

VILLAGE OF BELLWOOD: TECHNICAL ASSISTANCE SAFETY PLANNING

25th Avenue
and Illinois Prairie Path

SAFETY ACTION PLAN

May 2022

Photo Credit: Village of Bellwood



Chicago Metropolitan
Agency for Planning

Jacobs

Executive Summary

The Village of Bellwood is working with Chicago Metropolitan Agency for Planning (CMAP) and Jacobs Engineering Group Inc. (Jacobs) to prepare a comprehensive **Safety Action Plan (SAP)** that investigates multimodal traffic safety improvements at the intersection of 25th Avenue and the Illinois Prairie Path (IPP), along with the adjacent intersection of 25th Avenue and Madison Street. The goal of the SAP is to address existing safety concerns and expand safe mobility for all roadway users.

Throughout this study, CMAP, the Village of Bellwood, and Jacobs engaged with a variety of stakeholders to identify and equitably address the intersection's most pressing traffic safety concerns for all road users—drivers, passengers, bicyclists, pedestrians, and public transit users. Another goal of this study has been to plan for and enable expanded mobility for all modes of travel, especially pedestrians, bicyclists, and transit users.

Safety studies include a data-driven approach to identifying overrepresented crashes at a location, followed by identifying contributing factors. "Overrepresented" implies that a specific crash type or contributing factor to a crash is occurring more than the mean percentage.

The project team also engaged with stakeholders to identify safety and mobility obstacles that may not be captured in a review of crash data or infrastructure characteristics. By leveraging contemporary traffic safety research, performance data, and valuable insights from local stakeholders, this study documents the holistic strategies to achieve practical goals to improve safety and mobility at the intersection.

This SAP is the final document of the safety study at the intersection of 25th Avenue and the IPP. The purpose of the SAP is to provide and prioritize effective safety countermeasures and to design strategies and policies identified through analysis and community input. It builds upon the Existing Conditions Report (ECR), which was the first, foundational document produced in this safety study. The SAP will connect these countermeasures and policies with the intersection, producing a practical plan summarizing the findings of the study, including implementation strategies to promote safety.

Infrastructure-related countermeasures, policies, and educational safety strategies are the key types of recommendations in this document that target the concern category of Intersection Improvements and one or more of the four focus areas: Pedestrians and Bicyclists, Speeding/Aggressive Driving, Heavy Vehicles, and Intersection Improvements. These Emphasis Areas (EAs) were identified based on a comprehensive safety analysis performed during the ECR efforts that determined patterns in crashes that can be most effectively addressed through the safety study.

Each recommended countermeasure will include specific implementation strategies and their expected effect. While thorough, these countermeasures are not intended to be considered akin to Phase 1 design concept efforts, and further investigation of alternative countermeasures should always be considered.

Infrastructure-related countermeasures within the SAP focus on four key categories: pedestrian and bicycle facilities, minor intersection improvements, major intersection

improvements, and behavioral considerations. These countermeasures are not exhaustive but represent many of the concerns shared by village stakeholders during the interview engagement on January 28, 2022. Many of the recommendations use research-driven treatments that have been proven effective through national research programs and federal guidance. Some of these high-priority recommendations include:

- Improve safety, access, and circulation for pedestrians and bicyclists
 - High-visibility crossings
 - Leading pedestrian interval with countdown signals
 - New, wider sidewalks
 - Pedestrian/bicycle catchment area
 - Signing and guidance/wayfinding on the IPP
 - Rerouting users of the IPP
 - Grade-separated crossings
- Discourage speeding/aggressive driving
 - Speed feedback devices and automated enforcement
 - High-visibility enforcement campaigns
 - Traffic-calming features
- Increase safety for routing of and conflicts with heavy vehicles
 - Driver visibility and access control/alternate routes
 - Educational programs
 - Reduce conflicts
 - Restrict right-turn-on-red
 - Modify signal phasing for left-turning movements
 - Traffic signal upgrades
 - Install advanced warning signs
 - High-friction surface treatment

Contents

Executive Summary.....	ii
Acronyms and Abbreviations.....	vii
1. Introduction.....	1-1
Project Overview	1-1
Project Documents and Purpose	1-1
2. Pursuing Safety.....	2-1
A Safe System Approach.....	2-1
A Comprehensive Approach.....	2-1
Engineers	2-2
Educators	2-2
Enforcement	2-2
Emergency Service Providers	2-3
Everyone Else	2-3
Emphasis Areas and Concern Categories	2-3
Pedestrians and Bicyclists.....	2-4
Speeding/Aggressive Driving.....	2-4
Heavy Vehicles.....	2-4
Intersection Improvements	2-5
3. Developing the Safety Action Plan	3-1
Engaging the Community.....	3-1
Stakeholder Interviews	3-1
Land Use and Infrastructure Surrounding the Trail.....	3-1
Bike and Pedestrian Crossing	3-2
Roadway Infrastructure.....	3-2
Understanding Existing Conditions.....	3-2
4. Prioritizing Infrastructure Countermeasures and Policies	4-1
Crash Modification Factors	4-1
The Phased Approach.....	4-2
Emphasis Area 1: Bikes and Pedestrians.....	4-5
Proposed Improvement 1: High-Visibility Pedestrian Crossings.....	4-7
Proposed Improvement 2: Improved Signing and Guidance/ Wayfinding.....	4-9
Proposed Improvement 3: Rerouting Pedestrians and Bicyclists.....	4-1
Proposed Improvement 4: Construct New, Wider Sidewalks	4-3
Proposed Improvement 5: Pedestrian/Bicycle Catchment Area	4-1
Proposed Improvement 6: Implement Leading Pedestrian Interval.....	4-3
Proposed Improvement 7: Grade-Separated Crossing	4-5

Emphasis Area 2: Speeding/Aggressive Driving	4-8
Proposed Improvement 1: Speed Feedback Devices and Automated Speed Enforcement.....	4-9
Proposed Improvement 2: High-Visibility Enforcement Campaigns	4-1
Proposed Improvement 3: Traffic-Calming Features	4-2
Emphasis Area 3: Heavy Vehicles	4-4
Proposed Improvement 1: Educational Programs.....	4-5
Proposed Improvement 2: Improving Visibility + Access Control/Alternative Routes	4-6
Concern Category 1: Intersection Improvements	4-1
Proposed Improvement 1: Install Advanced Warning Signs.....	4-2
Proposed Improvement 2: Traffic Signal Upgrades	4-4
Proposed Improvement 3: Modify Signal Phasing for Left-Turning Movements.....	4-6
Proposed Improvement 4: Restrict Right-Turn-On-Red	4-8
Proposed Improvement 5: High-Friction Surface Treatment.....	4-9
Forward Thinking.....	4-1
5. Implementation and Funding.....	5-1
Implementation of Countermeasures.....	5-1
Funding the Future	5-1
Invest in Cook.....	5-1
Illinois Transportation Enhancement Program.....	5-2
Local Highway Safety Improvement Program.....	5-2
Rebuild Illinois	5-3
Safe Routes to School (SRTS)	5-4
Safe Streets and Roads for All (SS4A)	5-5
Sustained Traffic Enforcement Program	5-6
6. References	6-1

Tables

Table 2-1. Defined EAs and Concern Categories.....	2-3
Table 3-1. Crashes by Severity (2016-2020).....	3-3
Table 4-1. List of Prioritized Countermeasures/Policies	4-3
Table 4-2. Proposed Countermeasures: Bikes and Pedestrians.....	4-5
Table 4-3. Proposed Countermeasures: Speeding/Aggressive Driving.....	4-8
Table 4-4. Proposed Countermeasures: Heavy Vehicles	4-4
Table 4-5. Proposed Countermeasures: Intersection Improvements	4-1
Table 4-6. Summary of Prioritized Countermeasures/Policies.....	4-2

Figures

Figure 1-1. Village of Bellwood Location Map & Safety Study Area	1-1
Figure 3-1. Components of the Outreach Strategy	3-1
Figure 3-2. Intersection of 25 th Avenue and Madison Street Map	3-3
Figure 3-3. Notable Crash Characteristics (KABCO: 2016–2020).....	3-4
Figure 4-1. Maps of IPP Near the Intersection of 25th Avenue and Madison.....	4-4
Figure 4-2. Existing Crosswalk Conditions.....	4-7
Figure 4-3. High-Visibility Crosswalk.....	4-7
Figure 4-4. Signage for Bike Route.....	4-9
Figure 4-5. Informational Signage.....	4-9
Figure 4-6. Current Crossing Paths.....	4-1
Figure 4-7. Proposed Reroute of the IPP on the West Side of 25th Avenue	4-1
Figure 4-8. Northwest Quadrant of Intersection.....	4-3
Figure 4-9. Sidewalks with a Width of 7 Feet.....	4-3
Figure 4-10. Northeast Corner of the Intersection with Catchment Area	4-1
Figure 4-11. Northeast Corner of the Intersection	4-2
Figure 4-12. Concrete Catchment Areas on North Side of Intersection	4-2
Figure 4-13. Northwest Corner of the Intersection with Catchment Area.....	4-2
Figure 4-14. Leading Pedestrian Interval Phases.....	4-3
Figure 4-15. Rendering of IPP Overpass Bridge at 25th Avenue.....	4-5
Figure 4-16. Overpass Bridge of the IPP in Algonquin, IL	4-6
Figure 4-17. IPP Tunnel in Crystal Lake, IL	4-6
Figure 4-18. Speed Feedback Sign.....	4-9
Figure 4-19. Enforcement Slogan.....	4-1
Figure 4-20. Existing Sidewalks.....	4-2
Figure 4-21. Streetside with Landscaping for Traffic Calming Effects	4-2
Figure 4-22. Reversing Path of Tractor-Trailer into Borg Warner Docks.....	4-6
Figure 4-23. Potential for Borg Warner Parking Expansion	4-6
Figure 4-24. Advanced Warning Sign for Camera Enforcement.....	4-2
Figure 4-25. Advanced Pedestrian/Bicyclist Warning Signage.....	4-2
Figure 4-26. Existing Traffic Signal on 25th Avenue and Madison Street	4-4
Figure 4-27. Retroreflective Traffic Signal Backplates.....	4-4
Figure 4-28. Protected Left Turn Phasing.....	4-6
Figure 4-29. Flashing Yellow Arrow	4-6
Figure 4-30. No Turn On Red Sign.....	4-8
Figure 4-31. Illustration of Reduced Stopping Distance	4-9

Acronyms and Abbreviations

ADA	Americans with Disabilities Act
CMAQ	Chicago Metropolitan Agency for Planning
CMF	crash modification factors
EA	Emphasis Area
ECR	Existing Conditions Report
FHWA	Federal Highway Administration
FTPI	Fast-Track Public Infrastructure
HSIP	Highway Safety Improvement Program
HVE	High-Visibility Enforcement
IDOT	Illinois Department of Transportation
IPP	Illinois Prairie Path
ITEP	Illinois Transportation Enhancement Program
KRM	Key Recommendations Memorandum
LPI	leading pedestrian interval
mph	miles per hour
MPO	Metropolitan Planning Organization
MUTCD	<i>Manual on Uniform Traffic Control Devices</i>
RAISE	Rebuilding American Infrastructure with Sustainability and Equity
RIPI	Rebuild Illinois Public Infrastructure
RIRED	Regional Economic Development
SAP	Safety Action Plan
SRTS	Safe Routes to School
SS4A	Safe Streets and Roads for All
STEP	Sustained Traffic Enforcement Program

1. Introduction

Project Overview

The intention of this overall safety study is to improve the safety of the intersection area by reducing the number and severity of crashes and expand the safe mobility of pedestrians and bicyclists at this important access point to the Illinois Prairie Path (IPP). This can be done by reactively preventing crash patterns that are already occurring, proactively preventing crashes that are likely to occur, reducing crash severity through speed management, and supporting the safe accommodation of bicyclists and pedestrians since the Village of Bellwood desires to encourage these modes. The study has developed strategies to address crashes and safety concerns associated with citation data, increased volumes of pedestrian and bicycle traffic through infrastructure improvements, and associated recommendations for enforcement and education. Through crash data analysis, other elements of the Existing Conditions Report (ECR) and input gathered from key person interviews, the plan will prioritize effective countermeasures to invest in, recommend where they should be placed, and provide planning-level costs to implement recommendations. The project will also identify policies, practices, and educational strategies that are likely to improve safety at the intersection. Multiple funding opportunities will be identified to help advance the project.

