2021 Pedestrian and Bicycle Master Plan

The Village of Wrightstown

Adopted 11/2/2021

VILLAGE OF Wrightstown EST. 1901

It's Just Right!

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Acknowledgements

Village of Wrightstown 2021 Pedestrian and Bicycle Plan

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1. Evaluation

1.1 Introduction

People walk and ride a bicycle for a variety of reasons including recreation, fitness, commuting to work, and travel to non-work destinations. Both walking and cycling are efficient and inexpensive forms of transportation that can provide a variety of benefits - community health, livability, decreased vehicular traffic, to name a few - with increased use. As communities grow, they should periodically review existing conditions, policies, and procedures to find opportunities for improvement, and to further realize these benefits.

The Village of Wrightstown is growing. Between the 2010 Census (2,676) and the 2020 Census (2,895), the village has grown by about eight percent (about 219 persons) with a lot of that growth occurring in the portion of the village located in Outagamie County. As the village continues to grow, the interest level in walking and bicycling will likely grow. Increased population will also mean that more people are traveling around the community, to a large degree by vehicle. These changing conditions mean more people are using the existing transportation network, but the facilities have largely remained the same. Through working on this plan, the village is proactively working to address long term community needs and desires.

However, the village cannot stop at the provision of facilities if it hopes to develop a culture of bicycling and walking. It must also help to inform motorists and non-motorists of their rights and responsibilities, ensure that they are following local and state laws, and provide incentives for…

Village of Wrightstown Comprehensive Plan Transportation Goals

- Promote the redevelopment of the downtown to contain a mix of uses to make walking and bicycling viable transportation options and minimize traffic on the existing street system.
- Continue to develop a pedestrian system in the village by installing sidewalks in new neighborhoods and providing connections to schools and other pedestrian traffic generators.
- Develop an off-street pedestrian trail system within the village.

…residents and visitors to use the facilities for transportation and recreational purposes.

The Village of Wrightstown Comprehensive Plan recognized the importance of walking and bicycling within the community by including objectives focused on supporting and promoting walking and bicycling.

1.1 Introduction

Bicycle and Pedestrian Plan Purpose

This plan will provide the framework to advance the comprehensive plan's goals and objectives through the following plan elements:

Evaluation

- **Goals and Objectives** – This section states the Bicycle and Pedestrian Plan's goals, and the objectives to achieve those goals.
- **Existing Efforts and Conditions** – This section addresses recent and current engineering, education, enforcement, and encouragement efforts in the village. This section also summarizes the locations and circumstances of reported bicycle and pedestrian crashes in the village.

Engineering

- **Physical Conditions Analysis** – This section includes photos of specific roadway segments and recommends modifications that will improve safety and accessibility and looks at ways to improve bicycle and pedestrian connections throughout the village.

Education and Initiatives

- **Education, Enforcement, Encouragement, Evaluation, and Equity** – This section includes recommendations for each of these elements and identifies specific techniques the village can use to implement the recommendations.

Recommendations

- **Implementation Matrix** – The section includes a matrix that identifies when the village should implement each recommendation, how each recommendation should be implemented (through code or policy modifications, etc.), the entities that are responsible for implementing each recommendation, and grant programs and other resources that can be used to implement the plan's recommendations.

1.1 Introduction – Guiding Principles

The 6 E's – Engineering, Education, Enforcement, Encouragement, Evaluation, and Equity – are key components to a comprehensive, integrated approach to pedestrian and bicycle planning. This approach is used by Safe Routes to School programs, and in recent years has added an E, Equity, to bring the total to six.

The incorporation of education, enforcement, encouragement, evaluation, and equity with the provision of bicycle and pedestrian facilities (engineering) is recognized as essential to creating safe and convenient bicycle and pedestrian systems. This approach to bicycle and pedestrian planning has been used to develop the 2016 Brown County's Bicycle and Pedestrian Plan, other local plans, and is the foundation of WisDOT's Bicycle Transportation Plan. This approach has also been used throughout the country to create comprehensive bicycle and pedestrian systems for many years and is a broad concept to sufficiently address pedestrian and bicycle safety. The 6 E's don't have a specific order, and multiple efforts may be occurring at any given time.

This plan will use this approach to ensure a thorough effort, and that all available options are considered.

1.2 Goals and Objectives

Vision

The Village of Wrightstown will develop a walking and bicycling culture that enables people of all ages and physical abilities to safely and conveniently travel throughout the community. The following goals will support the Village of Wrightstown Comprehensive Plan transportation goals and objectives.

Goal 1.) Build upon existing bicycling and pedestrian networks in the village.

Objectives

a. Identify and prioritize short- and long-term projects to reduce barriers for safe pedestrian travel.

b. Create a seamless corridor system for bicyclists and pedestrians that will provide safe and efficient access to several activity centers within and outside of the village.

