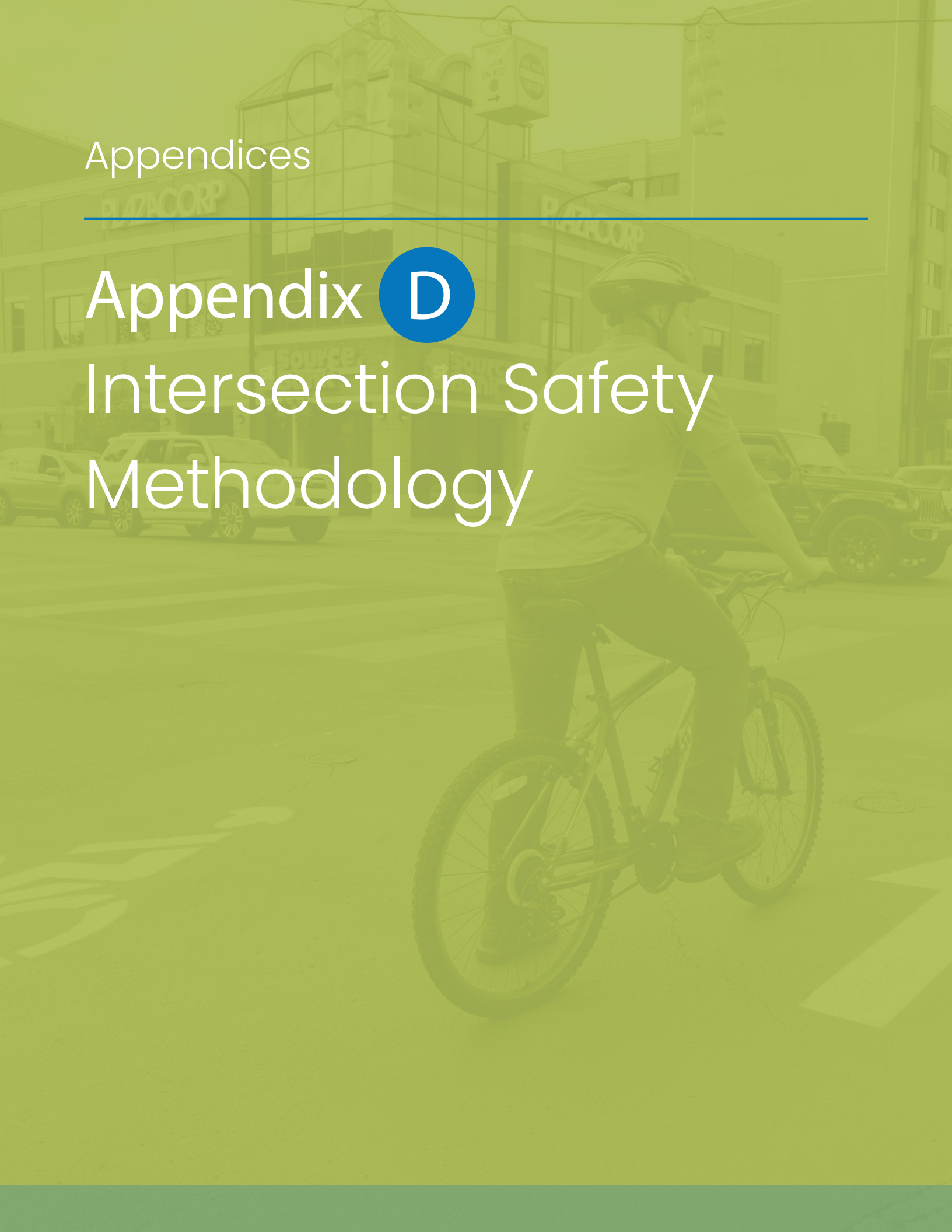
Table 5: Pedestrian Level of Traffic Stress Based on Physical Buffer Width[1]

Total Number of Travel Lanes (both directions)[3]	Total Buffering Width (feet)[2]				
	< 5	*≥ 5 to < 10*	*≥ 10 to < 15*	*≥ 15 to < 25*	*≥ 25*
≤ 2	LTS 2[4]	LTS 2	LTS 1	LTS 1	LTS 1
3	LTS 3[4]	LTS 2	LTS 2	LTS 1	LTS 1
4–5	LTS 4[5]	LTS 3	LTS 2	LTS 1	LTS 1
6 ≥	LTS 4[5]	LTS 4[5]	LTS 3	LTS 2	LTS 2

1. Source: Based on Oregon Department of Transportation *Analysis Procedures Manual*, Table 14-23.
2. Total buffering width is the summation of the width of buffer, width of parking, width of shoulder, width of curb and gutter, and width of the bike lane on the same side of the roadway as the pedestrian facility being evaluated.
3. One-way facilities are assumed to have their lanes multiplied by 2 to represent exposure to lane crossing.
4. If no centerline is present (residential street) or the street is traffic calmed (including sporadic vertical separation such as street furniture, street trees, lighting, planters, surface change, and so on), then the PLTS can be lowered by one PLTS level.
5. Sections with a substantial physical barrier/tall railing between the travel lanes and the walkway (such as might be found on a bridge) can be lowered to PLTS 3.

Appendices

Appendix D
Intersection Safety Methodology



MEMORANDUM

APPENDIX A

Kalamazoo, MI Safety Action Plan – Intersection Safety Improvement Plan Methodology

Contents

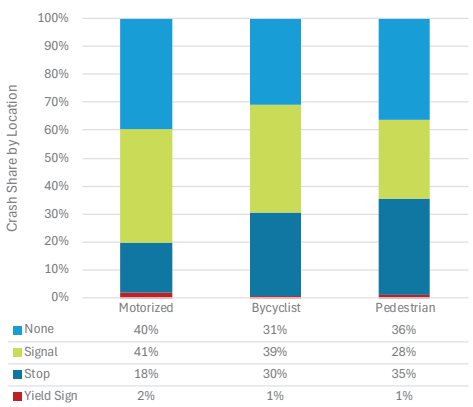
Intersection Safety Improvement Plan Methodology

Intersection Safety Analysis

To better understand intersection safety risks for people walking and biking, Alta conducted a detailed analysis of crash patterns and pedestrian comfort across Kalamazoo. Although the City provided a list of signalized intersections, preliminary findings showed that only 39% of bicycle crashes and 28% of pedestrian crashes occurred at signalized intersections, with a further 30% of bike crashes and 35% of pedestrian crashes occurring at stop-controlled intersections. Because a comprehensive intersection dataset was not available, Alta created a custom intersection feature class using the roadway network from the Pedestrian Level of Traffic Stress (PLTS) analysis, removing interstate ramps and cleaning the data to exclude false intersections at differing grades.

Crashes within approximately 250 feet of an intersection were matched to the closest intersection point, and crash counts were weighted by severity to identify high-risk locations. Detailed crash attributes were analyzed to highlight intersections with high rates of pedestrian-involved collisions—particularly those involving severe outcomes, dangerous movement types (e.g., angle, rear-end, run-off-road), or poor lighting conditions.

To supplement crash data with a pedestrian comfort lens, PLTS were calculated for intersecting corridors at each intersection, and the maximum and minimum scores were recorded. Alta developed behavior-informed scoring system that reflects how stressful approaches can significantly increase perceived travel time and pedestrian activity. This scoring approach emphasized the highest-leg of each intersection, recognizing its outsized role in shaping the and comfort of the overall crossing.



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tool and highest

Crash severity and PLTS data were combined into a composite index, allowing intersections to be ranked based on both historical data and pedestrian stress factors. These results were cross-referenced with the City-provided MnDOT intersection screening overlaid with a national equity index to identify areas with the combined safety risk and equity need.

The final output includes two static maps:

A severity-weighted crash index map for all intersections.

A pedestrian-involved crash index map highlighting intersections with elevated average and maximum PLTS scores and showing neighborhood boundaries.

This comprehensive analysis has established a strong foundation for identifying priority intersections for targeted upgrades and advancing equitable, data-informed safety improvements in Kalamazoo.

Focus Area Selection Methodology

Using the results of the Safety Analysis, Alta compiled a comprehensive table of all intersections in Kalamazoo with corresponding all-crash and pedestrian safety index scores for inclusion in the Intersection Safety Upgrades Plan. This table also identifies the neighborhood in which each intersection is located and serves as the foundation for identifying priority locations. Ten key intersections of concern have been selected for review by the City, to be presented in April 2025. These locations were prioritized based on high pedestrian and all-crash safety index scores, representation across different neighborhoods, and lack of significant geometric or striping improvements since the crash data were collected. The presentation will also note any overlap between these intersections and findings from concurrent safety studies, including the bus stop and lighting analyses.

Following the City's review, Alta anticipates that five of these intersections will be selected as priority locations for near-term safety upgrades. For each of the five, Alta will develop tailored recommendations addressing issues such as signal timing, signage, and physical design, with an emphasis on improving safety and accessibility for pedestrians, cyclists, and individuals with mobility challenges.

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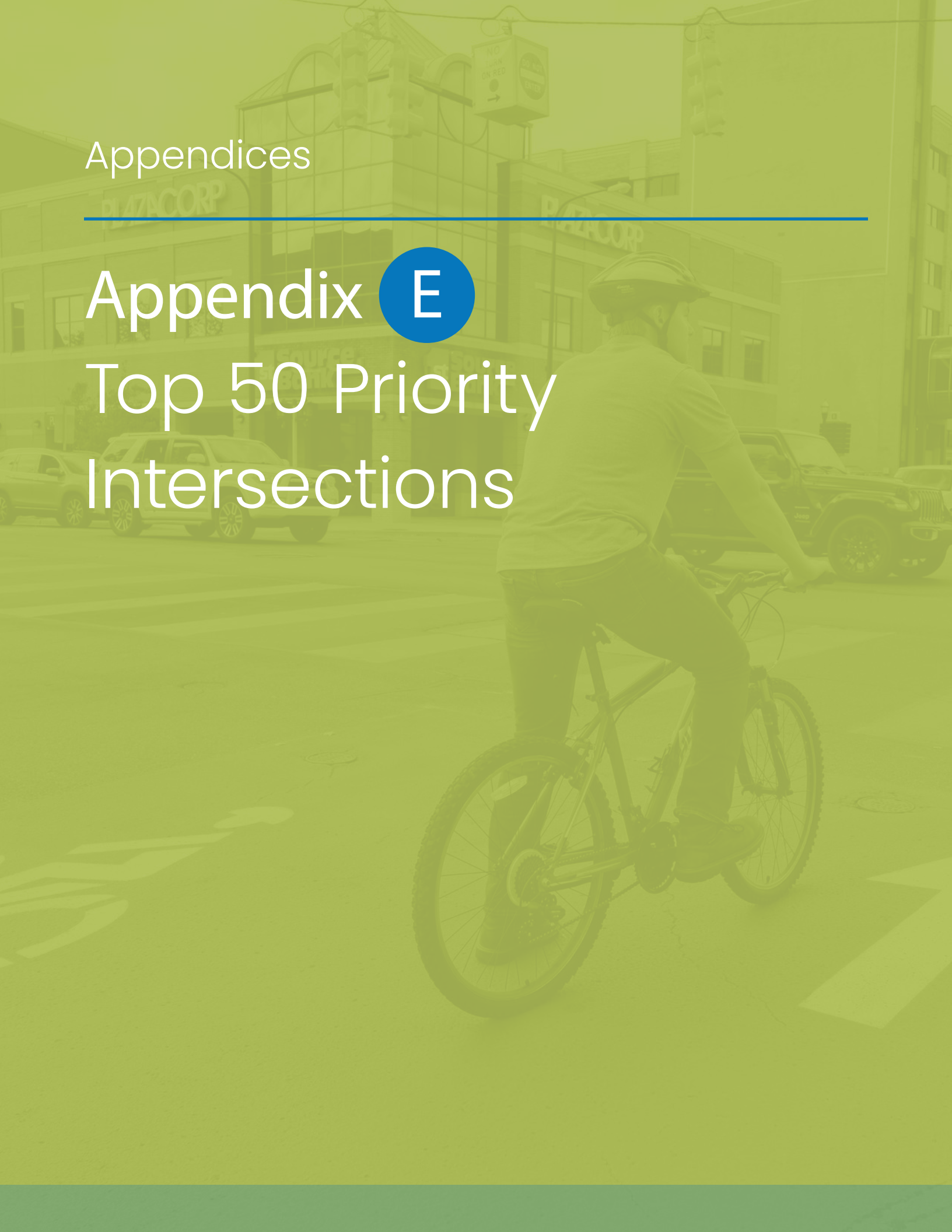
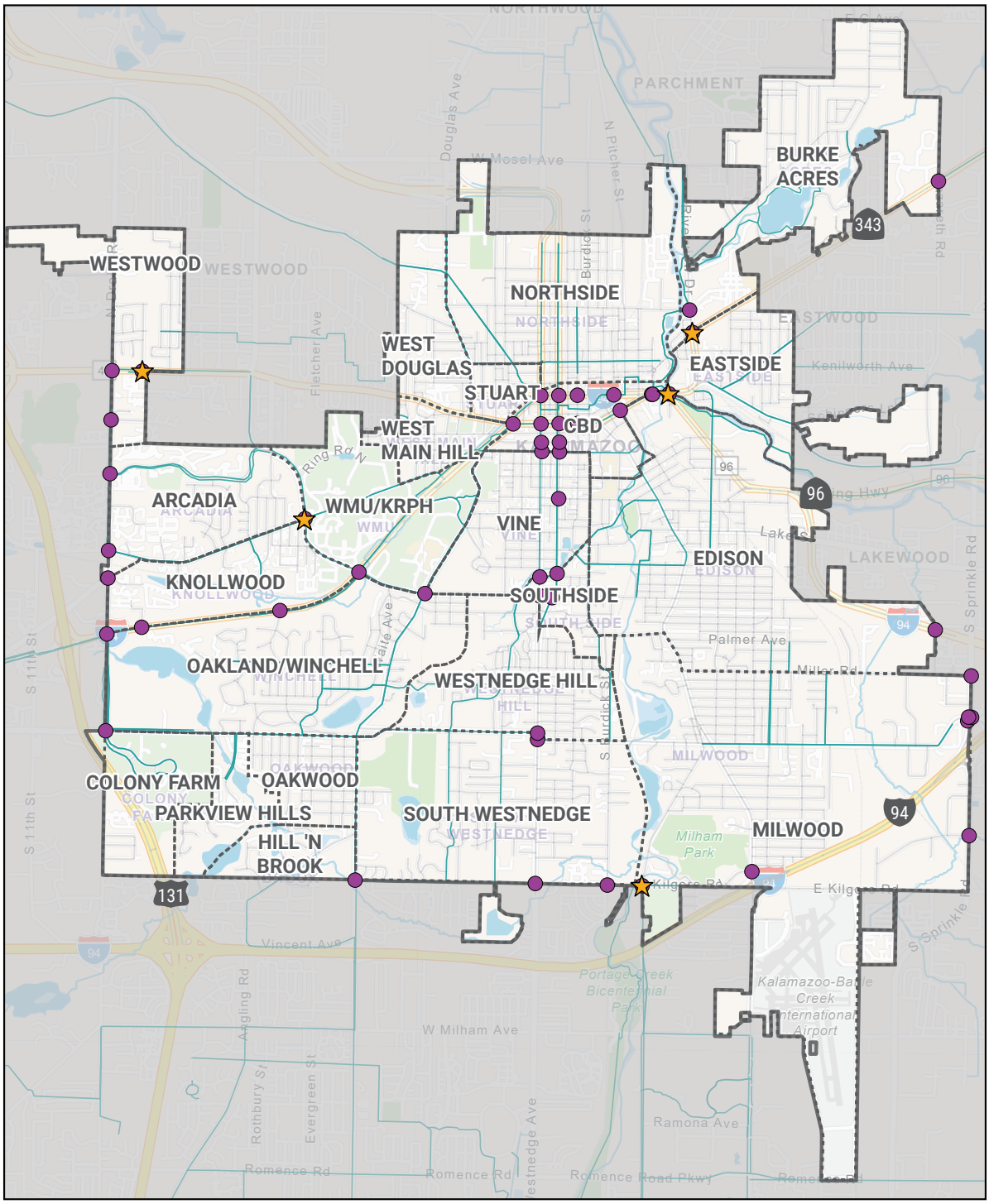
Appendix E
Top 50 Priority Intersections