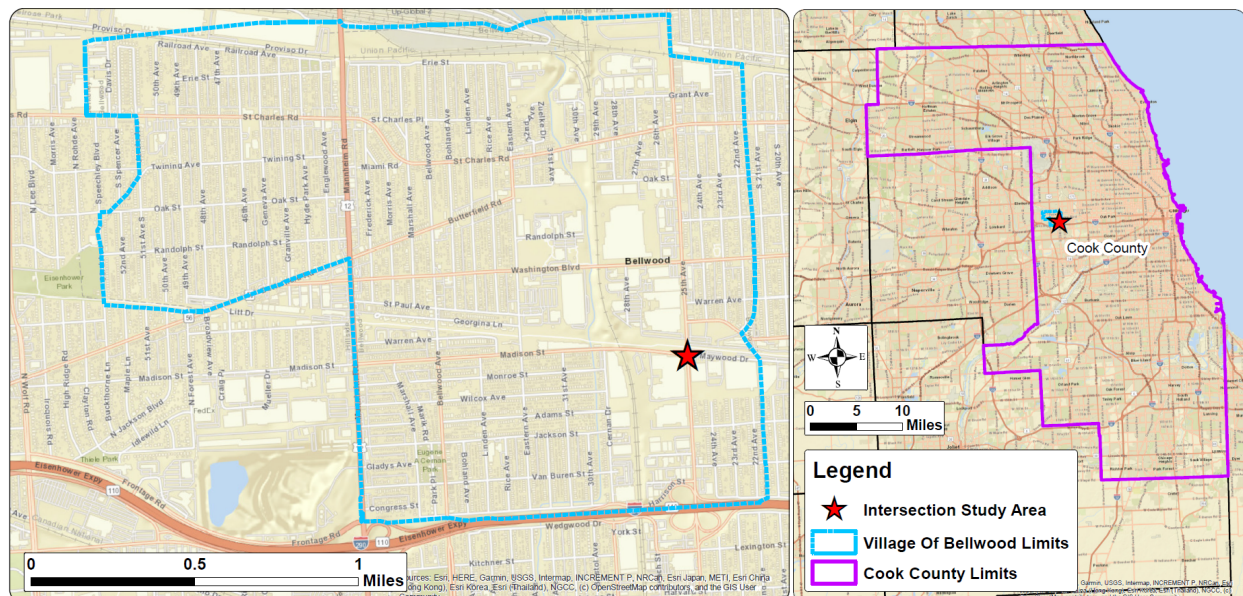


Figure 1-1. Village of Bellwood Location Map & Safety Study Area

Project Documents and Purpose

In the process of developing the Village of Bellwood's Safety Action Plan (SAP) for 25th Avenue and the IPP, adjacent to the intersection of 25th Avenue and Madison Street, four major documents were created:

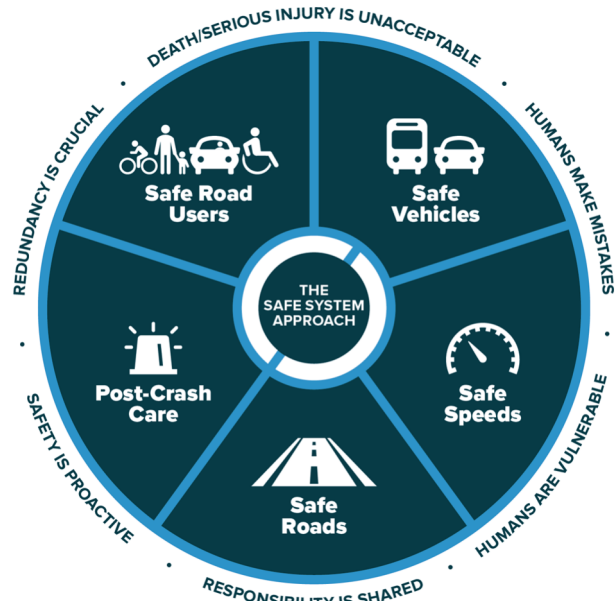
- Outreach Plan
- ECR
- Key Recommendations Memorandum (KRM)
- SAP

The SAP further describes the design recommendations and policies for all roadway improvements identified in the KRM. This document provides a comprehensive set of prioritized recommendations, including aspects related to implementation, planning-level cost estimates, and possible funding opportunities, developed from areas of improvement identified in the ECR and Outreach Plan.

2. Pursuing Safety

A Safe System Approach

Moving beyond the traditional approach to traffic safety, the safe system approach (SSA) is human-centered, focusing on creating a forgiving environment that anticipates and accommodates human error through robust, modern infrastructure. A safe system approach acts as a safety net for all road users, even in the face of mistakes and misjudgments, reducing or eliminating opportunities for crashes to occur, and minimizing the severity of crashes that do occur. This approach recognizes the value of pursuing behavior change in road users through enforcement, education, and policy but views these as opportunities to further improve the safety of an already safe and forgiving roadway system.



Source: FHWA 2022

SSA Principles

- Fatalities and injuries are unacceptable
- Roadway users make mistakes and are vulnerable
- Responsibility is shared
- We must be proactive in preventing crashes
- Redundancy is critical

The use of a safe system approach is especially crucial when patterns of distracted or aggressive driving have been identified. These are behaviors that generally cannot directly be influenced by roadway design features; however, they can be accounted for through a comprehensive, forward-looking, and safety-oriented design. Similarly, at locations featuring higher volumes of pedestrian and bicycle traffic, such as schools or near multi-use paths like the IPP, additional infrastructural considerations must be made to ensure that these road users are protected without sacrificing connectivity or convenience.

A Comprehensive Approach

Though roadway design and infrastructure improvements are a central part of any traffic safety program, they must be complemented with similarly innovative and data-driven behavioral, policy, and cultural strategies. In many cases, the data-driven approach highlights the different policy changes that will impact behavior or alter social norms.

One example of this would be seat belt laws. In 1968, the first federal seat belt law took effect requiring vehicles to have seat belts, even though seat belt use was still voluntary. In 1984, New York became the first state to require seat belts to be worn. Since then, many states see 90 percent or more of their occupants wearing seat belts. This is an example of how lawmakers can implement policy that impacts behavioral and cultural

norms. Two examples of local policy that can have a positive impact on roadway safety would be implementing hands-free laws or enacting city-wide speed reductions in school zones.

Similarly, engineers and planners can directly or indirectly impact what types of infrastructure options are possible at a location. If property transfers from the local agency to a private entity, future improvements may be limited due to the reduction in available property. An example of this is present in our study area. On the northwest side of 25th Avenue and Madison Street, the Village owns a vacant lot. If the vacant lot were to be transferred to a private owner, the reduction in Village-owned property can consequently reduce the number of potential implementable improvements at the site. Prior to transferring property away from the Village to a private entity, it would benefit the Village to think ahead to ensure that no countermeasures become restricted or impossible to implement due to the reduction or elimination of previously owned property.

In order to consider many of these unconventional situations in traffic safety projects, the 5-E's must be considered: engineers, educators, enforcement officers, emergency service providers, and everyone else. These five groups are a great starting point to assist in choosing who should be invited to interviews.

Engineers

Responsible for the design and maintenance of transportation facilities, engineers at the local, regional, and state levels play a crucial role in the pursuit of traffic safety. Using modern, data-driven best practices and design standards, engineers can create roads that prioritize safety and minimize severe traffic crashes. Through research-driven analyses, they can optimize the use of limited available funds to update existing facilities to achieve infrastructure improvements that can save lives and create a more walkable, reliable, and safe system.

Educators

Educators can help shape our community's drivers through safety-informed curricula and influential programming for students. By collaborating with educators and community leaders, the project team can connect with younger road users to establish a stronger road safety culture that can produce long-term impacts. This can include awareness campaigns within schools, advancements in new driver education programs, safe school routes planning, and more.

Enforcement

Local and state police play an important role in traffic safety by enforcing laws designed to keep road users safe. They can act as a deterrent, responding to patterns of unsafe driving behaviors such as speeding, running red lights, drunk driving, and more, producing long-term results when deployed effectively. Partnerships with enforcement agencies, law-makers, and judicial officials can also provide great value to safety planning by tapping their unique community insights on safety needs.

Emergency Service Providers

Emergency response and medical professionals are another key player in the pursuit of traffic safety. Their capacity to respond quickly and effectively when needed can save lives, and their ability to be able to act fast can be the difference between a severe injury and a fatality. Therefore, emergency medical responders have a critical role in the development of an effective, comprehensive road SAP. Partnerships can produce a greater understanding of the needs of responders to react quickly to incidents, what types of injuries may be the most crucial to address through infrastructure improvements, and more.

Everyone Else

This group, made up of community members who can contribute to safety interventions, may be the greatest resource available to a road safety team. Their local knowledge of the community's roads, the shortcomings of their infrastructure, the needs of themselves and their neighbors, and more, provide insight where the other four E's may not have a clear understanding. They have the capacity to transmit messages and raise awareness, provide impetus to create active programs, and represent the unique needs of their communities. Partnerships may involve local interest groups such as biking clubs and parent groups, advocates, institutions such as churches, community centers, and business groups, and more, involving all aspects of a community in the pursuit of safer roads.

Emphasis Areas and Concern Categories

Emphasis Areas (EAs) are categories used in traffic safety analysis to help capture the unique needs of a study area. Each EA—Pedestrians and Bicyclists, Speeding/Aggressive Driving, and Heavy Vehicles—is defined based on patterns of crashes, driver behavior patterns associated with crashes, patterns of environments involved in crashes, or specific needs that are expected in the future. Similarly, Intersection Improvements has been designated as a concern category. Collectively, these four groups help analysts and stakeholders focus on the practical steps that can be taken to improve safety by targeting individual EAs. For example, if the speed management EA is identified, countermeasures should be chosen that can target this EA, such as traffic calming or increased enforcement at critical speeding locations. Additionally, one concern category—Intersection Improvements—was noted based on the stakeholder interview process. Similar to EAs, Intersection Improvements will be a target for improvements.

Table 2-1. Defined EAs and Concern Categories

Emphasis Area (EA)	• Pedestrians and Bicyclists • Speeding/Aggressive Driving • Heavy Vehicles
Concern Category	• Intersection Improvements

The following three EAs and concern category were chosen specifically for the intersection of interest based on the unique attributes and crash history of the intersection. They were determined by the project team based on a comprehensive crash analysis performed during the ECR and priorities expressed during the stakeholder interviews. Countermeasure recommendations will be made specifically targeting these identified EAs.

Pedestrians and Bicyclists

With fatalities of vulnerable road users on the rise across the United States, many agencies are exploring opportunities to make their cities more pedestrian- and bike-friendly. Since walking, biking, and the use of public transit are becoming essential forms of movement, steps are being taken to ensure safer infrastructure, increased connectivity, and the separation of pedestrian transportation modes. The community members and stakeholders of Bellwood have identified the pedestrian and bicyclist experience as a primary EA for the safety study as they look to improve safety and access to the IPP from throughout the village. By proactively identifying and addressing risk factors, safety issues can be curbed and a more walkable and bikeable environment created.



Source: Jacobs 2022

Speeding/Aggressive Driving

Most severe crashes involve high vehicle speed or a type of aggressive driving behavior. Faster driving speeds foster an increase in crash severity, especially when vulnerable road users are involved. To improve safety performance, speed management and reducing aggressive driving should be areas of focus. Speed management can be achieved through infrastructure improvements, such as lane narrowing and traffic calming, that guide motorists toward safer speeds that comply with posted speed limits and reducing speed limits in areas with increased pedestrian and bicycle activity. Enforcement treatments may be considered based on identified needs, community input, and research-based assessment of existing facilities.



Source: Jacobs 2022

Heavy Vehicles

With existing and future growth of the industrial and commercial facilities surrounding the study intersection, heavy vehicle traffic volumes are expected to increase. The addition of more buses, tractor-trailers, and single-unit trucks presents challenging issues. A major concern is the significant disparity in heavy-vehicle size compared to pedestrians and bicyclists.



Source: Jacobs 2022

When compiling countermeasures related to heavy vehicles, it is common to discuss strict laws and regulations related to length, weight, speed limit, and hours-logging. However, some additional topics have been identified for the study area.

Intersection Improvements

The intersection of two or more streets creates the potential for collisions, such as left-turning traffic conflicting with incoming traffic or right-turning traffic conflicting with a pedestrian crossing. The safety performance of these intersections can often be improved by reducing the number of conflict points present through innovative intersection designs or by reducing the probability or severity of crashes by using other safety treatments. Though intersections are commonly designed to maximize operational performance—i.e., traffic through-put—they may not yet be optimized for safety performance. By combining concerns voiced in the stakeholder interview process with proven safety countermeasures, many future crashes may be prevented, making intersections and Bellwood as a whole a safer place.



Source: Jacobs 2022

3. Developing the Safety Action Plan

Engaging the Community

The outreach strategy, as shown in Figure 3-1, focused on interviews with stakeholders who are familiar with the intersection of 25th Avenue and IPP, who will be impacted by proposed changes, and who were able to provide a view into the current state of traffic at the intersection by all users. These stakeholders helped the project team identify important opportunities to improve the safety in the study area.

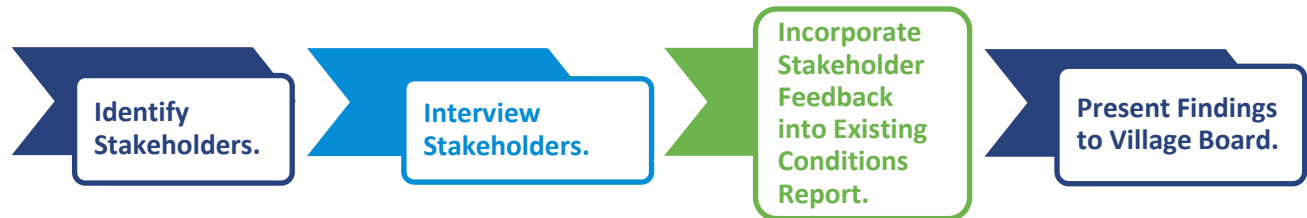


Figure 3-1. Components of the Outreach Strategy

Stakeholder Interviews

On January 28, 2022, the project team held interviews with stakeholders representing the community. Stakeholder input and feedback were gathered on various topics. Interviews started with a large group session to introduce the goals of the overall SAP. Stakeholders were then divided into breakout groups by the following more focused discussion topics:

- Illinois Department of Transportation (IDOT) / Cook County – Division of Highways
- Village of Bellwood and nearby property owners/businesses
- Cyclists, pedestrians and public transit users.

Discussion responses were documented and categorized. Once categorized, the feedback helped guide potential countermeasures proposed in the KRM.

The stakeholder interviews provided insight into the community goals for the intersection of 25th Avenue and the IPP, along with the adjacent intersection of 25th Avenue and Madison Street. Goals included advancing the land development and infrastructure surrounding the trail, creating a safe and convenient bike and pedestrian crossing for IPP users, and improving roadway infrastructure. The Outreach Plan contains more information on the stakeholders and interview questions.

Land Use and Infrastructure Surrounding the Trail

All stakeholder groups were concerned with the development at the intersection. The Village of Bellwood stakeholders frequently mentioned ongoing and future development in the area and how it would be linked to the study area. Property owners voiced concerns about impacts to the economy and businesses in the area. Meanwhile,

the bicyclists and pedestrian stakeholders were more concerned with creating a safe environment for path users and beautifying the surrounding area to encourage use.