Goal 2.) Provide and support educational programming that promotes increased walking and biking in the village.

Objectives

a. Educate people of all abilities of the rights and responsibilities of pedestrians, bicyclists and motorists.

b. Develop village- and school-based programs that educate students and their parents about safe walking and bicycling practices and encourage parents to allow their children to walk or bike to school.

Goal 3.) Create an environment that helps make pedestrians and bicyclists more comfortable traveling around the community.

Objectives

a. Keep law enforcement officers and other personnel trained in current bicycle and pedestrian laws and enforcement techniques.

b. Provide bicycle parking at all parks, government buildings, and other village owned facilities.

c. Encourage other establishments to provide bicycle parking such as schools, major employers, shopping centers, and other major activity centers.

d. Encourage developers to create bicycle and pedestrian friendly developments/site designs.

e. Include requirements for the provision of direct bicycle and pedestrian access from public streets and sidewalks in the village's codes and community design standards.

f. Encourage the mixing of compatible land uses to provide a variety of destinations that can be reached on foot and/or by bicycle.

1.3 Existing Conditions

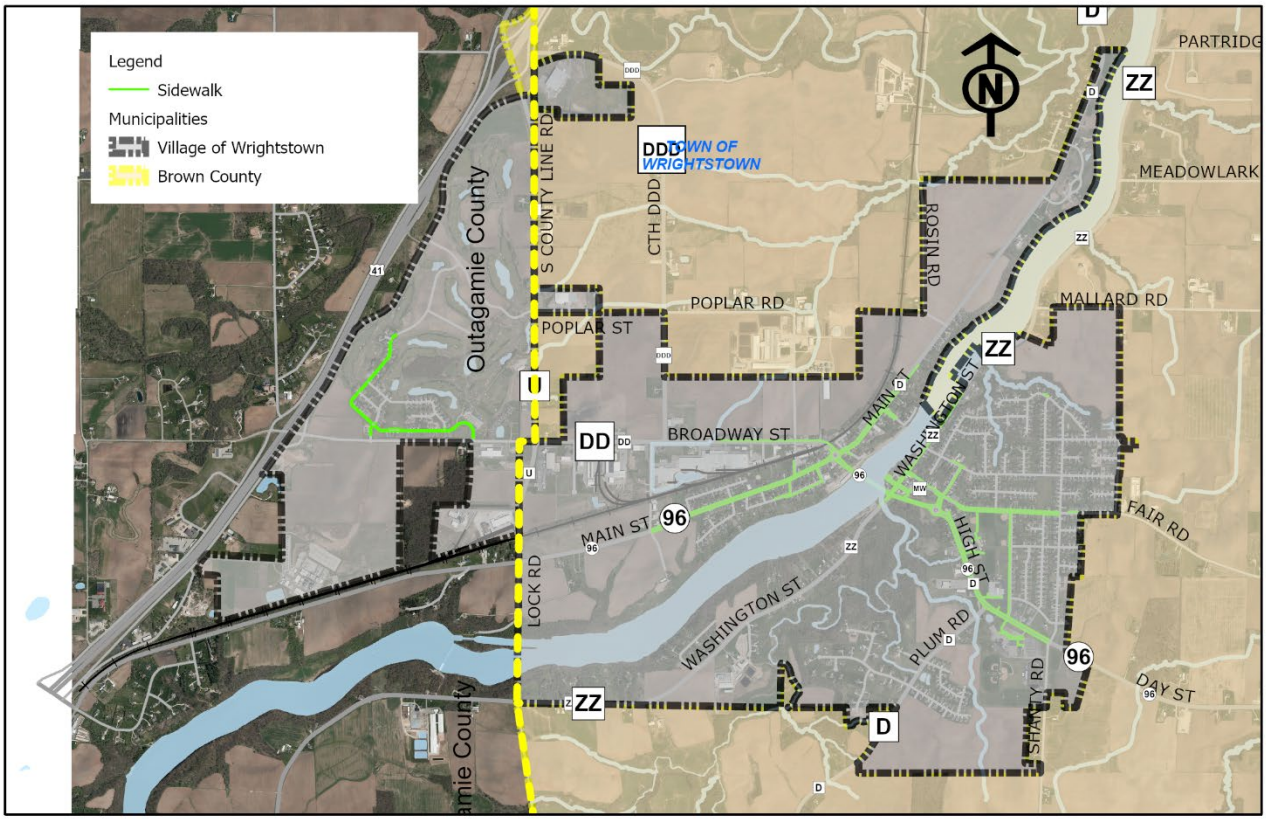
Village Pedestrian Network

The village's existing sidewalk network is largely concentrated in older parts of the community on the near east and west sides of the Fox River.