PRIORITY AREAS FOR SAFETY IMPROVEMENTS

CITY OF KALAMAZOO

alta

Intersections with Recommendations

Top 50 Scoring All Mode Intersections

Bikeways & Trails

Neighborhoods

City Boundary

0 0.5 1 MILE

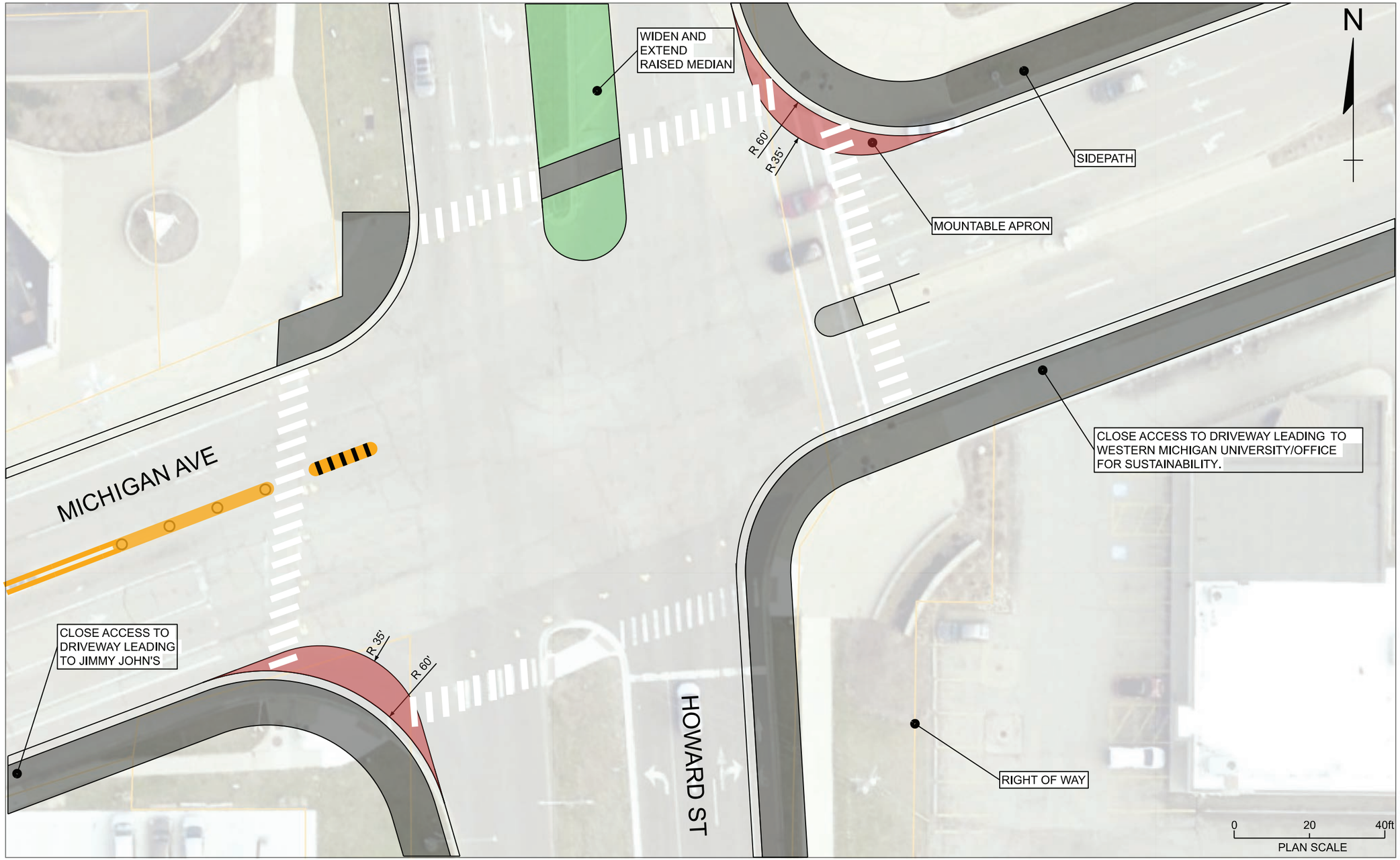
N

Date: 11/14/2025

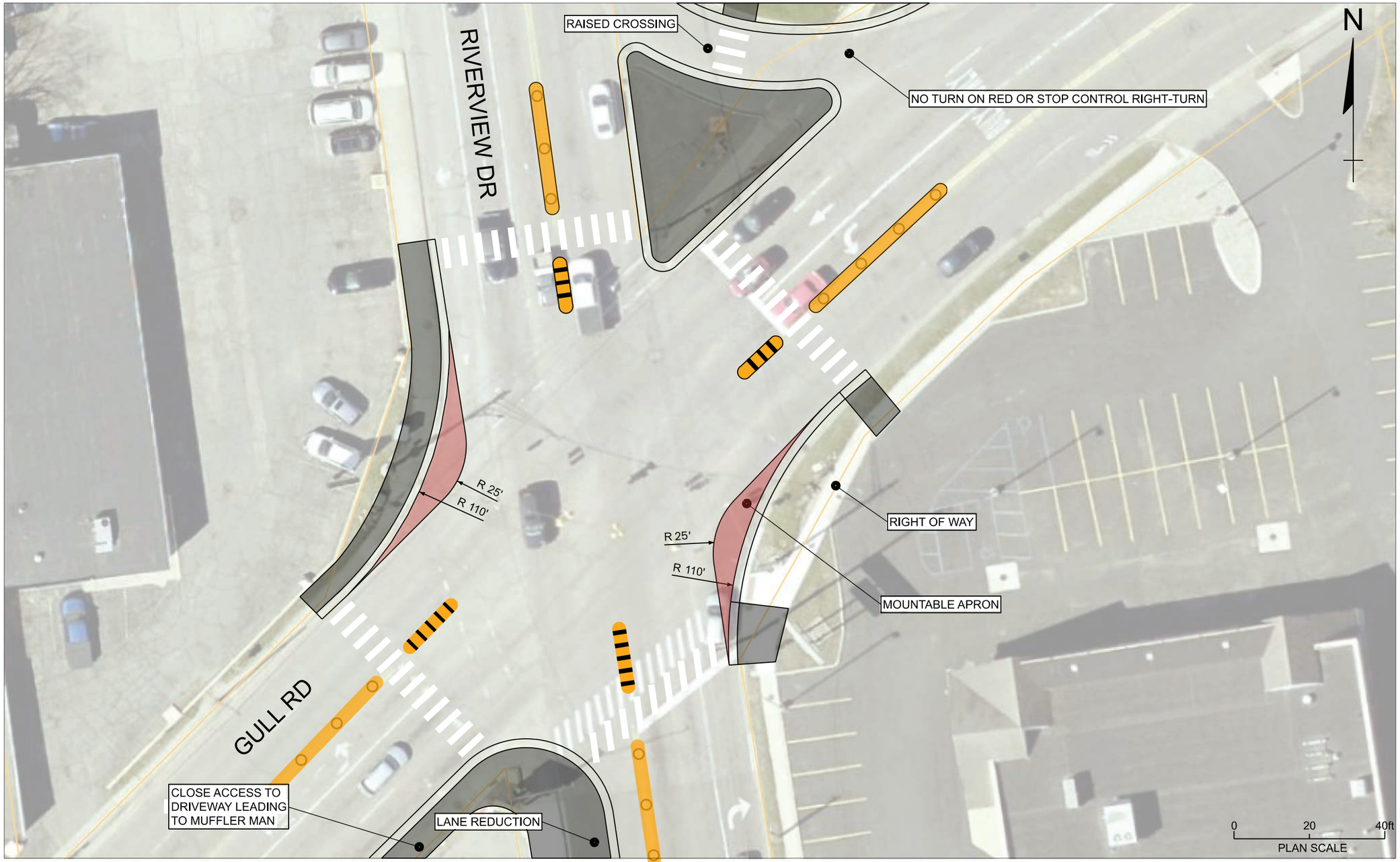
Neighborhood	All Modes Score	Pedestrian Safety Score	Longitude	Latitude
Central Business District	1.99	1.97	-85.58984313	42.2944007
Central Business District	1.98	1.95	-85.58975831	42.29154796
Oakland/Winchell	1.98	1.41	-85.64832557	42.26969299
Central Business District	1.98	1.97	-85.58730297	42.29160031
Knollwood	1.97	1.86	-85.61421082	42.27631167
Central Business District	1.97	1.86	-85.58739349	42.29443948
Arcadia	1.97	1.39	-85.64826736	42.27811995
Eastside	1.96	1.93	-85.56934775	42.30099089
Westwood	1.96	1.93	-85.64816774	42.29627513
Burke Acres	1.96	1.39	-85.53620256	42.31660513
South Westnedge	1.96	1.86	-85.58962936	42.24515526
Southside	1.96	1.39	-85.58962158	42.27420811
Milwood	1.95	1.39	-85.56023395	42.24666422
South Westnedge	1.95	1.93	-85.58961525	42.26033216
Milwood	1.95	1.41	-85.53069068	42.26253994
Central Business District	1.95	1.39	-85.58958707	42.28875498
WMU/KRPH	1.95	1.96	-85.62164634	42.28162001
Milwood	1.95	1.98	-85.53121188	42.26218799
Central Business District	1.95	1.93	-85.57992478	42.29458279
Arcadia	1.95	1.39	-85.64822484	42.28587131
Edison	1.94	1.95	-85.57241033	42.29475656
Hill 'n Brook	1.93	1.39	-85.61410045	42.24522715
Central Business District	1.93	1.93	-85.57901436	42.2930259
Oakland/Winchell	1.91	1.41	-85.64828414	42.25992053
West Main Hill	1.91	1.81	-85.5935549	42.291506
Burke Acres	1.91	1.39	-85.56978582	42.30324933
Knollwood	1.91	1.34	-85.62485894	42.27231977
Central Business District	1.91	1.92	-85.58477541	42.29164864
Central Business District	1.91	1.94	-85.58719448	42.28874648
South Westnedge	1.90	1.86	-85.57984424	42.24510117

Neighborhood	All Modes Score	Pedestrian Safety Score	Longitude	Latitude
Knollwood	1.90	1.88	-85.64829388	42.27533463
Edison	1.90	1.41	-85.53579188	42.27132666
Central Business District	1.90	1.41	-85.57478363	42.29468741
Milwood	1.90	1.91	-85.5751151	42.24508816
Oakland/Winchell	1.90	1.34	-85.64361631	42.27041965
Southside	1.90	1.92	-85.58962128	42.27609679
Westwood	1.90	1.34	-85.64406306	42.2962682
Vine	1.89	1.34	-85.58728098	42.27646746
Central Business District	1.89	1.34	-85.58967773	42.28967526
Oakland/Winchell	1.89	1.81	-85.60518637	42.27424791
Central Business District	1.89	1.92	-85.58486607	42.2944934
Edison	1.89	1.91	-85.57464688	42.29469019
Milwood	1.89	1.39	-85.53109847	42.26256409
Southside	1.88	1.81	-85.58791189	42.27402343
Milwood	1.88	1.34	-85.5308114	42.25060343
Milwood	1.88	1.34	-85.53081768	42.26672554
Vine	1.88	1.90	-85.58721451	42.28402328
South Westnedge	1.88	1.34	-85.58961457	42.25968704
Westwood	1.88	1.92	-85.648195	42.291308
Central Business District	1.88	1.76	-85.58722089	42.28972279

