Bikeways and Trails Plan

Spring 2018
Clients:

Village of Palos Park
Chicago Metropolitan Agency for Planning (CMAP)

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The Village of Palos Park is a growing municipality located approximately 18 miles southwest of downtown Chicago, neighboring both DuPage and Will County. The Village has a distinct advantage due to its topography and its abundance of forest preserves unique among communities in northwestern Illinois. The abundance of natural features and access to open space is a huge draw for residents and visitors alike. According to the 2014 American Community Survey five-year estimates, the Village grew 3.4% since 2000 with just under 5,000 residents. However, in early 2016, the Village annexed land just west of its previous boundaries and grew its land area 63% from 4.3 square miles to 7 square miles. This annexation resulted in the Village being composed of 5 major non-contiguous tracts that can be accessed through several major roadways and forest preserve trails.

The Forest Preserve District of Cook County (FPDCC) owns and manages the forest preserves that surround and separate major parts of the Village. These preserves are home to world class trail systems where local residents can access nature and enjoy the outdoors. Due to its close proximity to the City of Chicago, these trails also appeal to city dwellers and members of the surrounding communities looking to enjoy nature. The year-round trail systems are not only available to bikers and walkers, but select trails are enjoyed by horseback riders, mountain bikers, and even winter sport enthusiasts. The trails range from unpaved, single track trails geared towards mountain bikers to newly constructed trails such as the Cal-Sag Trail, a paved, multipurpose hiking and biking trail that can be enjoyed by families.
SECTION I: INTRODUCTION & REGIONAL CONTEXT

PROJECT STUDY AREA

Project Purpose

This Bikeways and Trails Plan aims to identify short- and long-term bikeway projects that will lead to a comprehensive, connected network to enable safe and comfortable travel by bicycle throughout the entire community. The data used in this plan was gathered from stakeholder meetings, public outreach events, field observations, national publications on bicycle and trail planning, and municipal and regional agencies including: The Village of Palos Park, The Forest Preserves of Cook County, The Illinois Department of Transportation, and The Cook County Department of Transportation and Highways. Overall, this is a long-term plan that is intended to serve as a guide to inform the Village’s policies and decisions regarding future infrastructure. The Village recognizes that many of the proposed improvements will require significant modifications to the existing conditions that are likely only possible with full reconstruction and significant coordination with external stakeholders.

Project Goals

• Provide safe transportation networks that accommodate all modes
• Create safe access points and improve connectivity to the trail system for all modes of travel
• Attract visitors from the regional trail systems into the community
• Improve the visibility and safety of trail crossings
• Encourage the use of bicycles as a viable transportation option
• Improve connectivity between the east and west portions of the Village
Project Components

Existing Conditions
This report catalogs and analyzes the existing bicycle network, outlining the existing efforts previously undertaken and identifies opportunities to provide a more robust network.

Priority Projects
Public feedback and discussions with the steering committee were used to identify three priority projects. A high and low impact solutions were designed for each project.

Public Engagement
To reflect the suggestions and first hand knowledge of residents living in Palos Park, multiple outreach events were held over the course of the project. Opportunities to give feedback included: pop-up events, public meetings, and a project website.

Recommendations
Final recommendations were developed from the analysis and public input. They focus on improving the Village’s bikeability and connections to its paved trail system.

Project Steering Committee
To ensure a diverse and representative voice of the community and major stakeholders, as well as a Steering Committee was assembled. The Steering Committee was comprised of:
- Residents and representatives from private businesses
- The Village of Palos Park
- The Forest Preserve District of Cook County
- Cook County Department of Transportation and Highways
- Illinois Department of Transportation, and
- Palos Park Pedalers Bike Club
As with most communities, the majority of streets within Palos Park are local streets, carrying low traffic volumes at relatively low speeds. Most of these local streets allow bidirectional travel without centerlines or other striping, and do not have sidewalks. Bike riders typically prefer the low-traffic, low-speed conditions seen on local streets.1

Collector streets connect local streets to larger arterial streets. These roadways tend to have medium speeds and traffic volumes. To feel comfortable on collector streets, some separation between vehicles and cyclists is required for the average rider to feel comfortable, such as a paved shoulder or bike lane.

Arterials roads have higher speeds, more lanes, and heavy traffic flow, which typically require dedicated bike lanes for the average cyclist to feel comfortable and—depending on the traffic volume and speeds—may even require physically separated lanes. There are currently no bike lanes (standard or separated) in Palos Park.

1“Small Town and Rural Multimodal Networks. US Department of Transportation Federal Highway Administration. December 2016. I-8”
The five major, disconnected tracts that comprise the Village of Palos Park are separated by expanses of Forest Preserve, making it difficult to create a cohesive Village-wide bicycle network. However, the Village has pursued the following initiatives to improve and enhance biking conditions in Palos Park.¹

1. Per the 2009 Comprehensive plan, bicyclists are designated to use sidewalks along 123rd to foster off-road connections to the Metra Station and municipal buildings along McCarthy Road. But at 4 feet in width, balancing the safety of both pedestrians and bicyclists along these sidewalks is difficult.

2. The Village has installed signs along what are considered bikeways opportunity streets after conducting a study in the fall of 2008. These signs indicate streets help create a network that connects Southwest Suburban Montessori, Palos East Elementary, and Palos South Middle Schools to the Metra Station and the Village Green.