A major impediment to walking and bicycling are barriers, natural and man-made. The village is bisected by the Fox River, and it also has a busy state highway (96) that travels through downtown.

State Highway 96 is the only road in the village that crosses the Fox River. As the only connection across the Fox River for approximately 5 miles both north and south, it was extremely important that both bicycle and pedestrian facilities were included as part of the reconstruction of the bridge in 2016.

Village of Wrightstown Existing Pedestrian Facilities	
Sidewalks	11.39 Miles
Trails	0.00 Miles
Multi-use Trails	0.00 Miles
Total	**11.39 Miles**



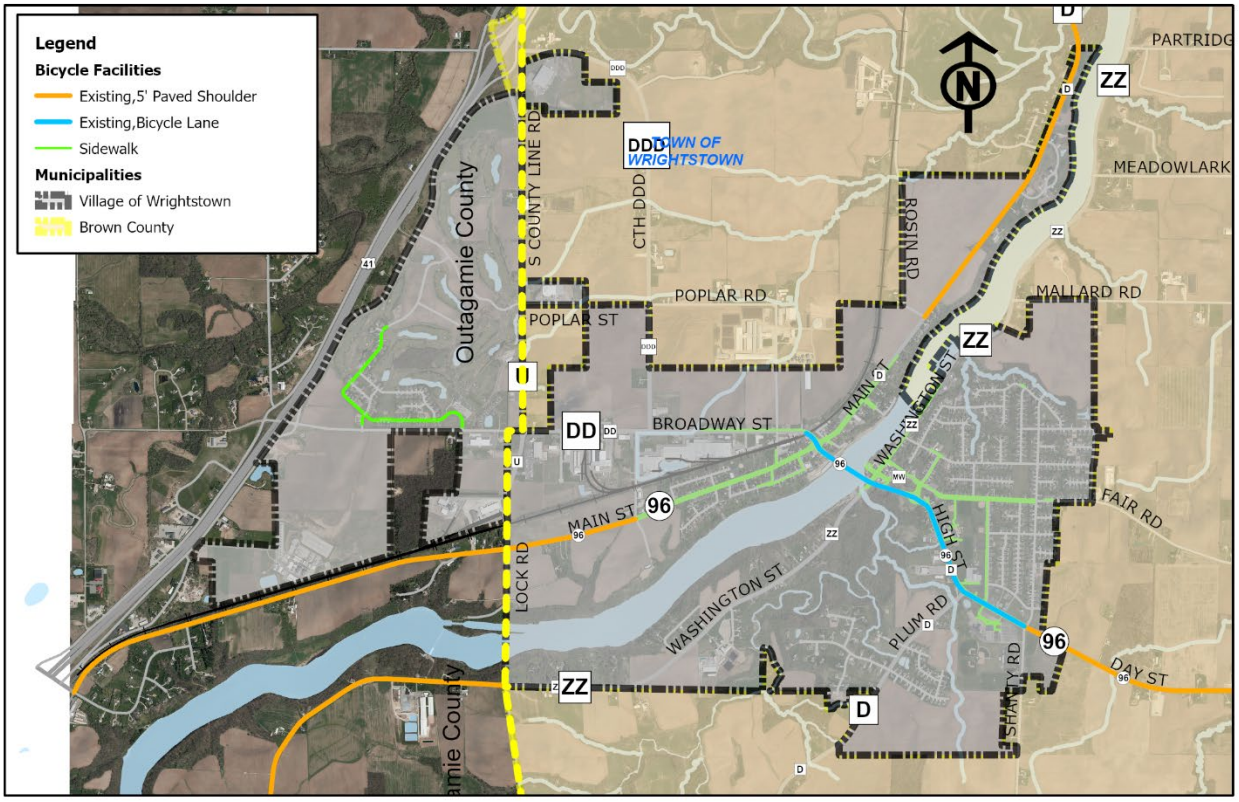
1.3 Existing Conditions

Village Bicycle Network

The village's existing bicycle network is made up of a bicycle lane on the recently reconstructed State Highway 96 and a 5' paved shoulder on County Highway D/Lost Dauphin Road.

Opportunities to cross the Fox River are limited for all forms of transportation. The village is located about halfway between the City of De Pere and the City of Kaukauna and is a popular destination for cyclists traveling along the Fox River because it offers scenic views and gently rolling terrain that cyclists enjoy. In addition to the desirable scenery and terrain, the opportunity to cross the river via a bridge makes the Village of Wrightstown a golden destination for cyclists from both the Green Bay Metropolitan area and the northern Fox Valley communities.