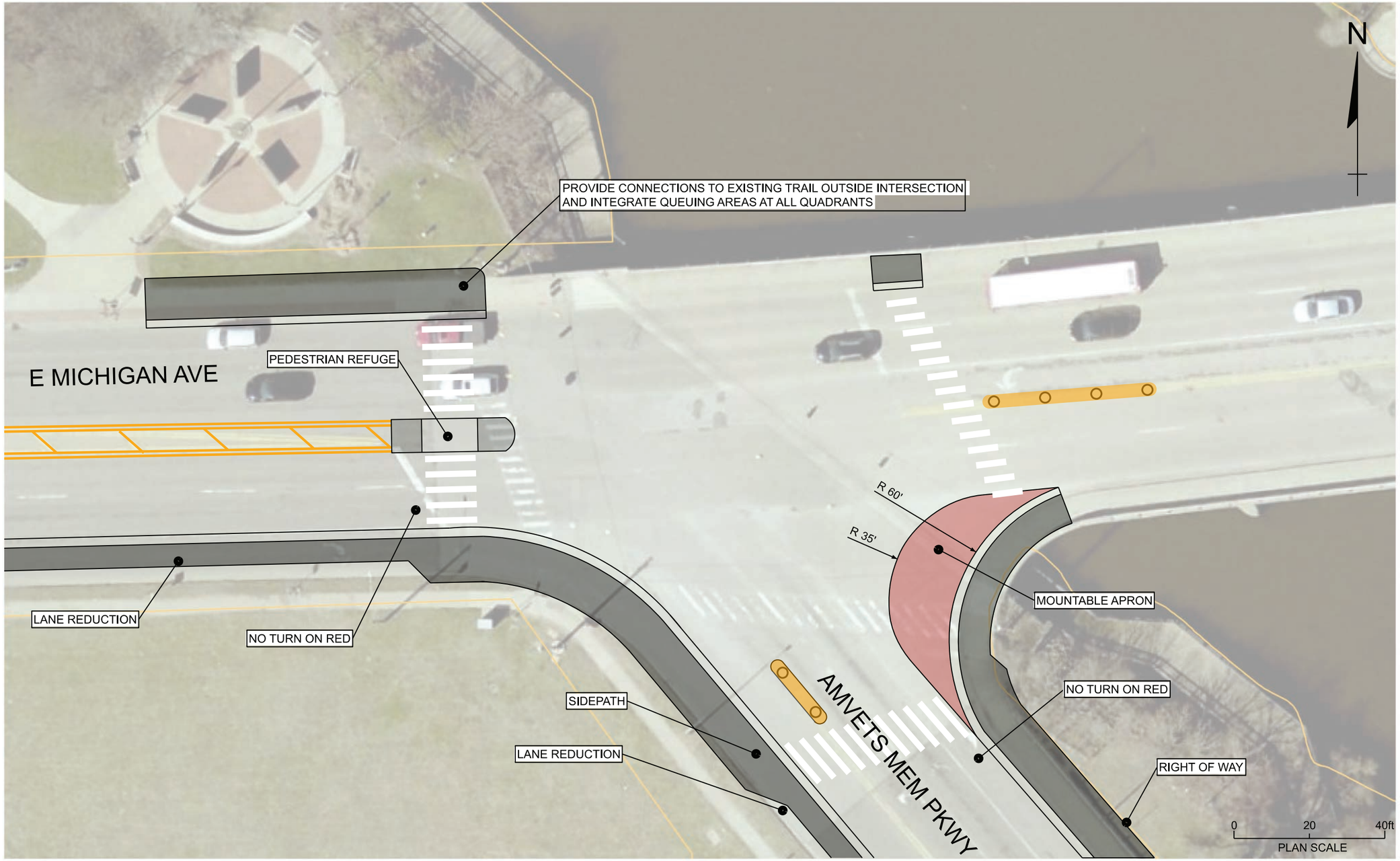
Appendix F
Priority Intersection Safety Improvement Drawings