3. Forest Preserve Trails provide Palos Park with access to a larger, regional bicycle network, including the 26-mile Cal-Sag Trail² and the 33-mile Tinley Creek Trail. Where roadways are lacking or cannot provide safe bicycle travel, these trails can be used as a means of transportation for the residents of Palos Park and can be utilized as bicycle routes both to destinations within the Village and to Forest Preserve trails and other amenities.

¹MUTCD guidance recommends a minimum of 8-feet, with 10-feet or more preferred.
²3 miles existing; additional 13 programmed.
SECTION II: EXISTING CONDITIONS SUMMARY

BICYCLE LEVEL OF TRAFFIC STRESS ANALYSIS

The Bicycle Level of Traffic Stress (LTS) analysis evaluates the level of stress perceived by bicyclists as they travel along a roadway, ranging from LTS 1, in which most people are comfortable on bike, to LTS 4, in which only very experienced and confident bicyclists are comfortable. This analysis was used to rate all streets in the Village of Palos Park area.

This analysis found that 67% (or 35 miles) of roadways in Palos Park are LTS 1 or 2, however they are clustered within residential neighborhoods and lack safe access to key community destinations, creating islands of internal connectivity. Although relatively few, LTS 3 and 4 roadways are the key connections that provide direct access across neighborhoods. Depending on speed limit and AADT, physically separated bicycle infrastructure is recommended to increase safety. Future bicycle improvements to LTS 3 and 4 roadways are vital to enhancing connectivity and accessibility in the region.

### Bicycle Level of Traffic Stress

<table>
<thead>
<tr>
<th>Speed Limit</th>
<th>2-3 Lanes</th>
<th>4-5 Lanes</th>
<th>6+ Lanes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 25 mph</td>
<td>LTS 1 or 2</td>
<td>LTS 3</td>
<td>LTS 4</td>
</tr>
<tr>
<td>30 mph</td>
<td>LTS 2 or 3</td>
<td>LTS 4</td>
<td>LTS 4</td>
</tr>
<tr>
<td>35+ mph</td>
<td>LTS 4</td>
<td>LTS 4</td>
<td>LTS 4</td>
</tr>
</tbody>
</table>
SECTION II: EXISTING CONDITIONS SUMMARY

ACCESS POINT TO EXISTING TRAILS

Access to paved trails was identified by the public and stakeholders as one of the top priorities as a destination to reach by bike. To understand the baseline of access, an inventory of access points trails was used to create bike-sheds around each paved access point. These bikesheds, highlighted above in red, demonstrate the area that can be reached by roadways or existing trails within a 5-minute bike ride-along a comfortable route.

While there is some connectivity between the low-stress roadway network and trail access points exists, it is self-contained and does not connect to the Villages key destinations. The Cal-Sag Trail is a major asset, but short of driving, residents of neighboring Palos Heights have safer and better access than residents of Palos Park. This analysis demonstrates the lack of safe and comfortable access to paved trails the Village offers. The lack of connectivity hinders access for residents of the Village and could discourage regional bicyclists from exploring the Village.
To ensure the Plan’s final recommendations are aligned with the community’s needs, the project team conducted a variety of outreach events ranging from pop-up meetings, bike tours, and online engagement activities, the key findings of which are summarized below:

**ONLINE ENGAGEMENT**

The project website was home to all relevant documents and photos, upcoming events promoting the project, and hosted online surveys and an Idea Map. Residents suggested improvements, connections, and designations through the site. The website was erected to educate the community and ensure residents who could not attend outreach events had an opportunity to voice their opinion. It also offered residents an opportunity to sign up to receive updates regarding the project. The online survey was accessible throughout the project timeline and advertised on the Village’s social media accounts and sent out in email blasts. Some of the key takeaways was to increase/enhance facilities that connect to the Metra Station and Cal Sag Trail and to improve bicycle signage, particularly in relation to nearby Village streets and key destinations.

**QUICK POLLS**

Part of the website included a Quick Poll. Users were prompted with questions to understand trail trends, use characteristics, and level of comfort. The following represent feedback from this online polling. Some of the key findings are presented below and on the following page.

What did residents have to say about biking in Palos Park?

- 65% ride their bike one or more times a week
- 78% ride their bike for recreation and exercise
- 65% feel safe biking throughout the community
Considering that new bike facilities may impact roadway character, which roads are most ideal for improved bike connections to destinations and trails?

- 86th Ave
- McCarthy Rd
- 104th/Willow Springs Rd
- 119th St
- Other

Which roadways are most difficult to cross on bicycle?

- 80th Ave: 15.2%
- 131st St: 15.2%
- 80th Ave: 5.0%
- 86th Ave: 3.0%
- 104th St/Willow Springs Rd: 3.0%
- Will Cook Rd: 3.0%
- Bell Rd: 3.0%
- Wolf Rd: 4.6%
- McCarthy Rd: 4.6%
- Harlem Ave: 16.7%
- Southwest Hwy: 18.2%
- Calumet Sag Rd: 18.2%
- LaGrange Rd: 22.7%

Based on the list below, please select the top 3 roadways you are most comfortable biking along:

- Bell Rd: 23.9%
- Harlem Ave: 15.2%
- LaGrange Rd: 15.2%
- McCarthy Rd: 6.5%
- Southwest Hwy: 6.5%
- Will Cook Rd: 8.7%
- 80th Ave: 13.0%
- 131st St: 15.2%
- 86th Ave: 15.2%
- Other: 2.2%
POPP-UP MEETINGS