Village of Wrightstown Existing Bicycle Facilities	
5' Paved Shoulder	1.31 Miles
Bicycle Lane	1.20 Miles
Total	**2.51 Miles**



1.3 Existing Conditions

Challenges and Opportunities

While some challenges and opportunities were mentioned on the previous pages, it is important to note that there may be solutions to overcoming the challenges and seizing the opportunities. Below are some examples of the challenges related to bicycle and pedestrian infrastructure. These challenges contribute to the existing sidewalk network gaps, and lack of bicycle connectivity.

Challenges

Natural and Physical Barriers – Natural barriers such as rivers and streams and other geographic features like ravines can be a challenge when planning and constructing bicycle and pedestrian facilities. Other types of barriers can include busy or high-speed roadways.

Facility Maintenance - While a community may have bicycle and pedestrian facilities, it is important to consider the facility's conditions as it may encourage or discourage cyclists and walkers from using those facilities. Keeping sidewalks, multi-use trails, bike lanes, and paved shoulders clear of debris and in good repair decreases hazards and can make the experience less stressful.

Retrofitting Facilities – whether its bicycle facilities, a multi-use trail, or sidewalks, retrofitting facilities into an already developed neighborhood can be a difficult task. There are strategies that the village may be able to utilize to accomplish retrofit projects.

Fox River and the STH 96 Bridge

Source: Google Streetview

Broadway Street

1.3 Existing Conditions

Challenges and Opportunities Continued

Below are examples of the opportunities that the village can capitalize on.

Opportunities

Geography - The village has a relatively small geographic footprint. This is advantageous when considering bicycle and pedestrian improvements. Most people are willing to walk between a quarter and a half mile to a destination while most people are willing to ride their bike between five and ten miles. Much of the village is within walking distance to many destinations and all of the village is within biking distance of these destinations.

Existing Infrastructure – The most important piece of infrastructure in the village is the STH 96 bridge that traverses the Fox River. The bridge was recently reconstructed (2015) and it includes provisions for both bicyclists and pedestrians.

In addition to the STH 96 bridge, STH 96 also serves as the main thoroughfare through the village. STH 96 on the east side of the Fox River was all reconstructed as part of the reconstruction of the bridge in 2015. The highway was constructed to accommodate bicycle lanes however they need to be striped and signed. The project did include sidewalks which connect to the elementary, middle, and high school as well as to the village hall.

There are other provisions that were implemented over the years that were left incomplete such as striped crosswalks that don't connect to corners that have curb cuts for sidewalks, but the sidewalks were never installed. These improvements, while not connected to anything today, should be viewed as an opportunity for future improvements/connectivity.

Community Support – Brown County and the Village of Wrightstown offered opportunities for public input throughout the development of this plan. Additionally, the village also conducted a survey related to parks in 2019. The survey results were shared and utilized as supplemental information for this project. Village residents want improved connectivity and are asking for bicycle and pedestrian facilities throughout the village.

Crosswalks painted and curb cuts but no sidewalks.

1.4 Existing Conditions - Schools

Wrightstown Schools

Schools are a cornerstone of most communities. The buildings are used for various purposes and serve the community nearly year-round. Utilizing this planning process to examine the schools and their relationship to the surrounding neighborhoods is a fundamental step in determining/prioritizing where bicycle and pedestrian families should be located.