Bike and Pedestrian Crossing

Pedestrians and bicyclists are commonly observed crossing 25th Avenue at the intersection with IPP rather than at the designated signalized crosswalk at the traffic signal about 70 feet to the south. The following reasons were given for pedestrians crossing mid-block rather than at the designated signalized crosswalk:

- It takes more time to cross at the signal.
- The narrow sidewalks make it feel like pedestrians/cyclists are leaving the pathway.
- The signal is not properly timed for bikes and pedestrians.
- Pavement marking is fading on the crosswalks, leaving users with a feeling of being exposed.
- There is poor signage/wayfinding for how to continue along the IPP.
- During winter, there is no snow removal on the path.

It was also mentioned that planners/designers should consider the different types of trail users (bus riders, bicyclists, joggers, people with strollers, etc.) and how each will be impacted when providing solutions for the crossing of 25th Avenue.

Roadway Infrastructure

A consistent talking point during the interview process throughout all breakout groups was speeding, along with traffic congestion due to development and population growth. Traffic congestion was noticed, and expected to increase, for all types of traffic, including trucks, passenger vehicles, pedestrians, and bicyclists.

Recommendations from stakeholders were considered as potential solutions to many of the concerns that were voiced. [Section 4, Prioritizing Infrastructure Countermeasures and Policies](#), expands on these concerns and the correlated countermeasures.

Understanding Existing Conditions

The Village of Bellwood is located on the west side of Cook County, Illinois, west of Chicago's city limits. Home to nearly 19,000 residents, the village is 2.4 square miles, with over 6,200 households. To help better serve the needs of its residents, the Village of Bellwood updated its Comprehensive Plan in 2013 and outlined the following major mobility goals:

- 1) Balance the need for traffic flow with the desire to create a pedestrian-friendly environment and access to adjacent development.
- 2) Create an environment to foster and facilitate transit-oriented development.
- 3) Expand the locations of gateways into Bellwood that communicate the Village's brand and identity locations of primary travel routes, including the Interstate 290 and rail routes.
- 4) Enhance all modes of transportation.

The recent addition of an overpass bridge roughly 1 mile north of the study area, as well as plans to widen 25th Avenue north of the study area, will enable 25th Avenue to carry a higher volume of both truck and passenger vehicle traffic, resulting in a direct impact on the study area. Anticipated industrial development is expected to increase truck traffic throughout the area. Conflicts with other roadway users are also expected to increase.

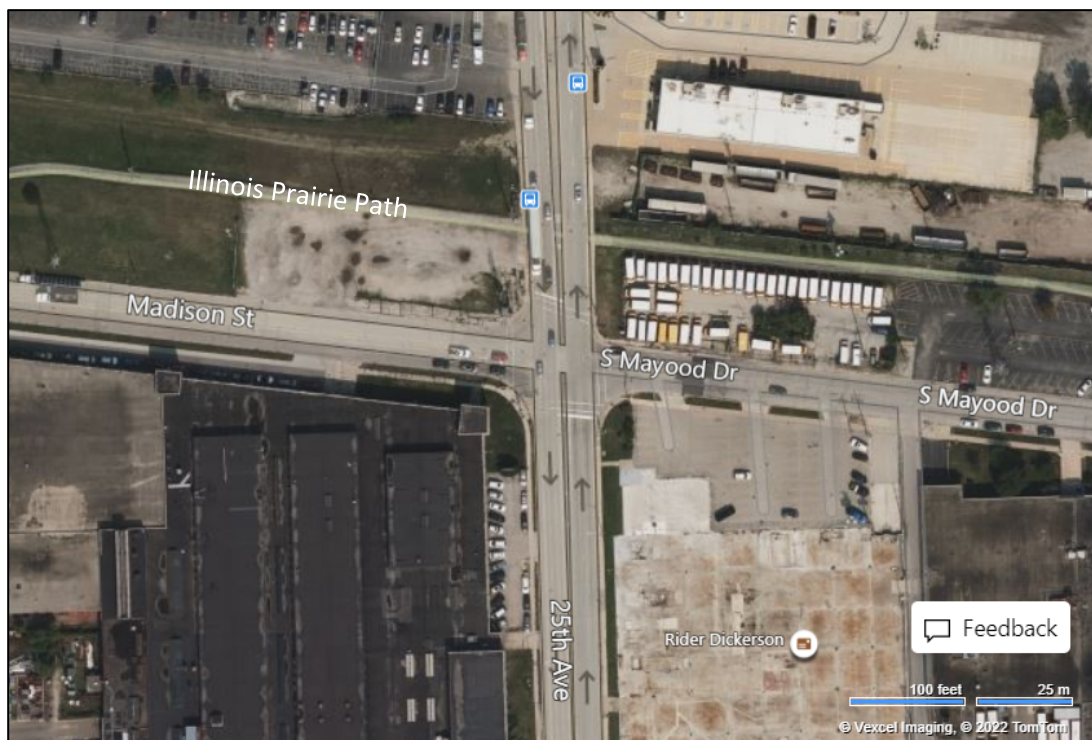


Figure 3-2. Intersection of 25th Avenue and Madison Street Map

Source: Bing Image 2022

Between 2016 and 2020, 93 crashes occurred within 550 feet of the intersection of 25th Avenue and Madison Street/South Maywood Drive (Table 3-1). None of the crashes resulted in fatalities, and 25 (26.9 percent) resulted in at least one injury. The frequency of injury crashes in the Village of Bellwood is higher than what is observed in both Cook County and throughout Illinois.

Table 3-1. Crashes by Severity (2016-2020)

Reference Area	Village of Bellwood – Study Area		Cook County, Illinois		State of Illinois	
Severity	Crash Count	% of Total	Crash Count	% of Total	Crash Count	% of Total
Fatal	0	0.0%	1,389	0.2%	4,972	0.3%
Injury	25	26.9%	146,978	19.0%	317,119	20.9%
No Injuries	68	73.1%	625,595	80.8%	1,193,782	78.8%
Total	93	100.0%	773,962	100.0%	1,515,873	100.0%

Figure 3-2 shows notable characteristics associated with the 93 KABCO crashes that occurred from 2016–2020, with statewide characteristics provided for comparison. Many of the characteristics observed in Bellwood’s KABCO crashes are significantly higher than those observed statewide.

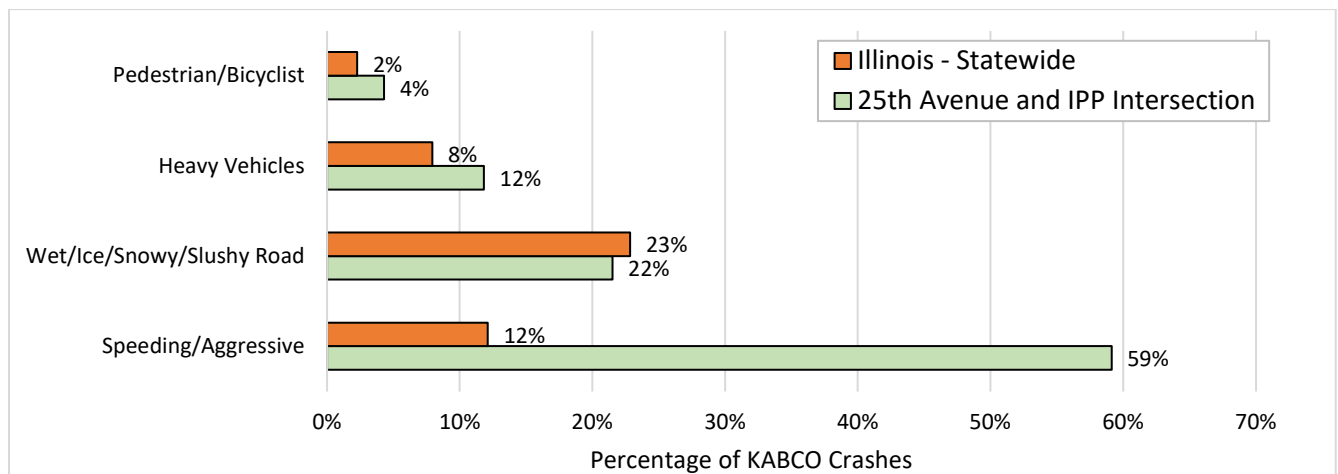


Figure 3-3. Notable Crash Characteristics (KABCO: 2016–2020)

The following is the KABCO scale:

- **K: Fatal Crash** – anyone involved in the crash dies within 30 days of the crash from injuries.
- **A: Incapacitating or severe injury/A-Injury** – any injury that is unrecoverable or prevents the injured person from returning to their pre-crash physical state. For example, brain damage, amputated limbs, or paralysis.
- **B: Capacitating injury/B-Injury** – any evident injury that is considered recoverable. For example, broken arm, bruises, cuts/lacerations, or abrasions.
- **C: Possible injury/C-Injury** – any injury that is claimed by the injured person but is not visually confirmed. For example, neck/back pain, headaches, or dizziness.
- **O: Property Damage Only (PDO)/No apparent injuries** – No complaints of injuries or pain; all parties included in the crash retain normal body functions/movements, and no medical attention is requested. For example, fender benders.

4. Prioritizing Infrastructure Countermeasures and Policies

The recommendations for potential countermeasures and policies are a culmination of the three major previous efforts: Outreach Plan, ECR, and KRM. Outreach efforts brought local stakeholders together to share their thoughts and experiences. These conversations guided the project team and shed light on items that are otherwise difficult to identify or that are non-observable to the project team. Some topics influenced the direction of the existing conditions evaluation. The KRM summarizes the outreach efforts.

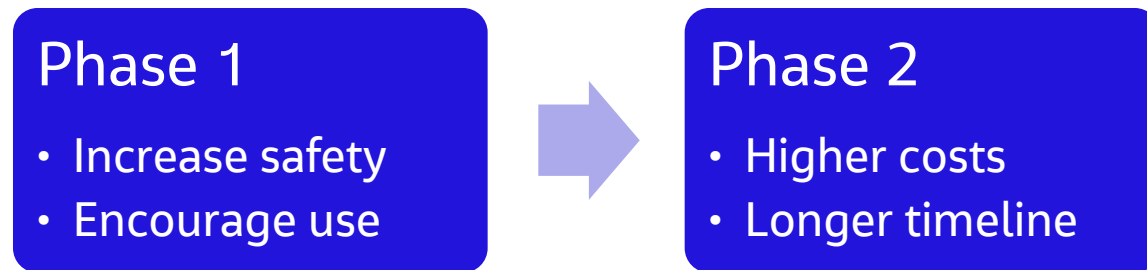
This section summarizes the KRM and describes how recommendations have been prioritized and how they interact with each other. Funding opportunities, implementation timelines, and high-level planning costs are also discussed.

Crash Modification Factors

A major variable for determining how a project is prioritized is to consider how the improvement will impact the expected number of crashes. One way to evaluate the change in crashes is to use crash modification factors (CMFs). The Crash Modification Factors Clearinghouse [website](#) is a great resource that acts as a repository of CMFs. A CMF is a multiplication factor used to determine the effectiveness of a particular countermeasure. The expected number of crashes after implementation of a specific countermeasure could decrease (CMF less than 1.0), increase (CMF greater than 1.0), or remain the same (CMF of 1.0). For example, the CMF for the installation of a high-visibility continental crosswalk in a school zone is 0.63 for all vehicle/pedestrian crashes.² This implies there is an expected reduction of 37 percent in crashes involving pedestrians and vehicles.

In many cases, it may be necessary to represent the CMF by a range of values instead of a single value because of different parameters used to evaluate. For example, research for any arbitrary CMF that is evaluated in an urban area would likely result in a different CMF value compared to the same CMF that was evaluated in a rural area. Even if similar parameters are observed between independent research efforts, the final findings are not guaranteed to have identical CMF values. This would be an instance in which representing the CMF by a range, like 0.6–0.73, would be most appropriate. Often, the CMF's research abstract will indicate the major infrastructure characteristics influencing the research and generation of the CMF value. These abstracts should always be reviewed to confirm that the study area's characteristics are similar to the research study area's characteristics.

A Phased Approach to Improving Safety



When implementing multiple countermeasures simultaneously, which is generally a desirable approach when improving a location, measuring the combined effect of the countermeasures is estimated through one of four methods. The methods differ depending on the target's crash type/severity and are described by the Federal Highway Administration (FHWA) in the video titled "Safety Data and Analysis: Applying a Method to Analyze Multiple CMFs" available online.³ Depending on the combined expected effect of these countermeasures, it might lead to changing to a phased approach of countermeasure implementation. The following is an example of the phased approach:

- Phase 1: Increase safety at the intersection of Madison and 25th and encourage use by bicyclists and pedestrians on the IPP by refreshing/updating the pavement markings to a high-visibility crosswalk and install advanced warning signs.
 - These two countermeasures interact with each other in a way that the signage warns drivers to expect pedestrians *prior* to the crosswalk. As the driver observes and processes the information on the sign, the driver would ideally become more aware and look for pedestrians in the crosswalk. The crosswalk is a highly visible feature at the intersection that *alone* should be enough, but combined with the advanced signage, is expected to be even more impactful.
- Phase 2: Reroute of the IPP users
 - Consider implementing an overpass or a reroute of all IPP users to decrease or remove the frequency of interaction between vehicles with vulnerable users. All three of these changes have a significantly longer implementation timeline and have a more expensive project cost. In addition to increased costs, implementing a countermeasure as physically demanding as a reroute or overpass must consider many major complications:
 - Future right-of-way needs: It would be a major obstacle to overcome a transfer of right-of-way away from the Village because Phase 1 improvements were thought to have addressed a safety concern, only to realize the right-of-way previously held by the Village was need for a Phase 2 improvement.
 - Maintenance: If an overpass was built, discussions between the IPP and the Village of Bellwood would have to include responsibility for maintenance, inspections, new signage, etc.

While Phase 1 would be expected to be completed in a matter of months with a relatively low cost, Phase 2 can progress simultaneously alongside and after Phase 1. The need for coordination with different designers, potential right-of-way acquisition needs, structural designs, and geotechnical/soil testing, it would be expected that Phase

2 can take a few years to complete. Since these steps are unavoidable, using this phased approach for improvements can accomplish some of the short-term improvements at the intersection through the Phase 1 countermeasures, while Phase 2 can provide more of the long-term solution.