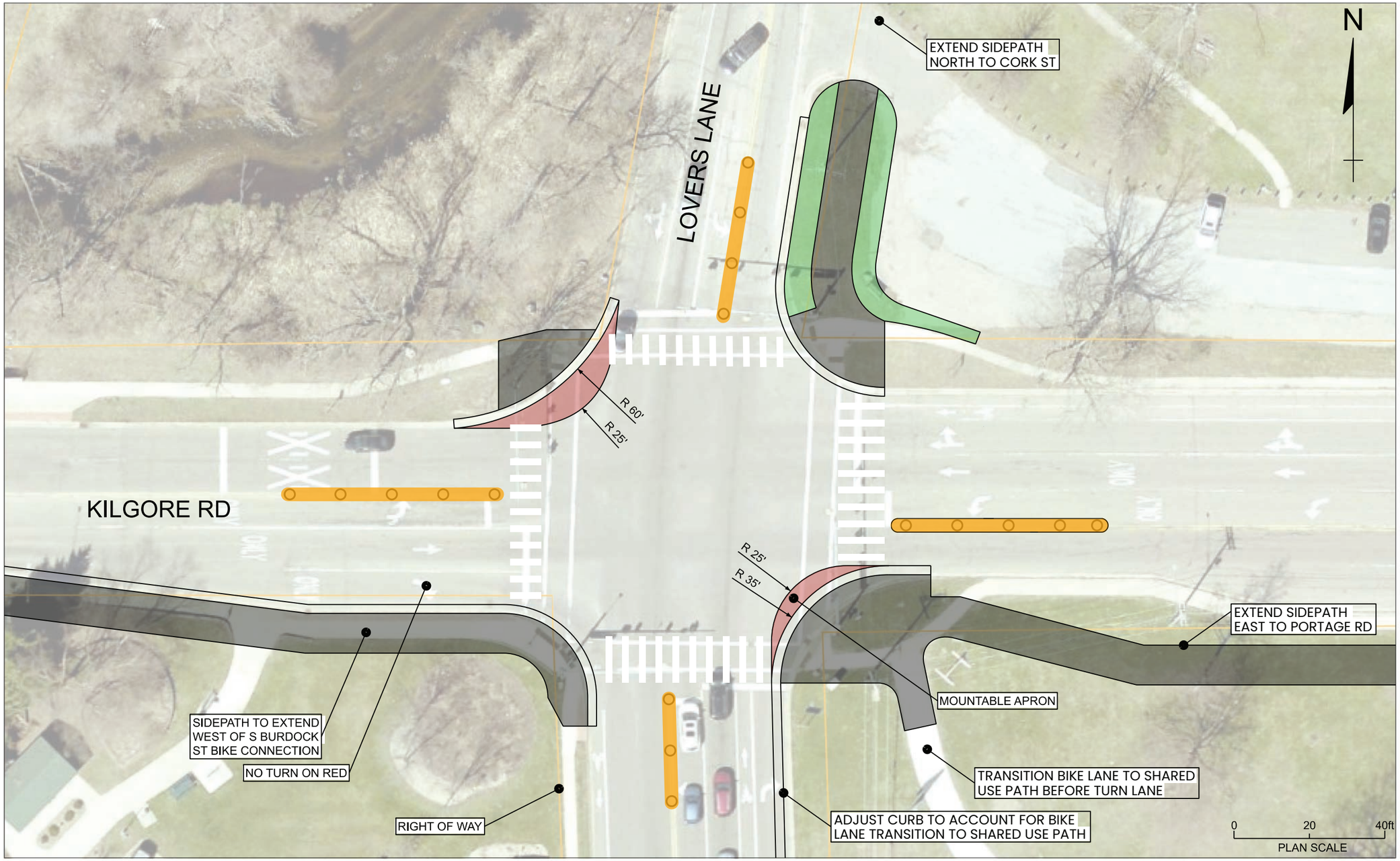
W MICHIGAN AVE AND S HOWARD ST



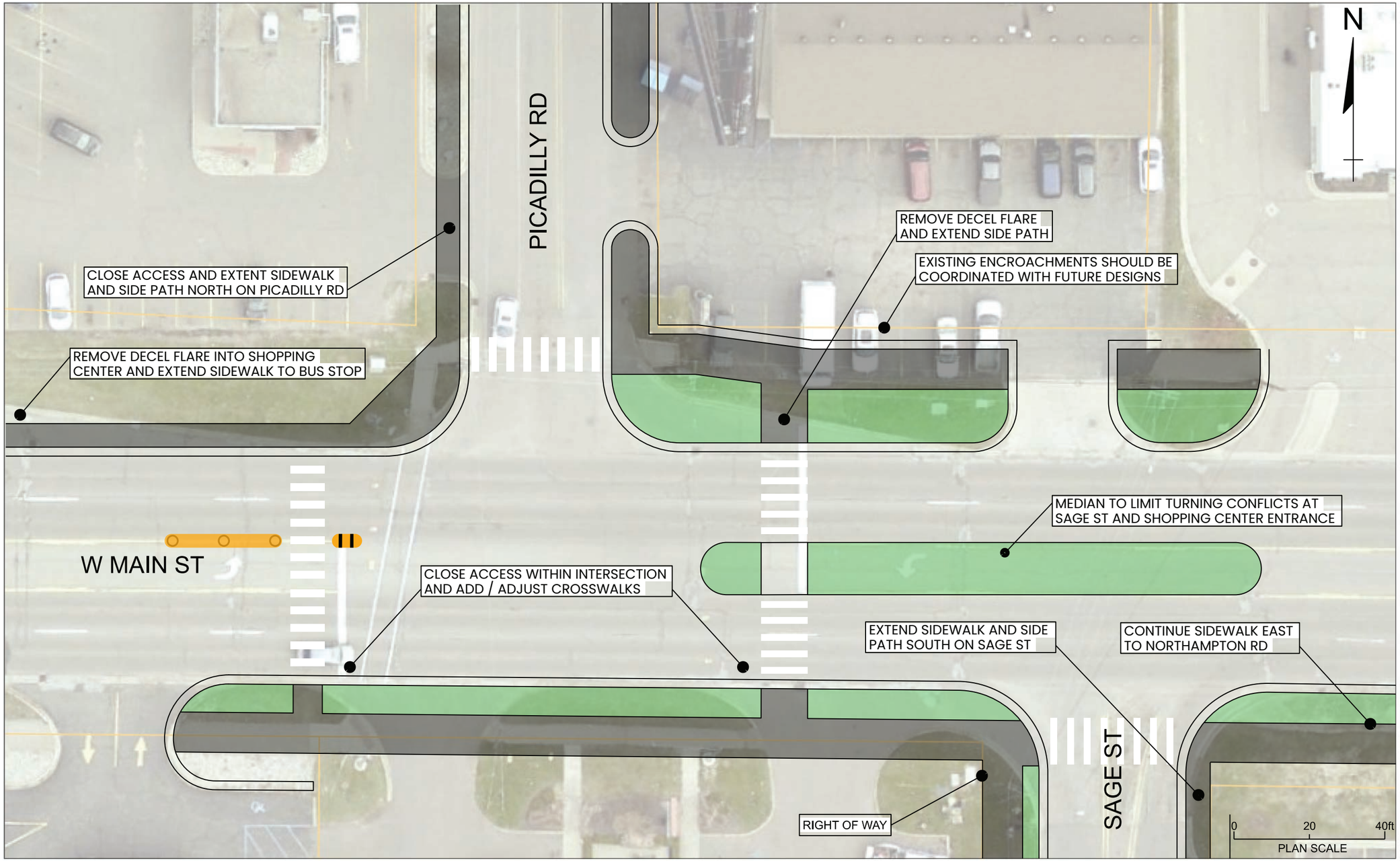
GULL RD AND RIVERVIEW DR



E MICHIGAN AVE AND AMVETS MEM PKWY

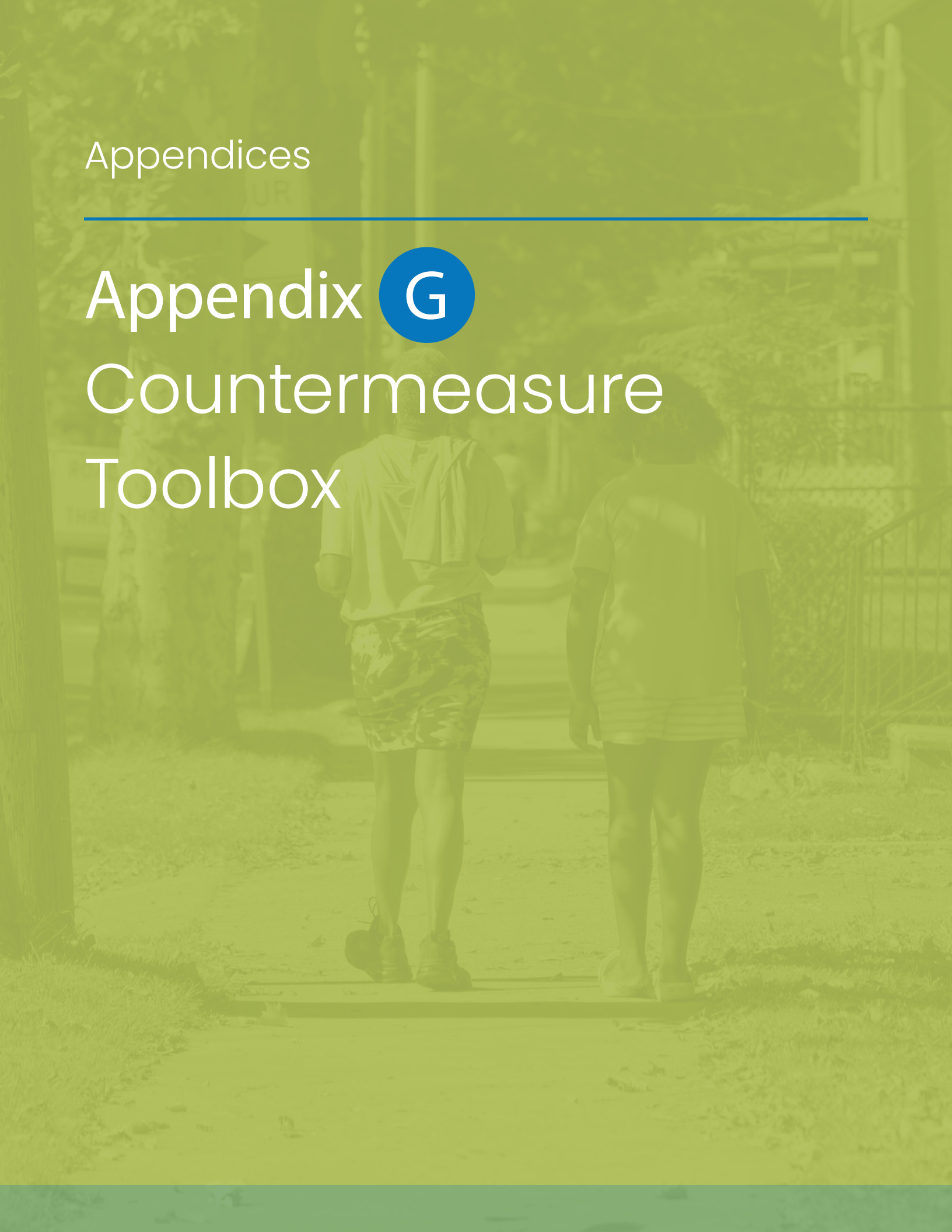


KILGORE RD AND LOVERS LANE



W MAIN ST AND PICADILLY RD

Appendix G
Countermeasure Toolbox



Countermeasure	Countermeasure Category	Description & Function	Safety Issues Addressed	Estimated Cost Range (MI Context)	Implementation Timeline	Guidance Link 1	Guidance Link 2	Quick-Build Potential	Local Implementation Considerations
Continental Crosswalks (High-Visibility Striping)	Pedestrian and Bicycle Infrastructure Enhancements	Bold bar striping increases visibility of crossings and driver yielding behavior.	Poor driver yielding, low crosswalk visibility.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA STEP | https://safety.fhwa.dot.gov/ped_bike/step/	MUTCD | https://mutcd.fhwa.dot.gov/	Yes	Quick-build ready; coordinate with resurfacing for longevity.
ADA-Compliant Curb Ramps & APS	Pedestrian and Bicycle Infrastructure Enhancements	Directional ramps, tactile surfaces, and Accessible Pedestrian Signals (APS).	ADA non-compliance, barriers for people with disabilities.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	ADA Standards | https://www.ada.gov/resources/2010-ada-standards/	PROWAG | https://www.access-board.gov/prowag/	Yes	Bundle with resurfacing or signal upgrades; not typically quick-build.
Leading Pedestrian Intervals (LPIs)	General	Signals give pedestrians a head start before vehicles move.	Vehicle–pedestrian conflicts at crosswalks.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term			No	Very low-cost; implement via controller reprogramming.
Extended Signal Timing	Signal Visibility and Operations	Adds seconds to crossing clearance for pedestrians/bicyclists.	Long crossing distances, insufficient clearance.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA Signalized Intersections Guide | https://safety.fhwa.dot.gov/intersection/other_topics/fhwasa13027/		No	Easy to implement; confirm doesn't unduly affect progression.
Bicycle Detection & Leading Intervals	Pedestrian and Bicycle Infrastructure Enhancements	Signal detection and timing tailored to bicycles.	Poor signal recognition of cyclists, conflicts with vehicles.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	NACTO Urban Bikeway Design Guide | https://nacto.org/publication/urban-bikeway-design-guide/	AASHTO Bike Guide | https://store.transportation.org/Item/CollectionDetail?ID=116	No	Can be integrated into new or upgraded controllers.
Signal Backplates with Retroreflective Borders	Signal Visibility and Operations	Improves signal visibility in glare and low light.	Signal visibility issues, rear-end crashes.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA Signalized Intersections Guide | https://safety.fhwa.dot.gov/intersection/other_topics/fhwasa13027/		No	Simple retrofit; can be paired with other signal upgrades.
Protected Left-Turn Phasing	Signal Visibility and Operations	Converts permissive to protected-only left turns.	Conflicts with pedestrians, cyclists, opposing vehicles.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA Signalized Intersections Guide | https://safety.fhwa.dot.gov/intersection/other_topics/fhwasa13027/		Yes	Requires cabinet upgrades; not quick-build.
No Turn on Red Restrictions	Traffic Calming and Lane Adjustments	Prohibits RTOR at high-conflict intersections.	Vehicle-pedestrian conflicts, safety at high-volume crossings.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA Signalized Intersections Guide | https://safety.fhwa.dot.gov/intersection/other_topics/fhwasa13027/		Yes	Quick-build with signs; compliance monitoring needed.
Centerline Hardening	Traffic Calming and Lane Adjustments	Physical delineators force slower left turns.	High-speed, shortcutting left turns.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	NACTO Urban Street Design Guide | https://nacto.org/publication/urban-street-design-guide/		Yes	Quick-build with bollards; permanent designs use curbing.
Raised Medians with Pedestrian Refuge	Intersection and Crossing Safety Measures	Provides mid-crossing refuge; calms left turns.	Long exposure distances; multi-threat crashes.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA STEP | https://safety.fhwa.dot.gov/ped_bike/step/	NACTO Urban Street Design Guide | https://nacto.org/publication/urban-street-design-guide/	No	Modular refuges possible; full install with reconstruction.
Median Noses	Intersection and Crossing Safety Measures	Extensions of medians into crosswalks for refuge.	Poor pedestrian visibility, turning conflicts.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA STEP | https://safety.fhwa.dot.gov/ped_bike/step/	NACTO Urban Street Design Guide | https://nacto.org/publication/urban-street-design-guide/	No	Pilot with modular materials; permanent with reconstruction.
Mountable Truck Aprons	Intersection Design Modifications	Tightens curb radii while accommodating trucks.	High-speed turning movements, long crossings.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	NACTO Urban Street Design Guide | https://nacto.org/publication/urban-street-design-guide/		Yes	Requires concrete work; not suited to quick-build.
Raised Slip Lane Crossings / Slip Lane Removal	Intersection and Crossing Safety Measures	Elevates crossings and reorients slip lanes.	High-speed turns, poor sightlines.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA STEP | https://safety.fhwa.dot.gov/ped_bike/step/	NACTO Urban Street Design Guide | https://nacto.org/publication/urban-street-design-guide/	Yes	Quick-build via curb extensions, paint, and bollards.
Realigned Channelized Right-Turns	Intersection Design Modifications	Adjusts geometry to reduce turning speeds.	Conflicts between pedestrians and turning vehicles.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA STEP | https://safety.fhwa.dot.gov/ped_bike/step/		No	Can pilot with paint/curb extensions; full build needs reconstruction.
Lane Reductions / Road Diets	Traffic Calming and Lane Adjustments	Converts or removes excess travel lanes.	Long crossings, speeding, high crash rates.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA Road Diet Informational Guide | https://safety.fhwa.dot.gov/road_diets/	NACTO Urban Street Design Guide | https://nacto.org/publication/urban-street-design-guide/	No	Can be piloted with pavement markings; permanent requires resurfacing/reconstruction.
Optimized Lane Configurations	Traffic Calming and Lane Adjustments	Repurposes underutilized lanes for bike/transit/turning.	Inefficient space use; multimodal gaps.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA Road Diet Informational Guide | https://safety.fhwa.dot.gov/road_diets/	NACTO Urban Street Design Guide | https://nacto.org/publication/urban-street-design-guide/	Yes	Quick-build possible with markings and signage.
Sidepaths / Shared-Use Paths	Pedestrian and Bicycle Infrastructure Enhancements	Two-way separated paths along arterials.	Sidewalk riding, unsafe bike-vehicle interactions.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	NACTO Urban Bikeway Design Guide | https://nacto.org/publication/urban-bikeway-design-guide/	AASHTO Bike Guide | https://store.transportation.org/Item/CollectionDetail?ID=116	No	Requires ROW; segments may be phased as pilots with barriers.
At-Grade Trail Crossings	Pedestrian and Bicycle Infrastructure Enhancements	Formal crossings replace substandard/unused underpasses.	Trail gaps, unsafe informal crossings.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA STEP | https://safety.fhwa.dot.gov/ped_bike/step/	AASHTO Bike Guide | https://store.transportation.org/Item/CollectionDetail?ID=116	No	Requires intersection redesign; temporary at-grade markings possible.
Sidewalk Widening / Infill	General	Builds or expands sidewalks to standard width.	ADA barriers, missing pedestrian connections.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term			Yes	Quick-build with asphalt paths pending permanent install.
Reconfigured Crosswalk Placement	Pedestrian and Bicycle Infrastructure Enhancements	Moves crosswalks closer to desire lines, reduces distance.	Long exposure, poor sightlines.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA STEP | https://safety.fhwa.dot.gov/ped_bike/step/	MUTCD | https://mutcd.fhwa.dot.gov/	No	Low-cost striping possible; full rebuild requires curb adjustments.
Bus Stop Boarding Pads & Shelters	Transit Accessibility Improvements	Adds ADA boarding area and weather protection.	Inaccessible transit stops, unsafe boarding.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	NACTO Transit Street Design Guide | https://nacto.org/publication/transit-street-design-guide/	ADA Standards | https://www.ada.gov/resources/2010-ada-standards/	Yes	Pads are quick-build eligible; shelters medium-term with funding.
Access Management (Driveway Closures)	Access Management Strategies	Removes/consolidates driveways near intersections.	Vehicle-pedestrian conflicts; turning crashes.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA Access Management Manual | https://ops.fhwa.dot.gov/access_mgmt/		No	Requires property owner coordination; often tied to redevelopment.
Pedestrian-Scale Lighting	Intersection and Crossing Safety Measures	Improves visibility and comfort for night travel.	Poor visibility, nighttime crashes.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA STEP | https://safety.fhwa.dot.gov/ped_bike/step/	IESNA Lighting Standards | https://www.ies.org/standards/	Yes	Quick-build solar bollards possible; permanent requires utility coordination.
Wayfinding & Signage for Trail Realignments	Pedestrian and Bicycle Infrastructure Enhancements	Updates signage to guide users at trail-roadway intersections.	User confusion, unsafe crossings.	~$3,000–$50,000 per intersection / <$20,000 per mile	Short-term	FHWA STEP | https://safety.fhwa.dot.gov/ped_bike/step/	AASHTO Bike Guide | https://store.transportation.org/Item/CollectionDetail?ID=116	Yes	Quick-build feasible with temporary signage.

Appendix H
Intersection Improvement Cost Estimates and Priority Intersection Improvement Cost Estimates

Intersection Countermeasure Cost Estimates

Improvement Type	Typical Length/Distance	Estimated Implementation Time	Quick-Build Option	Estimated Cost Range*
ADA-Compliant Curb Ramps & APS	Per corner / ramp	Weeks	N/A	$10k–$25k each
High Visibility Crosswalk Striping	Per crossing (50–100 ft)	Days	Yes – ~70% less (paint/thermoplastic)	$5k–$15k each
Signal Upgrades (LPIs, bike detection, backplates)	Per intersection	Months	Limited (signal reprogramming only)	$50k–$150k
Pedestrian-Scale Lighting	Per pole (50–75 ft spacing)	Weeks	Temporary solar possible	$10k–$20k each
Separated Sidepath / Shared-Use Path	Per 0.1 mile (500 ft)	Months	Yes – 30–50% less with bollards/paint	$150k–$250k per 0.1 mi
Sidewalk Infill / Widening	Per 100 ft	Weeks–Months	Limited (asphalt/concrete pads)	$50k–$100k
Median Refuge Island	Per crossing (40–60 ft)	Months	Yes – modular curb islands (~40% less)	$150k–$350k
Centerline Hardening / Turn Calming	Per approach	Days–Weeks	Yes – bollards/modular (50–60% less)	$25k–$75k
Mountable Aprons / Curb Extensions	Per corner	Months	Some tactical versions (40–50% less)	$50k–$100k
Transit Stop Upgrades (pad + shelter)	Per stop	Weeks	Yes – modular shelters	$25k–$50k
Driveway Closures / Access Management	Per driveway	Months	N/A	$50k–$150k
Protected Signal Phasing (Left Turn)	Per intersection	Months	No	$100k–$200k

Methodology for Cost Estimates

To support decision-making, the following table provides planning-level cost ranges for common safety and multimodal improvements. These values are not tied to any one intersection but summarize the typical treatments proposed across the five priority locations.

The methodology for these estimates draws on several resources:
- Michigan Department of Transportation (MDOT) Pay Item Catalog and Unit Price Averages – Provides recent bid-based unit prices for curb ramps, crosswalk markings, signal hardware, lighting, and other roadway elements.
- Federal Highway Administration (FHWA) Safe Transportation for Every Pedestrian (STEP) Program – Offers planning-level cost ranges and case studies for pedestrian crossing treatments such as refuge islands, raised crosswalks, and lighting.
- National Association of City Transportation Officials (NACTO) Urban Street Design Guide & Urban Bikeway Design Guide – Includes typical costs and design considerations for sidepaths, curb extensions, and turn-calming features.
- American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities – Provides unit cost assumptions and design standards for bicycle facilities, including shared-use paths.

All costs reflect construction only. Design, right-of-way, and utility relocation are not included and could add 20–40% depending on site conditions.

Ranges account for variability in materials, project phasing, and local conditions. The lower end of each range generally reflects tactical or quick-build applications (e.g., paint, bollards, modular curb islands, signal reprogramming), while the upper end reflects permanent reconstruction (e.g., concrete medians, poured sidewalks, full signal replacements). Quick-build strategies are noted where applicable, since they can deliver immediate safety benefits at lower cost and often serve as a first step toward permanent capital projects.

Because roadway conditions differ widely—traffic volumes, utilities, drainage, and available right-of-way—these numbers should be interpreted as order-of-magnitude costs to guide prioritization and funding discussions. Actual project costs should be confirmed during preliminary engineering and design.

For more detailed cost estimate information from the Michigan Department of Transportation:
MDOT Pay Item Catalog & Unit Price Averages *https://www.michigan.gov/mdot*

Notes and Disclaimers:

Estimates are planning-level only and not intended for final design or bid.