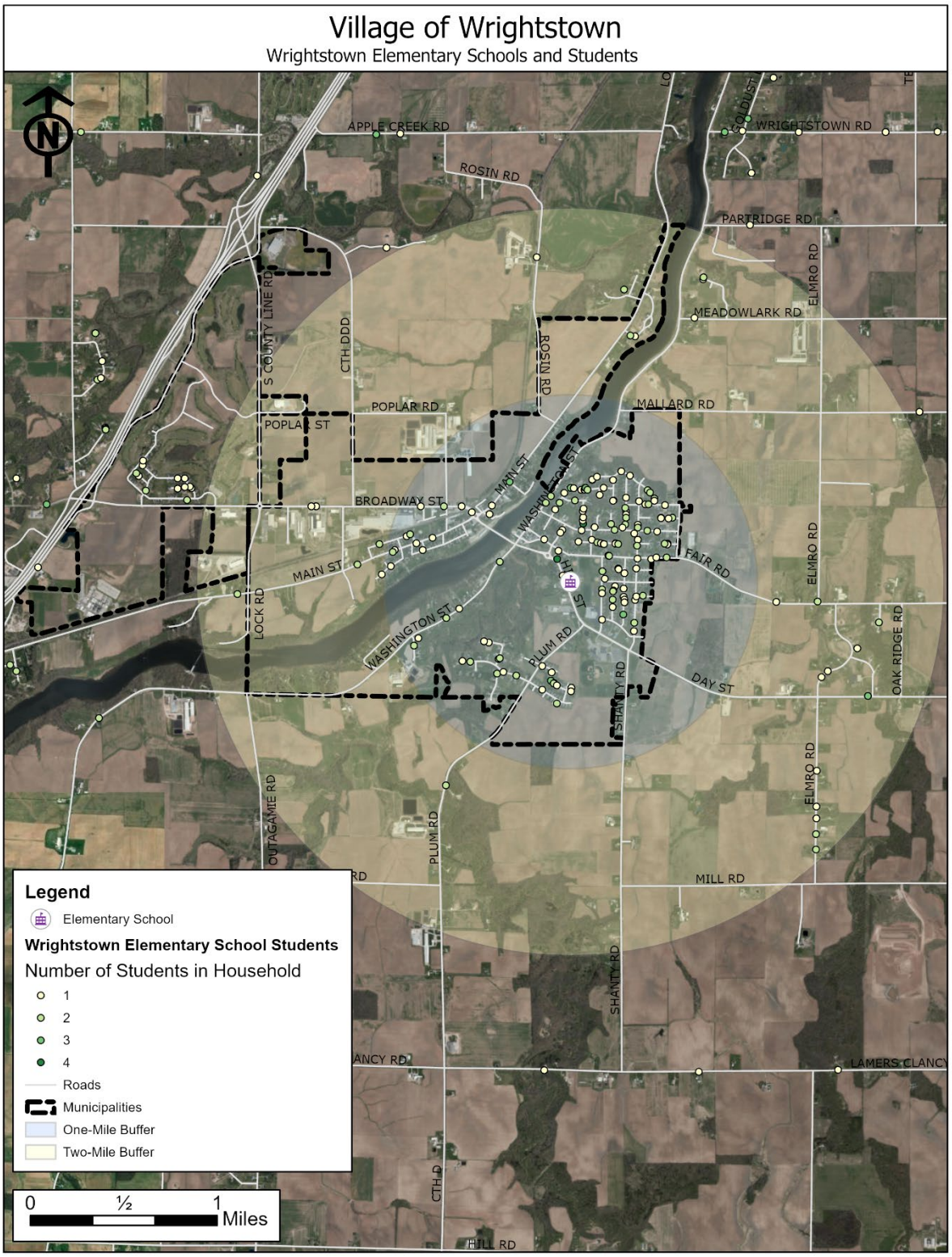
The Village of Wrightstown is home to five schools. Two schools (Saint Clare and Saint John) are private schools while the remaining three are the public schools including Wrightstown Elementary School, Wrightstown Middle School, and Wrightstown High School. St Clare Catholic School is located on Main Street just north of STH 96 and St John Evangelical Lutheran School is located on Clay Street. The public schools are located along the STH 96 corridor on the east side of the village.

The proximity of the schools to each other, specifically the public schools, means that there will be high concentrations of automobile traffic on STH 96 during both morning drop off and afternoon pickup times. This high concentration of automobile traffic combined with the potential for students to walk and bike also creates potential for conflicts.