As mentioned above, some of the short-term solutions may have a positive impact on enhancing the impact of the long-term solutions and boost the ridership along the IPP. If the short-term solutions increase the usage of the IPP, the ability to fund higher-cost solutions becomes more attractive to funding agencies since the benefit to the IPP users has grown.

Regardless of the implementation approach, it is important to have constant coordination and a firm understanding of future expectations and responsibilities.

Table 4-1. List of Prioritized Countermeasures/Policies

Emphasis Area	Prioritized Recommendations by EA
4.1: Bike and Pedestrians	1: High-Visibility Pedestrian Crossings
	2: Improved Signing and Guidance/Wayfinding
	3: Reroute Pedestrians and Bicyclists
	4: Construct New, Wider Sidewalks
	5: Pedestrian/Bicycle Catchment Area
	6: Implement Leading Pedestrian Interval
	7: Grade-Separated Crossing
4.2: Speeding/Aggressive Driving	1: Speed Feedback Devices and Automated Speed Enforcement
	2: High-Visibility Enforcement Campaigns
	3: Traffic-Calming Features
4.3: Heavy Vehicles	1: Improving Visibility + Access Control/Alternative Routes
	2: Educational Programs
Concern Category	Prioritized Recommendations by Concern Category
4.4: Intersection Improvements	1: Modify Signal Phasing for Left-Turning Movements
	2: Install Advanced Warning Signs
	3: Traffic Signal Upgrades
	4: Restrict Right-Turn-on-Red
	5: High-Friction Surface Treatment

Figure 4-1 can be used to reference the locations characteristics mentioned in the following sections that describe the Emphasis Area and Concern Category.

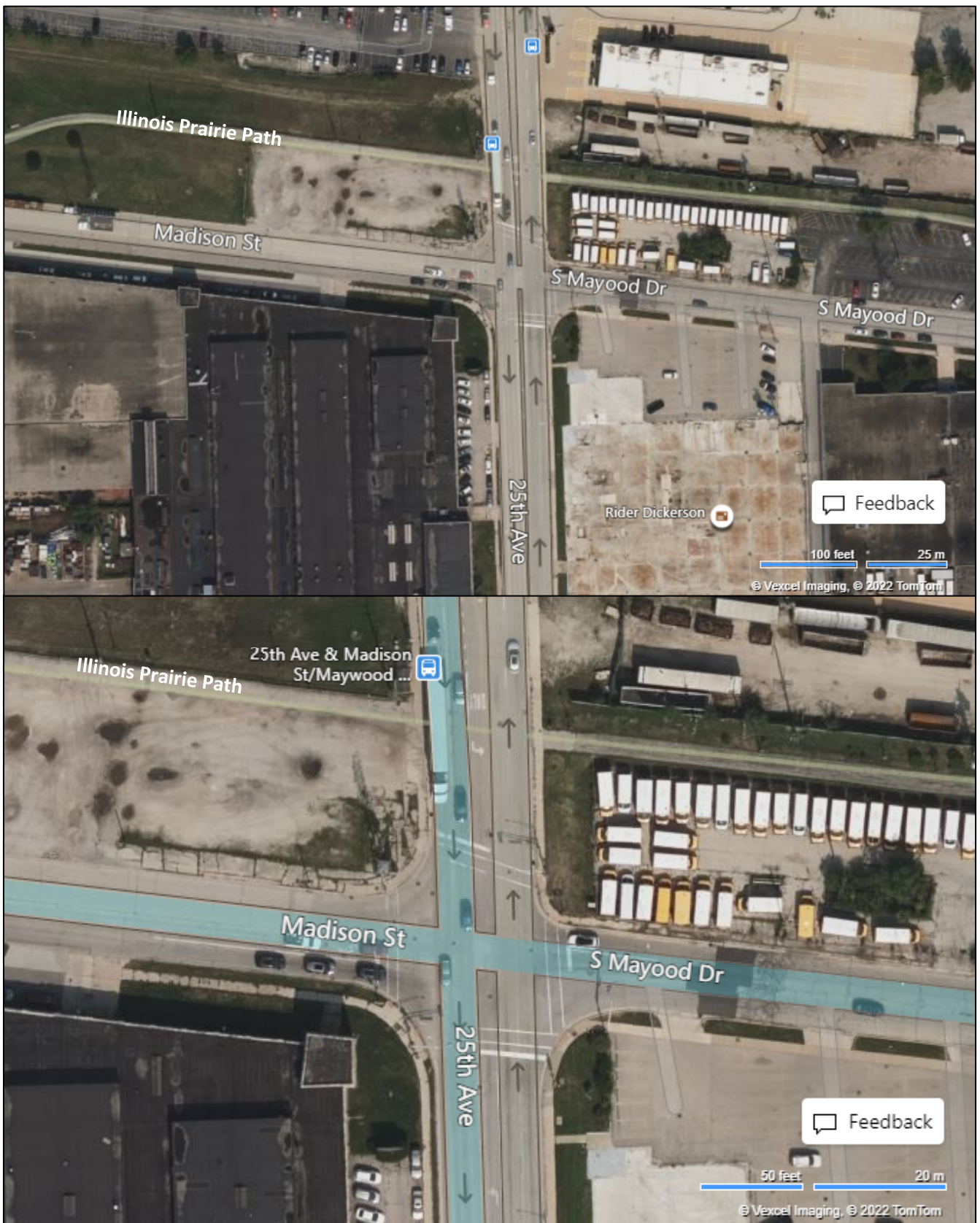


Figure 4-1. Maps of IPP Near the Intersection of 25th Avenue and Madison

Source: Bing Image 2022

Emphasis Area 1: Bikes and Pedestrians

The IPP is a rail-to-trail conversion path that attracts bicyclists and pedestrians. A safer, more comfortable, attractive, and useable space for pedestrians and bikes will increase interest and encourage greater use of the IPP in Bellwood. Shareholders commented on current concerns and solutions.

Safety comments to highlight:

- Many IPP and transit users cross 25th Avenue mid-block. Many users stop near the centerline as they cross.
- It takes more time to properly cross at the signal than to cross at the IPP.
- If two crossings are close together, drivers may start ignoring one of the two crossings. [In reference to creating a mid-block crossing at the IPP, approximately 70 feet north of an existing crosswalk at 25th Avenue and Madison Street.]
- Sidewalks at the back of curb do not feel safe for walking. They are too close to traffic and too narrow for multiple users at the same time.
- The narrow sidewalks are in bad condition.
- Due to limited sidewalk space, there are conflicts between cyclists and people waiting at the bus shelter.
- Relevant on the day of the interviews, snow had not been removed from the sidewalk causing pedestrians and cyclists to use the road.

Countermeasures for this EA include:

- Implement High-Visibility Pedestrian Crossing.
- Implement Leading Pedestrian Interval (LPI) with Pedestrian Countdown Signals.
- Construct New, Wider Sidewalks.
- Install Improved Signing and Guidance/Wayfinding on the IPP.
- Reroute Pedestrians and Bicyclists.
- Implement Grade-Separated Crossing.

Table 4-2 summarizes these countermeasures, and the following subsection discusses them in detail.

Table 4-2. Proposed Countermeasures: Bikes and Pedestrians

Priority #	Countermeasure	CMF	CMFc Link
1	High-Visibility Pedestrian Crossings	0.6	4123 ⁴
2	Improved Signing and Guidance/Wayfinding	-	N/A
3	Rerouting Pedestrian and Bicyclist Traffic	0.33	9259 ⁵
4	Implement Leading Pedestrian Interval	0.87	9916 ⁶

SAFETY ACTION PLAN

5	Pedestrian/Bicycle Catchment Area	-	N/A
6	Construct New, Wider Sidewalks	0.2*	2197 ⁷
7	Grade Separated Crossing	-	N/A

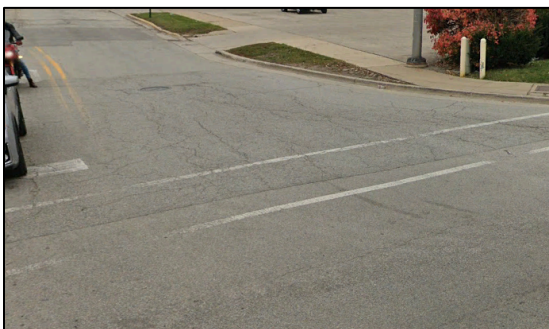
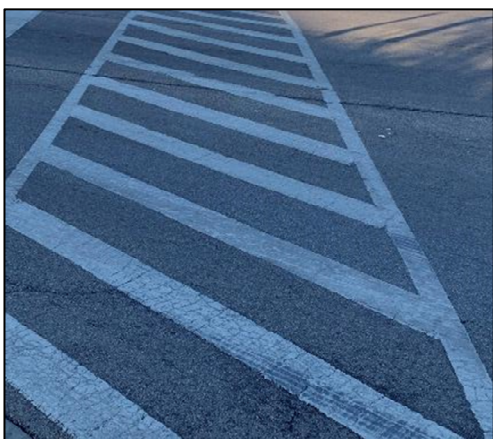
* Based on existing 5-foot-wide sidewalks expanding to 8 feet wide

Pedestrians and Bicyclists

Proposed Improvement 1: High-Visibility Pedestrian Crossings

CMF=0.6

Description: High-visibility pavement marking for pedestrian crossings use crosswalk designs that are more visible from further away compared to traditional transverse, or parallel, line crosswalks.

Existing Conditions	Strategy Benefits
- Transverse line crosswalks - Faded to nonexistent crosswalk markings - Two pedestrian crashes over the last 5 years  Figure 4-2. Existing Crosswalk Conditions Source: Bing Image 2014	- More noticeable to approaching vehicles, increases awareness, distinct from other markings - Improves yielding rates - Low cost  Figure 4-3. High-Visibility Crosswalk Source: Jacobs 2022 This 'zebra' design is one of the high-visibility crosswalk pattern options provided in the FHWA's <i>Manual on Uniform Traffic Control Devices (MUTCD)</i>.
Funding	
- Crosswalk restriping is typically part of regular maintenance; however, there are funding opportunities available for new crosswalks as a standalone project or in conjunction with other projects, such as sidewalk improvements or an IPP reroute. - Safe Streets and Roads for All (SS4A) - Safe Routes to School (SRTS) - Invest in Cook	
Key Considerations	
- All legs of the intersection are candidates for this countermeasure. - Can be deployed widely, easily, and systemically. This approach could be implemented at all signalized intersections along 25th Avenue or Madison Street/South Maywood Drive, regardless of there being a history of crashes that involve pedestrians or bicyclists.	

- By appropriately spacing the pavement marking outside of the wheel path, there is a reduction in wear, increasing the lifespan. The stop bars along each leg could be refreshed to further influence drivers to leave a safe distance between their vehicles and crosswalk users.
- Can be worked into regular maintenance cycles. If this countermeasure is not implemented, it is suggested that the existing parallel designs be refreshed more frequently.
- Can be implemented along with other countermeasures, such as constructing new, wider sidewalks or rerouting the IPP.

Pedestrians and Bicyclists

Proposed Improvement 2: Improved Signing and Guidance/Wayfinding

CMF=N/A

Description: Users of the IPP who are unfamiliar with its route may not be aware of the preferred route. In the near-term, the goal is to encourage users of the IPP to use the crosswalk at the intersection of 25th Avenue and Madison Street. Signs should be installed to indicate which direction the IPP continues.

Existing Conditions	Strategy Benefits
- There is no signage similar to that shown in Figure 4-4 to indicate the best and safest route to continue along the IPP. - The multi-use path on the IPP intersects with 25th Avenue at a 90-degree angle.	- Eye-catching signage providing directional guidance for IPP users, as shown in Figure 4-4, could prevent mid-block crossings across 25th Avenue. - As a near-term goal, this encourages users from using the mid-block crossing, shown by the red line in Figure 4-6. - Encourages use of the path by preventing additional informational resources to users.
 Figure 4-4. Signage for Bike Route <i>Source: Jacobs 2022</i>	 Figure 4-5. Informational Signage <i>Source: Jacobs 2022</i>
Funding	
Illinois Transportation Enhancement Program (ITEP)	
Key Considerations	
- Placement of the signs may be considered in conjunction with a reroute of the IPP or wider sidewalks. - Another type of signage can transfer non-wayfinding information to the users of the IPP. This might include a map of the IPP as it stretches through Bellwood, connecting to its neighboring villages. This informational map or signage could include locations	

of green space/parks, water fountains, public art displays, bathrooms, coffee shops, convenience stores, and other useful pieces of information.

Pedestrians and Bicyclists

Proposed Improvement 3: Rerouting Pedestrians and Bicyclists

CMF=0.33

Description: Pedestrian crossings should be convenient for pedestrians. Instead of users crossing at 25th Avenue mid-block, the trail could be rerouted further west to run parallel to Madison Street, bringing trail users to the signalized intersection. Additionally, a rigid barrier could be constructed, as shown by the dashed purple line in Figure 4-6, to prevent crossing mid-block.

Existing Conditions	Strategy Benefits
▪ Crossing option 1—which is unsafe—is shown by the red line. Option 2, shown by the green line, takes a short detour about 70 feet south towards the signalized intersection to cross 25th Avenue. ▪ The crosswalk at the signalized intersection is currently inconvenient with the existing location of the IPP with 25th Avenue. ▪ 90-degree turns are not ideal for bikes or people in wheelchairs.	▪ Brings users to the front of any business that is constructed on the northwest corner on the empty lot. ▪ Provides more sweeping turns for bicyclists instead of sharp turns. ▪ This proposed improvement would direct pedestrians and bicyclists to the signalized intersection to cross 25th Avenue at the crosswalk, as shown in Figure 4-7, ideally preventing any mid-block crossings. ▪ If a larger turning radius was created on the northeast corner, this could eliminate some of the truck traffic mounting the curb during their turn from westbound to northbound. Currently, there is no crash data showing an interaction between trucks and pedestrians/bicycles on this corner, but it is suspected that many near-misses occur due to the tire marks on the curb.
	