Costs do not include design, ROW, or utilities, which may add 20–40%.

Site-specific factors such as soil conditions, drainage, underground utilities, adjacent land use, and traffic control requirements may substantially increase or decrease costs.

Quick-build measures can provide near-term safety improvements at 30–70% lower cost, but will often require eventual replacement with permanent infrastructure.

Ranges reflect order-of-magnitude assumptions and should be validated with engineering studies before funding allocation.

Priority Intersection Safety Improvement Cost Estimates

Intersection	Intersection-Wide Upgrades	Sidepaths / Sidewalk Widening	Trail Crossings / Queueing / Bump-outs	Medians / Lane Reductions	Safety Treatments (Aprons, Hardening, Phasing, Access)	Transit / Access Upgrades	Total Estimated Range
Intersection	**Intersection-Wide Upgrades**	**Sidepaths / Sidewalk Widening**	**Trail Crossings / Queueing / Bump-outs**	**Medians / Lane Reductions**	**Safety Treatments (Aprons, Hardening, Phasing, Access)**	**Transit / Access Upgrades**	**Total Estimated Range**
W Michigan Ave & S Howard St	$150k–$250k	$800k–$1.2M (sidepaths)	—	$150k–$250k	$200k–$400k	—	**$1.5M–$2.2M**
Gull Rd & Riverview Dr	$100k–$200k	$100k–$150k (crosswalk/ramps)	$300k–$500k (slip lane/raised crossing)	—	$150k–$250k	$25k–$50k per stop	**$800k–$1.2M**
E Michigan Ave & AmVets Pkwy	$150k–$250k	$200k–$350k (sidewalk widening/queuing)	$500k–$700k (at-grade trail connections)	$300k–$500k	$150k–$300k	—	**$1.6M–$2.7M**
Kilgore Rd & Lovers Ln	$150k–$250k	$900k–$1.3M (sidepaths)	$150k–$300k (trail crossings/bump-outs)	—	$200k–$350k	< $10k (no-turn-on-red)	**$1.4M–$2.2M**

How the Numbers Add Up

The total cost range for each intersection reflects the **combined cost of the individual improvement categories**. Each line item—such as intersection-wide upgrades, new sidepaths, trail crossings, median changes, or safety treatments—was estimated separately to highlight its relative scale. Adding these items together produces the overall planning-level ranges shown in the table.

For example, at **Kilgore Road and Lovers Lane**, the intersection-wide upgrades ($150k–$250k), new sidepaths ($900k–$1.3M), trail crossings and bump-outs ($150k–$300k), and safety treatments ($200k–$350k), together with a small allowance for policy changes like no-turn-on-red, combine to a total estimated range of **$1.4M–$2.2M**.

Notes for Consideration

Basic intersection upgrades include things like fixing curb ramps to meet ADA standards, improving crosswalks, adjusting signal timing, and adding lighting. These are the "must-have" safety and accessibility improvements at every intersection.

New sidepaths and wider sidewalks are shown separately because they're larger projects along the roadway edges, not just inside the intersection. They provide safer space for people walking and biking but require more construction.

Trail crossings and bump-outs add safety where paths and sidewalks meet the intersection. These features shorten the distance people have to cross, add waiting space, and include tactile warnings for people with vision impairments.

Medians and lane changes reflect bigger redesigns of the road. They can slow traffic, give people a safe place to stop halfway across, and reduce conflict points with turning

Safety treatments such as corner aprons, bollards, or protected left-turn signals are lower-cost add-ons that help calm vehicle speeds and improve visibility.

Transit and access changes include upgrades like new bus stop pads or simple policy changes like "no right turn on red." These are usually small costs but make a big difference in safety and accessibility.

Railroad crossings are not included. For example, at Kilgore & Lovers Lane, a potential future project could extend a sidepath across the railroad, but that would need separate planning and funding.

All costs shown are **planning-level estimates** meant to guide decisions. Actual costs will depend on detailed design, construction conditions, and utility needs.

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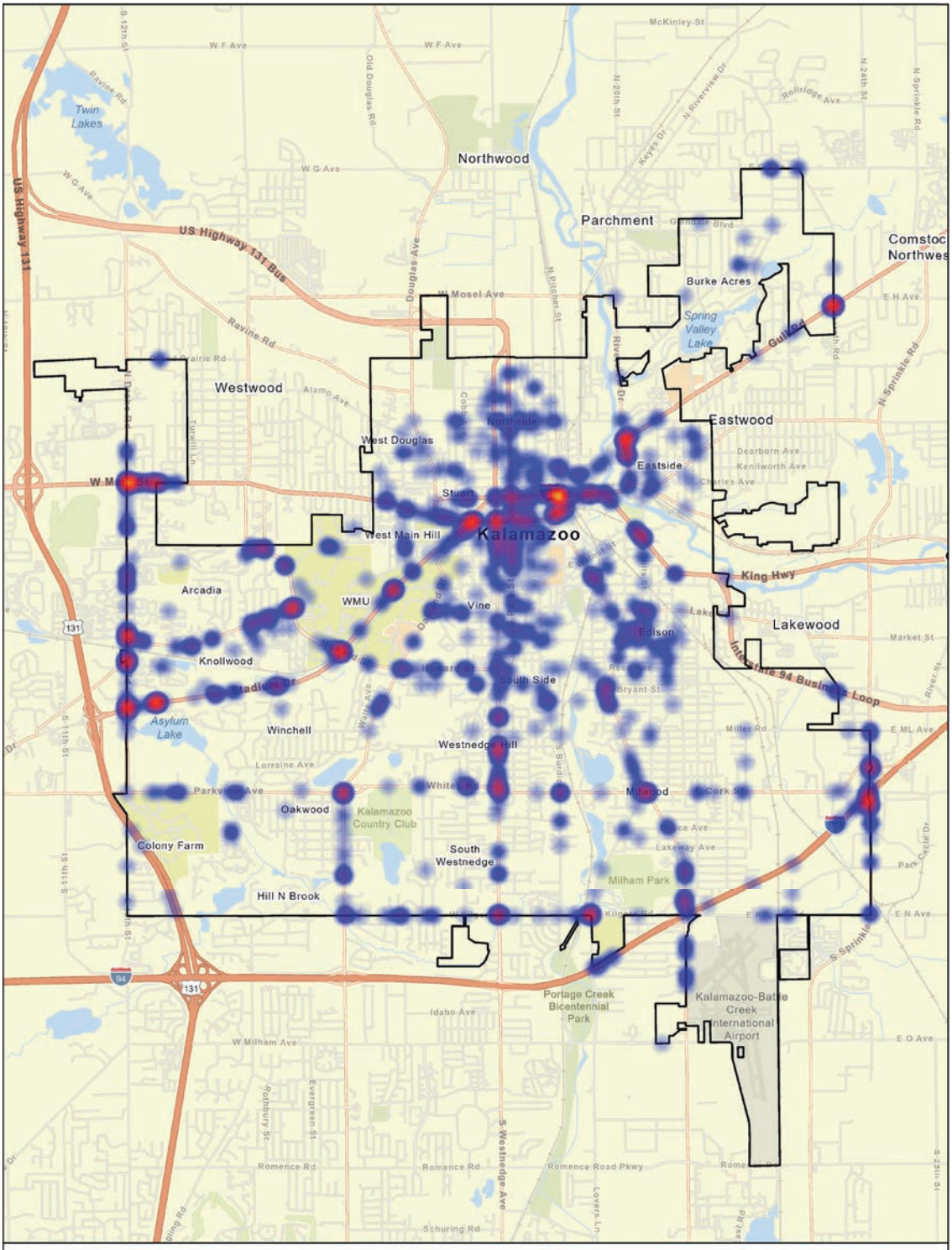
Appendices

Appendix I
Lighting Safety Improvement Plan Maps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Parchment
Comstock Northwest
Burke Acres
Spring Valley Lake
Westwood
Eastwood
West Douglas
Eastside
Kalamazoo
West Main Hill
Arcadia
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Edison
Lakewood
King Hwy
Knollwood
South Side
Asylum Lake
Winchell
Westnedge Hill
Oakwood
Kalamazoo Country Club
Colony Farm
South Westnedge
Hill N Brook
Milham Park
Portage Creek Bicentennial Park
Kalamazoo-Battle Creek International Airport
US Highway 131
US Highway 131 Bus
Twin Lakes
Ravine Rd
W G Ave
W F Ave
W Mosel Ave
Alamo Ave
Douglas Ave
Stuart
Northside
Dearborn Ave
Kenilworth Ave
Charles Ave
Market St
Miller Rd
Lakeway Ave
Lorraine Ave
Parkview Ave
Whites Rd
Cork St
Bryant St
Idaho Ave
W Milham Ave
Romence Rd
Romence Road Pkwy
Schuring Rd
S Westnedge Ave
Rothbury St
Evergreen St
Lovers Ln
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N 24th St
N Sprinkle Rd
S Sprinkle Rd
Park Circle Dr
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E M L Ave
E N Ave
E O Ave
S 32nd St
Interstate 94 Business Loop
Heat Map of Traffic Crashes in Dusk Condition, 2014-2023
Relative Crash Density
Least Frequent
Most Frequent
City's Boundary
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Miles
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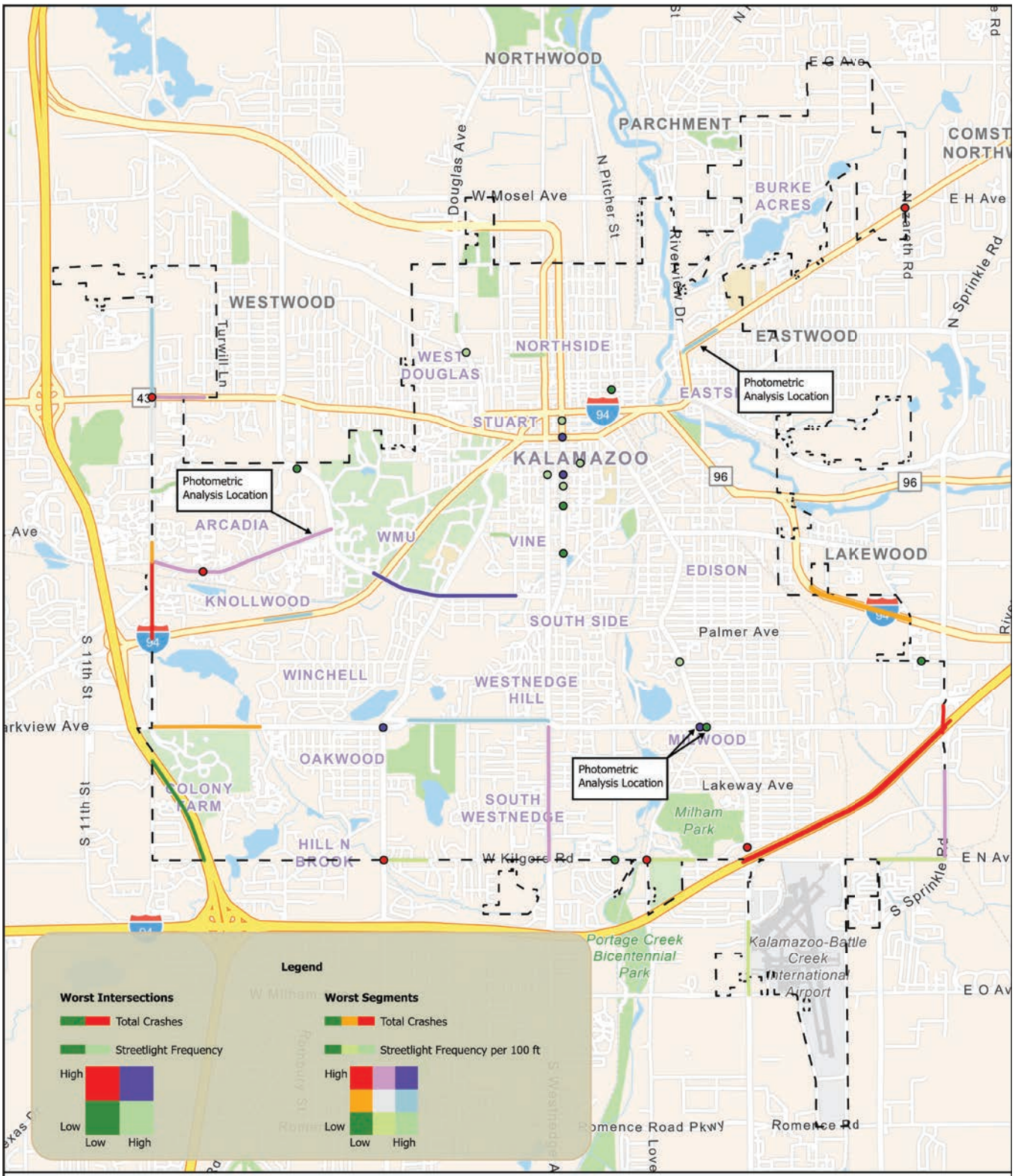
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PARCHMENT
BURKE ACRES
WESTWOOD
NORTHSIDE
WEST DOUGLAS
EASTWOOD
STUART
KALAMAZOO
ARCADIA
WMU
VINE
EDISON
LAKEWOOD
KNOLLWOOD
SOUTH SIDE
Palmer Ave
WINCHELL
WESTNEDGE HILL
OAKWOOD
COLONY FARM
SOUTH WESTNEDGE
HILL N BROOK
Lakeway Ave
Milham Park
W Kilgore Rd
Portage Creek Bicentennial Park
Kalamazoo-Battle Creek International Airport
Romence Road Pkwy
Romence Rd
W Mosel Ave
E G Ave
E H Ave
E N Ave
E O Ave
Douglas Ave
N Pitcher St
Riverview Dr
N Westnedge Ave
N Sprinkle Rd
S Sprinkle Rd
Turwill Ln
S 11th St
Photometric Analysis Location
Photometric Analysis Location
Photometric Analysis Location
Legend
Worst Intersections
Total Crashes
Streetlight Frequency
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Low High
Worst Segments
Total Crashes
Streetlight Frequency per 100 ft
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Worst Segments and Intersections
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City of Kalamazoo
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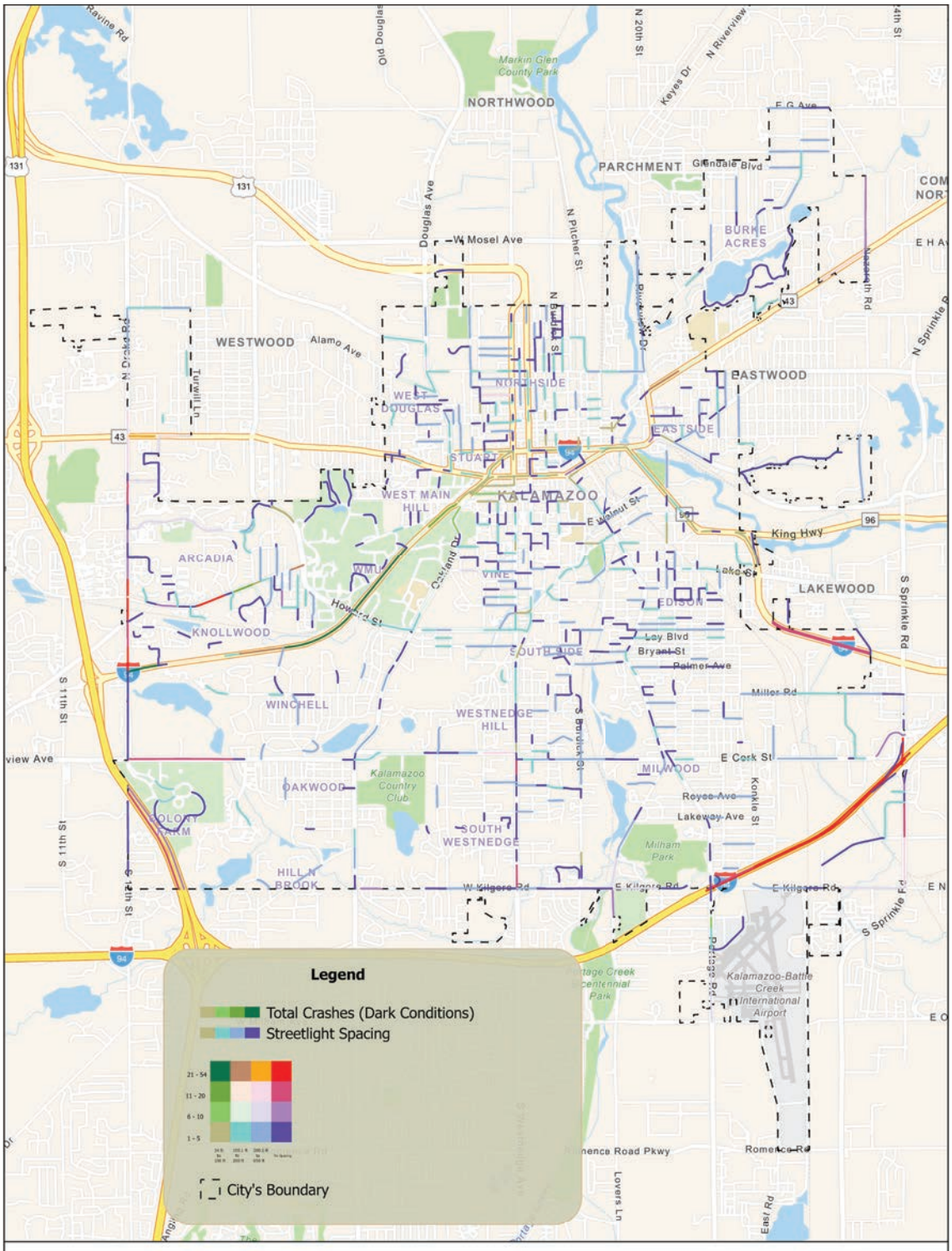

