THE CITY OF Kalamazoo

Kalamazoo Safety Action Plan

Draft

OCTOBER 2025

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 Innovative | Collaborative | Dependable

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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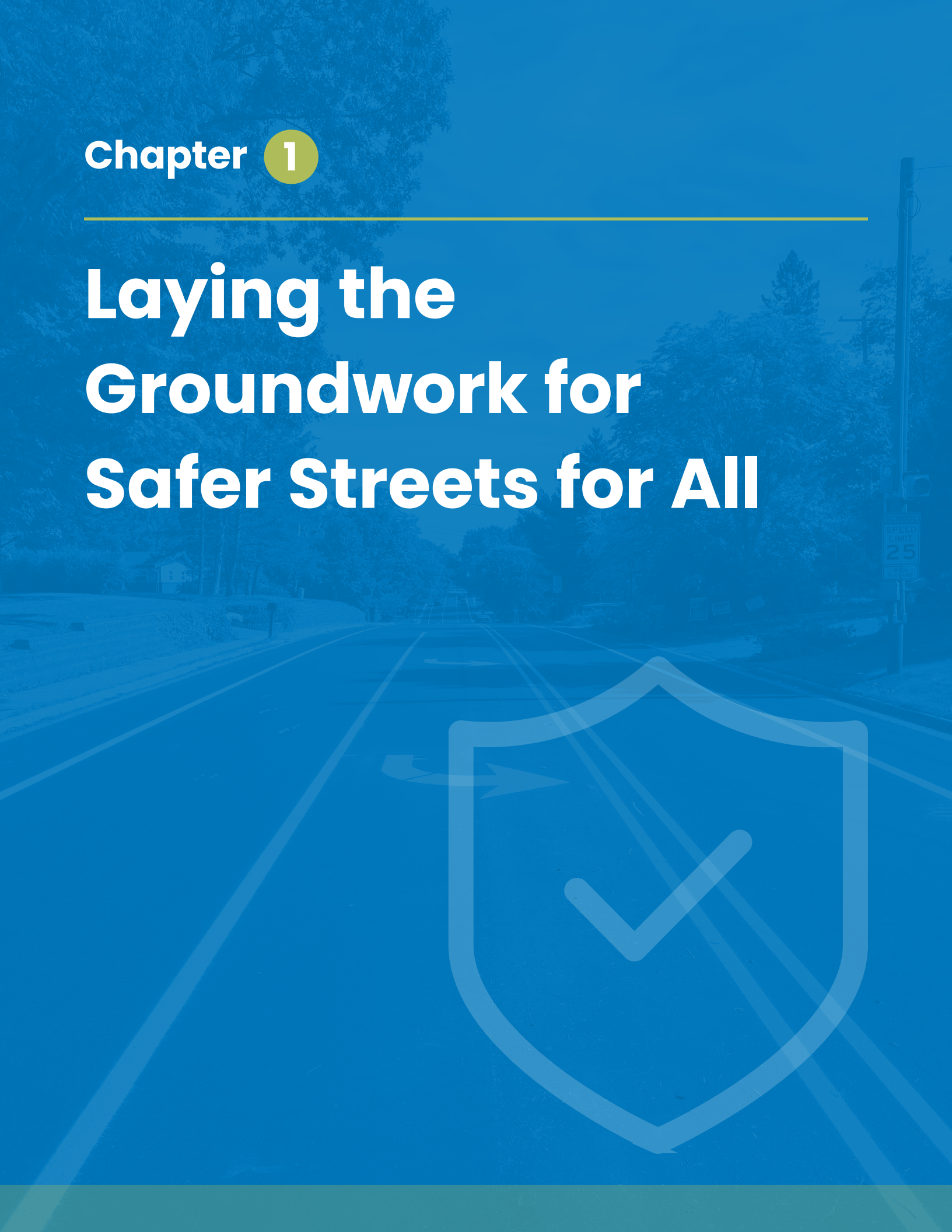
Chapter 1

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 encourage that 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.

Aligning with Imagine Kalamazoo 2025

This Plan is rooted in the vision outlined in Imagine Kalamazoo 2025, the City's Master Plan, which champions a "Safe Community" and a "Connected City." These guiding principles emphasize a transportation network that supports walking, biking, riding, and driving, while promoting safety, access, and a high quality of life. The Safety Action Plan supports this vision by assessing safety needs across the city's streets and neighborhoods and recommending strategic interventions to improve conditions for all users of the transportation system.

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.

Goals and Objectives of the Safety Action Plan

The core purpose of this Plan is to serve as an actionable roadmap for improving transportation safety across Kalamazoo. Its development has been informed by community input, crash data analysis, and a review of local context.

The Plan focuses on five key areas:

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

The Plan aims to reduce traffic-related fatalities and serious injuries while supporting a more people-centered, multimodal transportation system that meets the needs of residents, workers, and visitors alike.

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:

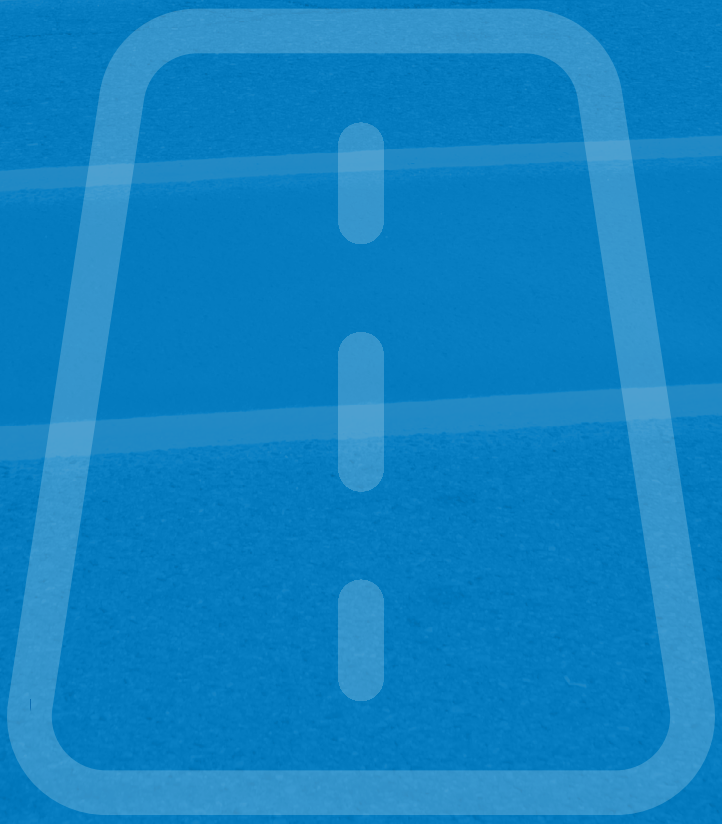
- Death and serious injuries are unacceptable
- Humans make mistakes
- Humans are vulnerable
- Responsibility is shared
- Safety is proactive
- Redundancy is critical

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.

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 2025 Master Plan

As the City's primary long-range planning document, Imagine Kalamazoo 2025 defines a vision for a "Connected City" and a "Safe Community." It prioritizes people-first streets, pedestrian-friendly land use, and the integration of multimodal infrastructure into neighborhood design. Design guidelines promote traffic calming, pedestrian-scale lighting, and enhanced crossings at key commercial and residential nodes.

This plan provides a policy foundation for prioritizing safety improvements in areas of high pedestrian activity and along corridors with known safety challenges. Its emphasis on connectivity and complete neighborhoods aligns directly with the goals of the Safety Action Plan and should guide the selection and design of countermeasures.

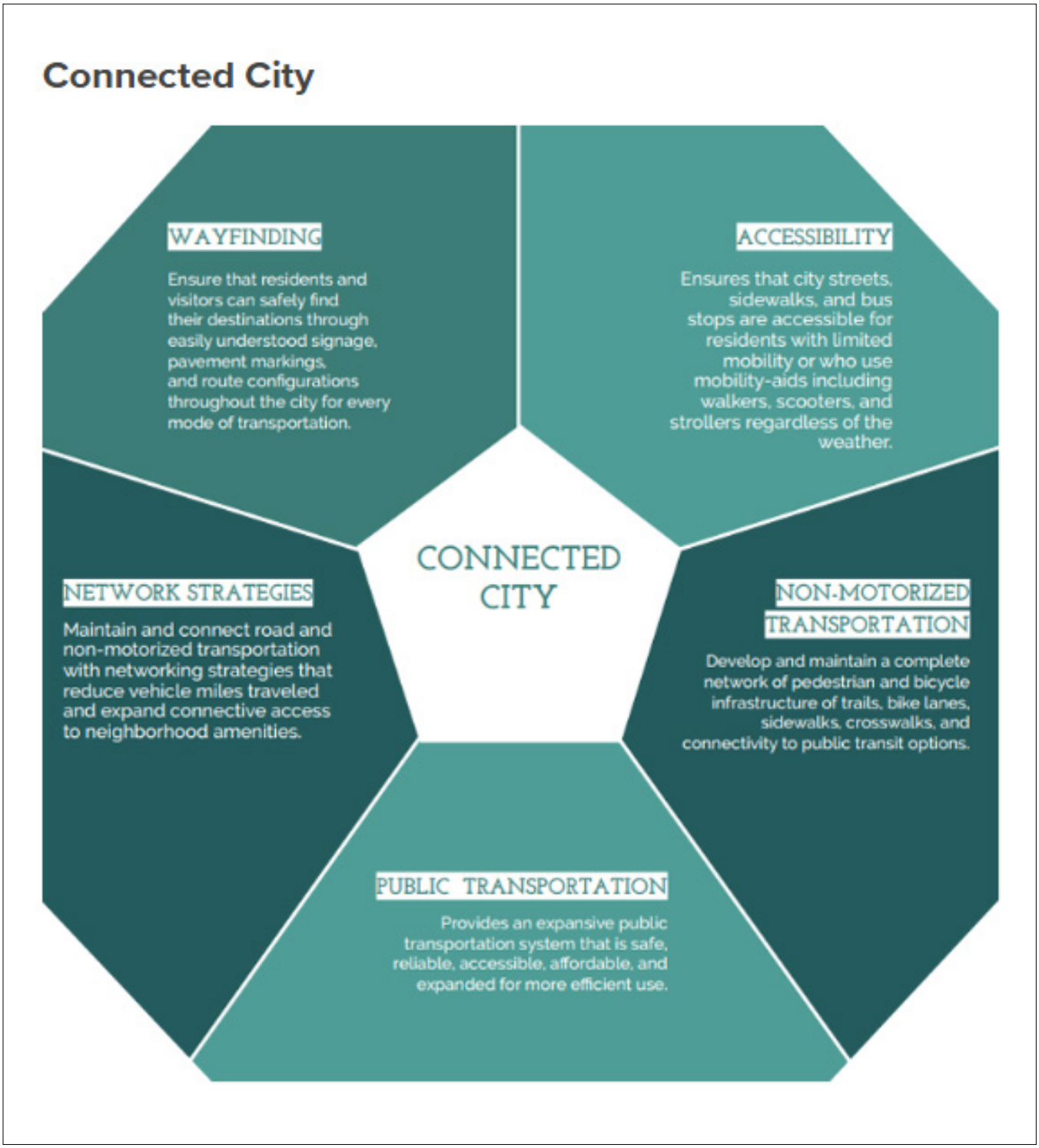


Figure 2. The "Connected City" goal of the Imagine Kalamazoo Plan envisions a multimodal transportation network that improves access, mobility, and safety for all users—whether walking, biking, using a mobility aid, or taking public transit.

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.

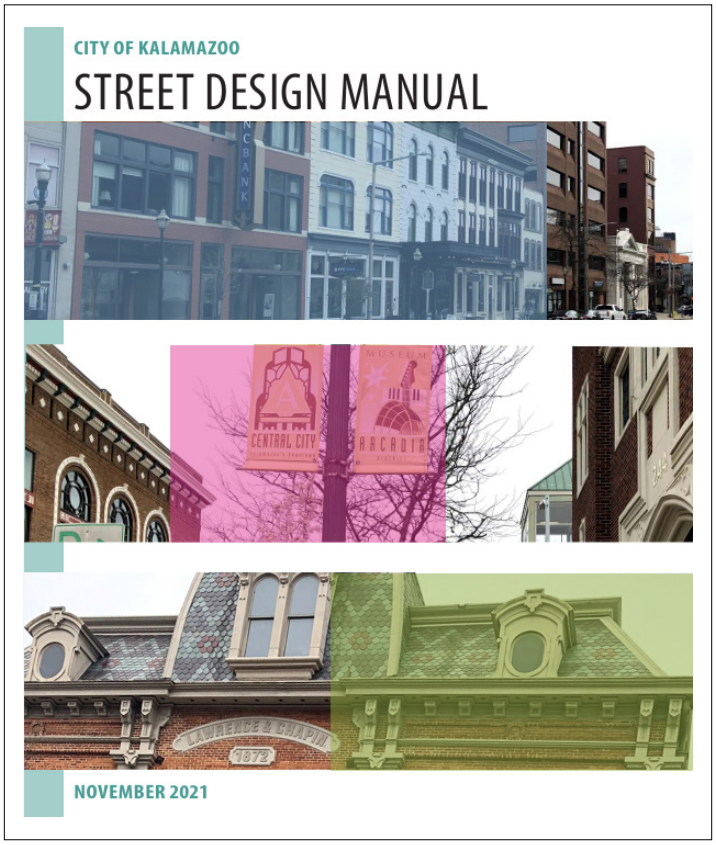


Figure 3. Cover of Kalamazoo's 2021 Street Design Manual, featuring historic downtown architecture and district identity elements that reflect the city's unique character and planning context.

Regional and Metropolitan Transportation Plans

2050 Metropolitan Transportation Plan (KATS)

Developed by the Kalamazoo Area Transportation Study (KATS), the 2050 MTP 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 MTP 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

This 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 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 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 can encourage its recommended projects are 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 that safety projects are rooted in community priorities and positioned for lasting impact

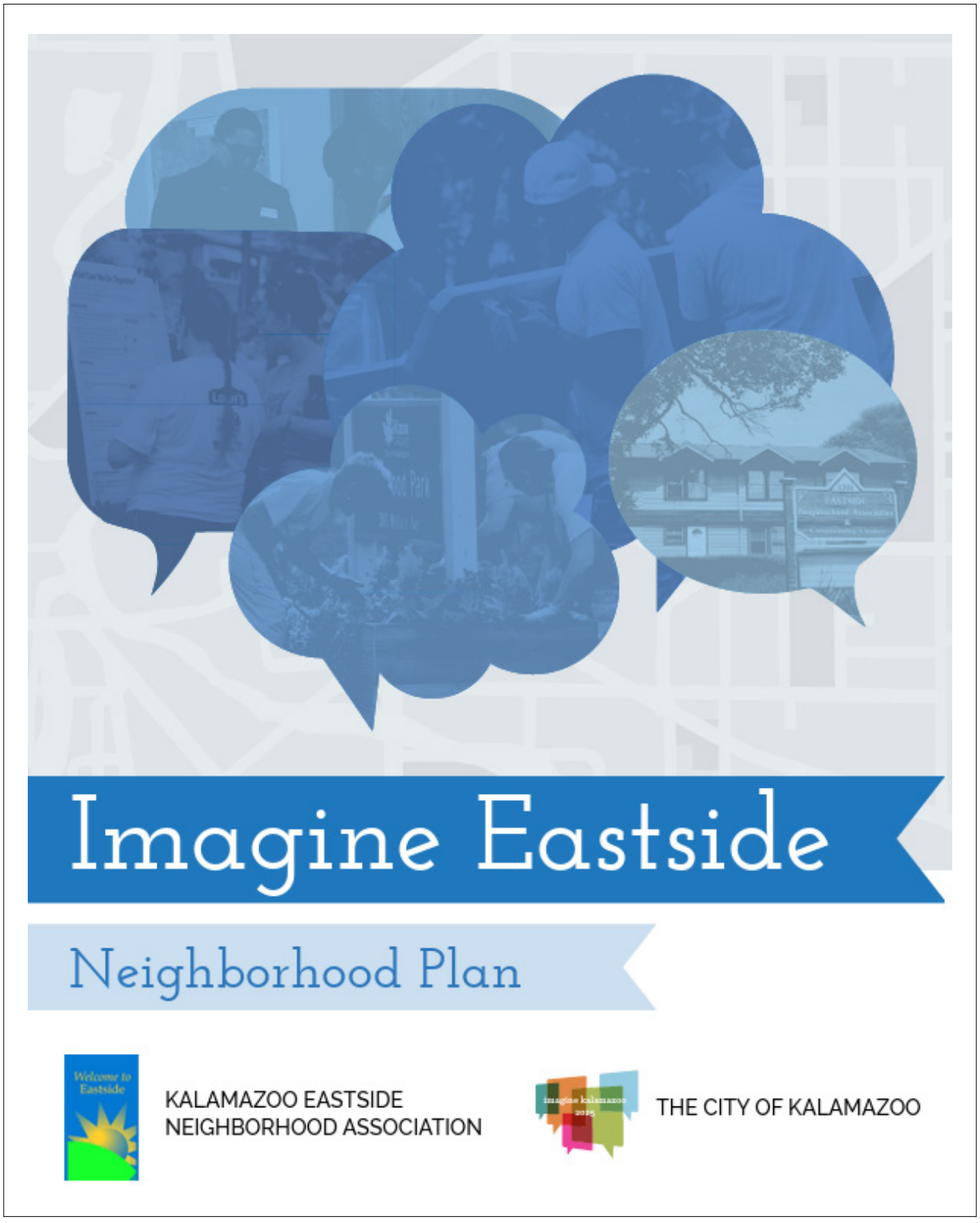


Figure 4. The Imagine Eastside Neighborhood Plan highlights the voices, spaces, and aspirations of Eastside residents, developed in partnership with the Kalamazoo Eastside Neighborhood Association and the City of Kalamazoo.