Figure 4-6. Current Crossing Paths Source: Jacobs 2022	Figure 4-7. Proposed Reroute of the IPP on the West Side of 25th Avenue Source: Jacobs 2022

Funding

- ITEP
- Invest in Cook

Key Considerations

- This new route along Madison Street could introduce new conflicts between bike/pedestrians and vehicles if access points are constructed to any potential future businesses on the northwest side of the intersection in the vacant lot.
- Inserting a rigid barrier would help prevent unsafe crossings but adds a lengthy fixed object along the curb line, potentially creating a safety hazard for vehicular users.
- A reroute of the IPP could be used to route IPP users to/from 25th Avenue in the event that the IPP is continued as an overpass or underpass across 25th Avenue in the future.

Pedestrians and Bicyclists

Proposed Improvement 4: Construct New, Wider Sidewalks

CMF=0.2

Description: The 2018 Illinois Accessibility Code requires sidewalks to be at least 5 feet wide to provide spaces to pass other pedestrians. However, 5 feet is not wide enough for pedestrians to comfortably share the sidewalk with bicyclists. The most pressing location for a widening of at least 7 feet would be the west side of 25th Avenue, north of Madison Street. Pace riders wait for the bus at this location and encounter bicyclists on the narrow sidewalk.

Existing Conditions	Strategy Benefits
▪ Sidewalks present on all four legs of the intersection. ▪ Pace bus depot on the west side of 25th Avenue, north of the IPP – see yellow box in Figure 4-8. ▪ Cracked, 5-foot-wide sidewalks with no barrier to traffic north of the intersection. ▪ Some features of the intersection act as a deterrent to this improvement, as there are a number of fixed objects (utility poles, fire hydrants, light poles, etc.) located along the edge of the existing sidewalk.  Figure 4-8. Northwest Quadrant of Intersection Source: Bing Image; modified by Jacobs 2022	▪ Improve usability of all four legs by allowing more space for bikes and transit users in conjunction with pedestrians. ▪ Opportunity to provide new ramps compliant with the Americans with Disabilities Act (ADA) and other features that offer greater accessibility to all road users.  Figure 4-9. Sidewalks with a Width of 7 Feet Source: Jacobs 2022
Funding	
▪ SS4A ▪ SRTS ▪ ITEP	

Key Considerations

- The southwest quadrant of the intersection serves as a good example for the setback of the sidewalk from the street's curb. On this corner, there is a buffer of about 4 to 5 feet of grass between the curb and the edge of the sidewalk, creating a forgiving space for both errant vehicles and wandering bicyclists.
- Consideration should be made to provide a buffer width to achieve comfort, security and safety for pedestrians using the sidewalks. A buffer would also provide space for signs and snow storage and would protect pedestrians from splash.
- Sidewalk could be placed behind the bus stop to allow for uninterrupted flow on the sidewalk during bus loading/unloading.

Pedestrians and Bicyclists

Proposed Improvement 5: Pedestrian/Bicycle Catchment Area

CMF=N/A



Figure 4-10. Northeast Corner of the Intersection with Catchment Area

Source: Jacobs 2022

Description: Catchment areas are often used in locations where bicyclists frequently cross the street since they need more room to wait for a signal change. Catchment areas provide an area where crosswalk users can wait for the opportunity to cross the roadway without blocking the sidewalk or being pushed into the street.

Existing Conditions	Strategy Benefits
- Worn out path in the grass at the northeast corner of the intersection indicates bikes are unable to make the corner from the crosswalk to the sidewalk. - Tire tracks on the northeast corner of the intersection indicate vehicles mount the curb while taking a right turn onto 25th Avenue.	- ADA compliant. - Removes the near 90 degree turns for persons in wheelchairs or on bicycles on the north side of intersection. - Increases sight distance at intersection corners. - Provides extra space for pedestrians/bicyclists to wait without fear of being struck by a potential curb mounting vehicle. - Increases visibility for & of bike/pedestrian activity, gives cues to drivers. - Increases beautification and appeal of the area and IPP; provides an area for benches. - Provides an opportunity to straighten out the crosswalk on the north leg.



Figure 4-11. Northeast Corner of the Intersection

Source: Bing Image 2014



Figure 4-12. Concrete Catchment Areas on North Side of Intersection

Source: Jacobs 2022

Funding

- SS4A
- SRTS
- ITEP

Key Considerations

- The catchment should be done in conjunction with the sidewalk widening project and/or the IPP reroute.
- Constructing a catchment area on the northwest corner should consider the possible access point configurations to the existing empty lot. Right-in/right-out access or right-in only along 25th Avenue may be necessary due to the limited space. If needed, the general shape of the catchment area can be modified to best allow placement of a building or access point(s). Additional information about access point requirements may be available through IDOT Bureau of Local Roads and Streets.
- A better turning radius for the northeast corner of the intersection could be limited by the traffic pole. The traffic pole may need to be relocated to accommodate a greater turning radius for trucks and buses.



Figure 4-13. Northwest Corner of the Intersection with Catchment Area

Source: Jacobs 2022

Pedestrians and Bicyclists

Proposed Improvement 6: Implement Leading Pedestrian Interval (LPI)

CMF=0.87

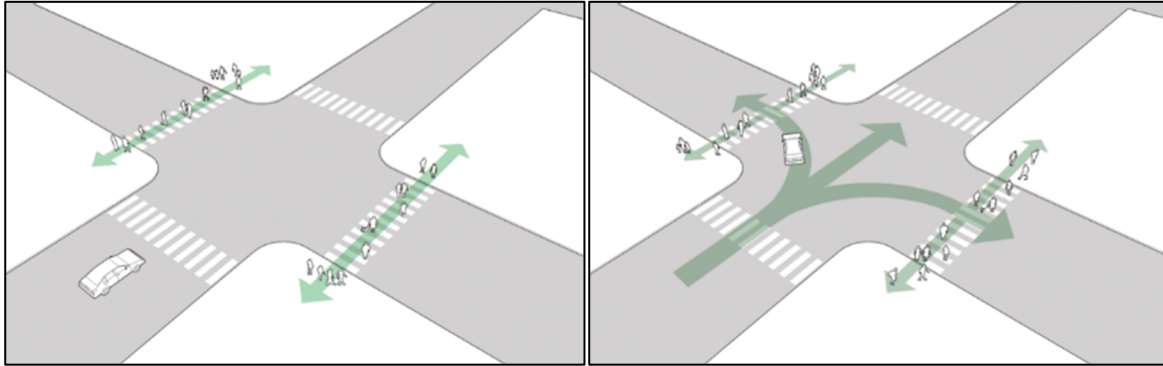


Figure 4-14. Leading Pedestrian Interval Phases⁸

Source: National Organization of City Transportation Officials (NACTO) Urban Street Design Guide, 2013

Description: Pedestrian and bicyclist crashes at signalized intersections commonly involve vehicles making turns. To decrease this risk, an LPI is a potential traffic signal timing treatment. It involves a small modification to the beginning of a traffic signal cycle, giving pedestrians and bicyclists a 3- to 7-second head start on their crossing movement when entering an intersection relative to the corresponding green signal phase in the same direction of vehicular travel. The countdown signal displays the number of seconds remaining to cross the crosswalk and is displayed with the “WALK” signal. The countdown starts at the onset of the “WALK” phase.

Figure 4-14 shows a single vehicle with multiple pedestrians in the crosswalk. The vehicle intends to make a left turn, but prior to a green light for the left turn, the pedestrians are provided a “WALK” signal. Once the vehicle is able to make a left, pedestrians are well established in the intersection, making them more visible to the left-turning vehicle.

Signal-phasing diagrams were provided by the Village team. However, upon inspection of the materials, it was found that the files were dated from the 1980s. If vehicle volumes have increased significantly since, one can also assume the signal timings have changed. For that reason, the materials that were provided were not used in the analysis. The current signal timing should be reviewed and updated as necessary to reflect the LPI recommendation.

Existing Conditions	Strategy Benefits
▪ Signalized intersection with a pedestrian crossing indicator. ▪ Based on Google Street View observations, pedestrian signal heads	▪ Increases pedestrians' visibility within the crosswalk, increasing the likelihood that left-turning vehicles yield or wait for a gap.

may not be working at each corner of the intersection. ▪ There is no pedestrian countdown signal/push-button for crossing the Maywood Drive leg of the intersection.	▪ Shown to significantly reduce pedestrian-vehicle collisions, improving safety and comfort for vulnerable road users.
Funding	
▪ Highway Safety Improvement Program (HSIP)	
Key Considerations	
▪ Consider restricting right turn on red in conjunction with the LPI. The allowance of a right turn on red may limit the effectiveness of the LPI. ▪ For consistency, pedestrian signals should be placed on all legs of the intersection and updated to include pedestrian countdown signals.	

Pedestrians and Bicyclists

Proposed Improvement 7: Grade-Separated Crossing

CMF=N/A



Figure 4-15. Rendering of IPP Overpass Bridge at 25th Avenue

Source: Jacobs 2022

Description: A footbridge or bike bridge, as shown in Figures 4-15 and 4-16, is a grade-separated structure that would take IPP users across 25th Avenue to the other side, keeping users safe from the traffic below. Similarly, an underpass would provide the same protection to its users, as seen in Figure 4-17.

Existing Conditions	Strategy Benefits
The IPP meets with 25th Avenue mid-block at the same grade as the roadway.	- Separates vehicles from pedestrians and bicyclists, resulting in safer crossings. - Enhances access of the IPP to pedestrians and bicyclists who may be too intimidated to cross a street shared with vehicles. - Increases the efficiency of the traffic signal by removing pedestrians and bicyclists from the intersection.



Figure 4-16. Overpass Bridge of the IPP in Algonquin, IL

Source: Jacobs 2022

- The City of Broadview was recently awarded Local Transportation Alternatives Program funding to build a shared-use path along 25th Avenue, which lies roughly 0.5 mile from this study area.⁹ A major infrastructural change like this provides Bellwood residents with greater connectivity when using their regional bicycle network.



Figure 4-17. IPP Tunnel in Crystal Lake, IL

Source: Jacobs 2022

Funding

- SS4A
- ITEP
- Invest in Cook

Key Considerations

- An overpass would cross 25th Avenue at the current intersection with the IPP, as shown in the rendering of Figure 4-15. Ramps over 25th Avenue would begin roughly 300 feet to the west and 300 feet to the east of the intersection to allow for a comfortable change in elevation for the trail user and provide enough vertical clearance for the traffic below.
- This type of improvement comes along with many potential obstacles. There are utilities adjacent to potential future bridge location, right-of-way/ownership of the

land must be determined, public engagement is typically a requirement with notable structures, etc.

- The benefit-cost ratio that would be necessary to receive funding is unlikely to be achieved due to the very high cost of construction and the low frequency of pedestrian/bicyclist crashes. Constructing a bridge may be more appealing as the use of the IPP increases its ridership. Monitoring the usage of the IPP could be done through collecting pedestrian/bike counts, while generating more ridership might be accomplished through initial low cost, easily implementable countermeasures.
- It is currently unknown if there are any pedestrian/bike counts available that might need to meet specific warrants in order to justify this recommendation.
- Designs must consider features like stairs along 25th Avenue, in terms of usability to senior citizens, and also consider the slope of the ramps to be ADA compliant.
- For southbound drivers approaching Madison Street, the overpass structure might inhibit visibility of the traffic signals.
- Broadview has an additional [bike path project](#)¹⁰ to the south which must have proper connectivity to the IPP. An overpass will create a challenge to a direct connection. Designs will need to address future connectivity.
- Special attention must be made to ensure that an overpass does not act as a deterrent to economic generation/activity by posing as a bypass to any businesses or routes to school.
- With the implementation of an underpass, more thought will need to go into lighting, drainage, graffiti removal, security, and existing underground utilities.
- This improvement does not address users that must use the intersection to access their destination. It should be considered as a complement to at-grade intersection improvements previously mentioned.

Emphasis Area 2: Speeding/Aggressive Driving

Speeding is defined as exceeding the speed limit or driving faster than is safe in current road conditions. These road conditions include the presence of vulnerable road users. Other aggressive driving includes running red lights, failing to yield (including to bikes and pedestrians), and following too closely.

Countermeasures for this EA include:

- Speed Feedback Devices and Automated Speed Enforcement
- High-Visibility Enforcement Campaigns
- Traffic-Calming Features

Table 4-3 summarizes the countermeasures and the following subsections discuss them in detail.

Table 4-3. Proposed Countermeasures: Speeding/Aggressive Driving

Priority #	Countermeasure	CMF	CMFc Link
1	Speed Feedback Devices and Automated Speed Enforcement	0.46	2915 ¹⁰
2	High Visibility Enforcement Campaigns	-	N/A
3	Traffic Calming Features	0.89	586 ¹¹

Speeding/Aggressive Driving**Proposed Improvement 1: Speed Feedback Devices and Automated Speed Enforcement**

CMF=0.46

Description: Dynamic speed feedback signs display the speed of approaching vehicles on a digital sign board, offering immediate feedback to motorists, as shown in Figure 4-18. These are often installed along with other guidance such as speed limit signs for comparison, pedestrian crossing signs, and school zone signs.

Existing Conditions	Strategy Benefits
Speed limit signs indicating 30 miles per hour (mph) are located along 25th Avenue north and south of the IPP, while the east/west leg has a 25 mph speed limit.	- Promote safe driving behaviors without actively using enforcement. - Inexpensive to implement. - Little impact on the function of the roadway or the aesthetic of the location. - Encourages driving within the speed limit. - Important to heavy vehicles who take longer to come to a complete stop. Figure 4-18. Speed Feedback Sign <i>Source: Jacobs 2022</i>
Funding	
SRTS	
Key Considerations	
Speed feedback signs are best implemented on relatively low-volume, two-lane roads where sensors can provide feedback to individual drivers. They are commonly installed along collector roads (Madison Street) within or around neighborhoods, minor arterial roads (25th Avenue), or roads surrounding schools and parks.	