Hot Dog Day
The first pop-up meeting was scheduled at one of the Village’s summer events, National Hot Dog Day + Pet Parade on July 27th, 2017. Activities were conducted to understand where popular destinations are located, how people typically travel to them, and where barriers exist. Participants commented on an idea board. Key themes included:

- Incorporate new trails along existing roads
- Enhance access to regional trails
- Improved east-west connections

Holiday Market
The second pop-up meeting was scheduled at one of the Village’s winter events, the Palos Park Holiday Market on December 1st, 2017. At this event, residents were asked to vote on short term, mid term, and long term bicycle connections which informed the Plans priority projects. The majority of residents voted for the following projects:

- 80th Avenue/121st Street/Palos Park Metra Station
- 119th Street
- Willow Springs Road/104th Avenue

PLAN COMMISSION MEETING
On March 15th, an update of the plans progress to date and potential solutions was presented to the Palos Park planning commission. Prior to and following this meeting an outreach activity was available to the public to gain insights regarding their preferences for potential solutions. High and low impact facility treatments were presented on poster boards for the three project identified at the Holiday Market: 119th Street, 121st Street, and Willow Springs Road. Attendants were given stickers and asked to vote on their preferred project.

- The majority of participants voted on high-impact solution
- There were safety concerns at the mid-block crossings
- Members of the public wanted to improve connections to the Cal Sag Trail
Feedback gained from the steering committee and the public was used as a starting point to identify opportunity roadways for bicycle facilities that could adequately balance the needs of all roadway users. The process of identifying these opportunity roadways is summarized below.

1. **Existing bicycle demand**
   To better determine the existing demand (or lack thereof) of streets within the Village, a bicycle “heat map” was collected from Strava. Data regarding the time, distance, and speed traveled by cyclists within the Village from smart phone technology and compiles it to create a color intensity visualization of bicycle use, as seen in the corresponding map. This heatmap was a crucial first step in drafting the proposed bicycle network.

2. **Distance to major destinations**
   To begin to identify a connected network, the full street network in Palos Park was categorized by its length and streets that less than 0.5 miles were removed from the network. This primarily separated the streets that serve small residential areas from the streets that connect those neighborhoods to each other, or regionally. Any remaining streets that were isolated from the network by eliminating the short segments were also removed, as they would lack the connectivity to the larger network.
3. Access to existing trails and roadway attributes

The resulting street network was analyzed for its potential to provide better connections to the paved trail system. Four Cal-Sag connections and five Tinley Creek Trail connections were identified as opportunities to make those connections. Each street that connects to those access points was cataloged, along with the conditions at the access point itself, such as crossing markings and trail signage. Data was collected for each street to understand the potential for a quality bicycle facility and compare among them. This helped to determine which streets were of a higher priority based on the importance and quality of the connection it makes, the role it would play in the network, and the likelihood of implementing a comfortable facility. With these priority connections as a base, additional bicycle routes were identified to further connect residents to destinations throughout the Village. A sample of this evaluation can be seen below:

<table>
<thead>
<tr>
<th>121st Street SW Hwy</th>
<th>123rd Place McCarthy Avenue</th>
<th>127th Street 84th Avenue</th>
<th>131st Street Archer Avenue</th>
<th>McCarthy Road Archer Avenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tinley Creek Trail</td>
<td>Tinley Creek Trail</td>
<td>Tinley Creek Trail</td>
<td>Tinley Creek Trail</td>
<td>Tinley Creek Trail</td>
</tr>
<tr>
<td>Length (Miles)</td>
<td>.48</td>
<td>.19</td>
<td>.77</td>
<td>9.46</td>
</tr>
<tr>
<td>Number of Lanes</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Lane Width</td>
<td>15'</td>
<td>9.5'</td>
<td>12'</td>
<td>12'</td>
</tr>
<tr>
<td>Surface Width</td>
<td>30'</td>
<td>19'</td>
<td>24'</td>
<td>24'</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Municipality</td>
<td>Municipality</td>
<td>Municipality</td>
<td>IDOT, County, Local</td>
</tr>
<tr>
<td>Functional Class</td>
<td>Local, Collector</td>
<td>Local</td>
<td>Local</td>
<td>Collector</td>
</tr>
<tr>
<td>AADT</td>
<td>1,650</td>
<td>20</td>
<td>850</td>
<td>5,700 - 10,500</td>
</tr>
<tr>
<td>Speed Limit</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td># of Paved Access Points</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Key Destinations</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

5. Bike facility identification

This step connects or matches the variety of roadway types within the Village, for which bikeways are proposed, with a range of bikeway types. In order to accommodate pedestrians and bicyclists on different roadways, each with its own geometric and operational characteristics, a range of bicycle facility types were examined for each. Bicycle facility types vary in the amount of separation from the roadway and its traffic, with greater separation providing safe and comfortable accommodation for a wider range of bicyclists (including less experienced and more cautious cyclists), as is outlined in the following section.
The proposed bicycle network, spanning the Village, necessarily contains a wide range of challenges and requirements for facilities that vary by road, and even by road segment. Factors such as: AADT, posted speed limit, jurisdiction, and right-of-way, help determine which facility type is most applicable for each proposed connection. Generally speaking, the higher the traffic volume and vehicle speeds, the greater the separation required to achieve bicyclist comfort and safety. Within the Village of Palos Park, majority of the proposed network is on LTS 4 roadways due to the fact that these roadways connect the 5 major, disconnected parcels of the Village; it will require significant time, commitment, and investment to implement the type of bicycle facility necessary for these roadways. Depending on the changing characteristics of each roadway and the traffic it carries, it may be necessary to use a variety of bicycle facility types as roadways can change drastically within a relatively short distance. The range of bicycle facility types that are appropriate in Palos Park are each described in detail here.
SIDEPATHS