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 SS4A and HSIP. 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

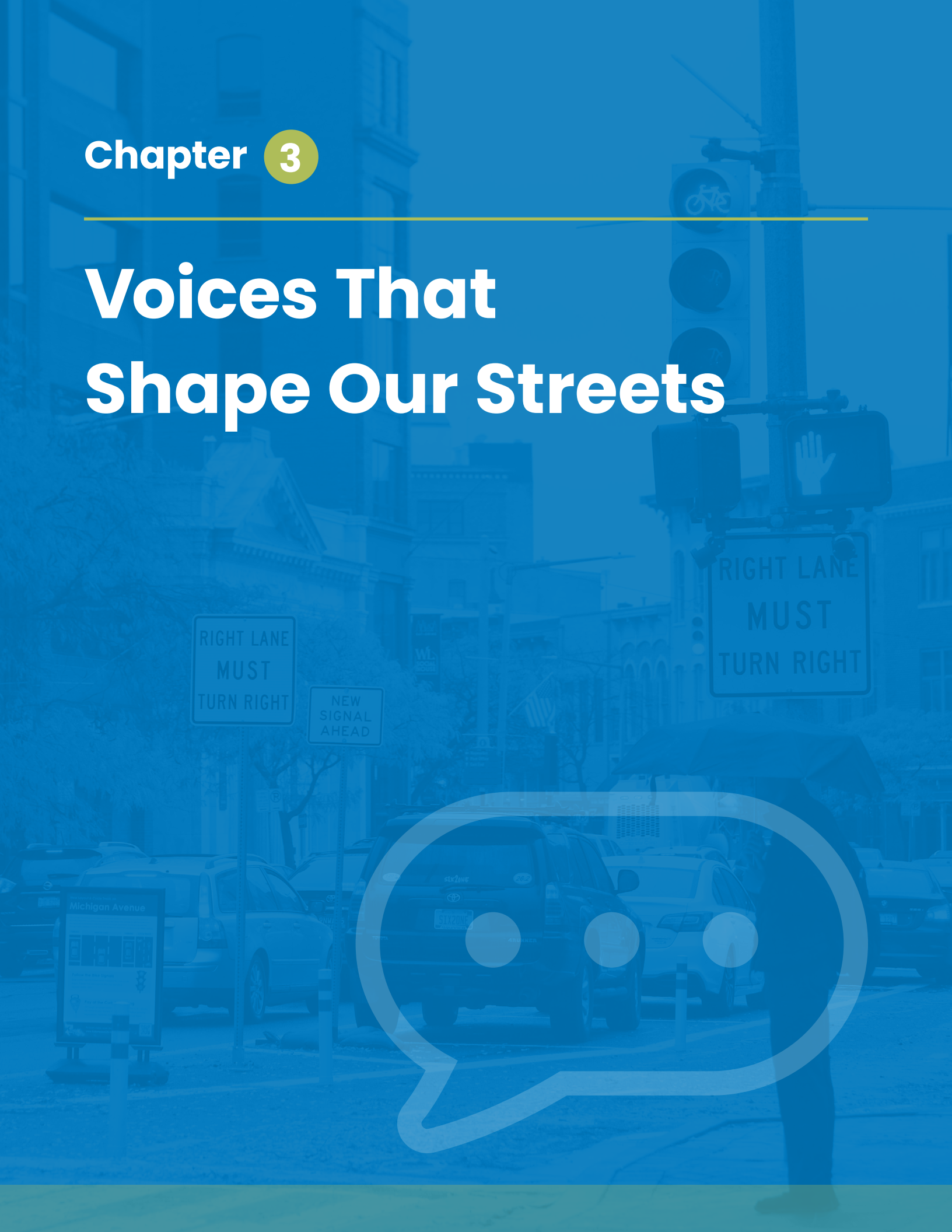
Delivering on the promise of safe streets will require collaboration across City departments, with the Metropolitan Planning Organization (KATS), and with community groups. This includes integrating safety goals into routine maintenance, capital improvement planning, development review, and performance 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 by promoting 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 encouraged the draft recommendations aligned 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 from 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

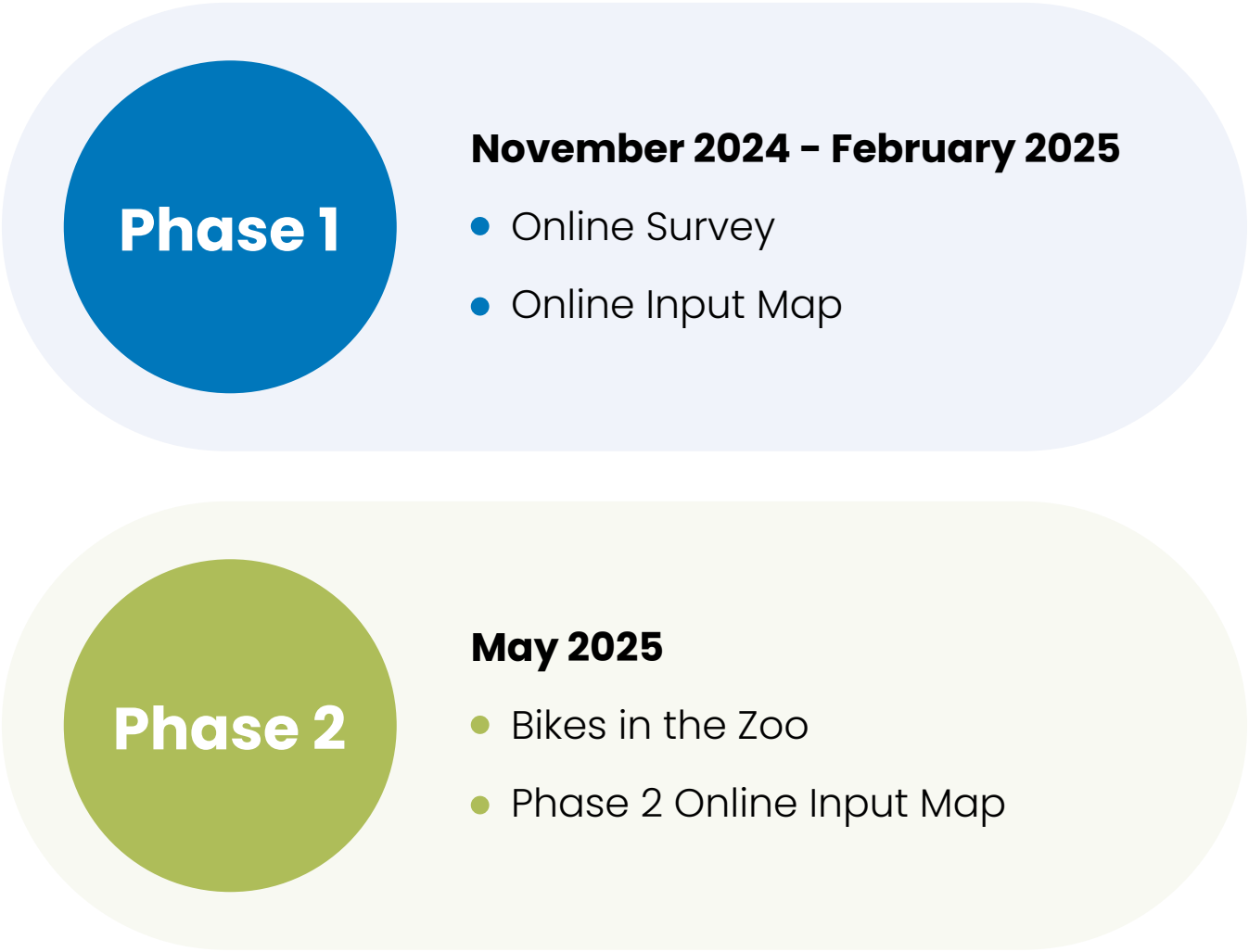
Online Survey (Nov 2024–Feb 2025): 668 responses representing 24 zip codes.

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.



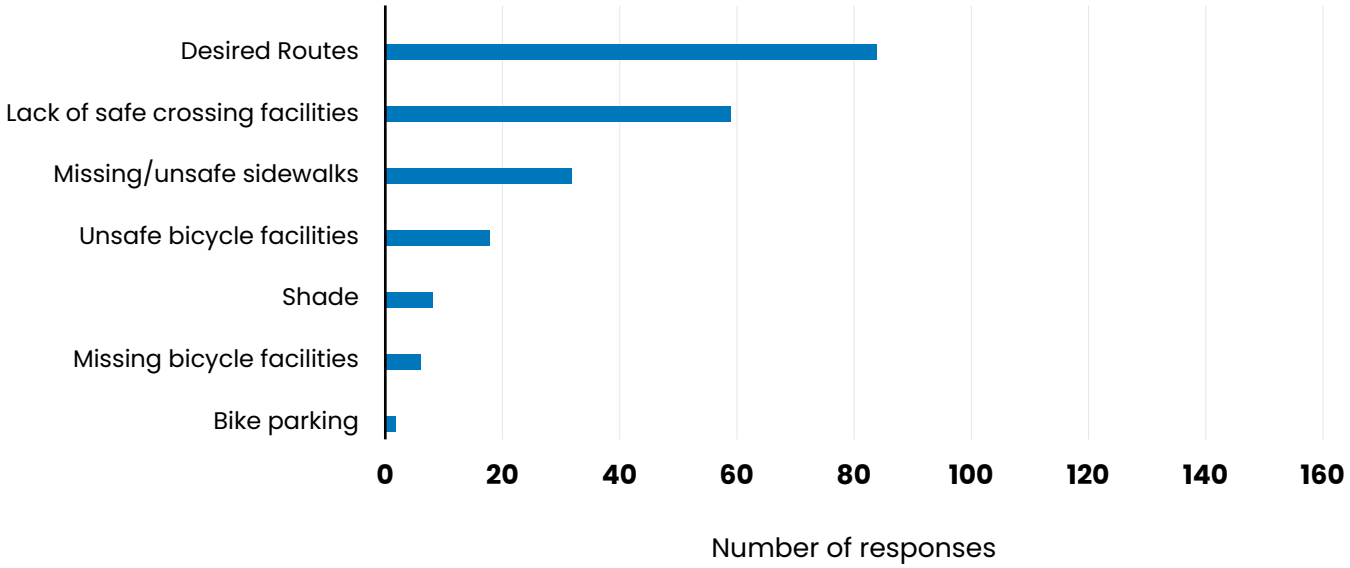
Phase 1: Citywide Input on Safety Concerns

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.

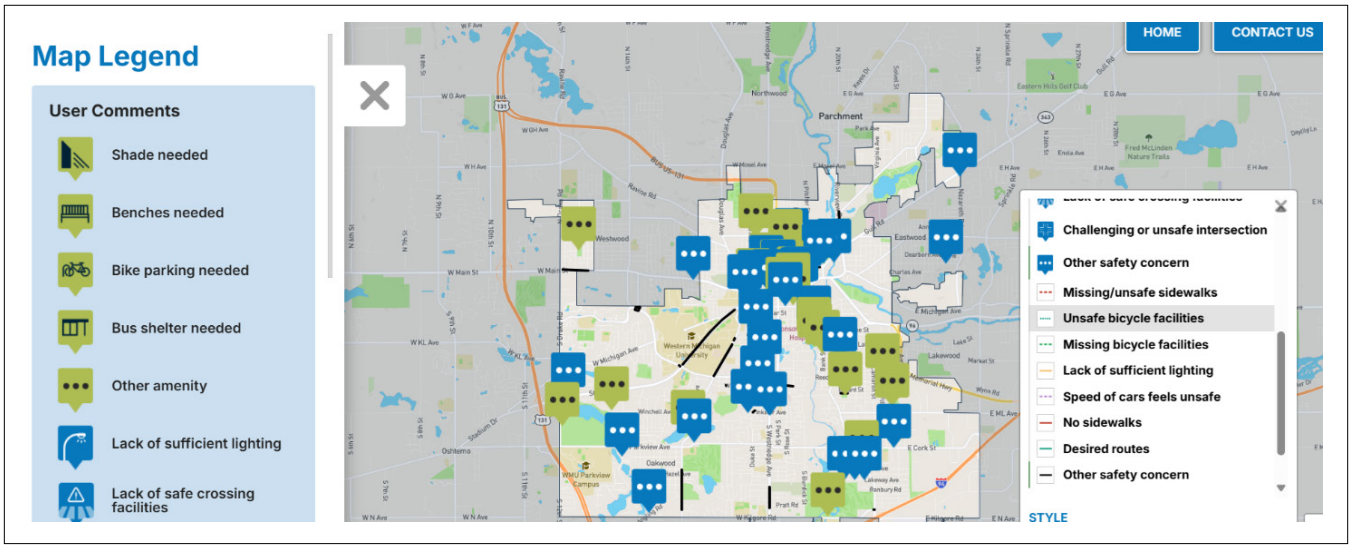
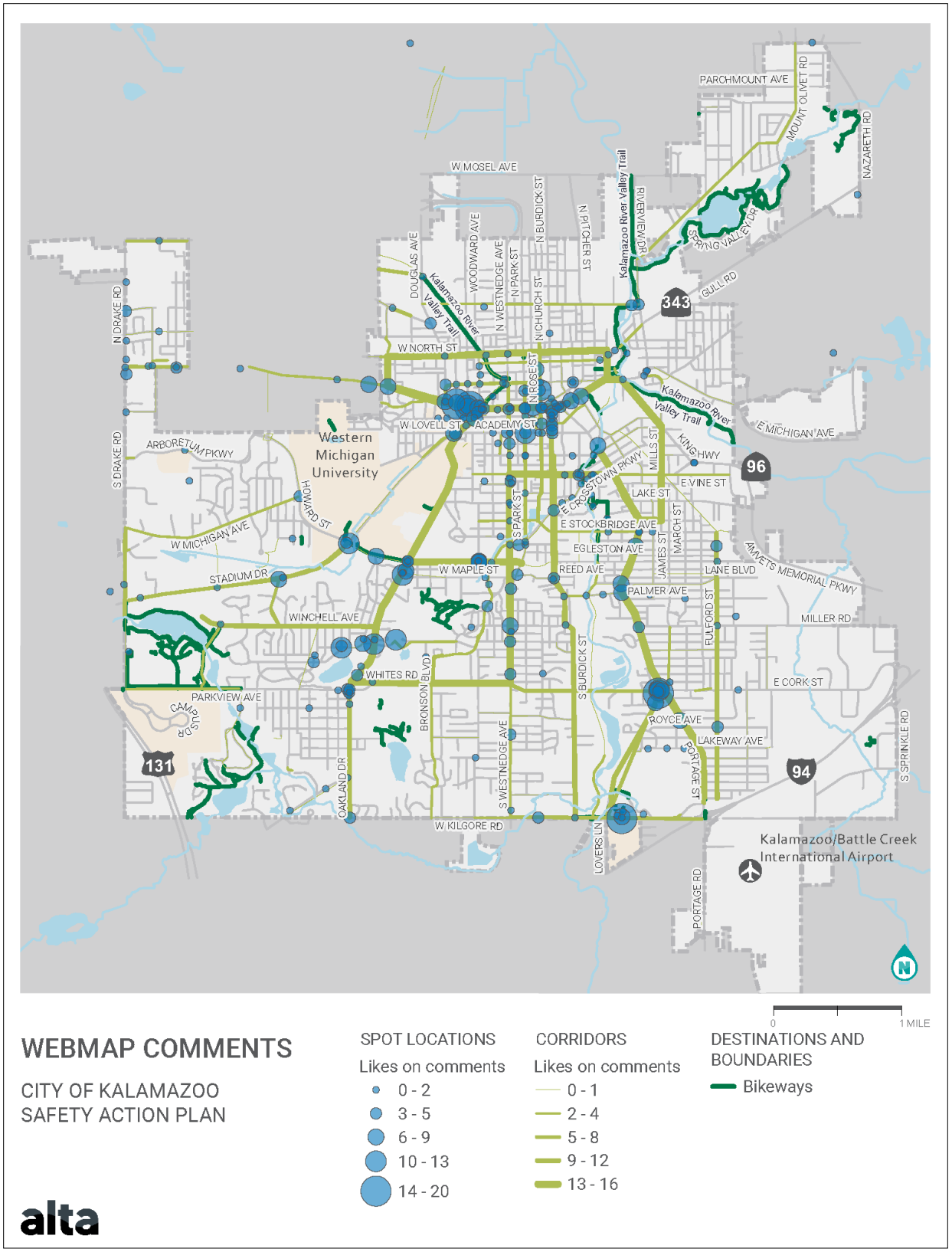


Figure 8. This map visualizes community input received through the Phase 1 Kalamazoo Safety Action Plan interactive webmap, highlighting locations with the most activity.



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

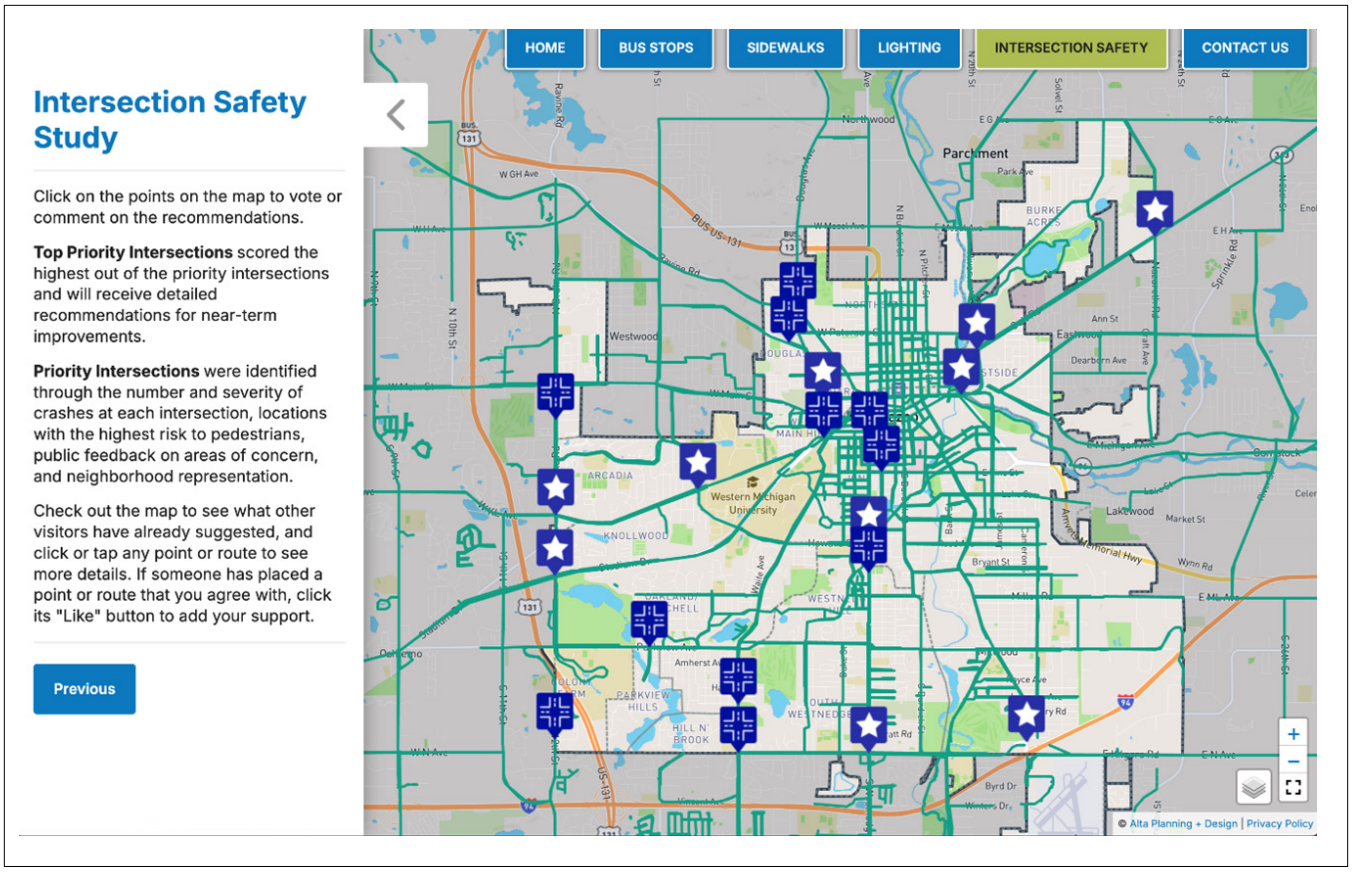
Figure 9. This map visualizes community input received through the Phase 1 Kalamazoo Safety Action Plan interactive webmap, highlighting locations with the most activity.

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—promoting community voices guided project focus areas.



Key Themes from Public Input

Across both engagement phases, consistent themes emerged that helped shape 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, promoting that community voices remained 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 encourage the plan's recommendations were 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—promoting the plan addressed 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 was reflected not only in the plan's development but also in its final refinement.