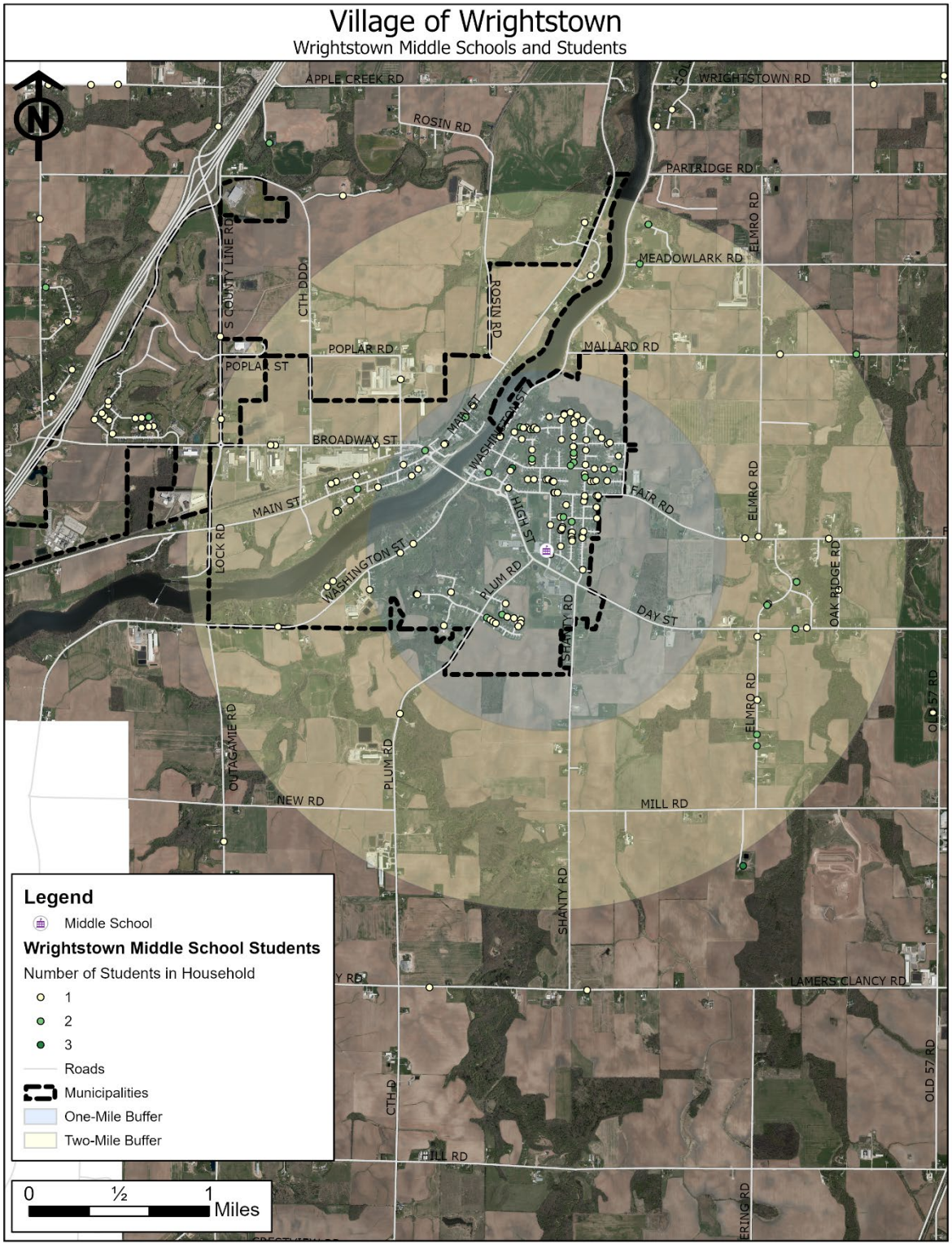
To help reduce the potential for conflicts between children walking and bicycling to school, an analysis of students' proximity to their respective school was completed for Wrightstown Elementary School, Wrightstown Middle School, and Wrightstown High School. This analysis will help determine if there are high concentrations of students in any area where bicycle and pedestrian accommodations should be considered. The following series of maps show the current students per household for each school.