Sidepaths are paths that parallel a roadway. They are at the sidewalk level, separated from vehicles by a curb and landscaped buffer. By design, they are similar to a trail, but are distinguished from a trail by nature of its location along a roadway and function as part of an on-street bicycle network, as opposed to following an independent route through open space. They provide greater physical separation for cyclists and pedestrians along corridors of high traffic volume and speed. The design of a sidepath distinguishes it from a sidewalk in width and material. This type of facility provides bicyclists and pedestrians with more comfort alongside higher volume roadways, such as arterial or collector streets.

**Characteristics**
- Comfortable for all experience levels
- Can replace sidewalks and be shared by bicyclists and pedestrians.
- Provides off-road connections for recreation and commuting
- Can be difficult to get Right-of-Way
- Village must pay for maintenance
- Special design considerations needed at driveways and cross-streets

**Design Guidelines**
- 8 – 12-foot sidepath (10-foot preferred) with a minimum 5-foot separation between motorized travel lanes is recommended.
- A 3-foot clearance between landscaping and the sidepath is desirable.
- Striping and edging to denote two-way travel lanes and path width.

**Candidate Roadways**
- Willow Springs Rd
- Archer Ave
- LaGrange Rd
- 131st St
- 80th Ave
- SW Hwy
- 123rd St
- McCarthy Rd

*2 - 4 Travel Lanes*
BIKE LANES

Conventional bike lanes provide a designated on-street space for bicyclists that is separated from motorized traffic and designated by a solid white line. Buffered bike lanes provide greater separation from motorized traffic through the addition of a painted buffer space. This buffer separates the bike lane from motorized travel lanes. Both forms of bike lanes will have painted bicycle and arrow markings. Conventional bike lanes are appropriate on streets with low speeds and moderate traffic. As speeds and/or traffic volumes increase, a buffer should be added.

Characteristics
- Creates separation between bicyclists and vehicles
- Appeals to a wider cross-section of users than bicycle routes on shared roadways
- Buffered lanes encourage greater distance between vehicles and bicyclists

Candidate Roadways*
- Bell Rd
- 131st St
- 80th Ave
- 86th Ave
- Wolf Rd
- 121st St

Design Guidelines
- 6-foot preferred, minimum 4-foot bike lanes on streets with no curb; 5-foot minimum on streets with curb
- 7 – 8-foot buffered bike lane preferred width.
- For buffers with a width greater than 3-feet, diagonal hatching is required. Otherwise buffers may be denoted by the use of two solid white lines.

*NACTO guidelines recommend a minimum speed limit of 25mph for bike lanes. The Village should consider lowering speed limits along streets that exceed this speed limit.
PAVED SHOULDER

Paved shoulders provide space for bicyclists when no other facility is available. Paved shoulders separate active modes from motorized traffic without requiring significant infrastructure. Paved shoulders are generally designated by the presence of a solid white line separating the shoulder and the travel lane. Paved shoulders are recommended where traffic speeds and volumes are low and where bike lanes are not an option and provide space for pedestrians where sidewalks don’t exist.

**Characteristics**
- Dedicated space for each mode improves all roadway users experience
- Provides stable surface off the roadway when sidewalks aren’t present
- Can reduce struck-from-behind bicycle crashes
- Typically used on rural roadways
- Shoulders must be maintained to keep clean and free of debris for pedestrians and bicycle utilization

**Design Guidelines**
- Minimum 5-foot width on streets with low AADT and speed; up to 8-foot minimum on streets with higher AADT and speed.
- Denoted by a solid white line.

**Candidate Roadways**
- Willow Springs Rd
- Bell Rd
- 119th St
- McCarthy Rd
- 121st St
- SW Hwy
- 86th Ave
- 88th Ave
- Will Cook Rd
- Ford Rd
- Wolf Rd
- 93rd Ave
- Kean Ave
- Powell Rd
SECTION IV: PROPOSED NETWORK RECOMMENDATIONS

BICYCLE BOULEVARD

Bicycle boulevards are designated routes that prioritize bicycle travel over other modes of travel. Bicycle boulevards are designated by enhanced signage and pavement markings and typically provide intersection treatments to slow traffic and provide safe crossing for bicyclists.

Bicycle boulevards are recommended on roadways with an AADT of no more than 3,000 and speed limits are no higher than 25 mph. Bicycle boulevards can be branded through signature signage and/or pavement markings to create a visual, cohesive route and add character to the neighborhood bicycle facilities.

Characteristics
- Indicates shared lane or shared roadway-environment for bicyclists and vehicles
- Alerts vehicles to presence of bicyclists
- Slows traffic

Candidate Roadways
- 86th Ave
- 88th Ave
- 93rd Ave
- Powell Rd

Design Guidelines
- Pavement markings such as shared lane markings that identify the presence of bicyclists
- Intersection and crossing treatments recommended including gateways treatments, pedestrians signs, and bicycle signs
- Speed management tools such as pavement markings, rumble strips, speed humps, chicanes, and chokers.