September 2025

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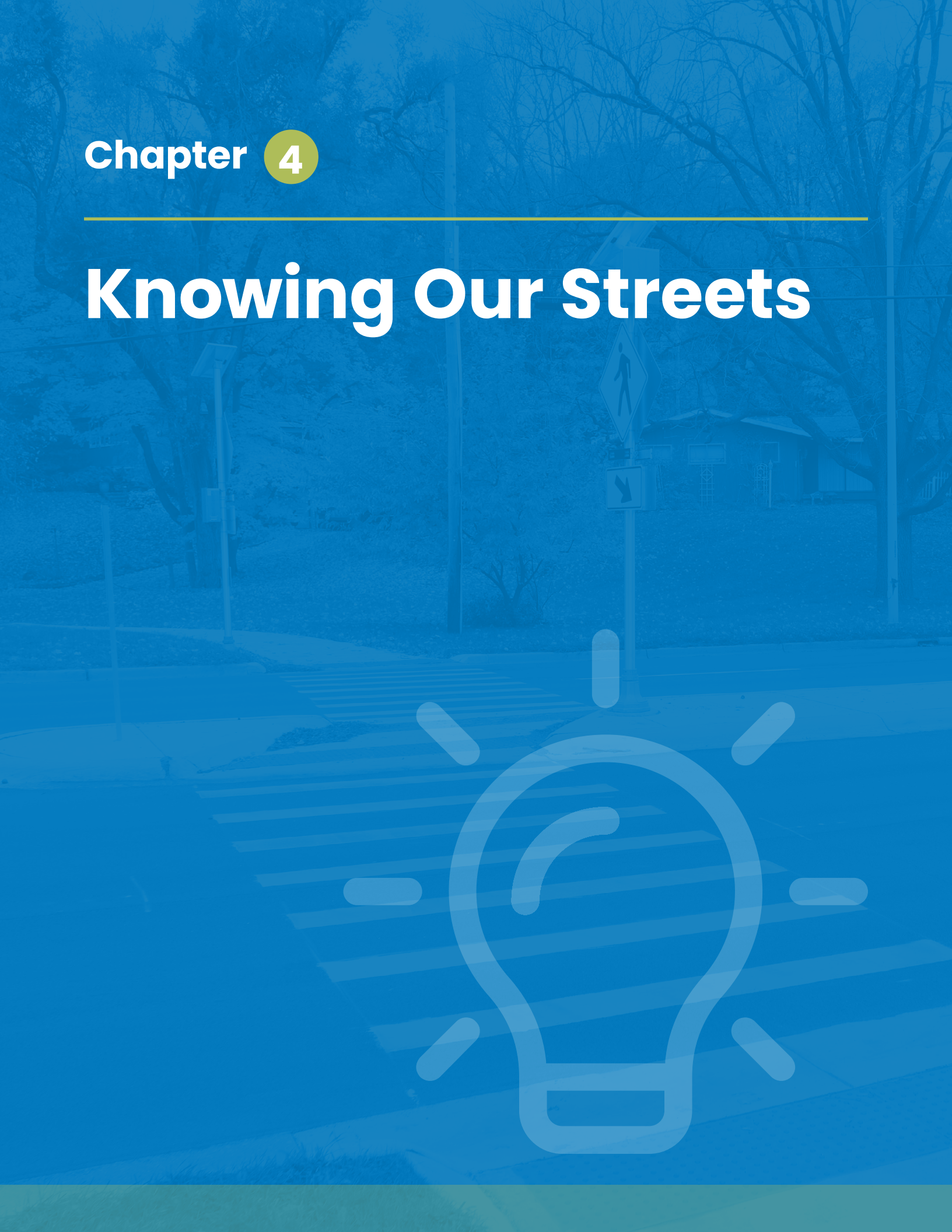
Chapter 4

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 promoting that safety improvements are 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 that future investments 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 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 that safety improvements are equitably distributed. 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 encourages that all residents—regardless of race, income, or ability—can travel safely.

Crash History at a Glance

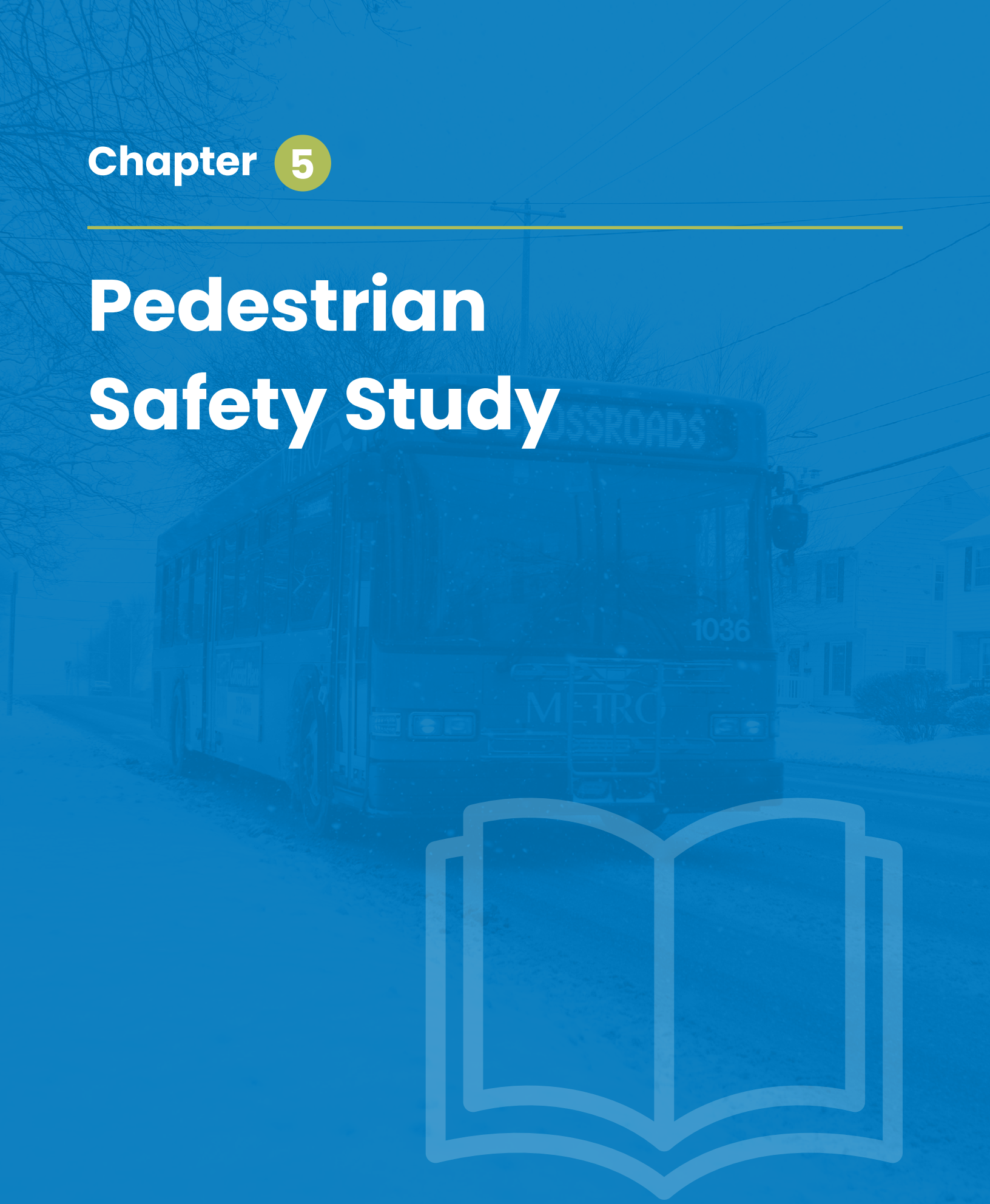
Crash data from 2014 through 2023 provides critical insight into safety challenges across the city. During this period, there were 436 pedestrian-involved and 336 bicycle-involved crashes. While these crashes represented just 2.4% of total crashes, they accounted for a disproportionate share of severe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

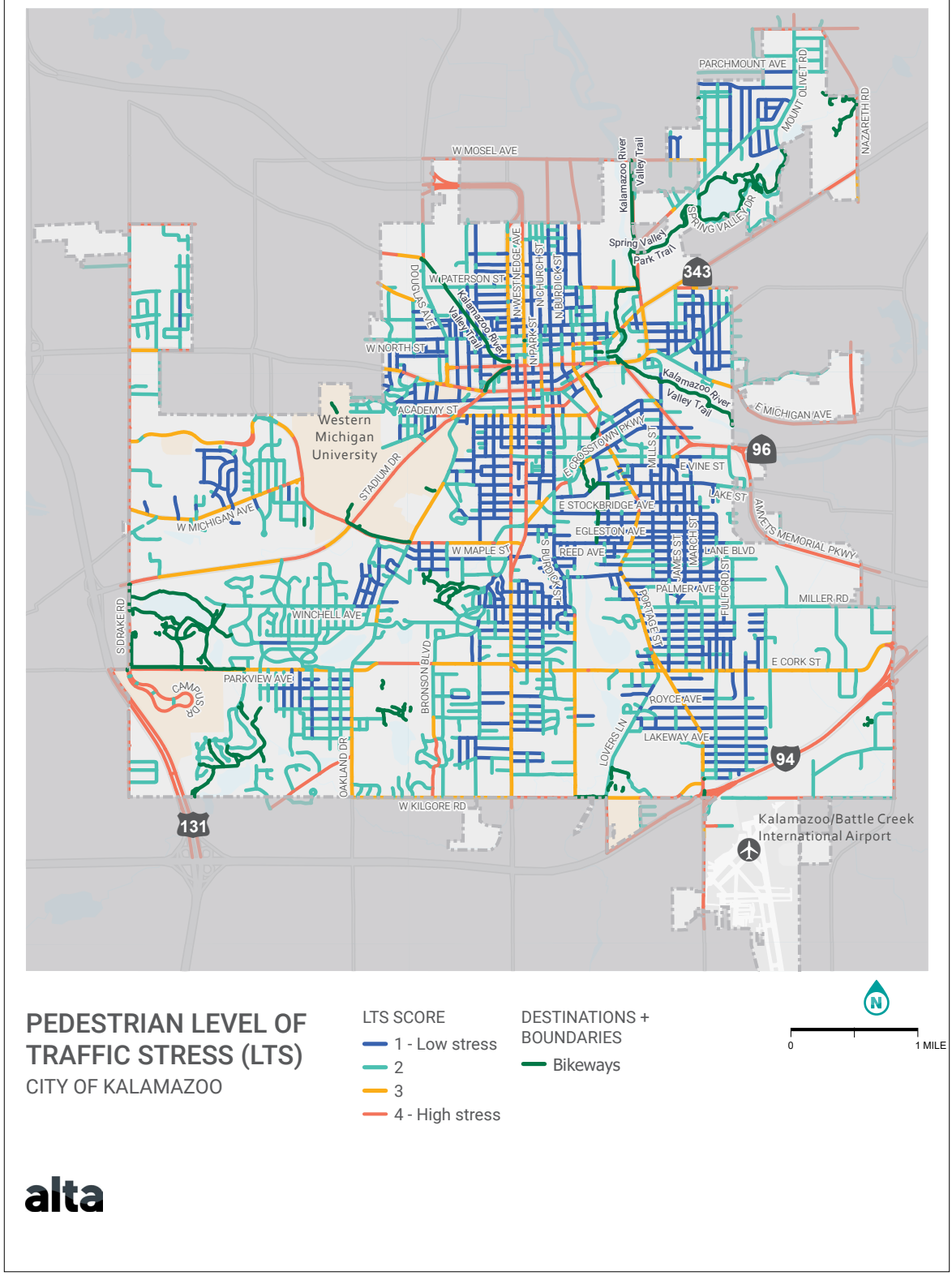
High-Stress Corridors and Barriers

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



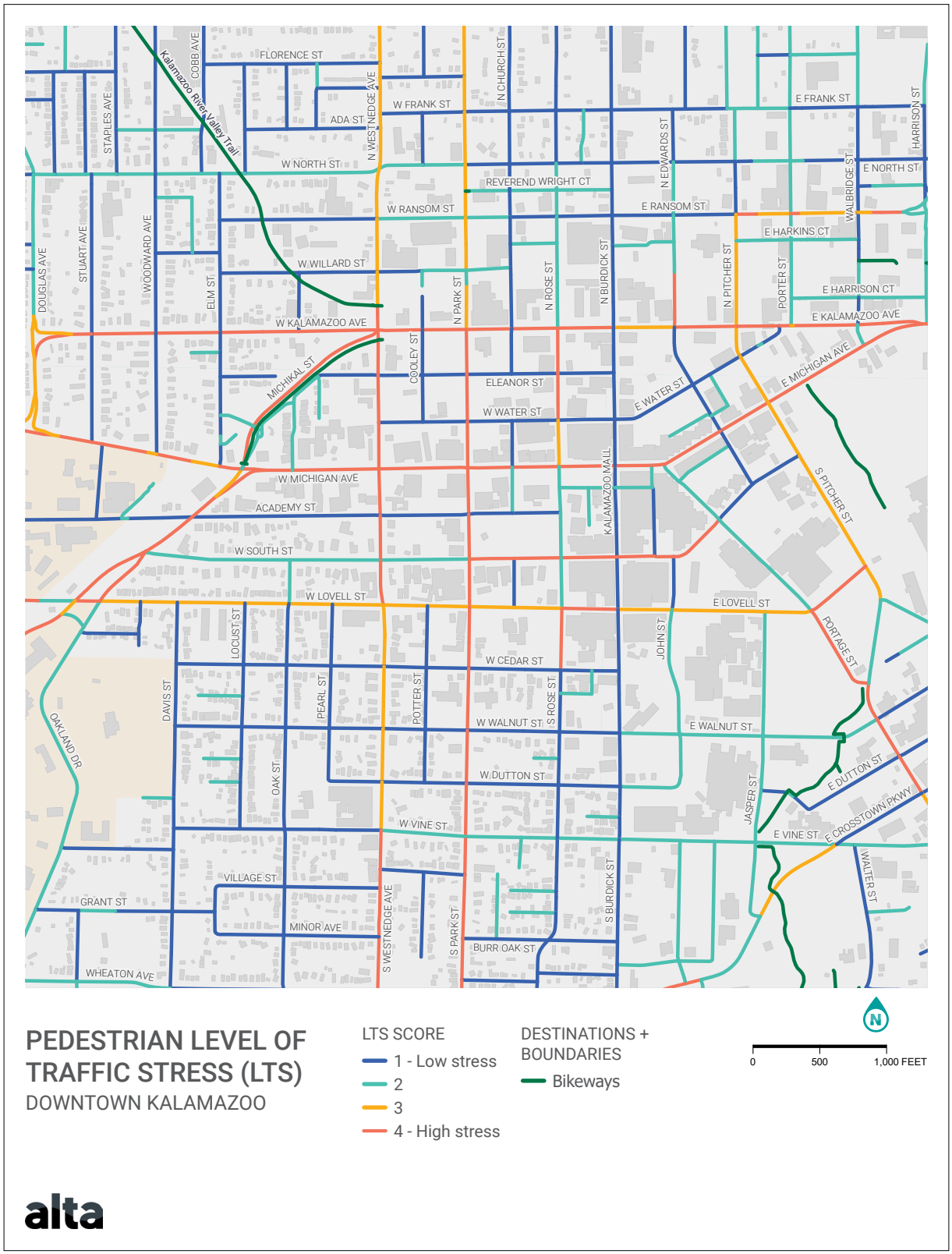
Downtown Challenges

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 chokepoints 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
- 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 encourages that the analysis identifies 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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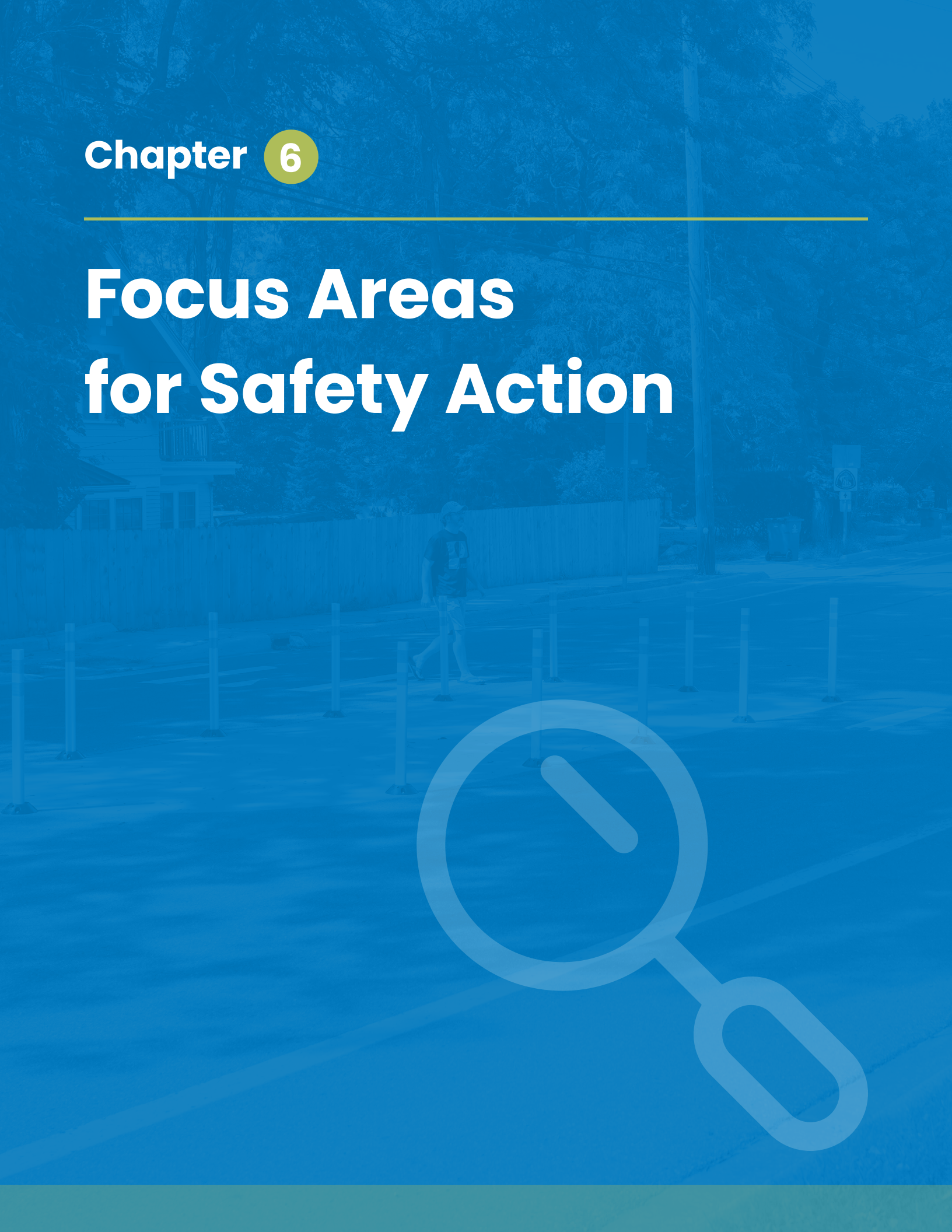
Chapter 6

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. This table also includes neighborhood context to help promote that future investments support both safety and geographic equity.

From this analysis, ten 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 in from **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 Safe Transportation for Every Pedestrian (STEP) program, and NACTO and 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.

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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.
- Restrict right turns on red on the west leg to reduce conflicts with pedestrians; confirm feasibility with traffic study.
- 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.

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 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 percent of the above ranges. However, permanent reconstruction of sidepaths and medians would still be necessary for long-term impact, increasing eventual investment needs.