WRIGHTSTOWN COMMUNITY
SCHOOL DISTRICT

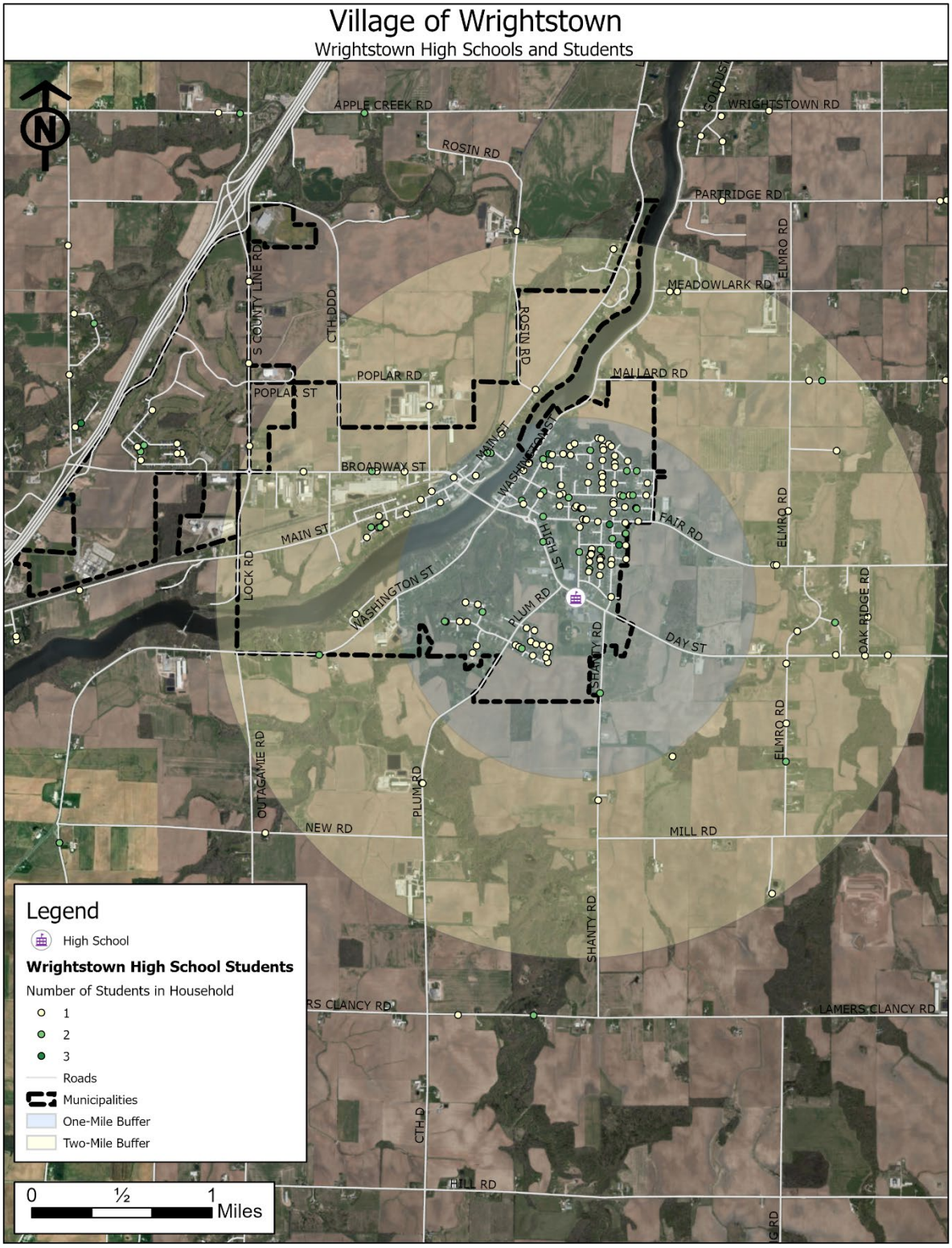
1.4 Existing Conditions - Schools



1.4 Existing Conditions - Schools



1.4 Existing Conditions - Schools



1.5 Existing Conditions – Gap Analysis

Pedestrian Gap Analysis

As part of this plan, a pedestrian network gap analysis was performed to identify areas where pedestrian facilities are not contiguous to another pedestrian facility. The results of the analysis included one gap that can and should be filled in with recommendations found in the following chapters. Below is a description of the gap.

Gap 1 – Fair Road – East of Longwood Lane on the north side of Fair Road

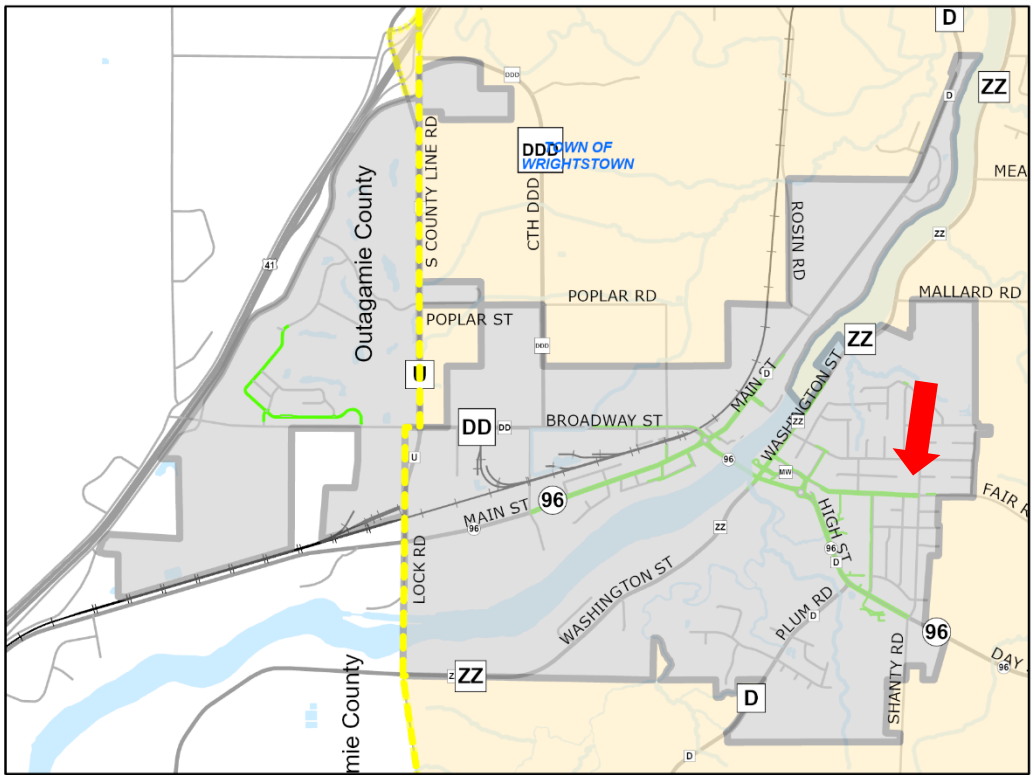
This gap in the sidewalk network is approximately 150 feet long and it appears to have utility poles in the right-of-way which would require a slight modification in the sidewalk alignment. At the corner of Longwood Lane and Fair Road, a curb cut already exists for a sidewalk ramp. The sidewalk could also continue to the east to Country Run Drive to complete that street segment, which would be approximately 736 feet long.