Image Source: NACTO
ADVISORY SHOULDER

Advisory shoulders, also known as dashed bike lanes by the Federal Highway Administration (FHWA), provide space for bicyclists on roadways that have insufficient space to accommodate conventional or buffered bike lanes. These shoulders are denoted by dashed lane markings and provide a dedicated space for bicyclists or pedestrians where no sidewalks are available, increasing the safety in the area. Advisory shoulders differ from conventional shoulders; they are included in the travel way and vehicular traffic may travel in the advisory shoulder when a bicyclist is not present. Advisory shoulders are currently an experimental treatment by the FHWA and are not included in the 2009 Manual on Uniform Traffic Control Devices (MUTCD). If these facilities are applied, consult the MUTCD website for updates on process and status. Approval is required from the FHWA if seeking federal funding.

Shared Lane Markings

Shared lane markings are an alternative treatment to advisory shoulders and may also be used to designate shared travel space between bicyclists and motorized vehicles and are denoted by the presence of a bike and chevron pavement marking. Shared lane markings should be used to designate the preferred positioning on the roadway for bicyclists.

Design Guidelines

- Single dashed lines denoting an advisory shoulder with a width no less than 4-feet.
- Center two-way lane must meet the 10-foot minimum.

Source: Rural Design Guide

Characteristics

- Indicates a delineated space for bicyclists when present.
- Alerts vehicles to presence of bicyclists.
- Provides space for pedestrian travel where no sidewalks are present

Candidate Roadways

- 119th St
- 86th Ave
- 88th Ave
- Will Cook Rd
- Ford Rd
- 93rd Ave
- Kean Ave
- Powell Rd
Through field visits, using aerial photography, and Google Streetview, an inventory of access points and midblock crossings to both paved and unpaved trails were identified throughout the entire study area. Access points were classified as either a trailhead or where a trail crosses a roadway. A total of 39 access points were cataloged based upon the type of intersection control, and presence of a crosswalk, sidewalk, or signage.

The map above identifies key roadway and trail access points that are likely to be a challenge when implementing improvements to the proposed draft network. The map above also details the 5 minute bikeshed from the identified challenging roadway intersections, using only the draft bike network. A list of tools that can be applied to each of these—and other—intersections within the Village is outlined in the next section.
INTERSECTION & CROSSING DESIGN TOOLS

Intersections should be designed to be predictable, clear, and safe for a variety of pedestrians, bicyclists, and vehicles. One of the most effective ways of achieving these goals is to reduce or minimize the radius of curb space at an intersection. The shape and dimensions of the curb radii has a significant effect on the overall operation and safety at any intersection. Reducing the crossing distance increases pedestrian visibility and decreases vehicle turning speed, ultimately increasing safety for pedestrians and cyclists. Even where concrete curbs are not present, there are alternative ways to reduce the radius of the curb including paint, vertical delineators, or bump-outs.

Along with reducing curb radii, there are other tools to enhance the safety of crossing at intersections that are addressed in this section. While reduced curb radii should be a standard for all roadways, the “candidate roadways” presented below were identified for shorter-term retrofit.

Candidate Intersection
- 119th St & Cal Sag Rd
- Willow Springs Rd & Cal Sag Rd
- Willow Springs Rd & 123rd St/McCarthy Rd

Source: NACTO
**SIGNALIZED CROSSING TOOLS**

The following tools can be applied to signalized intersections. Signals are a powerful crossing tool, and should be used when applicable; if signals are not feasible at a specific intersection then crossing tools should be considered, as outlined below.

**Signal Installation**

Signals are used at intersections that see pedestrian and bicyclist traffic, have moderate to high traffic volumes, have moderate to high traffic speeds, or have multiple lanes that pedestrians or bicyclists may not feel safe crossing. Signals must meet warrants per the Manual on Uniform Traffic Control Devices (MUTCD). They separate users in time to ultimately create a safe and comfortable intersection for multiple modes.

**Candidate Intersection**

- Cal Sag Rd & 86th St

**No Right Turn on Red**

When drivers look for gaps in oncoming traffic to make a right turn on red, they are not looking for pedestrians or bicyclists in the crosswalk and are more likely to hit them. Restricting right turns on red improve safety for pedestrians and bicyclists, particularly where there are frequent conflicts between right-turning vehicles and crossing pedestrians.

**Candidate Intersection**

- Willow Springs Rd & Cal Sag Rd
- Willow Springs Rd & 123rd St/McCarthy Rd
Push Button for Bicycle
Similar to pedestrian push buttons, bicycle push buttons are installed on actuated signalized intersections, allowing bicyclists to press them for green light prioritization.

Candidate Intersection
- Willow Springs Rd & Calumet Sag Rd
- Willow Springs Rd & 123rd St/McCarthy Rd

Leading Pedestrian Signal
A Leading Pedestrian Interval (LPI) gives pedestrians and bicyclists a 3-7 second head start when entering an intersection with a corresponding green light. MUTCD standards recommend a walking speed of 3.5 feet per second be used to calculate the Pedestrian Clearance Time to cross intersections. Pedestrian countdown signals are required to be used unless the pedestrian change interval is under 7 seconds in time.

Candidate Intersection
- 119th & Cal Sag Rd

Pedestrian Hybrid Beacons
A pedestrian hybrid beacon (PHB) is a flashing warning beacon that is activated by pedestrians when needed. PHB’s are used to create intermittent control where a full signal is not warranted, and are particularly useful in locations where traditional crosswalk signings and markings do not result in adequate motorist yielding rates, such as mid-block crossings or uncontrolled mainline crossing points. PHBs have been shown to significantly reduce pedestrian crashes and are becoming increasingly popular with State and local transportation agencies to fill the gap between unprotected crosswalks and full traffic signals to serve pedestrians. Currently, IDOT District 1 does not allow the use of PHBs.