Clarification

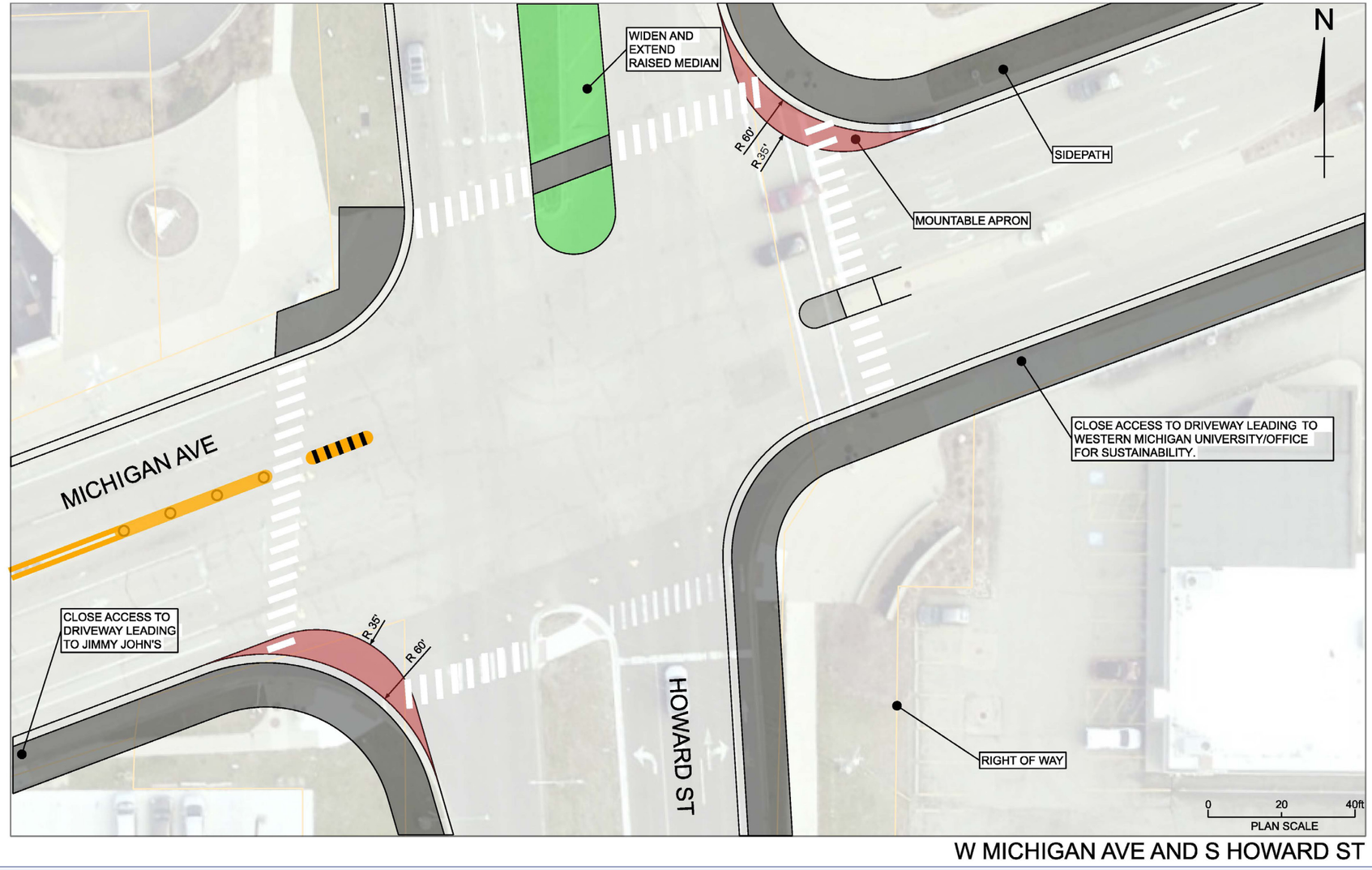
The separated sidepaths are identified as the largest cost item and are listed separately from intersection-wide upgrades. Intersection-wide upgrades ($150k–$250k) capture ADA ramps, APS, signal timing, and crosswalks. The sidepaths ($800k–$1.2M) represent major linear facilities that go beyond those 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

This intersection connects Ascension Borgess Hospital and surrounding medical facilities with adjacent neighborhoods and the Kalamazoo River Valley Trail. Gull Road functions as a high-speed arterial with limited pedestrian or bicycle accommodations. Sidewalks are narrow and misaligned, bike facilities are absent or shared lane conditions, and transit access is hindered by missing boarding pads. Crash data reflects unsafe turning movements and pedestrian risk near bus stops.

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

- Reconfigure channelized right at northeast quadrant to be a smart channel right with a relocated, raised crossing to improve visibility between pedestrians and turning drivers.
- 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 percent. These pilot measures provide immediate benefits but would need replacement with permanent materials in future phases.

Clarification:

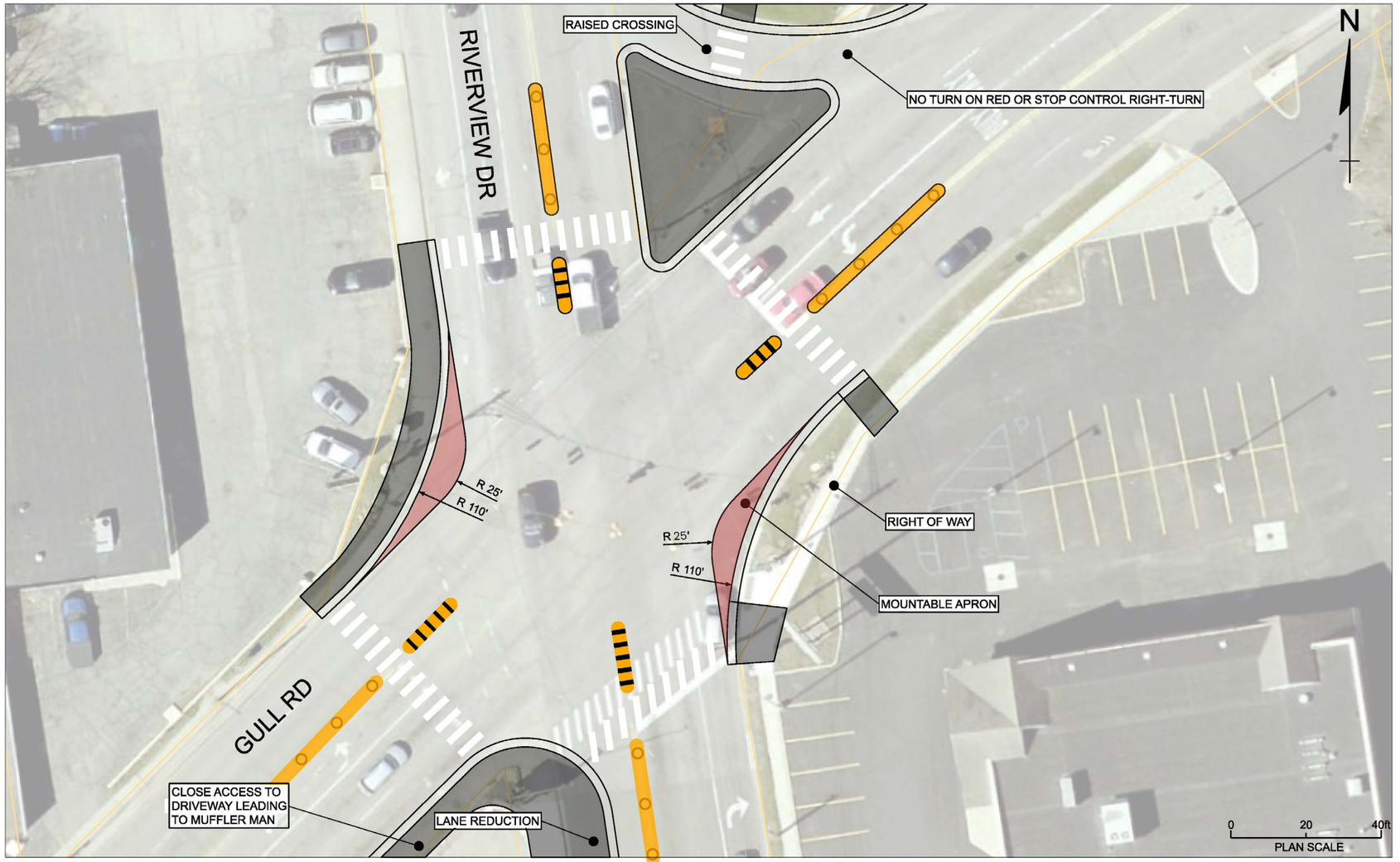
The slip-lane reconfiguration and raised crossings ($300k–$500k) are separated from intersection-wide upgrades ($100k–$200k) because they represent larger reconstruction efforts. Similarly, the new east-leg crosswalk and reconfigured ramps ($100k–$150k) are identified separately. Transit stop upgrades ($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

This intersection lies in a mixed commercial and industrial area and supports both local transit access and regional freight traffic. Sidewalks are worn, crosswalks are long, and bicycle facilities are absent. Wide curb radii and multiple turn lanes enable high-speed turning, while the below-grade trail crossing is underutilized and no longer passable due to flooding and safety challenges. Crash data shows pedestrian injury and high crash severity.

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 percent but would require full reconstruction for long-term durability and freight accommodation.

Clarification:

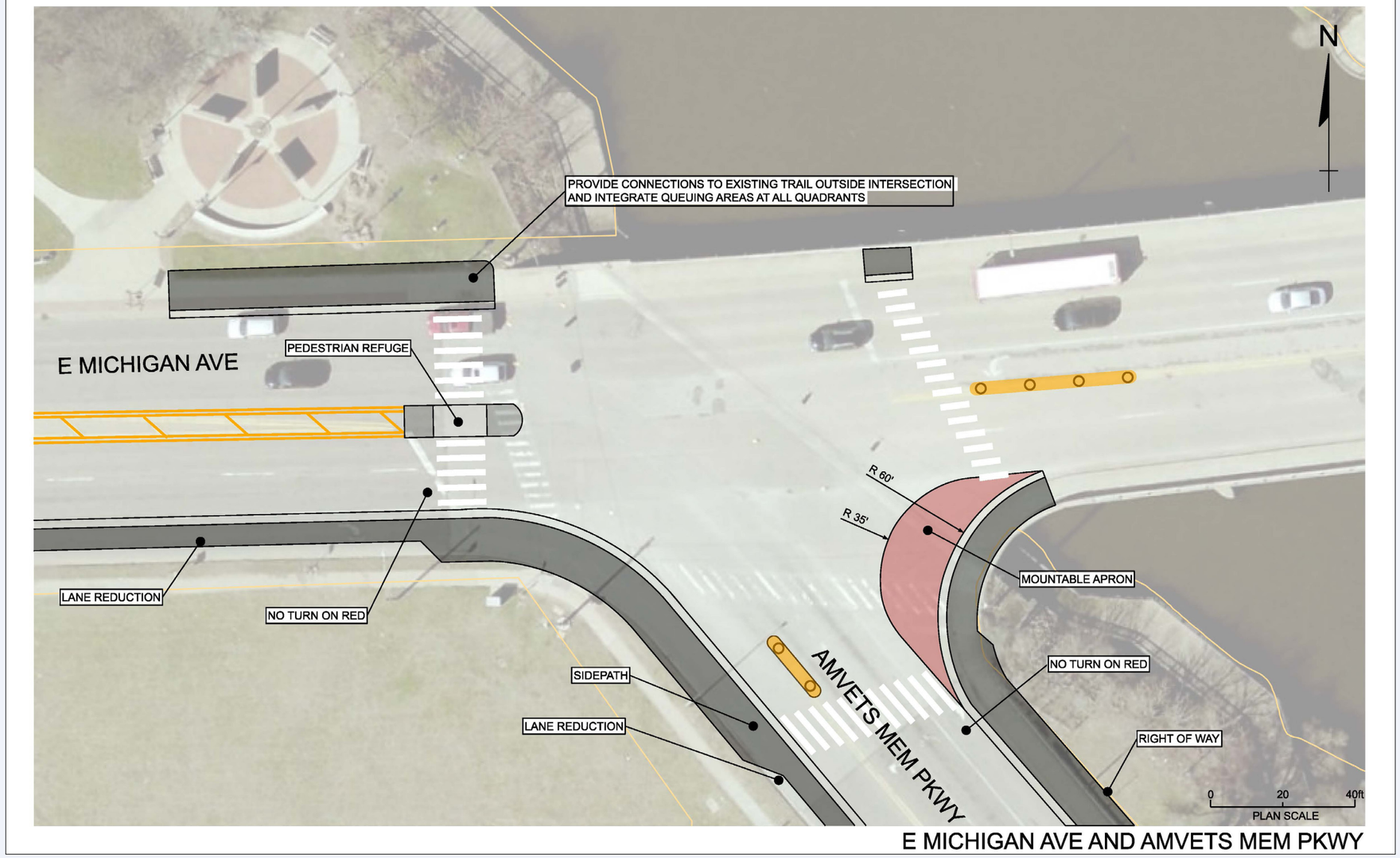
The at-grade trail connections ($500k–$700k) and sidewalk/queuing areas ($200k–$350k) are separate from intersection-wide upgrades ($150k–$250k). The trail connections are a major standalone project involving replacement of the underpass and approach realignments, while sidewalk/queuing areas require 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

This semi-industrial intersection links employment centers with residential neighborhoods. Sidewalk coverage is incomplete, bicycle facilities have poor connectivity, and wide curb radii increase pedestrian exposure to fast-turning vehicles. Desire paths suggest strong walking demand despite unsafe conditions. Crash records include pedestrian and injury collisions.

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 percent. Permanent sidepath construction would remain a significant capital cost regardless of quick-build staging.

Clarification:

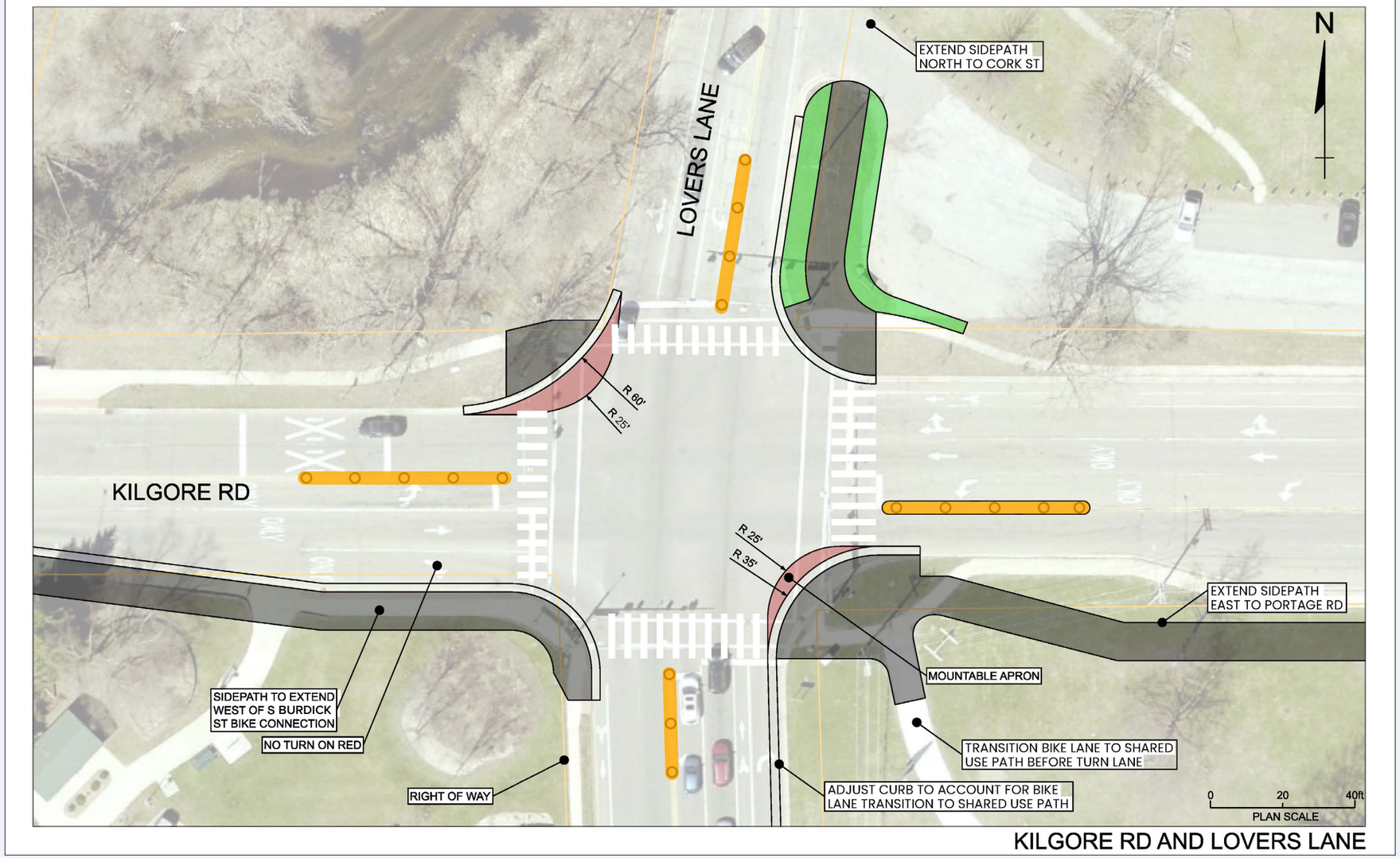
Trail crossings and bump-outs ($150k–$300k) are separate from both intersection-wide upgrades ($150k–$250k) and sidepath construction ($900k–$1.3M). Intersection-wide upgrades capture ADA ramps, APS, LPIs, and lighting, while sidepaths represent major linear facilities. Trail crossings and bump-outs 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.

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

This suburban-style intersection connects neighborhoods to retail and schools but lacks basic multimodal infrastructure. Sidewalks are fragmented, crosswalks inconsistent, and bike facilities absent. Wide roadways, high vehicle speeds, and driveway conflicts create unsafe conditions. Crash history reflects both pedestrian risks and turning-movement collisions. The location also serves as a major connection to Frays Park—a valued neighborhood amenity—and provides a critical walking and biking link for residents of the Westwood neighborhood.

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 percent of full reconstruction cost. These measures provide near-term safety while allowing higher-cost infrastructure changes to be phased in later.

Clarification:

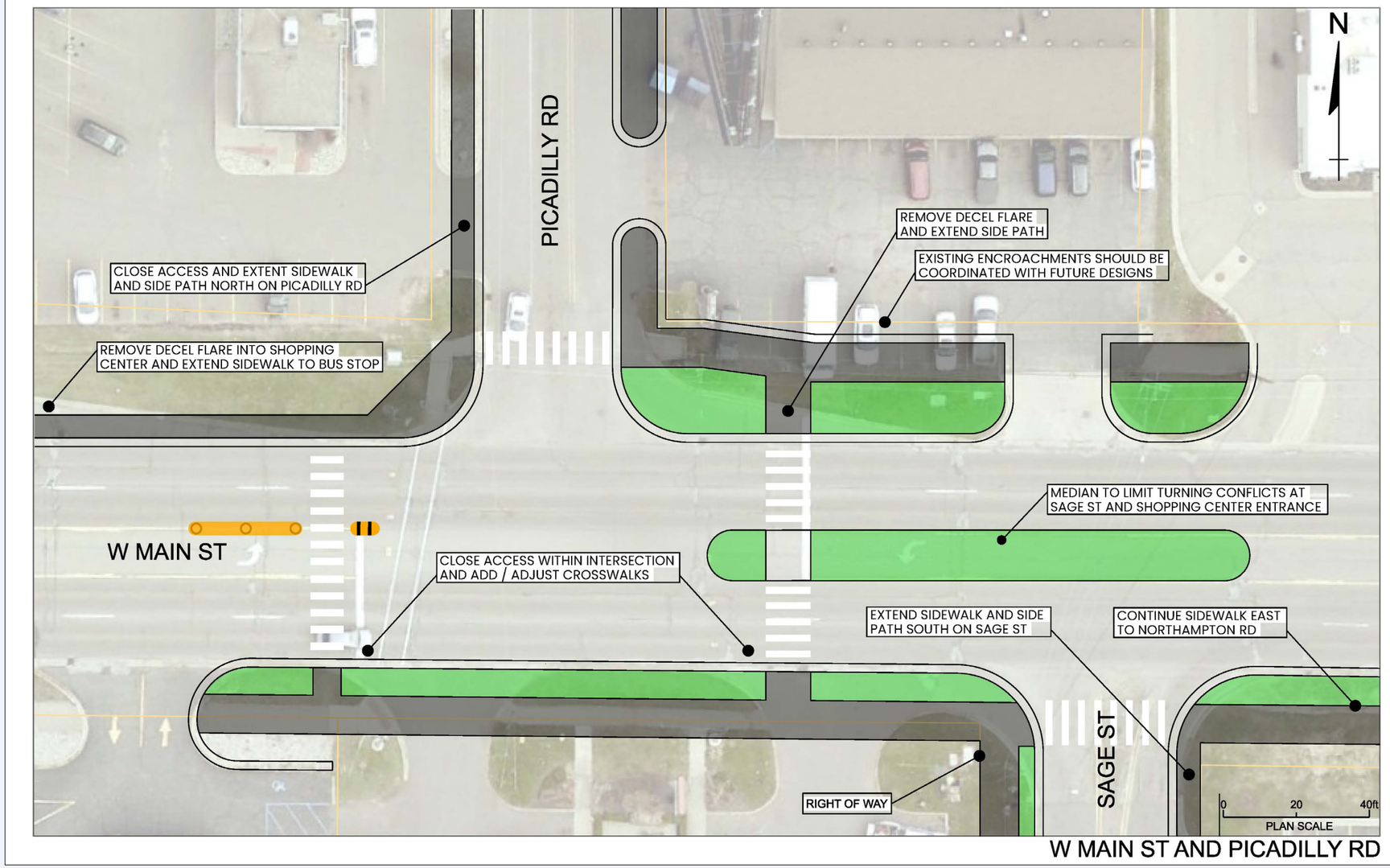
The median refuge ($200k–$350k) and driveway/access closures ($150k–$250k) are listed separately from intersection-wide upgrades ($75k–$150k) and sidewalk connections ($100k–$150k). This reflects the additional costs of reconfiguring traffic operations and extending multimodal access beyond baseline 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.