- Based on stakeholder feedback, a speed feedback sign may be most beneficial for northbound traffic on the southern leg of the intersection (25th Avenue) and westbound traffic on the eastern leg of the intersection (South Maywood Drive). If no camera or video recording device is implemented, the speed feedback sign should be combined with occasional enforcement.
- These feedback signs can be paired with a camera or video recording device to act as an automated enforcement feature. If a vehicle exceeds the speed limit, a photo or video is taken, which is then shared with the registered owner of the vehicle. A fine, or some other type of monetary punishment, is typically associated with the speeding behavior. It should be noted that use of these kinds of enforcement devices varies by municipality throughout Illinois.

Speeding/Aggressive Driving**Proposed Improvement 2: High-Visibility Enforcement Campaigns**

CMF= N/A

Description: High-Visibility Enforcement (HVE) is a universal traffic strategy approach designed to create a deterrence and change unlawful traffic behavior.¹² HVE techniques and approaches can vary depending on the EA that is being targeted. However, the most common enforcement campaigns target impaired, distracted, speeding, and aggressive drivers.

The framework for this type of program can be evaluated from the early planning stages to eventually a quantitative analysis of citation, arrest, and crash data, as well as survey data from local communities. Social media can also contribute to promoting such programs to keep the public aware of what efforts are being made to ensure safe travel for all road users.

Existing Conditions	Strategy Benefits
76% of injury crashes involved speeding/aggressive driving. 72% of all crashes involved speeding/aggressive driving.	- Shown to promote voluntary compliance with the law. - Reduces instances of dangerous driver behavior in critical locations.  Figure 4-19. Enforcement Slogan¹³ Source: IDOT 2022

Funding

- Sustained Traffic Enforcement Program (STEP)

Key Considerations

- HVE campaigns are most effectively implemented where existing patterns of speeding or impaired driving have been detected and where reducing speeding violations are most crucial to vulnerable road users, such as near schools, park, or multi-use paths. Based on feedback from the stakeholder interviews, the study area would be a good candidate for HVE campaigns.
- Train officers beforehand to avoid public relations problems. The implementation must begin with warnings and flyers.
- Contact possible partners and stakeholders to start planning enforcement strategies. Possible partners include local leaders from the state and local levels, law enforcement agencies, criminal justice stakeholders (prosecutors, judges), state-level organizations (State Highway Safety Office, Sheriffs Associations), and media.

Speeding/Aggressive Driving**Proposed Improvement 3: Traffic-Calming Features**

CMF=0.89

Description: Traffic calming involves the use of relatively low-impact design features and modifications to the roadway and the surrounding environment to visually narrow the roadway. These features include planting strips with trees or hedges, planters, benches, and buildings at or within the right-of-way. By giving the roadway a feeling of being narrower, traffic calming indirectly slows down vehicle traffic and creates a more friendly environment for non-motorized road users.

Existing Conditions	Strategy Benefits
- Wide, 5-lane roadway along 25th Avenue - No vertical indicators (trees, buildings, benches, planters) to show speed visually around the IPP 	- Creates a safe and comfortable area for pedestrians and bicyclists using the IPP. - Makes walking and biking more attractive options for community members. - Lowers vehicle speeds, reducing the frequency of pedestrian collisions and significantly reducing the severity of crashes when they occur. 
Figure 4-20. Existing Sidewalks Source: Bing Image 2014	Figure 4-21. Streetside with Landscaping for Traffic Calming Effects Source: Jacobs 2022 Landscaped features and attractive designs associated with traffic calming, such as planters, planting strips with trees, and benches, often offer unique aesthetic benefits.
Funding SS4A	

- ITEP

Key Considerations

- Traffic calming would be beneficial along both sides of 25th Avenue north of the intersection, near the Pace bus stop, and IPP.
- Due to a limited roadway cross section, traffic-calming measures for this location could consist of changing the area around the roadway rather than changing features of the roadway itself. Traffic-calming measures such as landscaping (trees, benches, water fountains, statues, planters, etc.) would signal to all road users that the area is pedestrian- and bicycle-friendly.
- Traffic calming should be designed for the specific location being targeted to ensure greatest effect.
- There will be ongoing maintenance needs for landscaping. However, maintenance may be provided by partners in the implementation, including business groups and neighborhood residents.
- Need to consider sight distance in the placement of traffic-calming features.
- There may be problems with tree roots and pavement/sidewalks, as well as underground utilities.

Emphasis Area 3: Heavy Vehicles

The study area is surrounded by industrial land and there is a bus stop on either side of 25th Avenue less than 150 feet north of the IPP. Buses and commercial vehicles frequently run along 25th Avenue at the IPP, creating potential conflicts between heavy vehicles and more vulnerable users, including bikes, pedestrians and passenger vehicles.

Countermeasures for this EA include:

- Improving Visibility + Access Control/Alternative Routes
- Educational Programs

Table 4-4 summarizes these countermeasures, and the following sections discuss them in more detail.

Table 4-4. Proposed Countermeasures: Heavy Vehicles

Priority #	Countermeasure	CMF	CMFc Link
1	Educational Programs	-	N/A
2	Improving Visibility + Access Control/Alternative Routes	0.56	3097 ¹⁴

Heavy Vehicles

Proposed Improvement 1: Educational Programs

CMF= N/A

Description: Educational programs aim to increase the awareness of concerns involved with driving or to provide drivers with the physical skills needed to safely operate their vehicle.

Existing Conditions	Strategy Benefits
- Heavy vehicles operating in the area with frequent exposure of pedestrians and bicyclists. - Currently, it appears that there are no current education programs in place to make heavy vehicle drivers aware of the IPP crossing.	- All roadway users can benefit from being more mindful of the expectations needed to travel safely. - If bicyclists and pedestrians are a top focus or priority, the frequency of crashes between heavy vehicles and these vulnerable users are ideally minimized.
Funding	
HSIP	
Key Considerations	
- Giving helpful reminders to heavy vehicle drivers can be done in a variety of ways. As loads are delivered or picked up, part of the departure process for the trucks can include businesses reminding truckers to look twice for people along the sidewalks as they make their turns onto 25th Avenue. Similarly, businesses can post signage in break rooms, warehouse areas, and/or delivery bays to refresh the thought of keeping an eye out for pedestrians and bicyclists. - Surrounding businesses can implement on-board systems to trucks. These systems can have a 'pop-up' alert for drivers when they are approaching a multi-use path. - Weigh stations, inspection sites, and gas stations with truck bays are opportunities to inform truck drivers of schools, parks, multi-use paths, on-street bike lanes, or areas frequented by walkers/bikes.	

Heavy Vehicles

Proposed Improvement 2: Improving Visibility + Access Control/Alternative Routes

CMF= 0.56

Description: A common issue with suburban/urban areas and locations with high volumes of heavy vehicle traffic is providing the necessary visibility and space for truck drivers to make all their necessary maneuvers safely. Additionally, suburban and urban areas frequently have structures and buildings that are located closely to each other. This can cause issues for heavy vehicles due to their size.

A solution to the concerns listed above is to create a safer, easier route for deliveries to take place, particularly at the Borg Warner property, that gives heavy vehicle drivers better visibility.

Existing Conditions	Strategy Benefits
- Tractor-trailers backing into the Borg Warner loading/unloading dock have difficulty making the maneuver shown in Figure 4-22. - When trucks approach the Borg Warner property from the north, they are required to pass the loading/unloading docks in order to reverse the trailer with enough of a turning radius. - This topic was brought up during the stakeholder interviews.  Figure 4-22. Reversing Path of Tractor-Trailer into Borg Warner Docks Source: Bing Image 2022	- Removing the need for trucks to engage deliveries or pick-ups from 25th Avenue would be beneficial to reducing the frequency and severity of all the crash scenarios mentioned above. - The act of reversing a tractor-trailer on a route with consistent traffic causes concerns surrounding visibility.  Figure 4-23. Potential for Borg Warner Parking Expansion Source: Bing Image 2022
Funding	
Invest in Cook	

Key Considerations

- Stakeholder interviews discussed the possibility of Borg Warner purchasing the plot of land just north of the IPP and just south of the Borg Warner property, as shown in the orange area in Figure 4-23. This would provide the opportunity to rearrange the loading/unloading docks, removing the need for heavy vehicles to do any reversing movement on 25th Avenue.
- Alternatively, the use of 28th Avenue to access the rear of the industrial properties can prove to be another way for preventing undesirable interactions between heavy vehicles and other roadway users.

Concern Category: Intersection Improvements

The intersection of 25th Avenue and Madison Street lies approximately 70 feet south of the IPP. Crash statistics in the study area encompassed those intersection-related crashes and shareholders weighed in on issues related to the intersection. Intersection improvements include traffic control devices, roadway geometry and pavement upgrades.

Countermeasures for this EA include:

- Restrict Right-Turn-on-Red
- Modify Signal Phasing for Left-Turning Movements
- Traffic Signal Upgrades
- Install Advanced Warning Signs
- High-Friction Surface Treatment

Table 4-5 summarizes these countermeasures, and the following sections discuss them in more detail.

Table 4-5. Proposed Countermeasures: Intersection Improvements

Priority #	Countermeasure	CMF	CMFc Link
1	Install Advanced Warning Signs	0.704	8474 ¹⁵
2	Traffic Signal Upgrades	0.85	1410 ¹⁶
3	Modify Signal Phasing for Left-Turning Movements	0.862	4270 ¹⁷
4	Restrict Right-Turn-On-Red	0.98**	5194 ¹⁸
5	High-Friction Surface Treatment	0.529	10318 ¹⁹

**Assuming implementation on one approach only

Intersection Improvements

Proposed Improvement 1: Install Advanced Warning Signs

CMF= 0.704

Description: Advanced warning signs inform motorists of potentially unexpected conditions in the roadway or along the side of the roadway that may not be readily apparent. The advanced pedestrian crossing sign, as shown in Figure 4-25, is used before a mid-block crosswalk or other location where pedestrians may not be expected to cross.

Existing Conditions	Strategy Benefits
- Red-light camera signs are installed at each traffic signal pole. - Advanced warning sign for camera enforcement is located 800' north of the intersection. - The placement of the IPP makes the mid-block crossing tempting, although the mid-block crossing is not ideal. - There are no advanced warning signs on the north leg of the intersection indicating to motorists that the IPP is ahead, so the trail is not readily apparent from the street.  Figure 4-24. Advanced Warning Sign for Camera Enforcement Source: Bing Image 2014	Advanced pedestrian crossing signs alert the driver to the presence of a crossing area ahead.  Figure 4-25. Advanced Pedestrian/Bicyclist Warning Signage Source: Jacobs 2022
Funding	
HSIP	
Key Considerations	
- Advanced crosswalk signage would ideally be located in advance of the intersection both north and south of the IPP on 25th Avenue. - Sign overuse may create noncompliance and may lead to visual clutter.	

- Signage needs to comply with the Illinois MUTCD.
- Due to the limited information available on red-light citations, enhancing data collection from the camera is recommended. A few examples of data that would be beneficial in the data collection process would be including information on repeat offenders, time of day of citations, and vehicle make/model.
- Studies of red-light running cameras have been done in Washington State showing varying degrees of success. The cameras are meant to modify driver behavior and increase safety. Results of red-light running cameras varied from an increase in citations and collisions to a decrease in both citations and collisions. Some locations had increases in collisions resulting in injury. Many studies found a change in the types of crashes, from angle to rear end. Angle collisions are typically more serious than rear-end collisions. In school zones, where tickets costs are higher, most vehicles speeds dropped, resulting in less citations and collisions.²⁰

Intersection Improvements

Proposed Improvement 2: Traffic Signal Upgrades

CMF= 0.85

Description: Traditional traffic lights are framed with a non-reflective, black backplate which is not visible, especially at night when the signal blends into the dark background. To improve visibility of signals both during the day and at night, many agencies are installing retroreflective yellow backplates to traffic signal heads. Upgrading signal lights to LED further enhance visibility.

Existing Conditions	Strategy Benefits
12-inch incandescent signal lenses  Figure 4-26. Existing Traffic Signal on 25th Avenue and Madison Street Source: Bing Image 2014	- Highly reflective, as shown in Figure 4-27, and appear to be illuminated at night, increasing visibility in dark conditions. - Improved visibility of traffic signals increases driver compliance and reduces the number of crashes, especially non-daylight crashes. - LED lights are brighter than incandescent lights and will improve visibility. - Reflectivity is not an issue with LED lights; incandescent reflects sunlight on traffic signals facing east and west causing the lights to look lit up when they are not. - LED lights are more energy efficient. - Upgrading the current 12-inch lens in the traffic signals to 12-inch LED will help with visibility of the signal lights.  Figure 4-27. Retroreflective Traffic Signal Backplates Source: Jacobs 2022

Funding
▪ Invest in Cook ▪ HSIP
Key Considerations
▪ The signalized intersection should be reviewed and considered for retroreflective backplate treatment and installation of 12-inch LEDs based on existing lighting features.

Intersection Improvements

Proposed Improvement 3: Modify Signal Phasing for Left-Turning Movements

CMF= 0.862

Description: The left-turning movement is often strongly associated with high-severity crashes, especially where left-turning or through traffic volumes are relatively high or where vision may be obstructed, making gap identification difficult and testing the patience of motorists who may choose to take risky moves to expedite the process. A protected left-turn phase uses a dedicated green arrow signal head, motioning when motorists can safely complete a left turn. This would be done in conjunction with pedestrian signals to ensure pedestrians have a "DON'T WALK" signal during protected left turns.

The protected left turn can be added as an additional phase while still allowing permissive left turns (i.e., left turns made during through green traffic signals), or such permissive turns may be restricted with a red arrow signal, requiring that all left turns only be made during the green arrow condition. A less restrictive version of this uses a flashing yellow arrow during through traffic phasing, allowing permissive left turns when a green through signal is present, but still alerting motorists of the need to yield to oncoming traffic and pedestrians.