Candidate Intersection
- Mid-block crossing at Willow Springs Rd & Sag Valley Trail
- Mid-block crossing at SW Highway and 121st St
- 119th & 86th St
- Intersection at 119th St & LaGrange Rd
CROSSING TOOLS

Crossing tools alert drivers of the presence of pedestrians or bicyclists, while giving them a designated space to cross a roadway. These tools should be used at intersections where more clearly defined space for pedestrians and vehicles is necessary.

In-Street Signs
In-street signs are movable, flexible signs that can be placed on the center line of a roadway immediately before or on a crosswalk to remind drivers to stop for pedestrians and bicyclists crossing. Other signs that can be used for an in-street sign include “Turning Vehicles Yield to Pedestrians” and “School Crossing”, if applicable.

Candidate Intersection
- Willow Springs Rd & Sag Valley Trail
- 119th St & Cal Sag Rd
- Cal Sag Rd & 86th

Pedestrian-Actuated Conspicuity Enhancement
Formerly known as Rectangular Rapid Flash Beacon (RRFB), Pedestrian-Actuated Conspicuity Enhancement’s (PACE) are flashing beacons that can be activated when needed. PACE’s can enhance safety and reduce crashes between vehicles and pedestrians or bicyclists by increasing driver awareness of potential conflicts. RRFB’s should be installed at intersections in which high volumes of pedestrian or bicyclist crossings are anticipated. Rectangular rapid flashing beacons (RRFB) can have sensors, be wirelessly synchronized when a pedestrian

Candidate Intersection
- 86th St & Cal Sag Rd
- 121st St & 80th St
- 121st St & SW Hwy
Pedestrian Refuge Island
A pedestrian refuge island is a curb-protected space that simplifies the crossing by requiring the pedestrian or bicyclist to cross one direction of travel at a time. The island is placed between opposing traffic lanes and should maintain a minimum of 6-feet in width to accommodate two 2-foot detectable warning tiles with 2-feet of space between them.

Candidate Intersection
- Willow Springs Rd & Cal Sag Rd
- Willow Springs Rd & 123rd St/McCarthy Rd
- 119th St & Calumet Sag Rd
- 121st St & SW Hwy

Raised Crosswalk
A raised crosswalk is a longer version of a speed hump with a flat surface that matches or exceeds the width of the crosswalk. A raised crosswalk gives priority to pedestrians and bicyclists by putting them above the roadway surface. The minimum recommended width for the surface of the raised crosswalk is 10-feet and should match the middle of the path leading up to it. Crosswalk markings mark the top and chevrons mark the slope to alert drivers of the grade changes. The raised crossings will help passively enforce drivers yielding to trail users.

Candidate Intersection
- Willow Springs Rd & Sag Valley Trail
- 119th St & Cal Sag Rd
- 121st St & SW Hwy
- Timber Ln & 119th St

Trail Crossing Signage
Trail crossing signage can be used as a supplementary tool to draw attention to a bicycle facility or pedestrian crossing. For example, a warning sign can be installed to alert turning drivers of the crossing, or bicycle/pedestrian crossing warning signs can be placed at the crossing, on the side street.

Candidate Intersection
- Willow Springs Rd & 123rd St/McCarthy Rd
- 119th St & LaGrange Rd
- 119th St & 86th St
- 121st St & Tinley Creek Trail
- 121st St & SW Hwy
- Timber Ln & 119th St
Bicycle Crossing Markings
Bicycle intersection crossing markings indicate the intended path of bicyclists and guide bicyclists on a safe and direct path through intersections while communicating their path to drivers.

**Candidate Intersection**
- Willow Springs Rd & Cal Sag Rd
- 119th St & LaGrange Rd
- 119th St & 86th St
- 119th St & Cal Sag Rd
- 121st St & SW Hwy
- Timber Ln & 119th St

Source: Rural Design Guide

Sidepath Geometry
Altering a sidepath’s geometry away from the parallel roadway at an oncoming intersection slows bicyclists down before approaching an intersection and increases their distance from vehicles. The American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities recommends that the sidepath be moved away from the roadway, to a midblock location and then shift towards the intersection. A key objective of this design is to reduce speeds of both trail users and drivers at the crossing.

**Candidate Intersection**
- Willow Springs Rd & Sag Valley Trail

Source: Kansas Cyclist

High-Visibility Crosswalk
A high-visibility crosswalk is an effective way to communicate the need for slower speeds to drivers. High-visibility crosswalk markings typically use 2-foot wide white bars at 4-feet on center, and crosswalk warning signs. High visibility crosswalks should be used anywhere a crosswalk is marked.