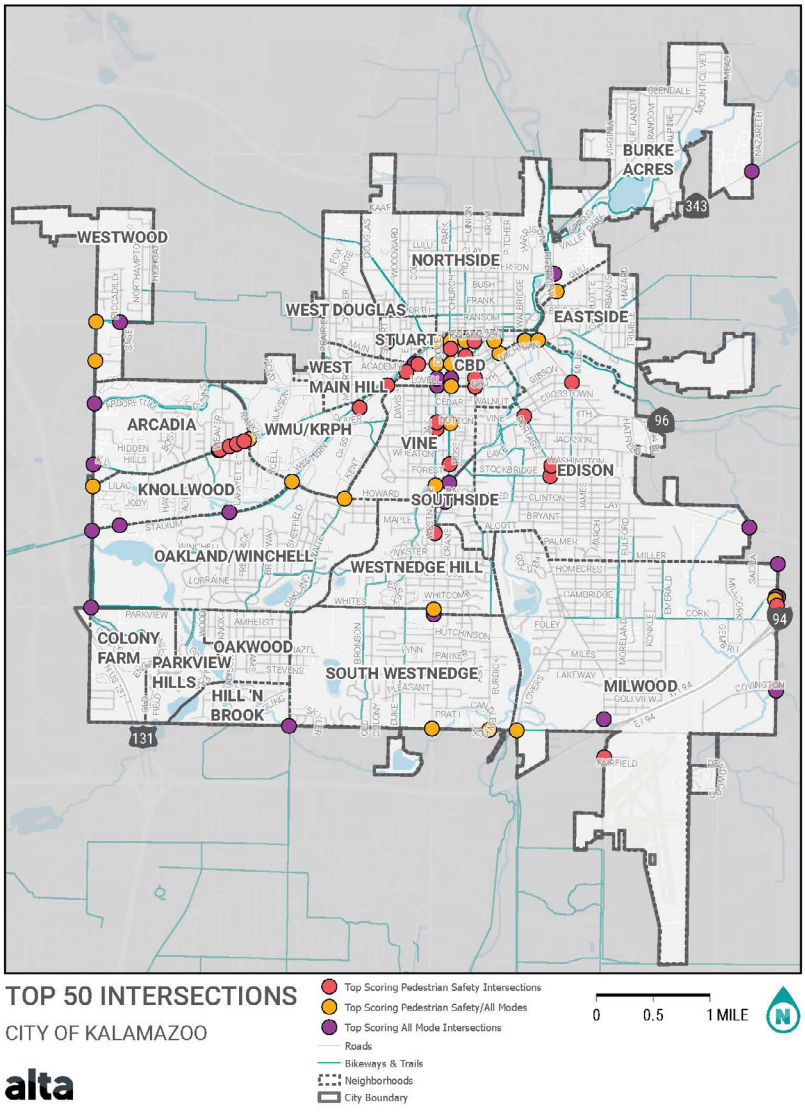


Concept plan showing driveway closures, sidewalk and sidepath extensions, removal of a deceleration flare, a median to manage turning conflicts, and reconfigured crosswalks to enhance pedestrian access.

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	Neighbor-hood	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	Neighbor-hood	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 (**Appendix F**)
- Lighting, sidewalk, and bus stop safety plans

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 (City) 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

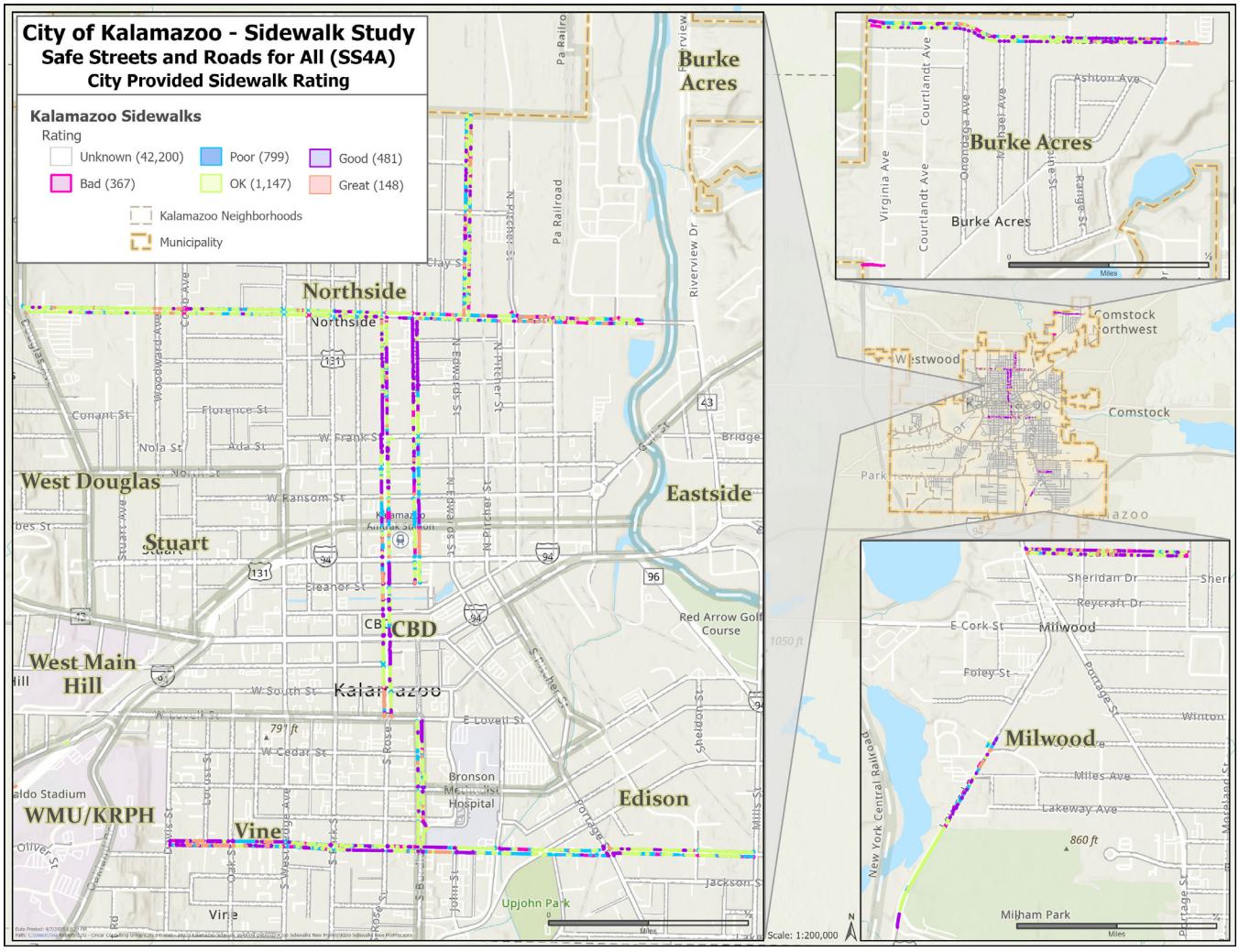
As part of the planning effort, the City provided a comprehensive sidewalk asset management dataset that included over 45,000 unique sidewalk segments. This dataset identified existing sidewalks along with condition ratings and indications of whether a segment should be removed or replaced. However, 93.5% of the segments had unknown condition data; collected data only covered parts of six (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

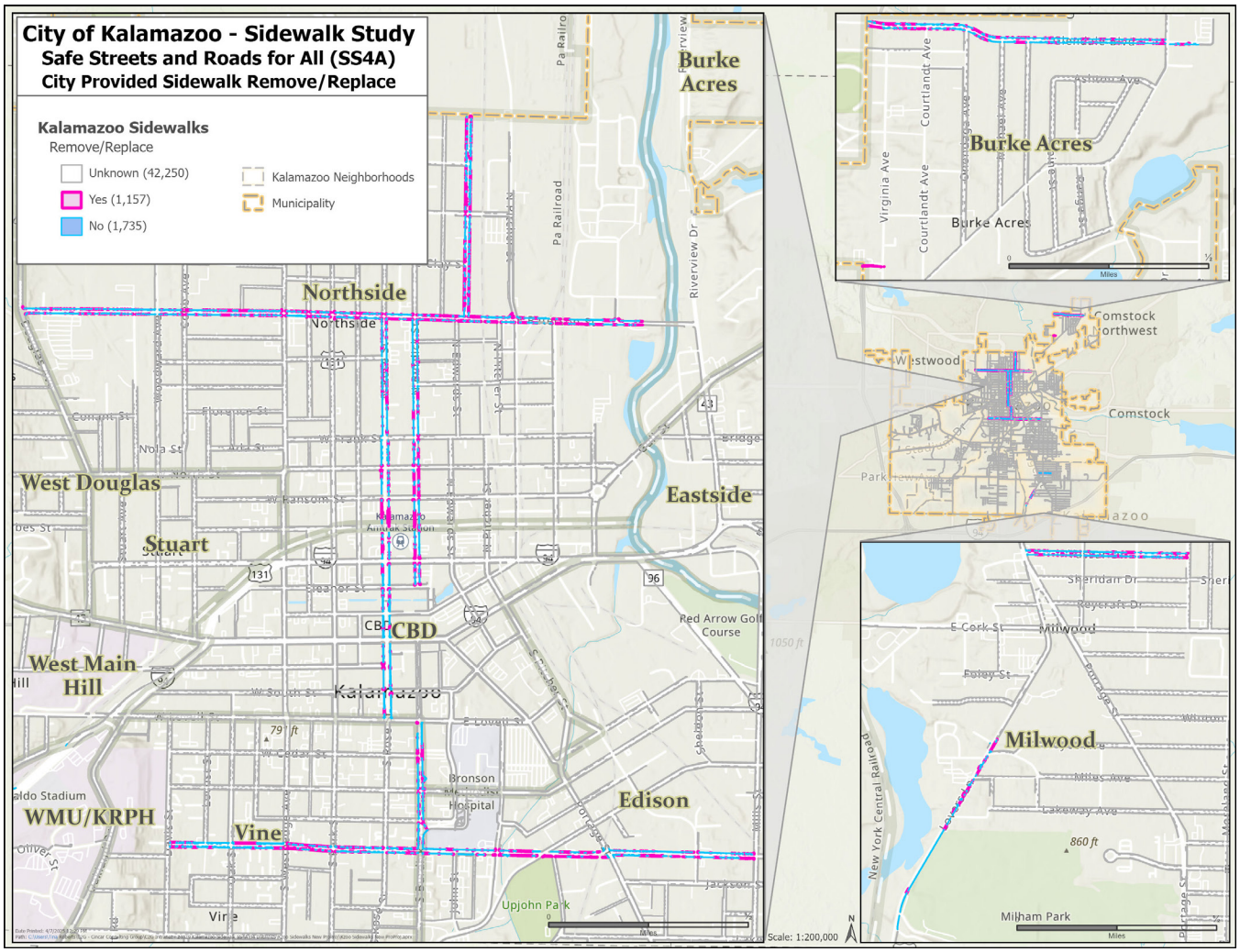
Condition	Remove/Replace		
	Unknown	Yes	No
Unknown	93.5%	0.0%	0.0%
Bad	0.0%	0.8%	0.0%
Poor	0.0%	1.7%	0.1%
Ok	0.1%	0.1%	2.4%
Good	0.0%	0.0%	1.1%
Great	0.0%	0.0%	0.3%

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.

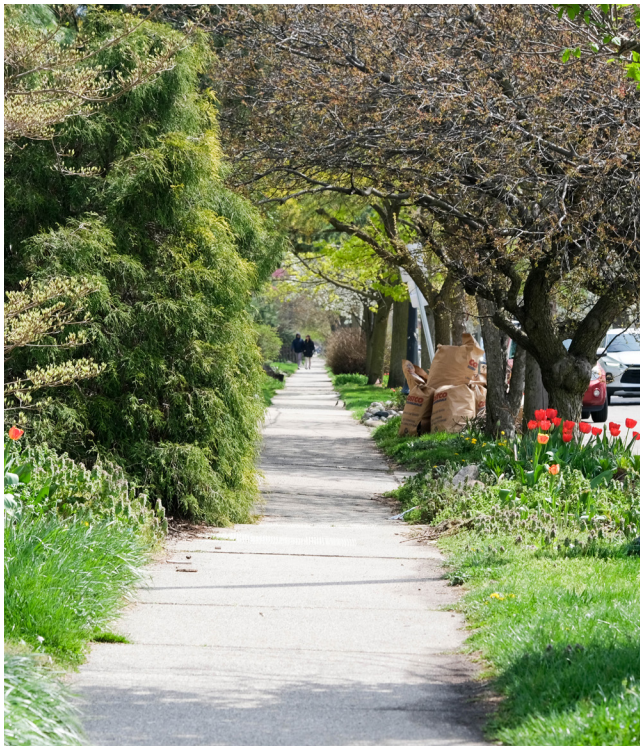
While no definitive correlation between tree species and sidewalk damage could be established at this time, the analysis underscores the importance of expanding and maintaining the City's sidewalk rating database. A more complete and up-to-date dataset would allow for stronger conclusions in future evaluations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

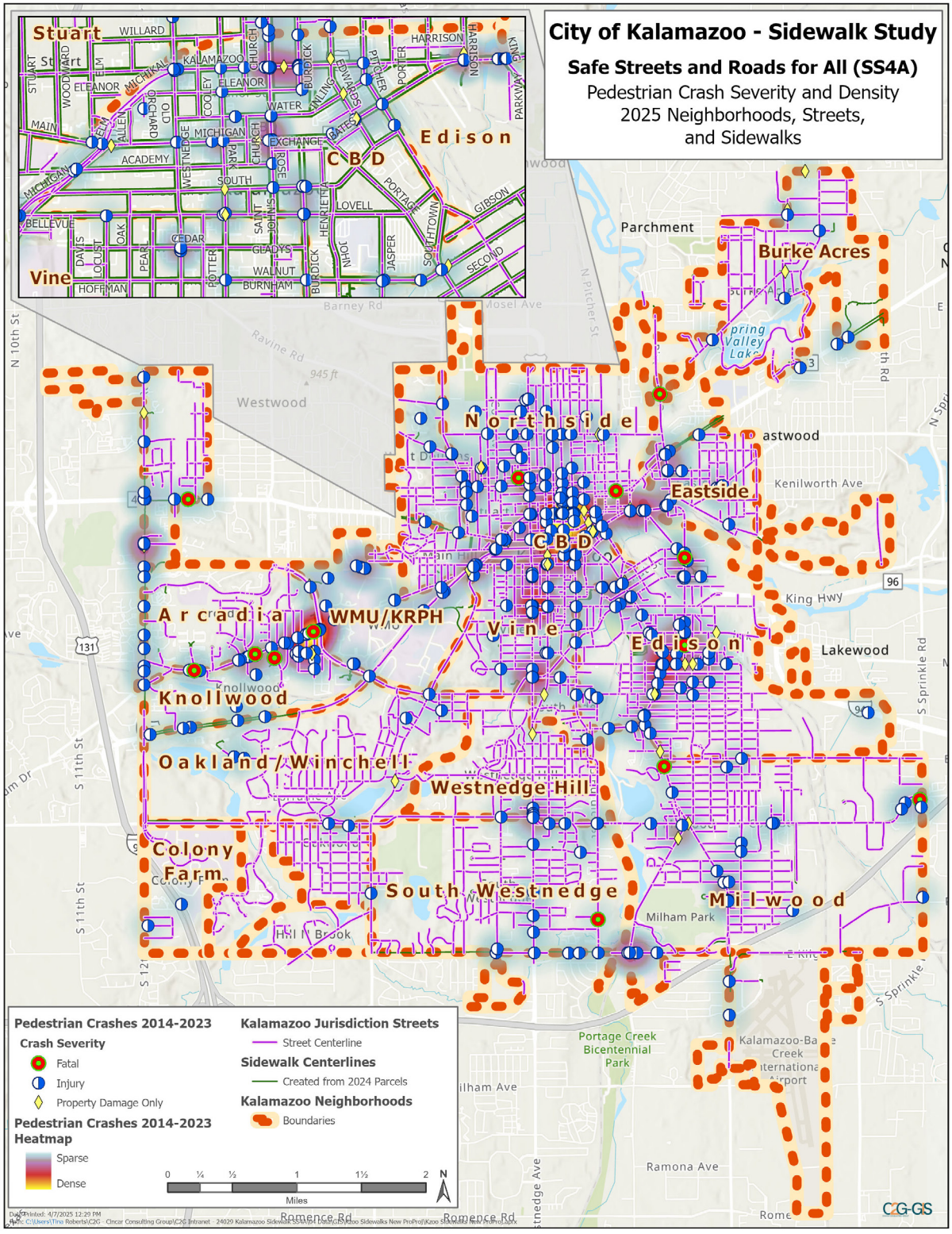
The following visuals provide spatial context for the key parameters analyzed, offering a geographic view of how pedestrian safety concerns and infrastructure needs are distributed across the city. Maps and graphics illustrate where sidewalk improvements may be most urgently needed, helping to guide 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

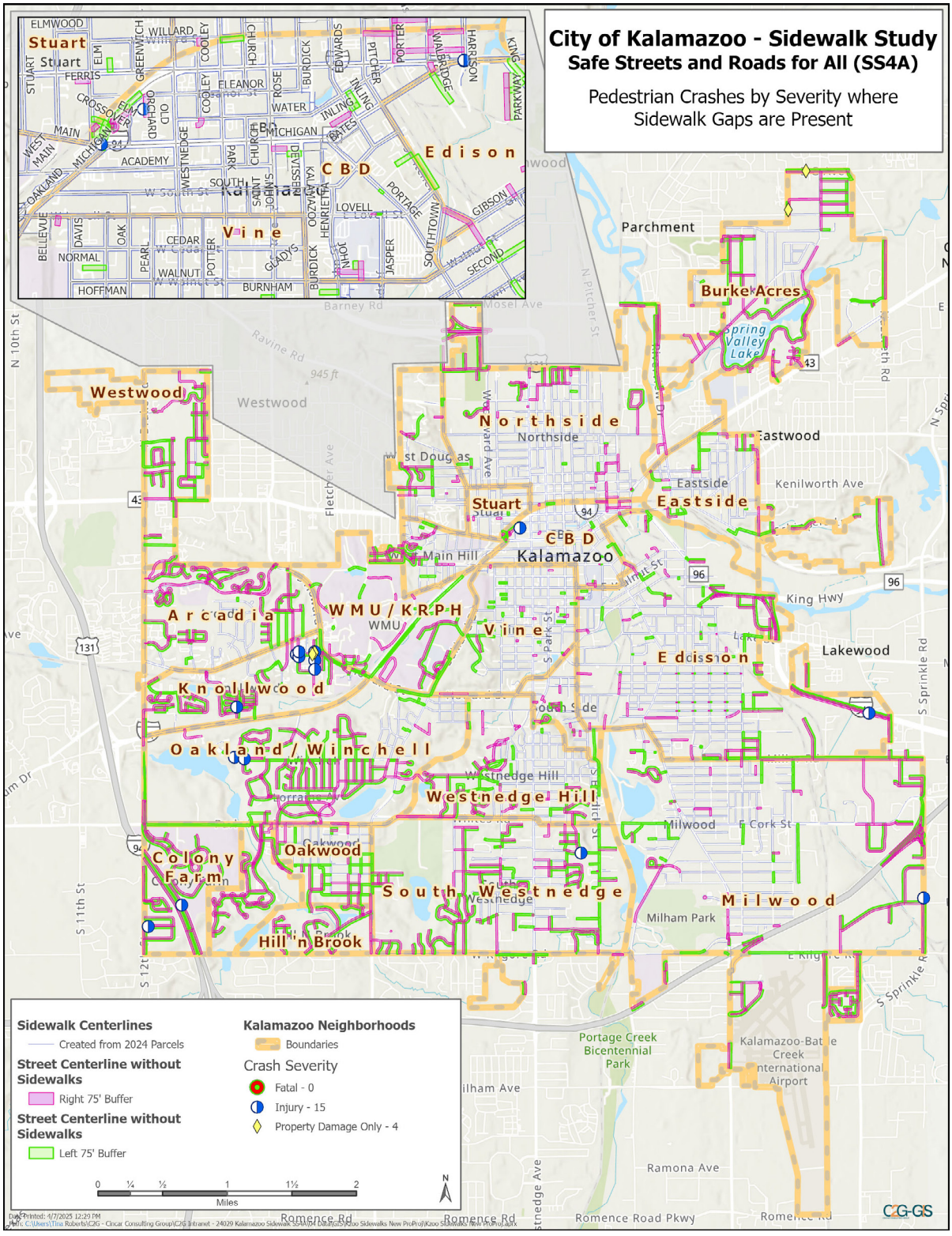
No.	Metric	Analysis	Thresholds	Score	Weights
1	Pedestrian Crashes	Assigned more points to neighborhoods with higher pedestrian crashes. Range: 0 - 137	0-15 15-25 25-60 60-115 >115	0 5 10 15 20	15%
2	Pedestrian Crashes Outside of 75' Sidewalk Buffer	Assigned more points to neighborhoods with pedestrian 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.