Existing Conditions	Strategy Benefits
- Eastbound and westbound traffic use permissive left turns onto 25th Avenue. - All intersection legs have left turn lanes. 25% of total crashes involved at least one turning vehicle. - Stakeholders mentioned vehicles taking the turns at high speeds. - Left-turning vehicles must identify an appropriate gap in	- Restricting permissive left turns essentially eliminates the potential for left turn-related crashes which tend to be severe. - Protects pedestrians using the crosswalk. - Improves the overall safety of a signalized intersection without greatly impacting traffic flow.  Figure 4-28. Protected Left Turn Phasing Source: Jacobs 2022  Figure 4-29. Flashing Yellow Arrow²¹ Source: ePermitTest 2020

oncoming traffic, while heeding pedestrians in the crosswalk, to safely cross opposing lanes of travel.	▪ If a protected left-turn phase (i.e., a green arrow phase) is implemented while still allowing permissive left turns, a moderate safety improvement can still be realized by transferring a portion of left turns being made to the protected phase and restricting pedestrian crossing during the protected turn. ▪ The implementation of a flashing yellow arrow can achieve additional safety benefits without incurring additional cost if the required signal head is already in place. ▪ Restricting left turns with a red light allows protected time for pedestrians to use the crosswalk. ▪ Offers greater protection to turning passenger vehicles, mass transit vehicles, and pedestrians/bicyclists.
Funding	
▪ HSIP	
Key Considerations	
▪ Restricting left turns to only protected phases is most appropriately implemented at signalized intersections of multilane roadways that are particularly challenging to cross; such intersections should have existing left-turn lanes to store turning vehicles during other phases, as is the case with our study area. ▪ Adding protected left-turn phasings, while retaining permissive turning, may be appropriate at any signalized intersection that experiences regular left-turning traffic volumes. All signalized intersections that have permissive left-turn phasing are good candidates for flashing yellow arrows, and this countermeasure is often implemented across a jurisdiction as a policy. Based on the findings of the ECR and initial input from shareholders, the westbound and eastbound legs of the intersection at 25th Avenue would be ideal candidates for protected left-turn phases. ▪ The timing needs of trucks and buses need to be taken into consideration when setting up the signal phase. Vehicle volumes, including turning volumes, will also need to be accounted for. Implementing a protected left turn could reduce the capacity of the intersection or lengthen cycles. ▪ As mentioned earlier in the section that discusses LPIs, the signal phasing details were not known at the time of writing this report. If the traffic signal cycles already include any of the proposed turning movement phases, these countermeasures can be disregarded.	

Intersection Improvements

Proposed Improvement 4: Restrict Right-Turn-On-Red

CMF= 0.98

Description: It is common to restrict drivers from turning right on red lights where pedestrians have a "WALK" signal to pass in front of them. This restricted movement is indicated by signage on signal mast arms, sometimes indicating enforcement times. Additionally, restrictions can be enforced through automated enforcement.

Existing Conditions	Strategy Benefits
▪ Busy intersection with high volumes and no restrictions of the right-turn during the red-light phase.	▪ Pedestrians are offered additional protection by reducing the number of conflicts that pedestrians face with vehicles making a right turn. ▪ When implemented in conjunction with an LPI, restricting right turns on red benefits pedestrians with minimal impact on traffic. ▪ Though the restriction may have some effect on traffic through-put, the safety benefits can be great, especially at facilities with high volumes of pedestrian or bicyclist traffic. ▪ This countermeasure is most effective where regular volumes of pedestrians pass through an intersection and where turning traffic volumes are relatively high. The image shows a traffic signal mast arm against a clear blue sky. On the left, a traffic light is shown with the red light illuminated. To the right of the light, a rectangular white sign with a black border is mounted. The sign features a black circle with a diagonal slash over a right-turn arrow, and the text 'ON RED' is printed below the symbol. Figure 4-30. No Turn On Red Sign Source: Jacobs 2022

Funding

- HSIP

Key Considerations

- Based on initial input from stakeholders, the southbound leg of 25th Avenue and the westbound leg of Maywood Drive were identified as possible candidates.
- This particular countermeasure is often applied at multiple intersections within a municipality to normalize the safe behavior of yielding to pedestrian phases. Removing another variable in the drivers' decision process will be beneficial for all users.

Intersection Improvements

Proposed Improvement 5: High-Friction Surface Treatment

CMF= 0.529

Description: High-friction surface treatments are intended to increase the friction between a vehicle's tire and the roadway surface, often reducing the necessary stopping distance, as shown in Figure 4-31.

Existing Conditions	Strategy Benefits
- More than 20 percent of all severity crashes occurred with a non-dry roadway surface. - More than 37 percent of all crashes were rear-end crashes.	- Helps to prevent or reduce the severity of crashes due to potential deficiencies in pavement friction. - Beneficial for heavy vehicles, which require longer stopping distances. Figure 4-31. Illustration of Reduced Stopping Distance²² <i>Source: PennDOT, undated</i>
Funding	
Invest in Cook	
Key Considerations	
- As the north leg of the intersection services users of the IPP, this countermeasure would be prioritized for the north leg, where IPP users cross 25th Avenue. Deploying the improvement on all legs would be ideal. - In terms of constructability, the existing pavement should be free of any severe cracking, potholes, or rutting.	

Forward Thinking

Saving lives and reducing injuries for all users of the transportation system takes long-term vision, coordination, and commitment to see projects and programs from feasibility to construction. The vision is developed through engagement with the local community, neighboring partners, and village leaders to understand the current needs and future development in the area that will determine expectations and hopes for the area. Next, long-term plans identify specific countermeasures, policies, and programs along with the agencies that will take ownership to put the plans in motion.

Visualizing 25th Avenue corridor as a well-recognized bike route for the north-south riders through Bellwood requires two key implementation factors. The area will need to be a draw for IPP users and community members to gather, explore, and enjoy the IPP and Bellwood. This can be accomplished by providing bike-friendly facilities and placemaking. As interest grows, the area will become a destination and additional features will gain support to clear the path for larger and more impactful community improvements. Simultaneously, steps need to be put in place to begin long term projects. For example, the cross section of the road in the future may accommodate bike lanes while still addressing the needs for commercial vehicles. Additional treatments such as potential IPP reroutes, catchment areas, and/or an overpass structure may require additional right-of-way or reserving right-of-way so that it is ready when projects can be put in place.

By developing the long-term vision, Bellwood will guide area development that supports transportation safety and community engagement for decades to come.

Table 4-6 provides a summary of the countermeasures proposed in order of prioritization. The table includes a rough timeframe from initial steps to completion, cost range, possible partners to coordinate with on implementation, and potential funding sources for each countermeasure.

Table 4-6. Summary of Prioritized Countermeasures/Policies

Emphasis Area/Concern Category #	Prioritized Recommendations by EA/Concern Category	Objective	Action	Timeframe	Cost	First Steps	Possible Partners	Possible Funding Sources
4.1: Bike and Pedestrians	1: High-Visibility Pedestrian Crossings	Create a crossing that is more visible to drivers.	Grind existing pavement markings and replace with 'zebra' or 'ladder' style.	<2 years	Low: <\$25,000	Initiate into routine maintenance schedules	N/A	Safe Streets and Roads for All (SS4A)
	2: Improved Signing and Guidance/Wayfinding	Provide guidance for pedestrians/bicyclists using the IPP.	Install IPP map and bike route signs at the IPP near 25th Avenue.	<2 years	Low: <\$25,000	Consider location and content of signs	IPP Board	Illinois Transportation Enhancement Program (ITEP)
	3: Reroute Pedestrians and Bicyclists	Bring IPP users directly to the existing crosswalk.	Remove existing IPP approximately 550 feet west of 25th Avenue and rebuild path south to the sidewalk on the north side of Madison Street.	2-5 years	Medium: \$25,000-\$100,000	Consider interaction of users with potential businesses on the northwest corner	Business owners	Invest in Cook; ITEP; Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Discretionary Grants
	4: Construct New, Wider Sidewalks	Provide space on the sidewalk for pedestrians, bicyclists, and transit riders.	Remove existing sidewalk on both sides of 25th Avenue north of Madison Street up to the bus stop and along Madison Street west of 25th Avenue. Replace with 7- to 10-foot wide sidewalks.	2-5 years	Medium: \$25,000-\$100,000	Seek funding	N/A	SRTS; ITEP; SS4A; RAISE
	5: Pedestrian/Bicycle Catchment Area	Provide an area for bikes and pedestrians to wait to use the crosswalk.	Build concrete catchment areas on the northwest and northeast quadrants of 25th Avenue and Madison Street/S. Maywood Drive.	2-5 years	Medium: \$25,000-\$100,000	Consider what features are desirable	N/A	Invest in Cook; ITEP; RAISE
	6: Implement Leading Pedestrian Interval	Allow pedestrians to become established in the crosswalk prior to permitting left turns.	Implement adjustments to the signal phasing cycle to allow pedestrians to cross with an all red.	<2 years	Low: <\$25,000	Evaluate existing signal phasing	N/A	Highway Safety Improvement Program (HSIP)
	7: Grade-Separated Crossing	Create a path without conflicts between pedestrians/bicyclists and vehicles.	Build a grade-separated bridge or tunnel across 25th Avenue at the IPP.	5+ years	Very High: >\$1M	Coordinate with utilities; determine ROW needs	Business owners, IPP Board	Invest in Cook; ITEP; SS4A
4.2: Speeding/Aggressive Driving	1: Speed Feedback Devices and Automated Speed Enforcement	Slow down drivers going over the speed limit.	Install speed feedback signs along 25th Avenue, both north and south of Madison Street/S Maywood Drive.	<2 years	Medium: \$25,000-\$100,000	Determine locations on each leg	Law enforcement agencies	SRTS; SS4A
	2: High-Visibility Enforcement Campaigns	Decrease the number of crashes involving speeding/aggressive driving.	Provide an increase in speed and aggressive driving enforcement. Conduct advertisement campaigns letting drivers know of an increase in enforcement.	Continuous	Medium: \$25,000-\$100,000	Contact stakeholders and plan enforcement strategies	Law enforcement agencies; local leaders; media	STEP
	3: Traffic-Calming Features	Reduce speeds along 25th Avenue.	Install trees, planters, and benches on the sidewalks along 25th Avenue to visually narrow the roadway.	2-5 years	Varies	Evaluate options	Businesses, neighborhood residents/groups	ITEP; SS4A
4.3: Heavy Vehicles	1: Improving Visibility + Access Control/Alternative Routes	Reduce truck-related congestion along 25th Avenue.	Create a safer, easier route for deliveries to adjacent properties.	2-5 years	Varies	Contact stakeholders	Surrounding businesses	Invest in Cook
	2: Educational Programs	Provide truck drivers more awareness of pedestrians and bicyclists.	Post signage in break rooms, warehouse areas and delivery bays to remind drivers to watch for pedestrians/bicyclists.	Continuous	Varies	Consider which approaches are more desirable	Surrounding businesses	HSIP; SS4A

Table 4-6. Summary of Prioritized Countermeasures/Policies

Emphasis Area/Concern Category #	Prioritized Recommendations by EA/Concern Category	Objective	Action	Timeframe	Cost	First Steps	Possible Partners	Possible Funding Sources
4.4: Intersection Improvements	1: Modify Signal Phasing for Left-Turning Movements	Protect pedestrians and reduce crashes.	Implement adjustments to the signal phasing cycle to allow for protected left turns. Remove and replace 3 signal heads with 5 signal heads.	<2 years	Medium: \$25,000-\$100,000	Evaluate existing phasing	Village engineering staff	HSIP
	2: Install Advanced Warning Signs	Increase compliance of stopping on red and awareness of the IPP at the intersection.	Install Red-Light Photo-Enforced Ahead and Pedestrian Crossing Ahead signs along 25th Avenue.	<2 years	Low: <\$25,000	Determine which legs need the improvement	Village engineering staff	HSIP; SS4A
	3: Traffic Signal Upgrades	Increase visibility of traffic signals.	Replace 12-inch signal lenses with LED lenses and install reflective yellow backplates on all signal heads.	<2 years	Medium: \$25,000-\$100,000	Evaluate which upgrades are desirable	Village engineering staff	Invest in Cook; HSIP
	4: Restrict Right-Turn-on-Red	Offer safer pedestrian crossings.	Install No Right Turn On Red sign on S Maywood Drive.	<2 years	Low: <\$25,000	Evaluate LOS impacts	Village engineering staff	HSIP
	5: High-Friction Surface Treatment	Reduce crashes due to slick surfaces.	Remove and replace existing asphalt with a high-friction pavement.	2-5 years	Medium: \$25,000-\$100,000	Evaluate existing pavement conditions	Village engineering/maintenance staff	Invest in Cook; SS4A

5. Implementation and Funding

Implementation of Countermeasures

While there are many countermeasures discussed in this SAP, not all are expected to be implemented. Each agency has their own approach to addressing and strategizing for traffic safety. For the Village of Bellwood, the first step would be to adopt the high-level proposals of this SAP to further show a sign of commitment to improving safety for all roadway users.

Since many of the countermeasures discussed in this plan have varying timelines for implementation, the Village should consider prioritizing short-, medium-, and long-term improvements simultaneously. For some countermeasures, evaluating how the construction can be done concurrently might provide the best and easiest approach to constructing each of the features.

Regardless of the level of complexity of each countermeasure, the Village and their stakeholders should equally weight the impact of all countermeasures to determine what is going to be best for the community.

Funding the Future

Funding opportunities vary greatly depending on the source. Some funding sources, like SRTS, require projects that focus on providing improvements to features for a specific type of user, like pedestrians, while others funding opportunities have criteria in place to make the process a competitive-based process (local HSIP). Regardless of the different details associated with obtaining funding, a list of funding opportunities is described below. Additionally, [grants.gov](https://www.grants.gov) serves as a valuable resource for identifying many unique funding opportunities.

[Invest in Cook](#)²³

Invest in Cook provides annual grants to cover the cost of planning, engineering, right-of-way acquisition and construction for transportation improvements consistent with the priorities of *Connecting Cook County*, Cook County's long-range transportation plan. Priorities include prioritizing transit and other transportation alternatives and maintaining and modernizing what already exists.