**Candidate Intersection**
- Willow Springs Rd & 123rd St/McCarthy Rd
- 119th St & LaGrange Rd
- 119th St & 86th St
- 119th St & Cal Sag Rd
- 121st St & SW Hwy
- Timber Ln & 119th St

Source: StreetsblogNYC
Taking into account the data, analysis, and public feedback presented above, three priority projects were identified that, if implemented, can help to adequately balance the needs of all roadway users, improve accessibility to key community destinations, and capitalize upon the existing paved trail network. For each project, both “high impact” and “low impact” solutions were developed and feedback was sought from the public and stakeholders on which of these projects is of the highest priority for short-term implementation.
SECTION IV: PROPOSED NETWORK RECOMMENDATIONS:

PRIORITY PROJECTS

119TH STREET

EXISTING CONDITIONS

ADT: 1,300
Speed: 35
Number of lanes: 2
Jurisdiction: IDOT and Forest Preserve

WHY IT’S IMPORTANT

1. Creates convenient access to the Cal Sag Valley Trail and Tinley Creek Trail
2. Connects to 121st Street priority project and Metra station
3. Provides cyclists with key corridor to access local roads south of the Forest Preserve

KEY CHALLENGES

1. Narrow roadway along 119th Street
2. Un-signalized intersection on 119th Street and 86th Avenue
3. IDOT
4. Topography can prevent bikers/pedestrians from being seen by vehicles
PROPOSED SOLUTIONS

Low-Impact

Key Attributes
This option adds shared lane markings to designate space for bicyclists.

Required Alterations
- Incorporate signage to slow vehicles
- Install high visibility crosswalk at intersection on 119th Street & 86th Avenue
- Discuss potential for design exceptions or a Jurisdictional Transfer from IDOT

High-Impact

Key Attributes
This option extends the roadway to include paved shoulders which are utilized by pedestrians and bicyclists.

Required Alterations
- Widen roadway
- Install a striped shoulder
- Discuss potential for easements from the Forest Preserve
- Install high visibility crosswalk at intersection on 119th Street & 86th Avenue
**SECTION IV: PROPOSED NETWORK RECOMMENDATIONS**

# PRIORITY PROJECTS

**121st Street/Timber Lane**

## EXISTING CONDITIONS

- **ADT:** 1,650
- **Speed:** 20
- **Number of lanes:** 2
- **Jurisdiction:** Village

## WHY IT’S IMPORTANT

1. Creates convenient bike access to the Metra station
2. Provides a seamless connection to regional trails
3. Creates safe mid-block crossing of SW Hwy

## KEY CHALLENGES

1. Bottleneck beneath Metra bridge on 121st Street and 119th Street
2. High traffic volumes on SW Hwy
3. Narrow street curve with low visibility on 119th Street
4. Difficulty crossing 119th at the intersection at Moritz to get to Cal Sag Trail
PROPOSED SOLUTIONS

Low-Impact

**Key Attributes**
This option adds bike lanes or wide shoulders and widens the roadway. These facilities may be used by cyclists of all levels.

**Required Alterations**
- Narrow travel lanes
- Incorporate signage to slow vehicles
- Install bike lanes or paved shoulder

High-Impact

**Key Attributes**
This option creates new curbs and an off-street sidepath on the south side of the street. These facilities may be used by cyclists, pedestrians, runners, and dog walkers.

**Required Alterations**
- Construct sidepath
- Discuss potential for easements to eliminate trees
- Construct sidepath geometry of trail when approaching key intersections
- Install signage approaching bridge to slow vehicles
- Install high visibility crosswalk at SW Hwy crossing
- Reduce/minimize curb radii or create narrow island with pedestrian/bike refuge at intersection of Moritz Avenue and 119th Street
SECTION IV: PROPOSED NETWORK RECOMMENDATIONS

PRIORITY PROJECTS

WILLLOW SPRINGS ROAD

EXISTING CONDITIONS

ADT: 4,050-9,100
Speed: 40-45
Number of lanes: 2
Jurisdiction: Forest Preserve and County

WHY IT’S IMPORTANT

1 Connects cyclists to the Sag Valley Trail
2 Signalized intersection on Cal Sag Rd and Willow Springs Rd connecting to Cal Sag Trail
3 Centrally located North/South connection
4 Parking lot signifies key access point to trailhead

KEY CHALLENGES

1 Large signalized intersection on McCarthy and Willow Springs Road
2 Narrow pavement width on Willow Springs
3 Outside Village incorporated limits and will require support from the County and Forest Preserve District
PROPOSED SOLUTIONS

Low-Impact

Key Attributes
This option extends and enhances the Sag Valley Trail pedestrian crossing pavement markings, adds crossing signage, and extends roadway to include paved shoulders for bicyclists and pedestrians.

Required Alterations
• Widen roadway
• Discuss potential for easements to eliminate trees
• Install high-visibility crosswalk at trail crosswalk
• Increase bike signage

High-Impact

Required Alterations
• Gain approval from County to construct sidepath
• Install high-visibility crosswalk at trail crosswalk
• Increase bike signage
• Reduce/minimize curb radii or create narrow island with pedestrian/bike refuge at intersection of McCarthy/Cal Sag Road and Willow Springs Road

Key Attributes
This option extends and enhances the Sag Valley Trail pedestrian crossing pavement markings, adds crossing signage, and includes a buffered sidepath to the east of Willow Springs Road.
POLICIES

The Village of Palos Park’s Code of Ordinances defers to the Comprehensive Plan (Plan) adopted in December 2009 to provide design guidelines for transportation infrastructure through subdivision regulations. The Plan identifies four functional classifications of streets including the Principal Arterial, Minor Arterial, Collector Streets, and Local Streets. Aside from arterial and collector streets, local streets will maintain a “rural cross section” according to the Plan. Many of these streets within Palos Park do not have curbs or gutters, and retain a width of 20-feet.