Streetlight Spacing on Segments with at Least One Crash Under Dark Conditions, by Total Crash Frequency

- Of the 6,158 streetlights, 4,056 were located along road segments, and 2,102 were located at intersections.
- Of the 4,056 streetlights located along segment areas 1,701 (42%) were on segments with at least one crash in dark conditions.
- The average streetlight spacing on segments with at least two streetlights and at least one crash in dark conditions is 190.4 feet.
- There are 925 HPS and 536 ELD lamp types in segments with at least 1 crash in dark conditions.

THE CITY OF Kalamazoo

City of Kalamazoo

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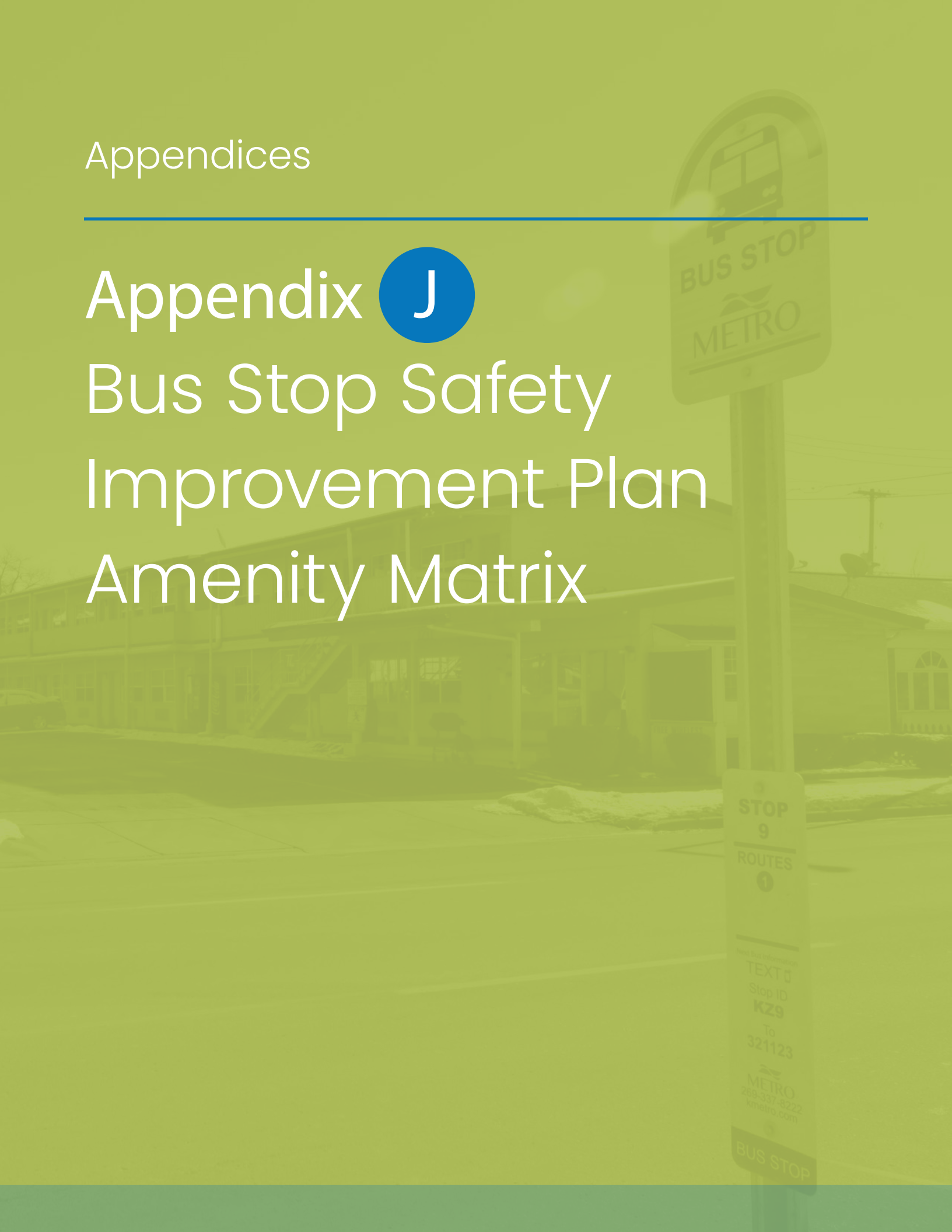
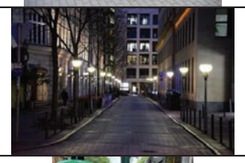
0 0.25 0.5 1 Miles

AECOM

Appendix J
Bus Stop Safety Improvement Plan Amenity Matrix



Bus Stop Amenities	Description	Example Image	Responsible Agency	Cost Tier	Timeframe	Urban Center	Event/Festival	Main Street	Neighborhood Business	Commercial Business	City Connector	Network Neighborhood	Enhanced Neighborhood	Local Neighborhood	Included in Design Element Checklist	Street Design Manual Page(s)
Basic (10 or fewer boardings per day)																
Accessible Boarding Area	Cement pad bus passengers use to get on and off the bus, minimum 5-feet by 8-feet in area. Connected to the sidewalk by a key walk of at least 5-feet in width.		Metro	Less than $50,000 per pad	Mid-Term											166
Bus Stop Sign	Sign on a pole indicating the location of a bus stop. Includes, at a minimum, the Kalamazoo Metro logo, stop ID, route identifier, route destination, route frequency, and route hours of service. May also include a system map and/or real-time bus arrival information (such as a phone number to text)		Metro	Less than $50,000 per sign	Short-Term											165
Streetlighting*	Streetlight(s) in close enough proximity to illuminate people coming to, going from, and waiting at the bus stop.		City to request, Consumers to implement	Less than $50,000 per streetlight	Short-Term										X	200-203
Upgraded - in addition to Basic (11-20 boardings per day)																
Waste Receptacle	Trash can fixed to the ground, a bench, or a shelter. Should be regularly emptied and upkept for cleanliness.		Metro	Less than $50,000 per receptacle	Short-Term										X	96-97
Bench	Uncovered seating.		Metro	Less than $50,000 per bench	Short-Term										X	94-95
Pedestrian-Scale Lighting*	Lighting mounted lower to the ground and positioned to illuminate sidewalks and crosswalks. Most important in areas with less activity.		City to request, Consumers to implement	Less than $50,000 per light	Mid-Term to Long-Term											200
Real-Time Bus Arrival Signage	Sign that displays when the next bus will arrive based on real-time data. Should be regularly checked to ensure proper functioning and repair as needed. Most important on routes with lower frequency.		Metro	Less than $50,000 per sign	Short-Term											

Short Term: within 5 years
Mid-Term: 5-10 years
Long-Term: 10-15 years

Required
Recommended
Optional/Situational
Limited/Restricted
N/A

Bus Stop Amenities	Description	Example Image	Responsible Agency	Cost Tier	Timeframe	Urban Center	Event/Festival	Main Street	Neighborhood Business	Commercial Business	City Connector	Network Neighborhood	Enhanced Neighborhood	Local Neighborhood	Included in Design Element Checklist	Street Design Manual Page(s)
Premium - in addition to Basic and Upgraded (more than 20 boardings per day)																
Bicycle Rack	Bicycle parking intended for short-term use.		City or property owner	Less than $50,000 per rack	Short-Term										X	148-149
Shelter	Transparent shelter covering seating. May also include built-in lighting and/or heating. Should be regularly upkept for cleanliness.		Metro	Less than $50,000 per shelter	Mid-Term										X	166-167
Landscape Planter	Street trees, planters, rain gardens, etc. installed at or around the bus stop to enhance its visibility and comfort for those waiting. Should be regularly upkept to keep sightlines clear and maintain aesthetics.		City or property owner	$50,001 - $150,000 per planter	Short-Term										X	216-219
Emergency Response Phone (Blue Light)	Device that provides additional pedestrian-scale lighting and contacts emergency response when activated. Should be regularly checked to ensure proper functioning and repair as needed. Most important in areas with less activity.		City or property owner	Less than $50,000 per phone	Mid-Term											
Public Art	Art installed at or around the bus stop to enhance its visibility and comfort for those waiting. Can be rotated over time to feature various artists, etc.		City or property owner	Less than $50,000 per installation	Short-Term										X	92-93

Short Term: within 5 years
Mid-Term: 5-10 years
Long-Term: 10-15 years

Required
Recommended
Optional/Situational
Limited/Restricted
N/A

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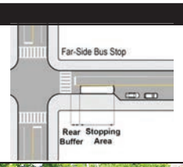
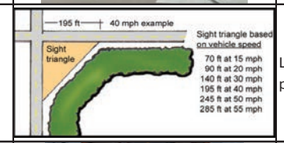
Appendix K
Bus Stop Safety Improvement Plan Countermeasure Matrix

Safety Countermeasures	Description and Safety Benefit	Example Image	Cost Tier	Timeframe	Intersection	Mid-Block	Urban Center	Event/Festival	Main Street	Neighborhood Business	Commercial Business	City Connector	Network Neighborhood	Enhanced Neighborhood	Local Neighborhood	Included in Design Element Checklist	Street Design Manual Page(s)
Annual Average Daily Traffic							12k-20k	<6k	1k-12k	6k-20k	10k-30k	6k-20k	6k-30k	<6k	<6k		
Travel Lanes							3 to 5	1 to 2	2 to 3	2 to 3	3 to 5	2 to 5	2 to 3	2	1 to 2		
Posted Speed Limit							30-35 mph	<20 mph	25 mph	25-40 mph	25-40 mph	25-45 mph	25-40 mph	25 mph	25 mph		
Vehicle/Bus Conflicts																	
Far-Side Bus Stop Placement	Placing a bus stop after a crossing or intersection. Bus stops should not be placed at the far side of intersections to avoid drivers rear-ending buses when proceeding through a green light.		Less than $50,000 per stop	Short-Term		X											164, 166
Bus Bulb	Curb extension into the roadway to keep the bus in its travel lane while picking up/dropping off riders. Prevents buses from needing to merge back into traffic. Can also act as a Curb Extension/Bulb Out.		Less than $50,000 per bus bulb	Mid-Term	X	X										X	168-170
Bus Queue Jump	Short transit lane located at the approach to a traffic signal that allows buses to bypass traffic. Most suitable on streets with frequent traffic congestion. Works best in tandem with Transit Signal Priority.		Greater than $300,000 per queue jump	Mid-Term to Long-Term	X											X	156-158
Transit Signal Priority	Traffic signal strategy that gives buses a green light when they are approaching an intersection. Most suitable on streets with frequent traffic congestion.		$50,001 - $150,000 per signal	Long-Term	X												157
Transit Lane	Dedicated travel lane for buses only. Most suitable on streets with frequent traffic congestion.		Greater than $300,000 per lane-mile	Long-Term		X										X	160-162