Funding cycle: Annual

Who can apply: Local governments and private partners

Award: Awards given have ranged from \$8K to over \$1M. Local match may not be needed for very high and high-need communities (Cohort 3 and 4).²⁴ Bellwood is a Cohort 4 municipality.²⁵

Applicable Countermeasures:

- High-visibility pedestrian crossings
- Rerouting pedestrian and bicycle traffic

- Constructing new, wider sidewalks
- Pedestrian/bicycle catchment area
- Grade-separated crossing
- Improving visibility and access control/alternative routes
- Traffic signal upgrades
- High-friction surface treatment

[Illinois Transportation Enhancement Program](#)²⁶

ITEP is a federally funded, competitive grant reimbursement program for alternative modes of transportation. The project must connect travelers with a destination, such as workplaces, businesses, schools, shopping centers, or other communities. There are nine eligible project categories, including Pedestrian/Bicycle Facilities and Streetscapes.

Funding cycle: Annual. The next funding cycle will be announced in the Fall of 2022.

Who can apply:

- Local governments
- Regional transportation authorities
- Transit agencies
- School districts, local education agencies, or schools
- Non-profit entities responsible for administration of local transportation safety programs
- Any other local or regional governmental entity responsible for oversight of transportation or recreational trails that the State determines to be eligible
- Metropolitan planning organizations and state agencies are not eligible.

Award: Up to \$2M per proposal. At least 25% of projects funded will be directed toward projects in high-need communities and the local matching funds required are determined on a sliding scale based on the Community Map score.

Applicable Countermeasures:

- Improved signing and guidance/wayfinding
- Re-routing pedestrian and bicyclist traffic
- Constructing new, wider sidewalks
- Grade separated crossing
- Traffic calming features
- High-visibility pedestrian crossings could be included with the reroute or sidewalk projects

[Local Highway Safety Improvement Program](#)²⁷

Local roadways in Illinois account for roughly 40-45% of all annual fatalities. To counteract this, local HSIP funding is generally advertised via a circular letter that is sent to local agencies in March of every year. Announcements of selected projects then follow in June/July of the same year.²⁸

To qualify for funding, multiple criteria are required for inclusion in the BSPE HS1 application.

- Data-driven crash analysis
- Appropriate countermeasure selection that addresses patterns in crash history
- Economic appraisal benefit-cost analysis must be satisfactory

For more information about local HSIP funding, visit IDOT's website for "local transportation partners/county engineers and local public agencies."

Funding cycle: Annual

Who can apply: Any government entity or non-profit

Award: Funding amounts change by fiscal year, but in FY 2023 IDOT had \$16.4M for local HSIP.

Applicable Countermeasures:

- High-visibility pedestrian crossings
- Implement LPI
- Educational programs
- Modify signal phasing for left-turning movements
- Install advanced warning signs
- Traffic signal upgrades
- Restrict right-turn-on-red

Rebuild Illinois²⁹

Rebuild Illinois is a multi-year capital bill, starting in 2019, to rebuild neglected infrastructure in Illinois through the Fast-Track Public Infrastructure program. Projects eligible range from transportation and water to state facilities and schools. Projects will need to be a bondable capital improvement (a transportation project with an average useful life of at least 13 years).

- Rebuild Illinois Public Infrastructure (RIPI). A grant ceiling of \$5,000,000 per project has been established. Grants for less than \$250,000 will not be awarded.
- Regional Economic Development (RIRED). A grant ceiling of \$2,000,000 per project has been established. Grants for less than \$250,000 will not be awarded.
- Shovel-Ready Sites. The program's objective is to recognize there are sites across Illinois with great economic development potential that required additional investment to become "shovel-ready."

Funding cycle: Annual

Who can apply: Local Public Agencies (LPA)³⁰

Award: RIPI ranges from \$250K to \$5M. RIRED ranges from \$250K to \$2M.

Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Discretionary Grants³¹

RAISE is a reimbursable program that aims to reconfigure the roadway to prioritize cyclists and pedestrian safety. The program is divided into capital projects and planning projects.

Funding cycle: Annual

Who can apply:

- States and the District of Columbia
- Any territory or possession of the United States
- A unit of local government
- A public agency or publicly chartered authority established by 1 or more States
- A special purpose district or public authority with a transportation function, including a port authority
- A federally recognized Indian Tribe or a consortium of such Indian Tribes
- A transit agency
- A multi-state or multijurisdictional group of entities

Award: Urban capital projects range between \$5M and \$45M. Urban planning projects have a maximum award of \$45M. Planning projects have no minimum award. No local match needed for rural, historically disadvantaged, or persistent poverty areas. Based on the Transportation Disadvantaged Census Tract, Bellwood is located in a historically disadvantaged area.

Applicable Countermeasures:

- Rerouting pedestrian and bicyclist traffic
- Construct new, wider sidewalks
- Pedestrian/bicycle catchment area

Safe Routes to School (SRTS)³²

SRTS aims to encourage children to walk and bike to school by funding transportation projects, programs, and initiatives. SRTS funds infrastructure projects that improve conditions for walking and biking within 2 miles of an elementary or middle school (Roosevelt Middle School & Thurgood Marshall Elementary is 2,700 feet from IPP and 2,800 feet from the intersection at 25th Avenue and Madison Street/S Maywood Drive). Projects are expected to comply with the National Environmental Policy Act. The grant covers Construction Costs and Construction Engineering. If the project is in a metropolitan planning organization (MPO), the MPO should be made aware of the project.³³

Funding cycle: Biannual

Who can apply:

- Political subdivisions (municipalities, counties, townships) or other roadway jurisdictions
- Schools and school districts

Award: up to \$250,000

Applicable Countermeasures:

- High-visibility pedestrian crossings
- Rerouting pedestrian and bicycle traffic
- Constructing new, wider sidewalks
- Pedestrian/bicycle catchment area

Safe Streets and Roads for All³⁴

SS4A is a new program aimed at improving traffic safety by reducing crashes particularly for cyclists and pedestrians, and supporting the [U.S. DOT's National Roadway Safety Strategy](#). The program consists of Action Plan Grants, to support working on an action plan, and Implementation Grants, to aid in the implementation of an action plan. Eligible projects must have an action plan or be working on an action plan, and include:

- Implementing improvements along an expanded multimodal network of reconfigured roads with separated bicycle lanes and improved safety features for pedestrian crossings.
- Applying low-cost safety treatments such as rumble strips, wider edge lines, flashing beacons, and better signage along high-crash rural corridors.
- Conducting speed management projects such as implementing traffic calming road design changes and setting appropriate speed limits for all road users.
- Installing safety enhancements such as safer pedestrian crossings, sidewalks, and additional lighting for people walking, rolling, or using mobility assistive devices.
- Addressing alcohol-impaired driving along key corridors through education, outreach, and publicized sobriety checkpoints on weekends and holidays.
- Making street design changes informed by culturally competent education and community outreach.
- Creating safe routes to school and public transit services through multiple activities that lead to people safely.³⁵

Funding cycle: Starts May 2022

Who can apply:

- Metropolitan planning organizations
- Counties, cities, towns, and other special districts that are subdivisions of a state
- Federally recognized tribal governments
- Partnerships comprised of the entities above

Award: \$5 to \$6 billion in grants over FY2022 to 2026. Cost sharing or matching is required.

Applicable Countermeasures:

- High-visibility pedestrian crossings
- Construct new, wider sidewalks
- Speed Feedback Devices and Automated Speed Enforcement
- Grade-separated crossing; traffic-calming features
- Educational Programs
- Install Advanced Warning Signs
- High-Friction Surface Treatment

Sustained Traffic Enforcement Program³⁶

STEP is part of the federal Highway Traffic Safety Grants. The program focuses on specific times of the year and times of the day when fatalities are highest due to alcohol and safety belt noncompliance. Participation in holiday campaigns is required, while weekend, Halloween and Super Bowl campaigns are optional. There is the option to request funding for "impaired driving, occupant protection, and speeding enforcement details outside of holiday campaigns."³⁷

Funding cycle:

Who can apply:

- Local, County and State law enforcement

Award: \$10M total was available for FY 2023. Cost sharing or matching is required.

Applicable Countermeasures:

- High-visibility enforcement campaigns

6. References

- ¹ Crash Modification Clearinghouse. (2022). <http://www.cmfclearinghouse.org>.
- ² Crash Modification Clearinghouse. (n.d.). Study Details. <https://bit.ly/3rtI30a>.
- ³ Federal Highway Administration. "Safety Data and Analysis: Applying a Method to Analyze Multiple CMFs." YouTube.com. (December 16, 2019). <https://bit.ly/3JG15a4>.
- ⁴ Crash Modification Clearinghouse. (n.d.). CMF/CRF Values. CMF ID 4123. <https://bit.ly/3JG53zu>.
- ⁵ Crash Modification Clearinghouse. (n.d.). CMF/CRF Values. CMF ID 9259. <https://bit.ly/37T8dmq>.
- ⁶ Crash Modification Clearinghouse. (n.d.). CMF/CRF Values. CMF ID 9916. <https://bit.ly/3xAv94v>.
- ⁷ Crash Modification Clearinghouse. (n.d.). CMF/CRF Values. CMF ID 2197. <https://bit.ly/3vpFY6C>.
- ⁸ National Organization of City Transportation Officials. Urban Street Design Guide. (October 2013). <https://bit.ly/3rsLhRC>.
- ⁹ Ormsby, David. "Thompson: \$2.9 Million Grant for Broadview Bike Path on 25th Ave." *Chicago, IL Patch*. (February 9, 2022). <https://bit.ly/3Oj hvJc>.
- ¹⁰ Crash Modification Clearinghouse. (n.d.). CMF/CRF Values. CMF ID 2195. <https://bit.ly/3rtL40u>.
- ¹¹ Crash Modification Clearinghouse. (n.d.). CMF/CRF Values. CMF ID 586. <https://bit.ly/3vl64YG>.
- ¹² National Highway Traffic Safety Administration. High Visibility Enforcement (HVE) Toolkit. (n.d.). <https://bit.ly/3vf5bAE>.
- ¹³ Martschinke, Sean/IDOT, email to Jacobs, May 5, 2022.
- ¹⁴ Crash Modification Clearinghouse. (n.d.). CMF/CRF Values. CMF ID 3097. <https://bit.ly/3xBDMvT>.
- ¹⁵ Crash Modification Clearinghouse. (n.d.). CMF/CRF Values. CMF ID 8474. <https://bit.ly/38Jli0I>.
- ¹⁶ Crash Modification Clearinghouse. (n.d.). CMF/CRF Values. CMF ID 1410. <https://bit.ly/3jGBX8r>.
- ¹⁷ Crash Modification Clearinghouse. (n.d.). CMF/CRF Values. CMF ID 4270. <https://bit.ly/38W5Fo3>.
- ¹⁸ Crash Modification Clearinghouse. (n.d.). CMF/CRF Values. CMF ID 5194. <https://bit.ly/37VDapN>.
- ¹⁹ Crash Modification Clearinghouse. (n.d.). CMF/CRF Values. CMF ID 10318. <https://bit.ly/3jOUAqN>.
- ²⁰ Giordano, L. "Are WA traffic cameras reducing dangerous driving or making it worse?" Crosscut.com. (January 31, 2022). <https://bit.ly/3EkQO10>.
- ²¹ Lake County Division of Transportation. "Flashing Yellow Arrow Traffic Signals: Lake County, IL." Lake County, Illinois, (May 2022). <https://www.lakecountyil.gov/4667/Flashing-Yellow-Arrow-Traffic-Signals>.

-
- ²² Pennsylvania Department of Transportation. High Friction Surface Treatment. (n.d.) <https://bit.ly/3jISUiL>.
- ²³ Cook County Government. Invest in Cook. Accessed April 1, 2022. <https://www.cookcountyil.gov/investincook>.
- ²⁴ Cook County Department of Transportation and Highways. "Invest in Cook FY2022 Call for Projects." (January 12, 2022). <https://bit.ly/3kJGxDH>.
- ²⁵ Chicago Metropolitan Agency for Planning (CMAP). FY20 Community Cohorts. (February 10, 2020). <https://bit.ly/37ntSTP>.
- ²⁶ Illinois Department of Transportation. (n.d.). Illinois Transportation Enhancement Program. <https://bit.ly/3xuqaSU>.
- ²⁷ Illinois Department of Transportation. Highway Safety Improvement Program (HSIP). <https://bit.ly/3kKVqp9>.
- ²⁸ Active Transportation Alliance. 2016. PED and Bike Funding Sources in Cook County. September 9. <https://bit.ly/3vMqo6O>.
- ²⁹ Illinois Department of Commerce and Economic Opportunity (DCEO). (n.d.) Rebuild Illinois Programs. <https://bit.ly/3vHzDoH>.
- ³⁰ IGFOA's Technical Accounting Review Committee (TARC). "Rebuild Illinois Bond Funds to Local Public Agencies." Illinois Government Finance Officers Association (IGFOA). (June 2020). https://www.igfoa.org/content/documents/whitepaper_rebuild_illinois.pdf.
- ³¹ U.S. Department of Transportation. RAISE Discretionary Grants. (January 28, 2022). <https://www.transportation.gov/RAISEgrants>.
- ³² Illinois Department of Transportation. "Illinois Safe Routes to School Program." Safe Routes to School. (2021). <https://bit.ly/38S9vye>.
- ³³ Active Transportation Alliance. SRTS & ITEP Grant Resources. (September 14, 2021). <https://activetrans.org/itep>.
- ³⁴ U.S. Department of Transportation. Safe Streets and Roads for All (SS4A) Grant Program. (May 16, 2022). <https://www.transportation.gov/SS4A>.
- ³⁵ U.S. Department of Transportation. *Safe Streets and Roads for All (SS4A) Fact Sheet*. (March 2022).
- ³⁶ Illinois Department of Transportation. Illinois Traffic Safety Grants. Transportation Safety Grants: Current Grant Opportunities. <https://bit.ly/3OWpfRv>.
- ³⁷ Illinois Division of Transportation Safety (DTS) Grants (Illinois). (n.d.) Public Safety Grants. <https://bit.ly/3kJHjk5>.