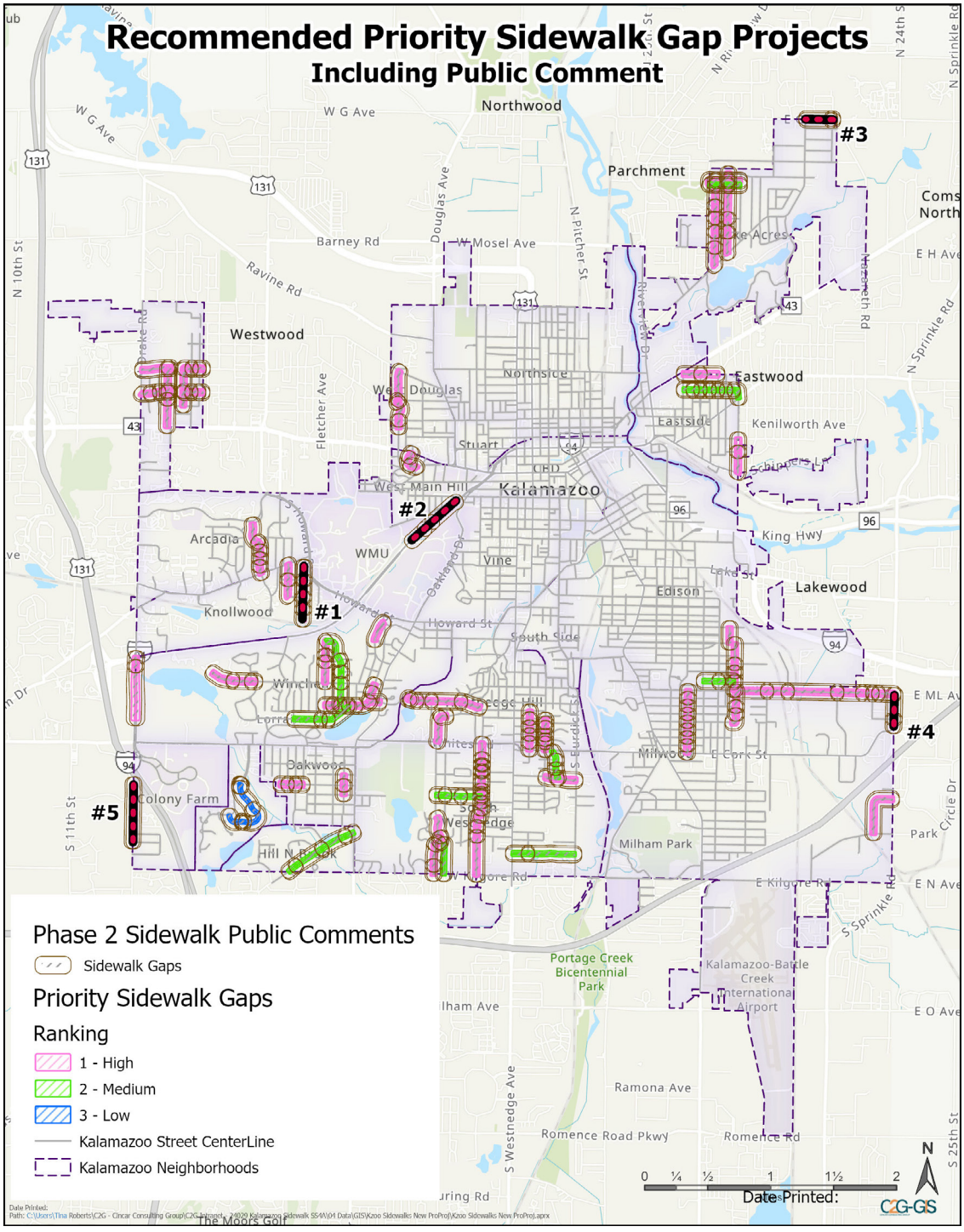
Table 5. Recommended Sidewalk Project List

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 = High; based on engineering judgement 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 1**. 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 1**.

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 percent of pedestrian fatalities occur at night1. 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.

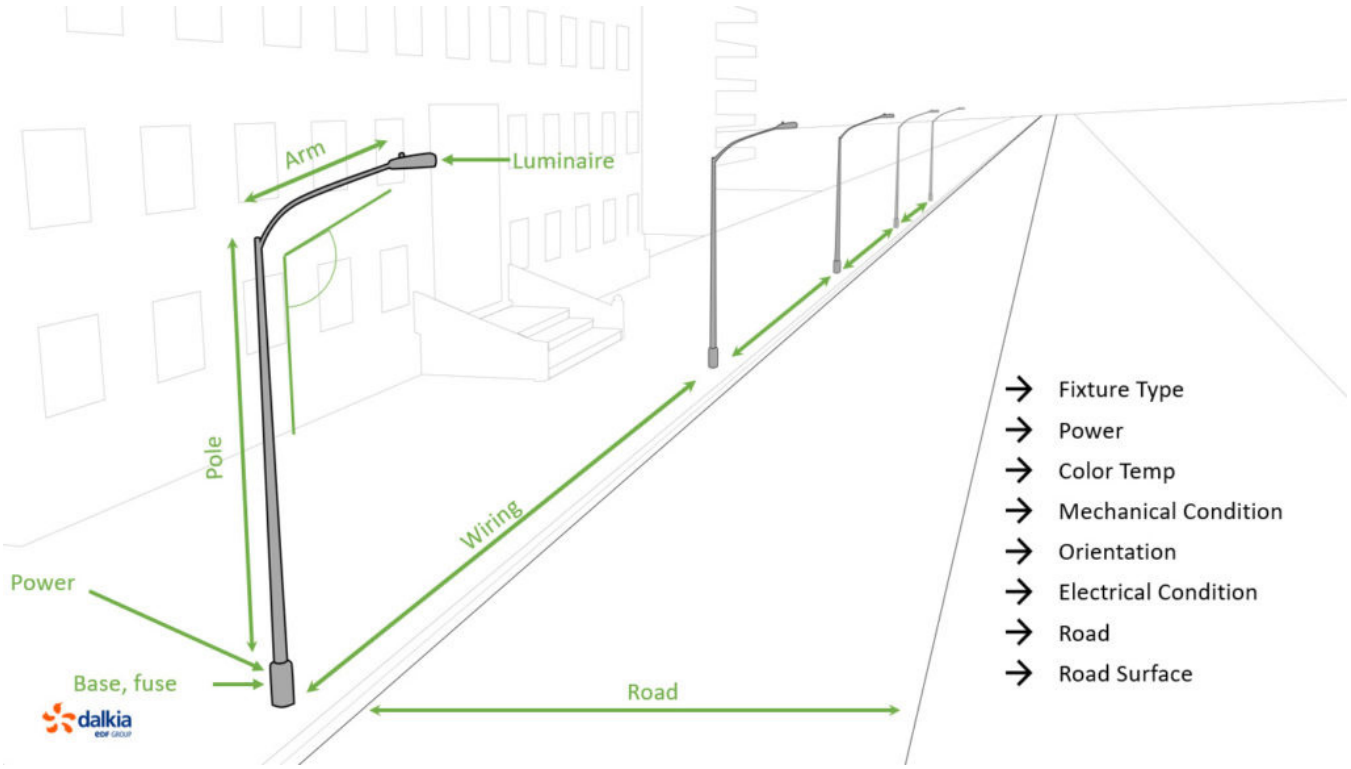
Based on 2014 to 2023 crash data, **19 percent of all traffic crashes in Kalamazoo occurred in dark-lighted conditions and 18 percent of those crashes resulted in a fatality or injury.** In contrast, **only five percent of all traffic crashes in Kalamazoo occurred under dark-unlighted conditions**; still, **17 percent 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 4 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 percent 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 percent 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.

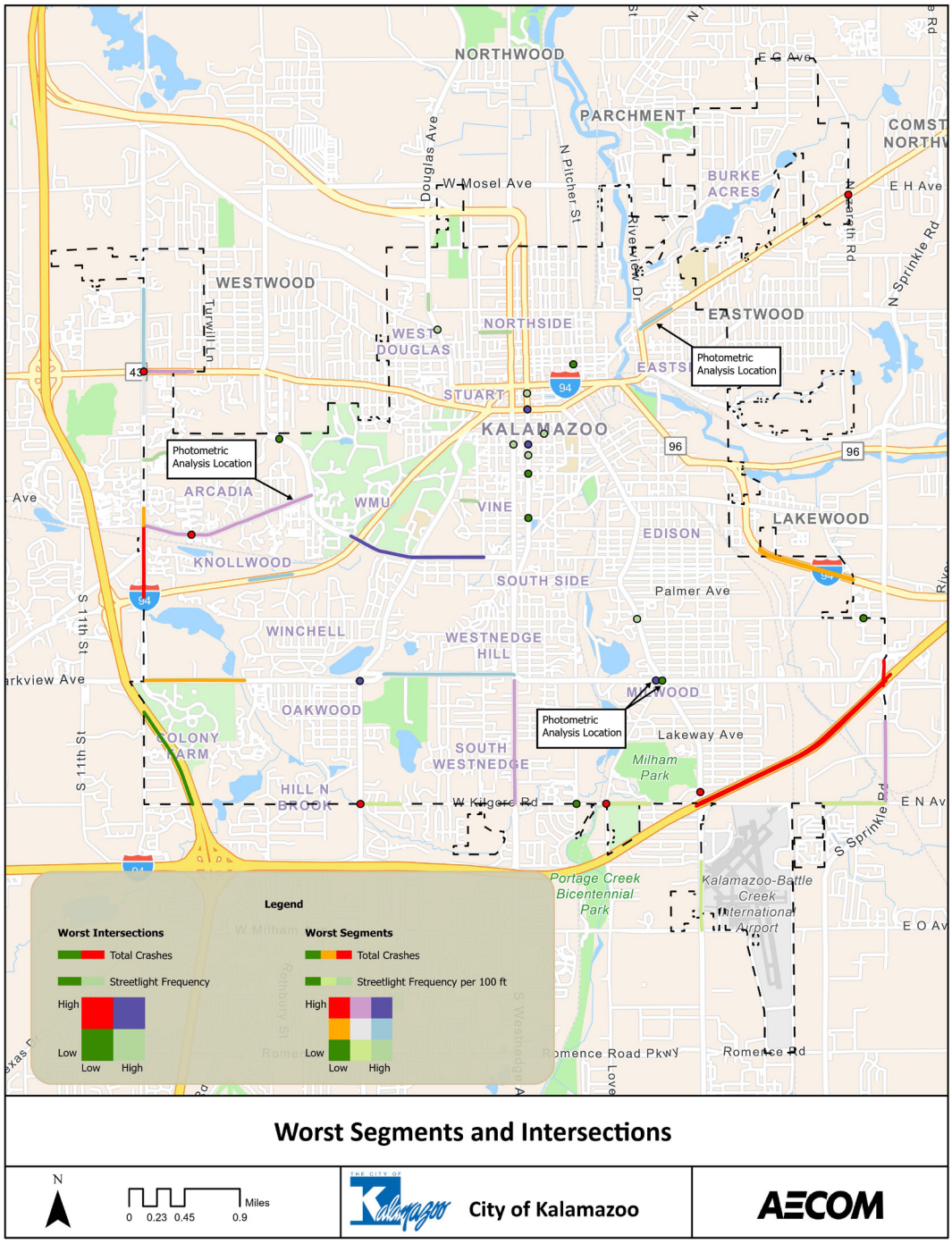
Table 7. Focus Locations List – Segments

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

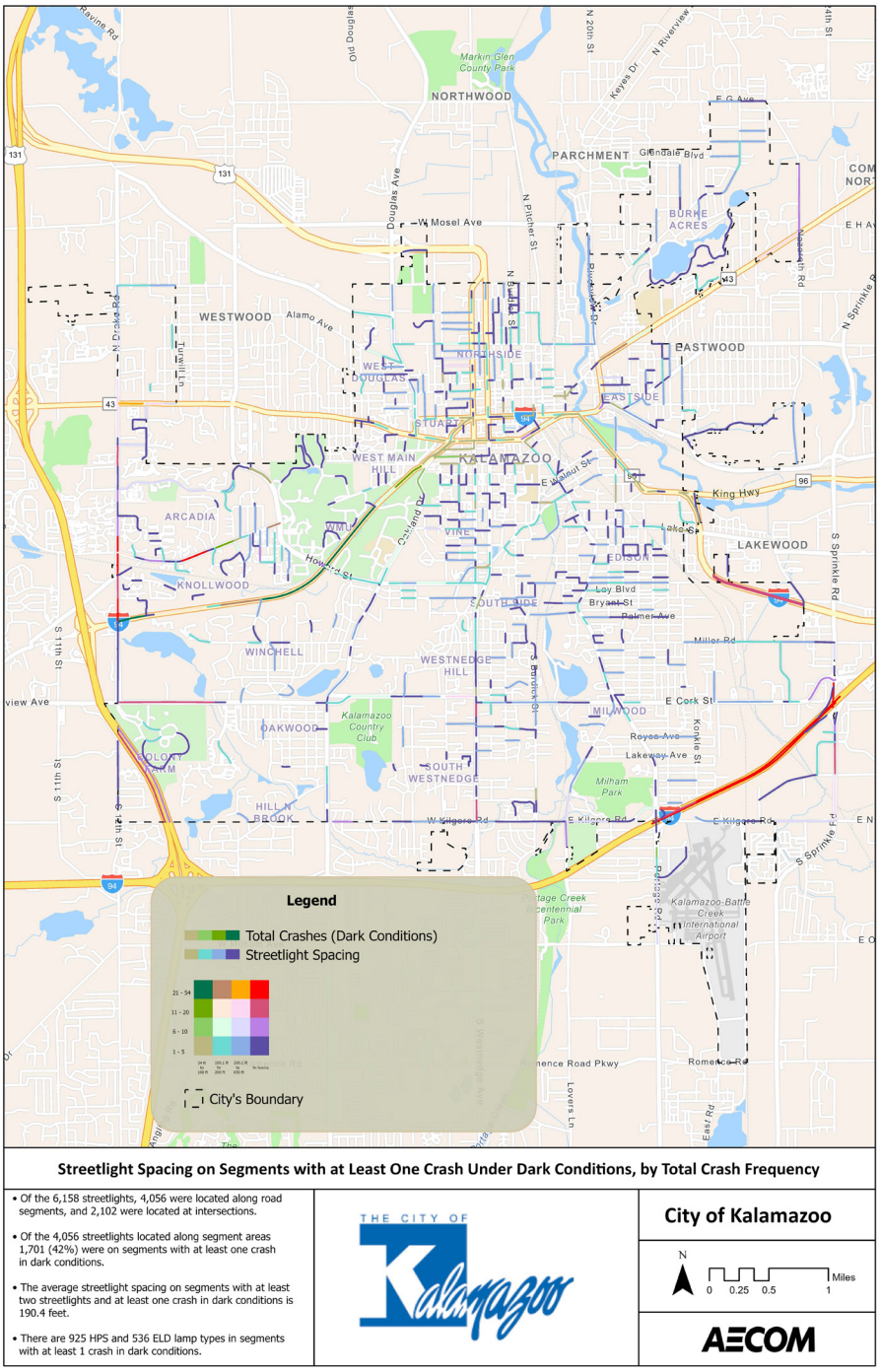
Photometric Analysis

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 4** and **Figure 5** 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 3**) 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



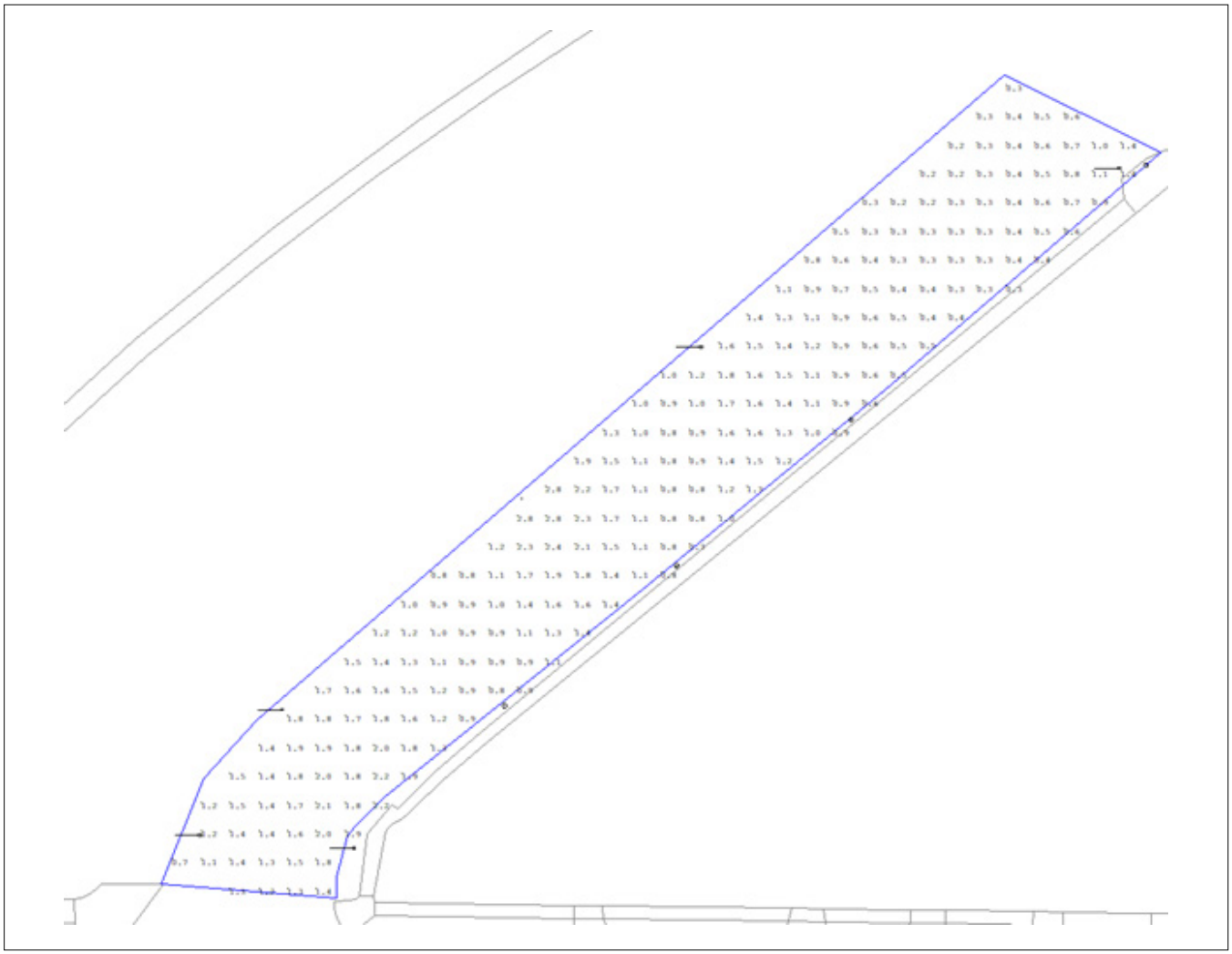
This map evaluates where nighttime crashes occurred in relation to street light spacing across Kalamazoo, helping identify segments with inadequate lighting coverage contributing to safety risks under dark conditions.