The goal of the transportation section of the Plan is to provide “safe and efficient movement of vehicles, bicycles, pedestrians, and equestrians.” The Plan also highlights the need to increase accessibility for bicyclists and pedestrians to destinations across Palos Park, including the Metra Station. In addition to enhanced connections that encourage bicycle transportation to and from the Metra Station, the Station would benefit from encouraging and providing increased bicycle parking.

The remainder of the Code of Ordinances does not specifically address bicyclists and pedestrians, except to designate the utilization of streets to pedestrians and vehicles (Part 12, Title 4, §1240), and for new planned unit developments to include pathway accommodations for bicyclists and pedestrians (Part 12, Title 6, §1270).

It is intended that this document will serve to further the Village’s policies and decisions regarding bike infrastructure.
PREVIOUS PLANS

The following plans which were completed between 2008 and 2010 significantly impact the way pedestrians and bicyclists get around Palos Park. The plans include one regional plan and two municipality specific plans.

**Village of Palos Park Comprehensive Plan**

The Village of Palos Park's Comprehensive Plan was adopted in December of 2009, and includes initiatives to enhance the current bicycle network by creating connections to the planned Cal-Sag Trail and new trails. The proposed trails in the Plan were prioritized to connect to high priority destinations by ways of paths, trails, routes, and lanes.

**GO TO 2040**

In 2010 the Chicago Metropolitan Agency for Planning (CMAP) released their long-range comprehensive plan to guide the growth of the region’s 284 communities through addressing transportation, housing, economic development, open space, environmental issues, and quality of life issues. Promoting investment in active transportation will benefit all roadway users and increase access, mobility, and safety.

**Palos Park Bicycle Plan**

In 2008, the Village worked with Chicago Bicycle Federation to create a prioritized network plan and a bikeway feasibility map of all proposed opportunities which resulted in the installation of signage along on-street routes and the designation of bicycle-use on selected sidewalks.
To improve the coordination and execution of the proposed recommendations, an implementation matrix was created for each roadway. As summarized in the table below, the jurisdiction and duration of implementation was categorized for each roadway. The implementation matrix was derived from discussions with the project steering committee, the roadway's jurisdiction and characteristics, and other potential barriers that were identified throughout the project.

<table>
<thead>
<tr>
<th>Name</th>
<th>Jurisdiction</th>
<th>Immediate (0-1 yr)</th>
<th>Short (2-5 yrs)</th>
<th>Mid (6-10 yrs)</th>
<th>Long (10+ yrs)</th>
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<tbody>
<tr>
<td>119th Street</td>
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<td>80th Avenue</td>
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<td>Powell Road</td>
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<td>Wolf Road</td>
<td>County</td>
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</table>
An estimated cost of facility types is summarized in the table below. Factors included in each of the costs include pavement marking lines, pavement marking letters/symbols, flexible delineators, landscaping restoration, and curb improvements.

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Cost (1/8 mile)</th>
<th>Cost (per mile)</th>
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</thead>
<tbody>
<tr>
<td>Sharrow</td>
<td>$199</td>
<td>$1,593</td>
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<tr>
<td>Striped Bike Lane</td>
<td>$5,023</td>
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<tr>
<td>Buffered Bike Lane</td>
<td>$24,584</td>
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<tr>
<td>Widened Shoulder</td>
<td>$30,000</td>
<td>$240,000</td>
</tr>
<tr>
<td>Multi-Use Path</td>
<td>$154,685</td>
<td>$1,237,480</td>
</tr>
</tbody>
</table>

**FUNDING OPPORTUNITIES**

Significant bicycle facility projects may require grant funding. The primary grant programs that these types of projects are eligible for include the following:

- Congestion Mitigation and Air Quality Improvement Program (CMAQ), administered by CMAP
- Illinois Transportation Enhancements Program (ITEP), administered by IDOT
- Transportation Alternativess Program (ITEP), administered by CMAP
- Surface Transportation Program (STP), administered by Kane/Kendall Council of Mayors.
- Safe Routes to School Program (SRTS), administered by IDOT
- Community Development Block Grant (CDBG), administered by Kane County
- Recreational Trails Program, administered by Illinois Department of Natural Resources
ACTION STEPS
Additionally, the Village should pursue the following key action items for their key priority projects:

Immediate Projects
• Undertake a branding effort to design signage and pavement markings to be included in bicycle boulevards and potentially on signage throughout the Village.
• Begin public outreach along routes for bicycle boulevards

19th Street Priority Project
• Prepare and submit letter to IDOT to inform them of planned projects along roadways of IDOT jurisdiction.
• Identify ROW and pavement width needs
• Identify scope of environmental or structural remediation needed
• Begin coordination with Forest Preserve on any ROW or easement needs

Sample Branding Signage
Berkeley, CA
Portland, OR
Burlington, VT
Portland, OR
RESOURCES

American Association of State Highway and Transportation Professionals (AASHTO)
https://www.transportation.org/

Chicago Metropolitan Agency for Planning's (CMAP) Complete Streets Toolkit
http://www.cmap.illinois.gov/programs/local-ordinances-toolkits/complete-streets/treatments-types-gallery

Federal Highway Administration (FHWA) Small Town and Rural Multimodal Networks
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/

Illinois Department of Transportation (IDOT) Bureau of Design & Environmental (BDE) Manual

Manual on Uniform Traffic Control Devices (MUTCD)
https://mutcd.fhwa.dot.gov/

National Association of City Transportation Officials (NACTO)
https://nacto.org