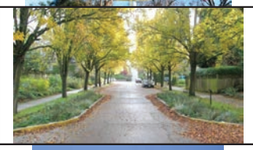
Short Term: within 5 years
Mid-Term: 5-10 years
Long-Term: 10-15 years

Required
Recommended
Optional/Situational
Limited/Restricted
N/A

Safety Countermeasures	Description and Safety Benefit	Example Image	Cost Tier	Timeframe	Intersection	Mid-Block	Urban Center	Event/Festival	Main Street	Neighborhood Business	Commercial Business	City Connector	Network Neighborhood	Enhanced Neighborhood	Local Neighborhood	Included in Design Element Checklist	Street Design Manual Page(s)
Annual Average Daily Traffic							12k-20k	<6k	1k-12k	6k-20k	10k-30k	6k-20k	6k-30k	<6k	<6k		
Travel Lanes							3 to 5	1 to 2	2 to 3	2 to 3	3 to 5	2 to 5	2 to 3	2	1 to 2		
Posted Speed Limit							30-35 mph	<20 mph	25 mph	25-40 mph	25-40 mph	25-45 mph	25-40 mph	25 mph	25 mph		
Vehicle/Pedestrian Conflicts																	
High-Visibility Crosswalk	High-visibility markings, such as ladder or zebra patterns, increasing the visibility of the crosswalk and alerting drivers to potential pedestrian crossings.		Less than $50,000 per crossing	Short-Term	X	X										X	72-75
Pedestrian Area/Sidewalk	Sidewalk or side path providing pedestrian access to and from the bus stop.		Less than $50,000 per sqaure foot	Mid-Term	X	X										X	68-71
Near-Side Bus Stop Placement	Placing a bus stop before a crossing or intersection. Bus stops should not be placed at the near side of mid-block crossings because the bus blocks drivers from seeing pedestrians crossing in front of the bus.		Less than $50,000 per stop	Short-Term	X												164
Leading Pedestrian Interval (LPI)	Traffic signal strategy that gives pedestrians a head start at crosswalks before vehicles receive a green light.		$50,001 - $150,000 per phase or signal	Mid-Term	X												90
Vegetation Control at Intersection	Cutting or removing vegetation to keep sightlines clear.		Less than $50,000 per acre	Short-Term	X												
Daylighting/Parking Restriction at Corner	Restricting parking at intersection corners to improve sightlines.		Less than $50,000 per intersection	Short-Term	X												

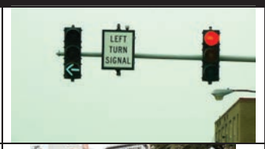
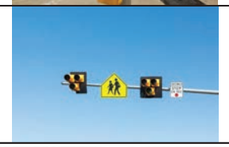
Short Term: within 5 years
Mid-Term: 5-10 years
Long-Term: 10-15 years

Required
Recommended
Optional/Situational
Limited/Restricted
N/A

Safety Countermeasures	Description and Safety Benefit	Example Image	Cost Tier	Timeframe	Intersection	Mid-Block	Urban Center	Event/Festival	Main Street	Neighborhood Business	Commercial Business	City Connector	Network Neighborhood	Enhanced Neighborhood	Local Neighborhood	Included in Design Element Checklist	Street Design Manual Page(s)
Annual Average Daily Traffic							12k-20k	<6k	1k-12k	6k-20k	10k-30k	6k-20k	6k-30k	<6k	<6k		
Travel Lanes							3 to 5	1 to 2	2 to 3	2 to 3	3 to 5	2 to 5	2 to 3	2	1 to 2		
Posted Speed Limit							30-35 mph	<20 mph	25 mph	25-40 mph	25-40 mph	25-45 mph	25-40 mph	25 mph	25 mph		
Vehicle/Pedestrian Conflicts																	
Mid-Block Crossing	Pedestrian crossing placed in between intersections, not at an intersection.		Less than $50,000 per crossing	Short-Term		X										X	78-79
Pedestrian Crossing Warning Sign	Yellow sign alerting drivers to an upcoming pedestrian crossing. Can be on the side of the road or in-street.		Less than $50,000 per sign	Short-Term		X											74
Rectangular Rapid Flashing Beacon (RRFB)	Flashing beacons activated by pedestrians at mid-block crossings or unsignalized intersections to alter drivers to crossing pedestrians.		$50,001 - $150,000 per beacon	Short-Term	X	X											91
Curb Extension/Bulb Out	Curb extension into the roadway to narrow the roadway, shorten pedestrian crossings, slow vehicles, and improve pedestrian visibility at crossings. Can also act as a Bus Bulb.		$50,001 - $150,000 per bulb out	Mid-Term	X	X										X	84-87
No Right Turn on Red	Prohibiting right-turns on red at an intersection and communicating through signage.		Less than $50,000 per leg of the intersection	Mid-Term	X												
Countdown Pedestrian Signal (CPS)	Traffic signal for pedestrians that displays how much time is left for pedestrians to cross the street.		Less than $50,000 per signal	Short-Term to Mid-Term	X												88

Short Term: within 5 years
Mid-Term: 5-10 years
Long-Term: 10-15 years

Required
Recommended
Optional/Situational
Limited/Restricted
N/A

Safety Countermeasures	Description and Safety Benefit	Example Image	Cost Tier	Timeframe	Intersection	Mid-Block	Urban Center	Event/Festival	Main Street	Neighborhood Business	Commercial Business	City Connector	Network Neighborhood	Enhanced Neighborhood	Local Neighborhood	Included in Design Element Checklist	Street Design Manual Page(s)
Annual Average Daily Traffic							12k-20k	<6k	1k-12k	6k-20k	10k-30k	6k-20k	6k-30k	<6k	<6k		
Travel Lanes							3 to 5	1 to 2	2 to 3	2 to 3	3 to 5	2 to 5	2 to 3	2	1 to 2		
Posted Speed Limit							30-35 mph	<20 mph	25 mph	25-40 mph	25-40 mph	25-45 mph	25-40 mph	25 mph	25 mph		
Vehicle/Pedestrian Conflicts																	
Protected Left Turn	Traffic signal strategy that separates when pedestrians are given the "WALK" indication and when vehicles turning left across pedestrians' path are given a solid green light.		Less than $50,000 per intersection	Short-Term	X												
Accessible Pedestrian Signal (APS)	Traffic signal for pedestrians that communicates information about when to "WALK" and "DON'T WALK" in non-visual formats (i.e., audible tones and vibrotactile surfaces) for pedestrians who are blind or have low vision.		Less than $50,000 per signal	Mid-Term	X												89
Pedestrian Hybrid Beacon (PHB)	Traffic control device activated by pedestrians at mid-block crossings or unsignalized intersections to bring traffic to a stop only when a pedestrian is crossing.		$150,001 - $300,000 per beacon	Mid-Term		X											91
Hardened Centerline	Physical barriers in the centerline of a road to slow driver turning movements by delineating a tighter turning radius.		Less than $50,000 per leg of the intersection	Short-Term	X												74
Access Management	Reducing access points to a road, including removing or consolidating driveways.		$150,001 - $300,000 per access point	Mid-Term to Long-Term	X	X											186
Pedestrian Refuge Island	Raised barrier in the middle of the road that allows pedestrians to cross one direction of traffic at a time.		$150,001 - $300,000 per island	Long-Term	X	X										X	80-82

Short Term: within 5 years
Mid-Term: 5-10 years
Long-Term: 10-15 years

Required
Recommended
Optional/Situational
Limited/Restricted
N/A

Safety Countermeasures	Description and Safety Benefit	Example Image	Cost Tier	Timeframe	Intersection	Mid-Block	Urban Center	Event/Festival	Main Street	Neighborhood Business	Commercial Business	City Connector	Network Neighborhood	Enhanced Neighborhood	Local Neighborhood	Included in Design Element Checklist	Street Design Manual Page(s)
Annual Average Daily Traffic							12k-20k	<6k	1k-12k	6k-20k	10k-30k	6k-20k	6k-30k	<6k	<6k		
Travel Lanes							3 to 5	1 to 2	2 to 3	2 to 3	3 to 5	2 to 5	2 to 3	2	1 to 2		
Posted Speed Limit							30-35 mph	<20 mph	25 mph	25-40 mph	25-40 mph	25-45 mph	25-40 mph	25 mph	25 mph		
Vehicle/Pedestrian Conflicts																	
Extended Pedestrian "WALK" Time	Lengthening traffic signal phase(s) to allow more time for pedestrians to cross the street. Most suitable on wide streets.		Less than $50,000 per phase	Mid-Term	X												
Designated Bus Loading Zone	Curb cut for the bus to pull into outside of the travel lane so it can pick up/drop off riders away from traffic. Most suitable at high-ridership stops on streets with less traffic so buses can easily merge back into traffic.		$150,001 - $300,000 per zone	Mid-Term to Long-Term	X	X										X	108
Raised Crosswalk	Elevated pedestrian crossing.		Less than $50,000 per crossing	Mid-Term	X	X											74
Bus/Bicyclist Conflicts																	
Floating Bus Stop/Bus Stop Island	A raised platform or island in the roadway to keep the bus in its travel lane instead of pulling out of traffic or into a bike lane to pick up/drop off riders. Bike lane is routed behind the platform to avoid conflicts.		$150,001 - $300,000 per island	Mid-Term	X	X											
Shared Bus-Bike Lane	Transit lane shared with a bike lane, usually marked with a sharrow and different color pavement. Should only be considered where dedicated bicycle facilities cannot be accommodated and where buses are operating at lower speeds (20 mph or less).		$150,001 - $300,000 per lane-mile	Mid-Term	X	X											161

Short Term: within 5 years
Mid-Term: 5-10 years
Long-Term: 10-15 years

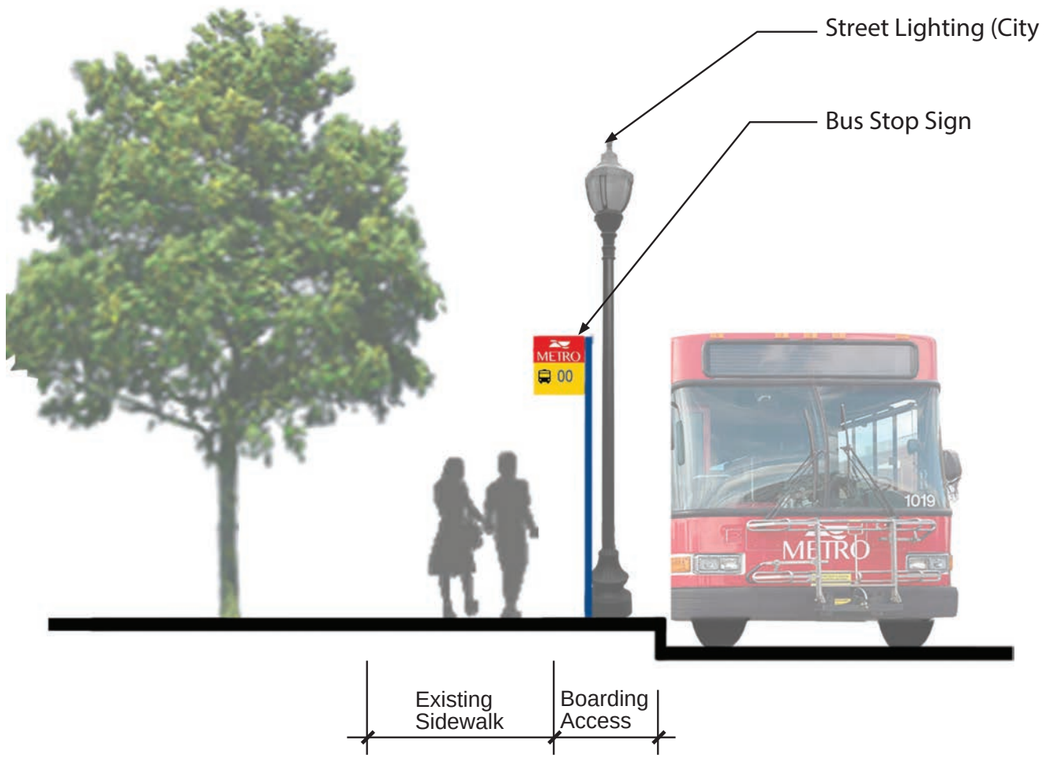
Required
Recommended
Optional/Situational
Limited/Restricted
N/A