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. X

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

Figure 23. X



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 4** highlights locations with inadequate illumination and higher risk factors, while **Table 5** includes sites that demonstrate stronger lighting performance and greater uniformity.

Among the locations in **Table 5**, 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 4** 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 8**. 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

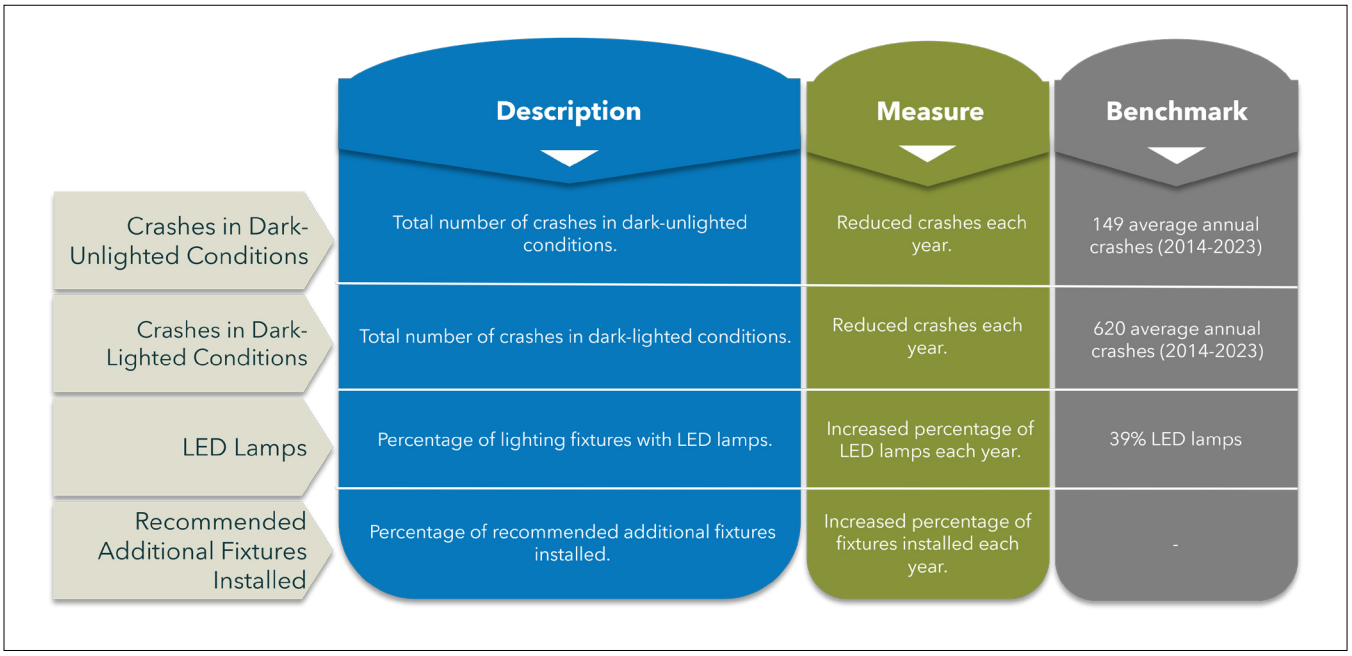
Implementing the recommended lighting improvements will require a phased approach, aligned with funding availability, coordination opportunities, and the complexity of each improvement. Wherever possible, improvements should be incorporated into ongoing or planned capital improvement projects to maximize 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. **Figure 6** 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.

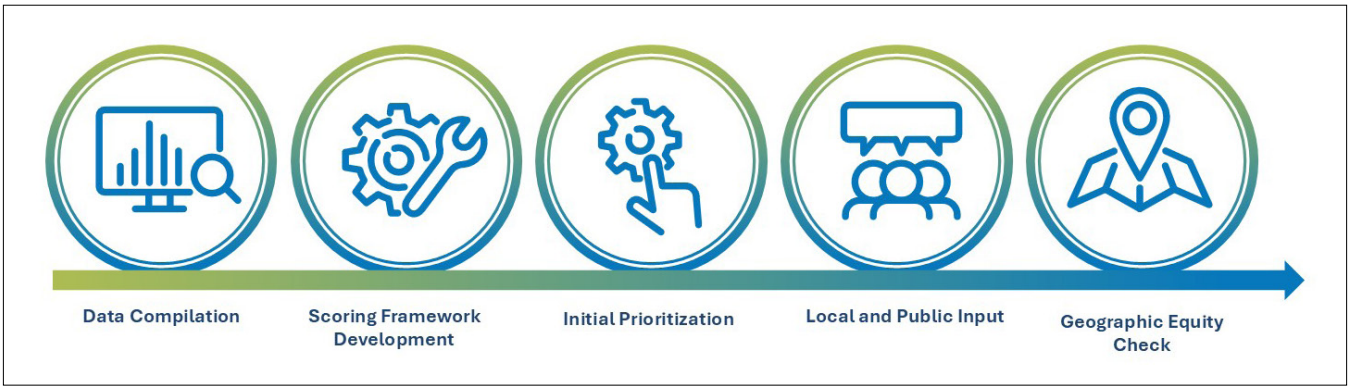
The recommendations presented in this memo aim to support a safer, more inclusive, and more efficient public transportation system for all Kalamazoo residents and visitors.

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 encouraged that the final list of focus locations was not only rooted in data but also grounded in real-world experience and aligned with community values. These 50 stops are the foundation for the improvement strategies and recommendations outlined in the remainder of the plan.

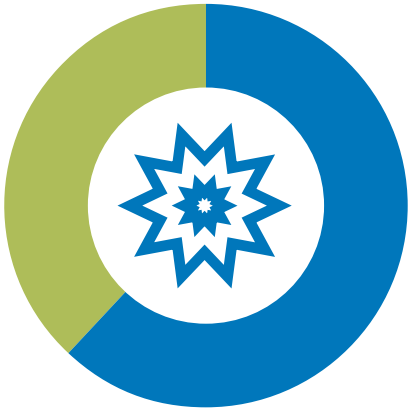
Data Compilation

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

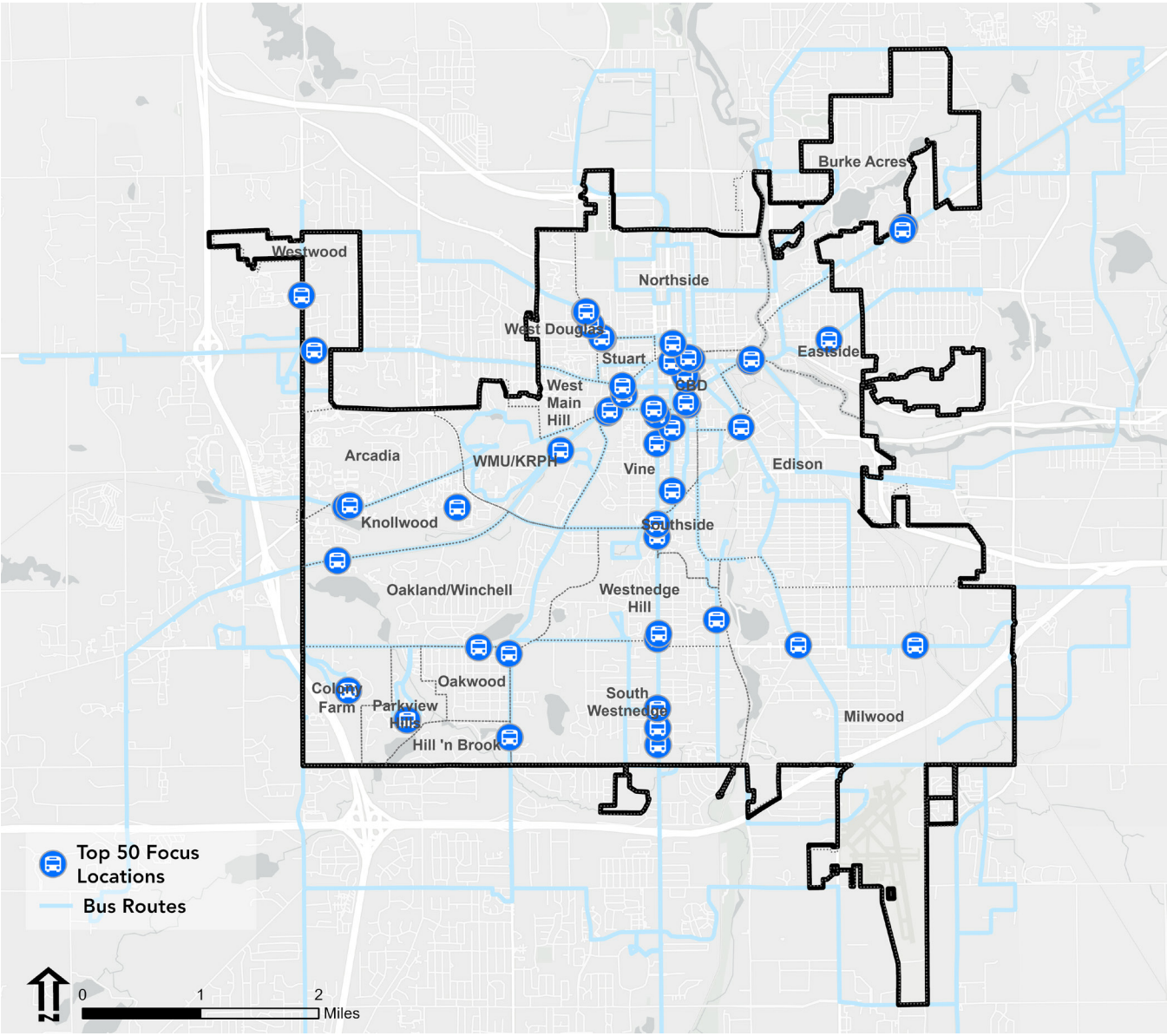
The focus locations selected using the methodology described above are listed in **Table 15** and shown in **Figure 3**.

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.
- **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

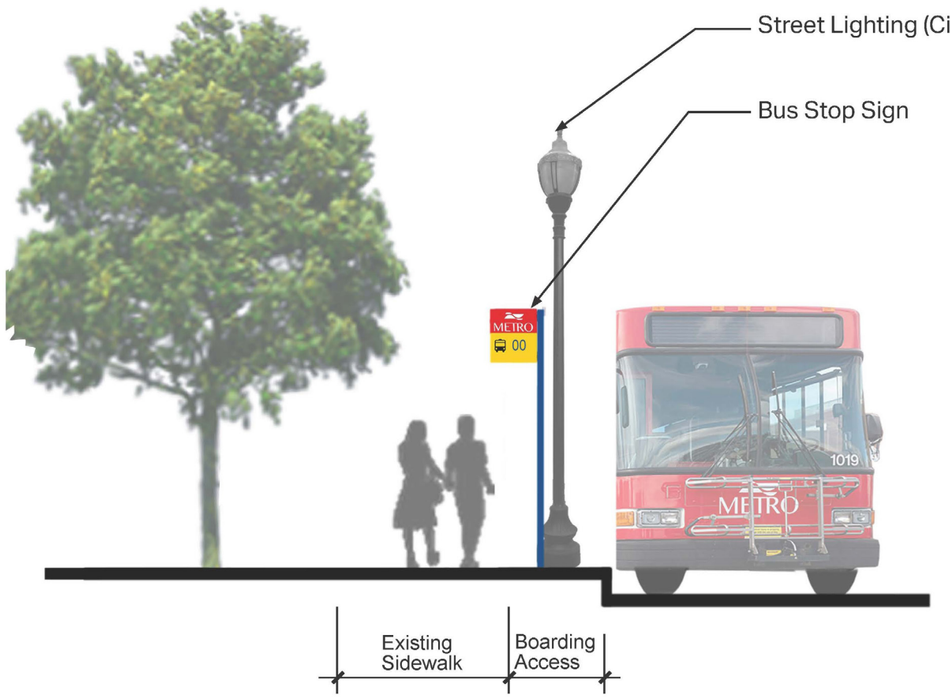
Amenity Tier	Features
Basic (≤10 boardings/day)	Accessible boarding area, bus stop sign, street lighting
Upgraded (11–20 boardings/day)	Includes all Basic features + bench, waste receptacle, pedestrian-scale lighting, real-time arrival signage
Premium (>20 boardings/day)	Includes all Upgraded features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

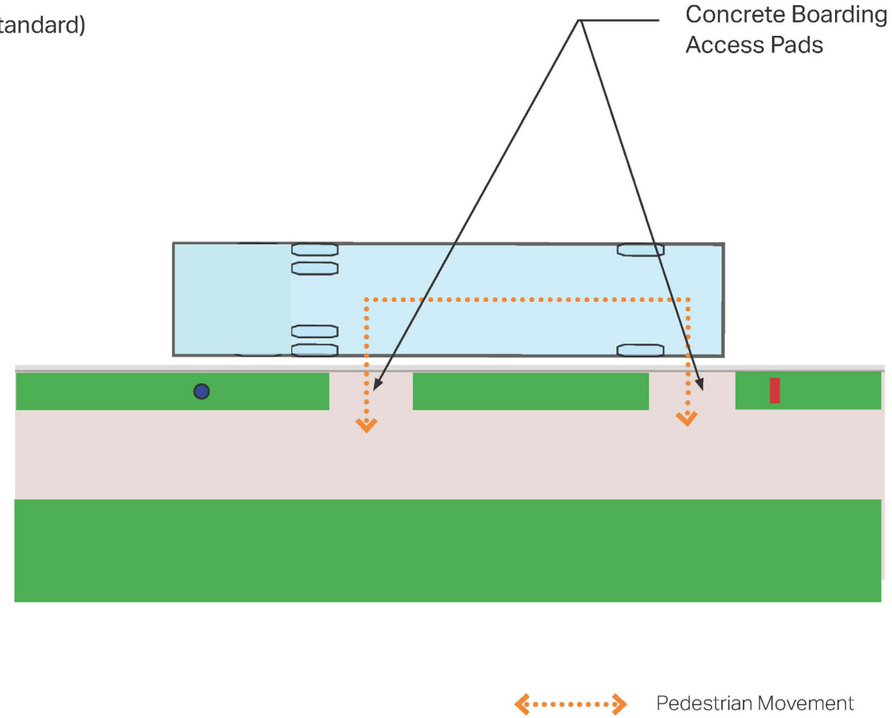
Bus Stop Amenities Prototypes

KMETRO BUS STOP *Prototype A - Basic*

Amenity Elements

- Accessible Boarding Area
- Bus Stop Sign
- Street Lighting



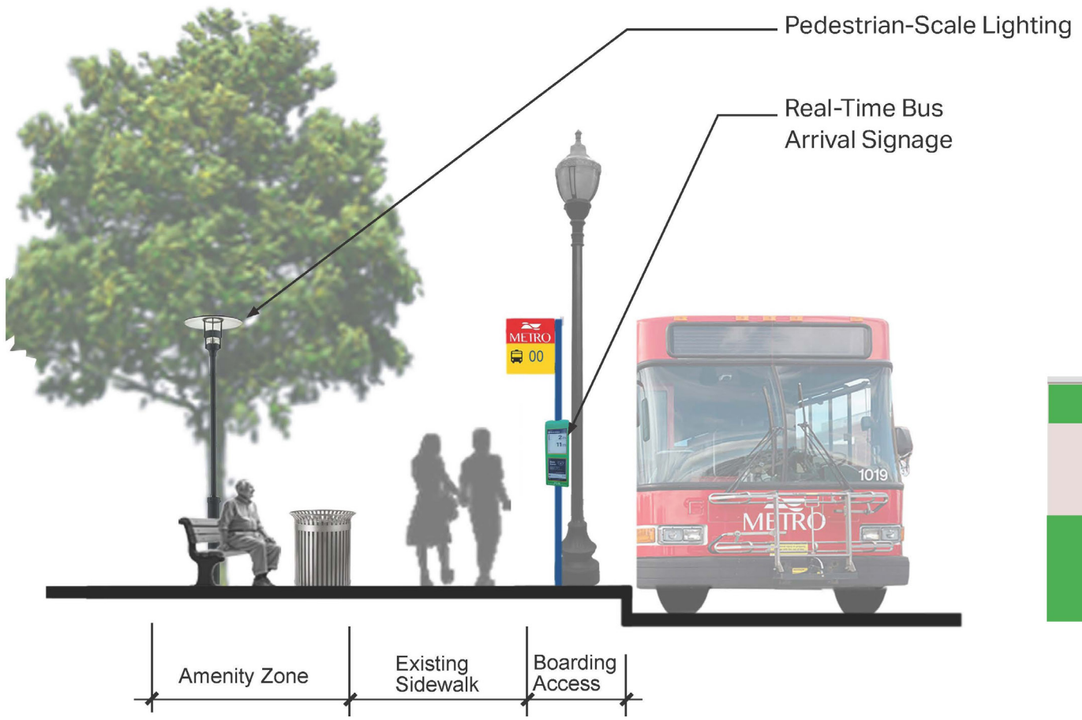


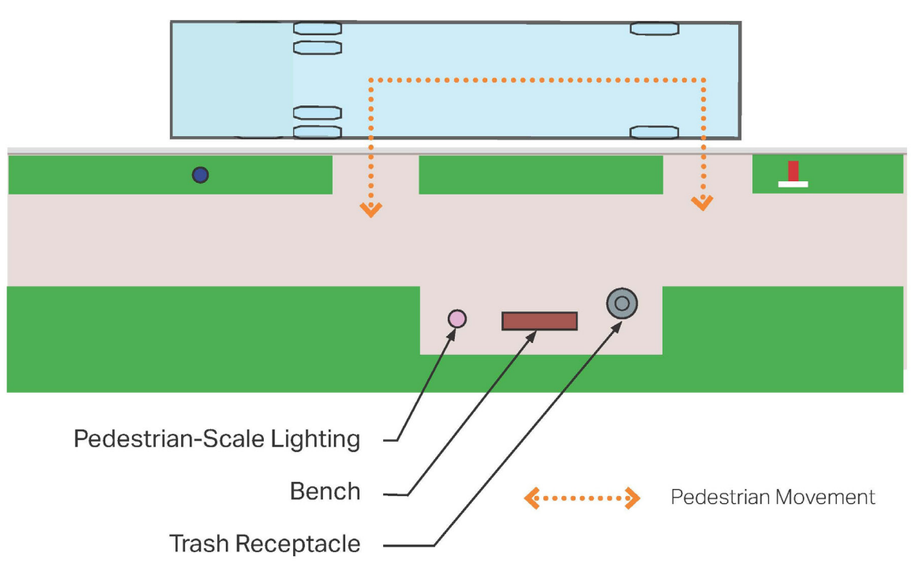
Prototype A represents the basic design for a KMETRO bus stop, including an accessible boarding area, street lighting, and signage—providing essential elements for safe and visible transit access in Kalamazoo's bus stop safety improvement plan.