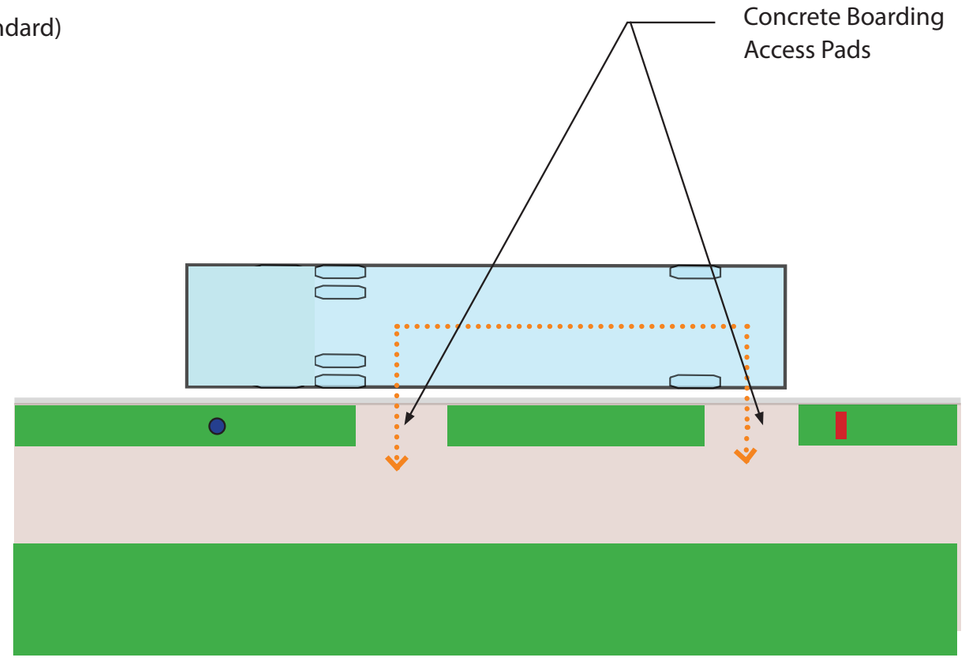
Appendix L
Bus Stop Safety Improvement Plan Prototypes

KMETRO BUS STOP Prototype A - Basic

Amenity Elements

- Accessible Boarding Area
- Bus Stop Sign
- Street Lighting



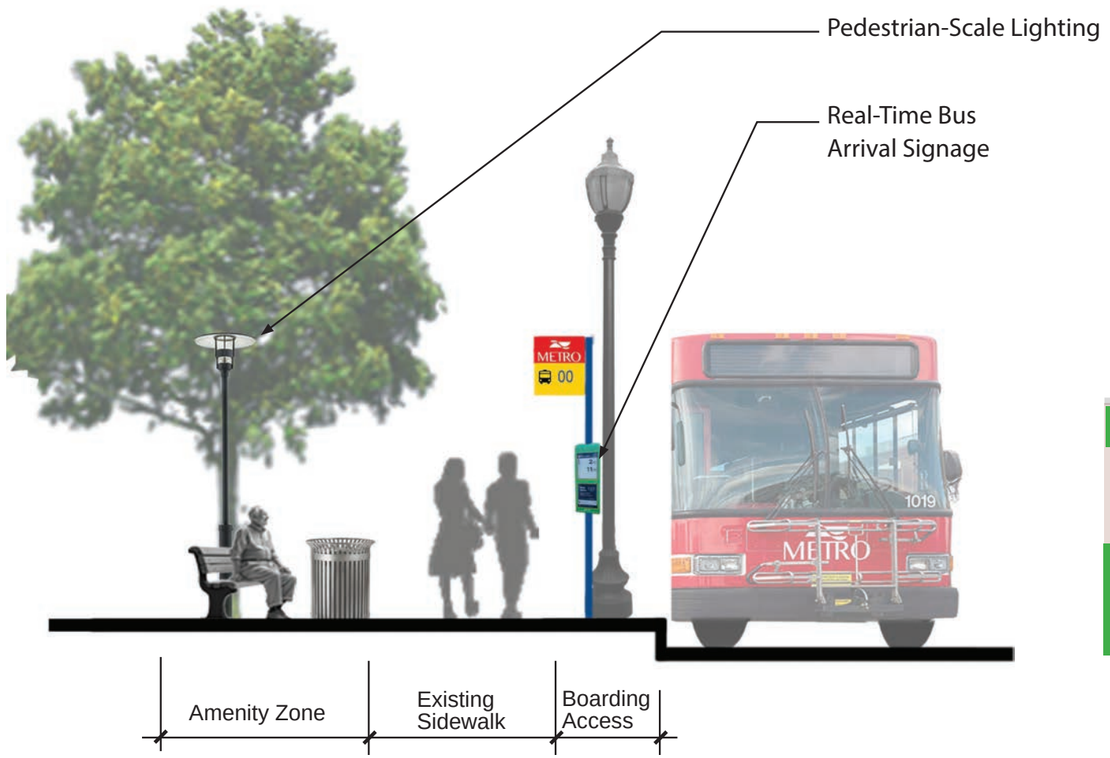


Pedestrian Movement

KMETRO BUS STOP Prototype B - Enhanced

Amenity Elements

- Accessible Boarding Area
- Bus Stop Sign
- Street Lighting
- Bench
- Trash Receptacle
- Pedestrian-Scale Lighting
- Real-Time Bus Arrival Signage

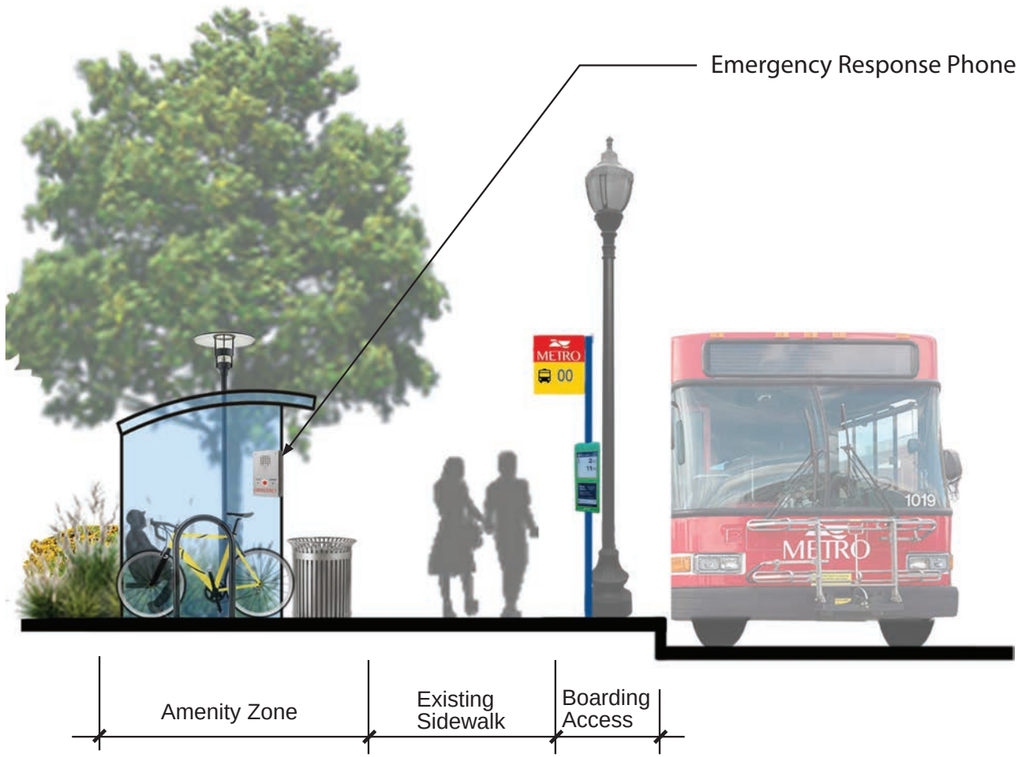


Page 2

KMETRO BUS STOP Prototype C - Premium

Amenity Elements

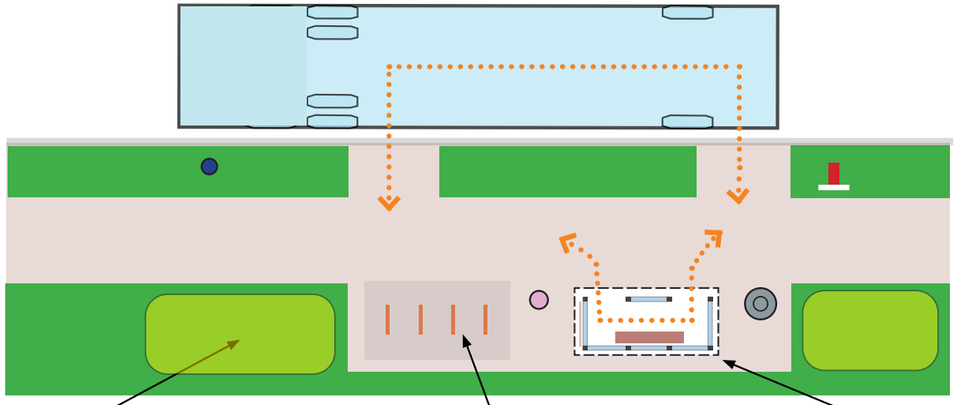
- Accessible Boarding Area
- Bus Stop Sign
- Street Lighting
- Bench
- Trash Receptacle
- Pedestrian-Scale Lighting
- Real-Time Bus Arrival Signage
- Shelter
- Emergency Response Phone
- Landscape Planter
- Bicycle Racks
- Public Art



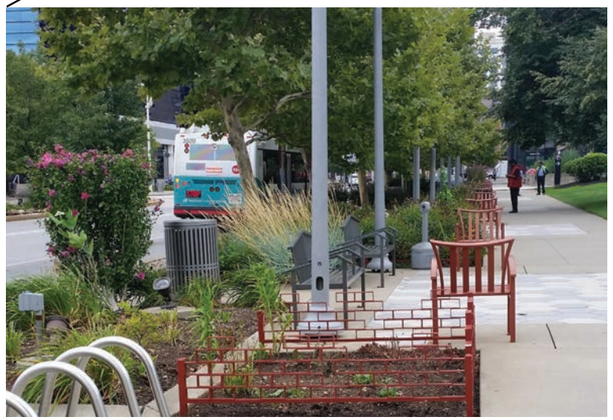
Page 3

KMETRO BUS STOP Prototype C - Premium

Key Amenities



Public Art - Windscreens
Encourage people to take transit, transform experience, feel safer and connect with their community



Landscape Planter

Bike Rack

Bus Shelter

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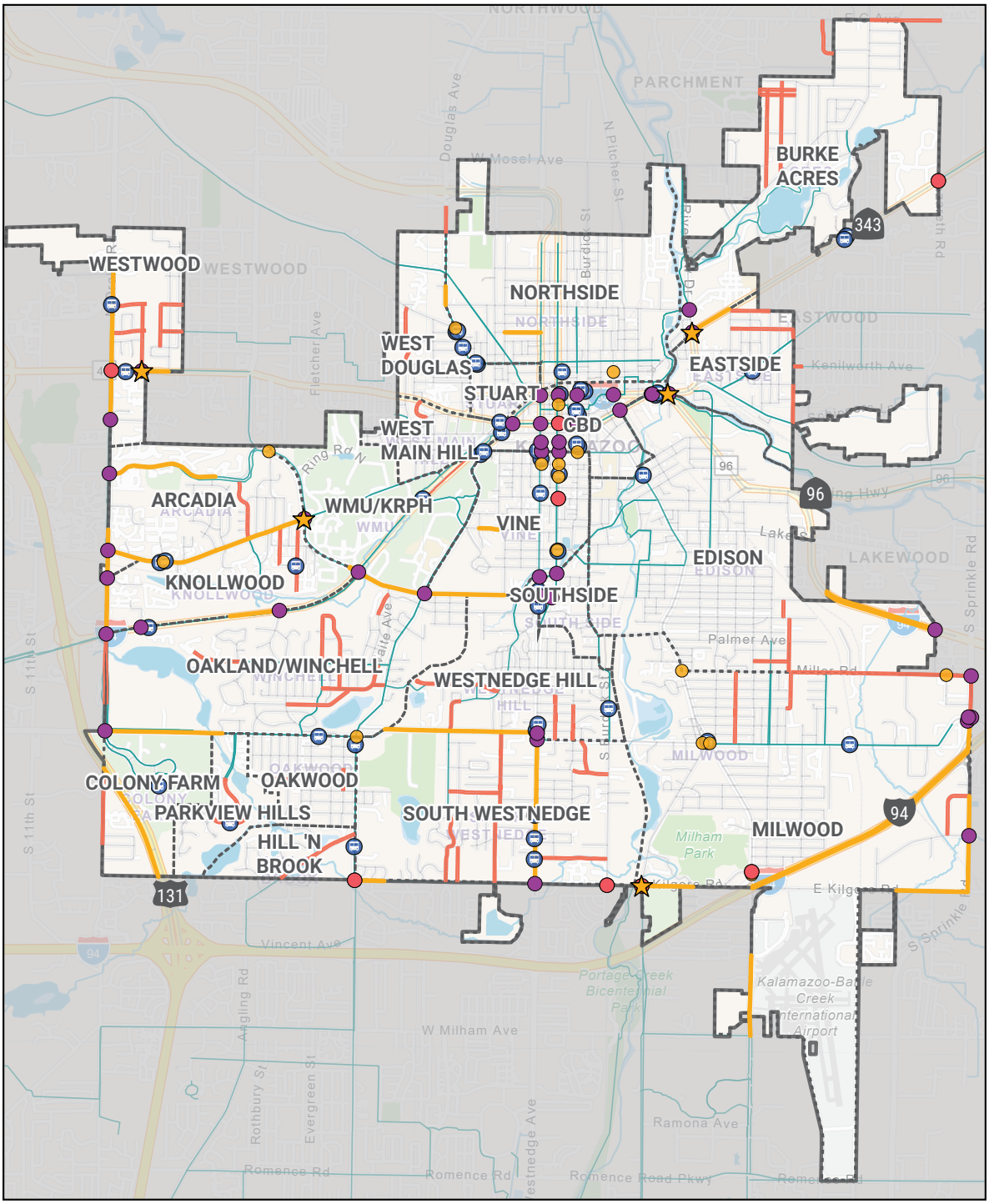
Appendices

Appendix M
Priority Locations from All Study Areas Mapped



PRIORITY AREAS FOR SAFETY IMPROVEMENTS

CITY OF KALAMAZOO

alta

- Intersections with Recommendations
- Priority Bus Stops
- Top 50 Scoring All Mode Intersections
- Top 50 Intersections + Priority Lighting
- Priority Intersection Lighting
- Priority Corridor Lighting

0 0.5 1 MILE

N

- Bikeways & Trails
- Priority Sidewalk Gaps
- Neighborhoods
- City Boundary

Date: 11/14/2025


THE CITY OF
Kalamazoo
Edwards
Michigan
Michigan
Edwards