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



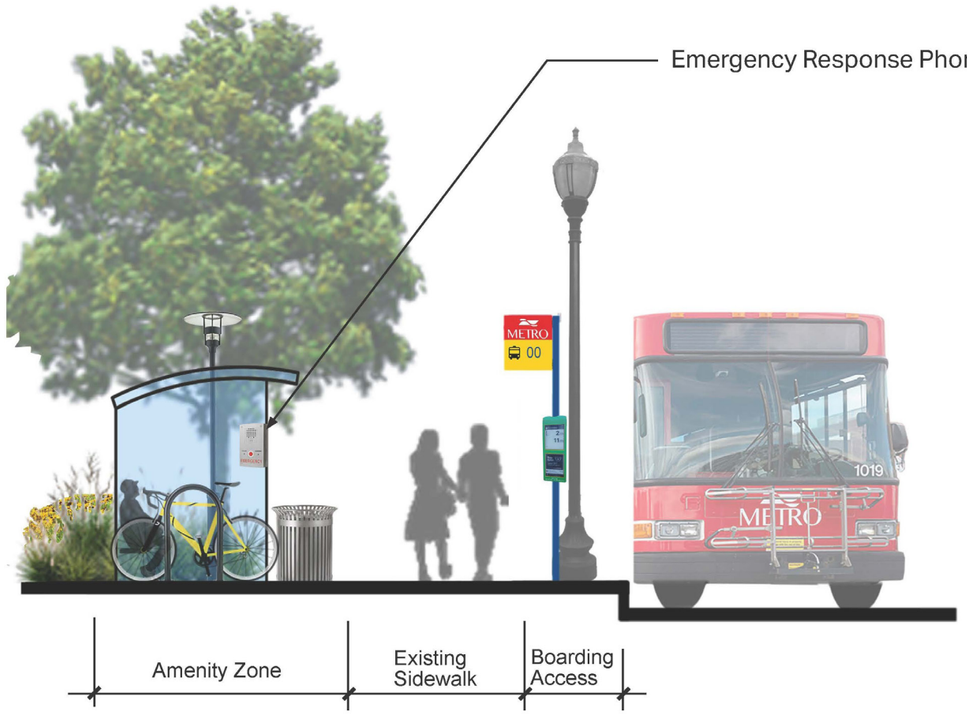


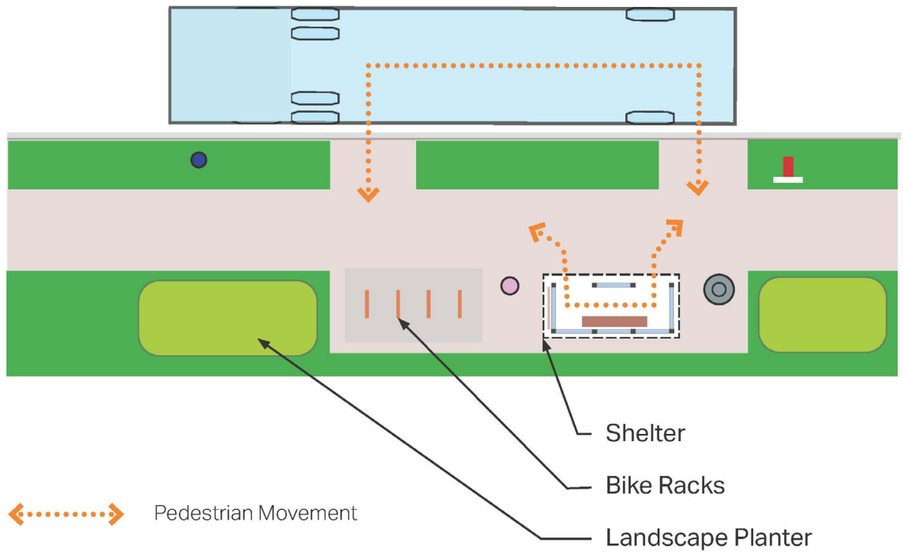
Prototype B illustrates an enhanced KMETRO bus stop with key features to improve rider comfort and safety, including a bench, trash receptacle, pedestrian-scale lighting, and real-time arrival signage—supporting a more informative and accessible transit experience

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

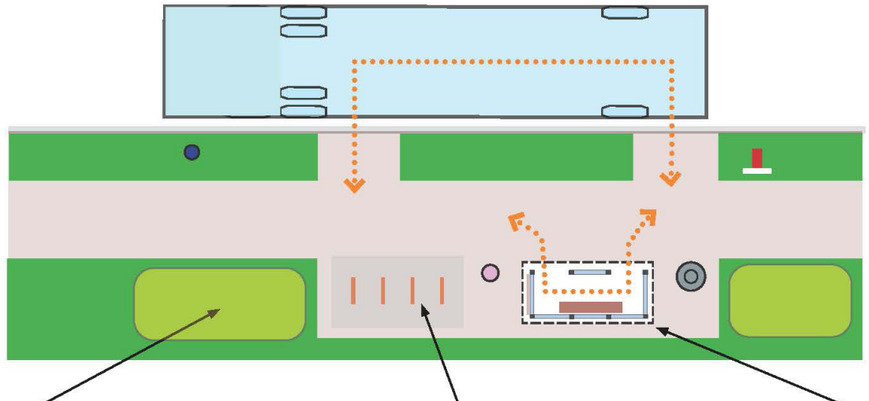




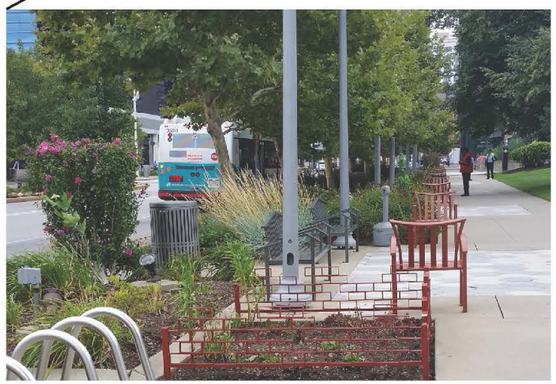
Prototype C represents a premium bus stop design that includes advanced safety, accessibility, and placemaking features such as a full shelter, emergency response phone, bicycle racks, pedestrian-scale lighting, and landscape planters to create a secure and welcoming environment.

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

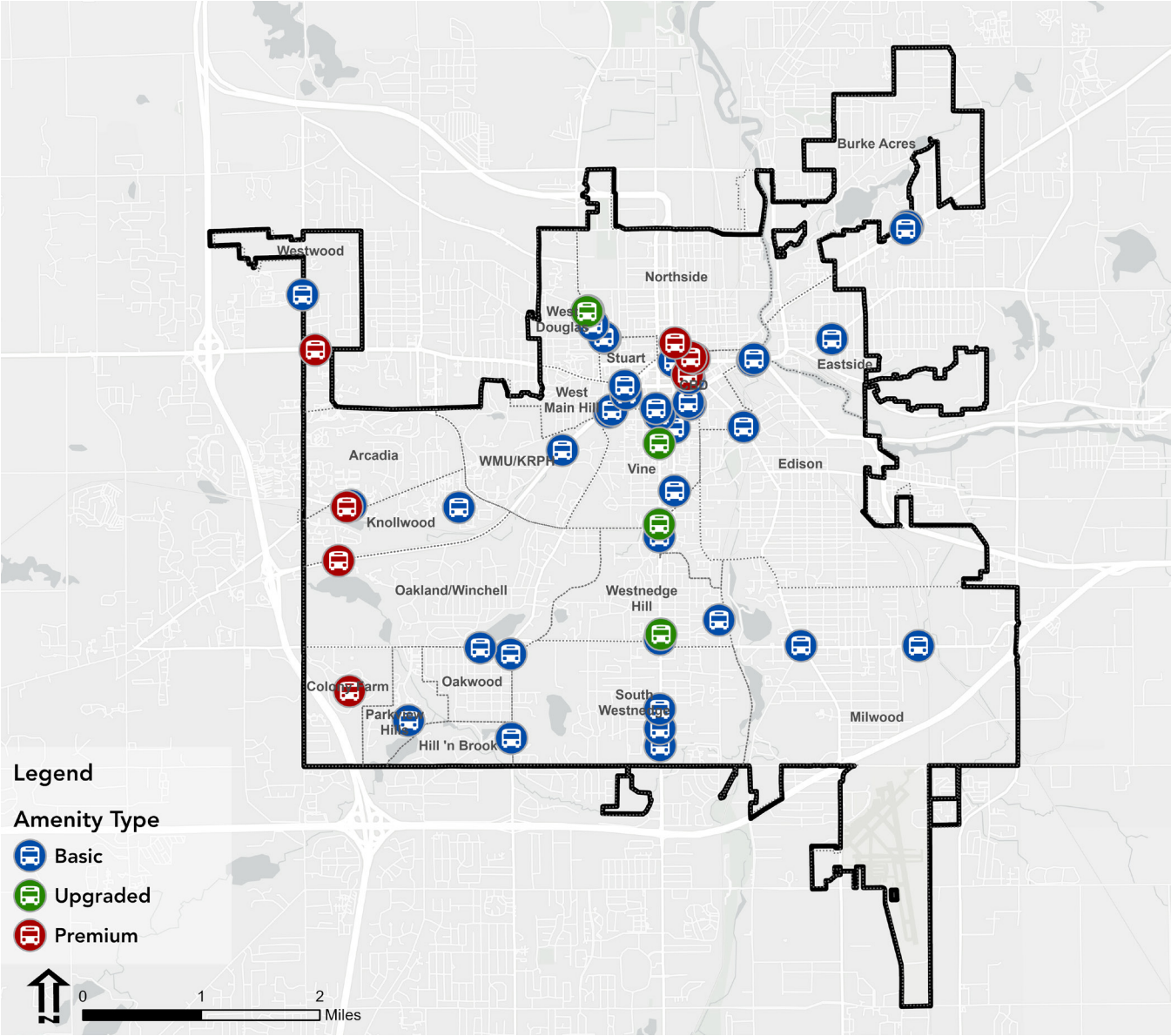
Bike Rack

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

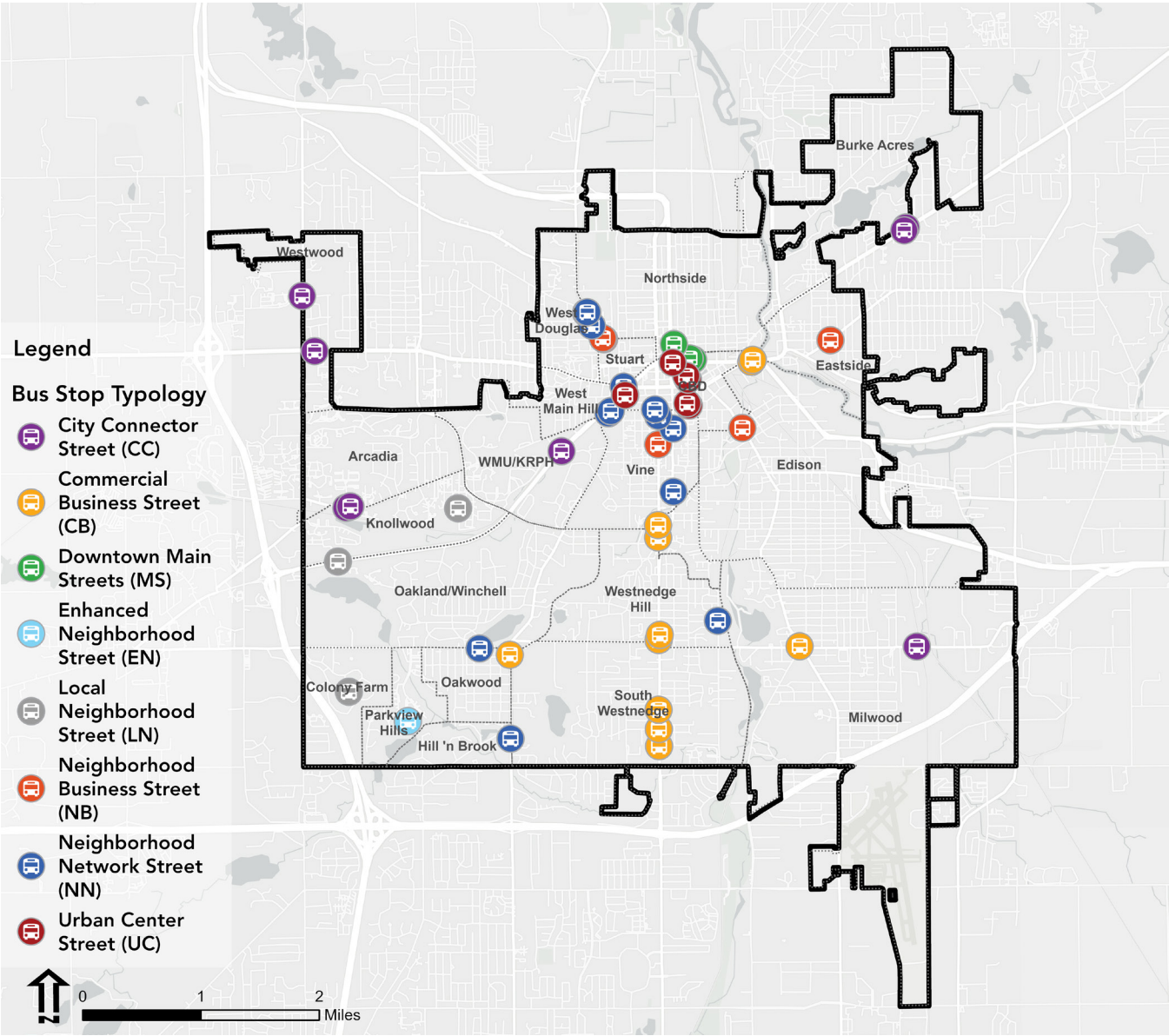
Bus-Bike Conflicts

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. X



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 five 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.

	Description	Measure	Benchmark (2014-2023)
Fatal & Serious Injury Crashes	Total number of fatal and serious injury crashes within 250 ft of the bus stops in the City of Kalamazoo each year.	Reduced number of fatal and serious injury crashes each year.	34.8 average annual FSI crashes
Bike and Pedestrian Crashes	Total number of bike and pedestrian crashes within 250 ft of the of bus stops in the City of Kalamazoo each year.	Reduced number of bike and pedestrian crashes each year.	53.1 average annual bike and pedestrian crashes
ADA-Compliant Bus Stops	Total percentage of ADA-compliant bus stops each year.	Increased percentage of ADA-compliant bus stops each year.	33% bus stops ADA-Compliant
Amenity Compliance	Total percentage of bus stops with the recommended amenities for its amenity categorization each year.	Increased percentage of bus stops with the recommended amenities for its amenity categorization each year.	-
Safety Countermeasures Installed	Total percentage of bus stops with the recommended safety countermeasures for its street type installed each year.	Increased percentage of bus stops with the recommended safety countermeasures for its street type installed each year.	-

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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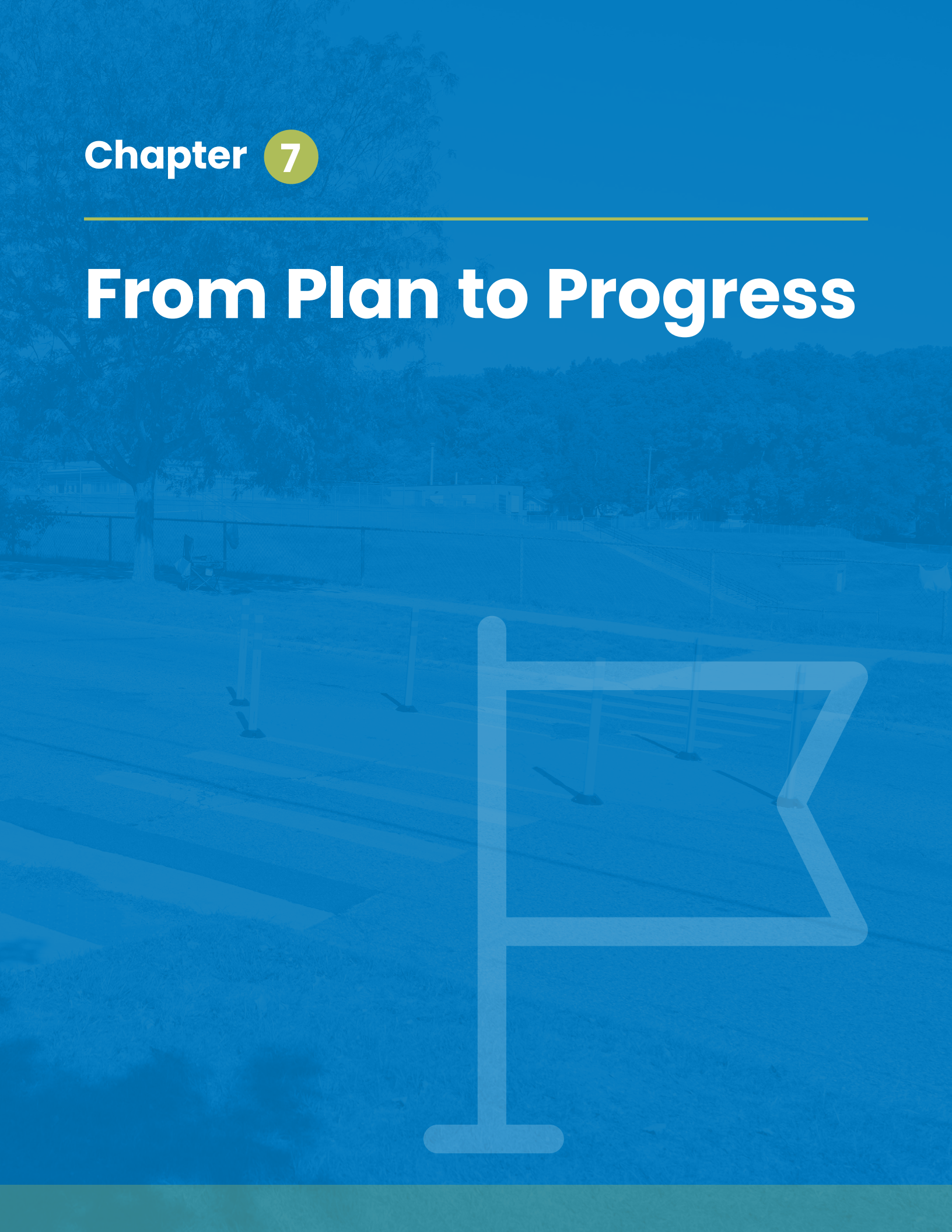
Chapter 7

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, promoting that 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

ThThe 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.

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 encourage that the Plan reflects 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 historic 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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