Legend

Gap 1

Sidewalk

Village Boundary



1.5 Existing Conditions – Gap Analysis

Bicycle Gap Analysis

The gap analysis performed for the village's bicycle facilities is shown below. The analysis revealed three gaps between the existing bicycle facilities that are within the village or that abut the village.

Gap 1 – Main Street, Vandyke Street to STH 96

This gap is approximately 0.77 miles long. Main Street is constructed as an urban section (curb and gutter) and is approximately 42 feet wide from curb face to curb face.

Gap 2 – Main Street, STH 96 to Rosin Road

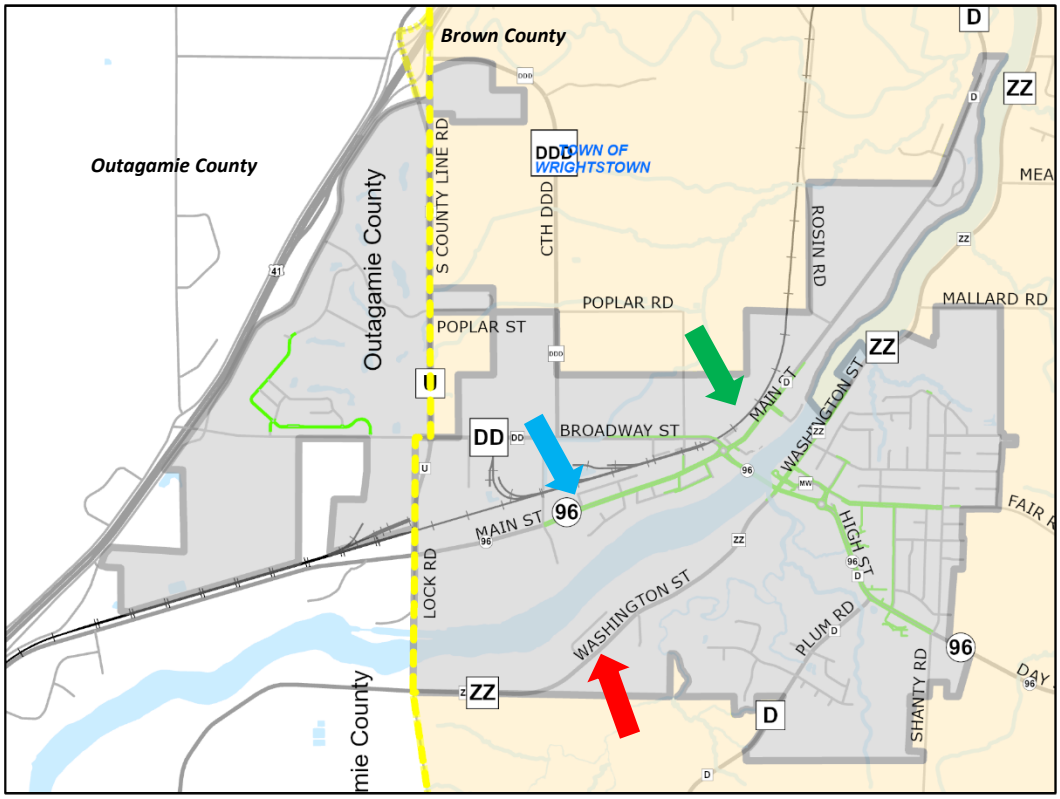
This gap is approximately 0.66 miles long. Main Street is constructed as an urban section (curb and gutter) for the southern half of this gap while the northern half is constructed as a rural section including 5' paved shoulders. The urban portion of this road section is approximately 40 feet from curb face to curb face.

Gap 3 – CTH ZZ, Brown/Outagamie County Line to CTH MW

This gap is approximately 1.8 miles long and is largely characterized as a rural section of road with gravel shoulders and swales. The road base is narrow throughout this gap.

Legend

- Gap 1
- Gap 2
- Gap 3
- 5' Paved Shoulder
- Bike Lane
- Village Boundary



1.5 Existing Conditions – Pavement Condition

WISLR - Pavement Rating

Local municipalities and counties are required to take inventory of pavement conditions on a biannual basis. The following map shows the pavement ratings for all roads in the village (except state highways) and can be used for future road improvement planning, including bicycle and pedestrian facility improvements.

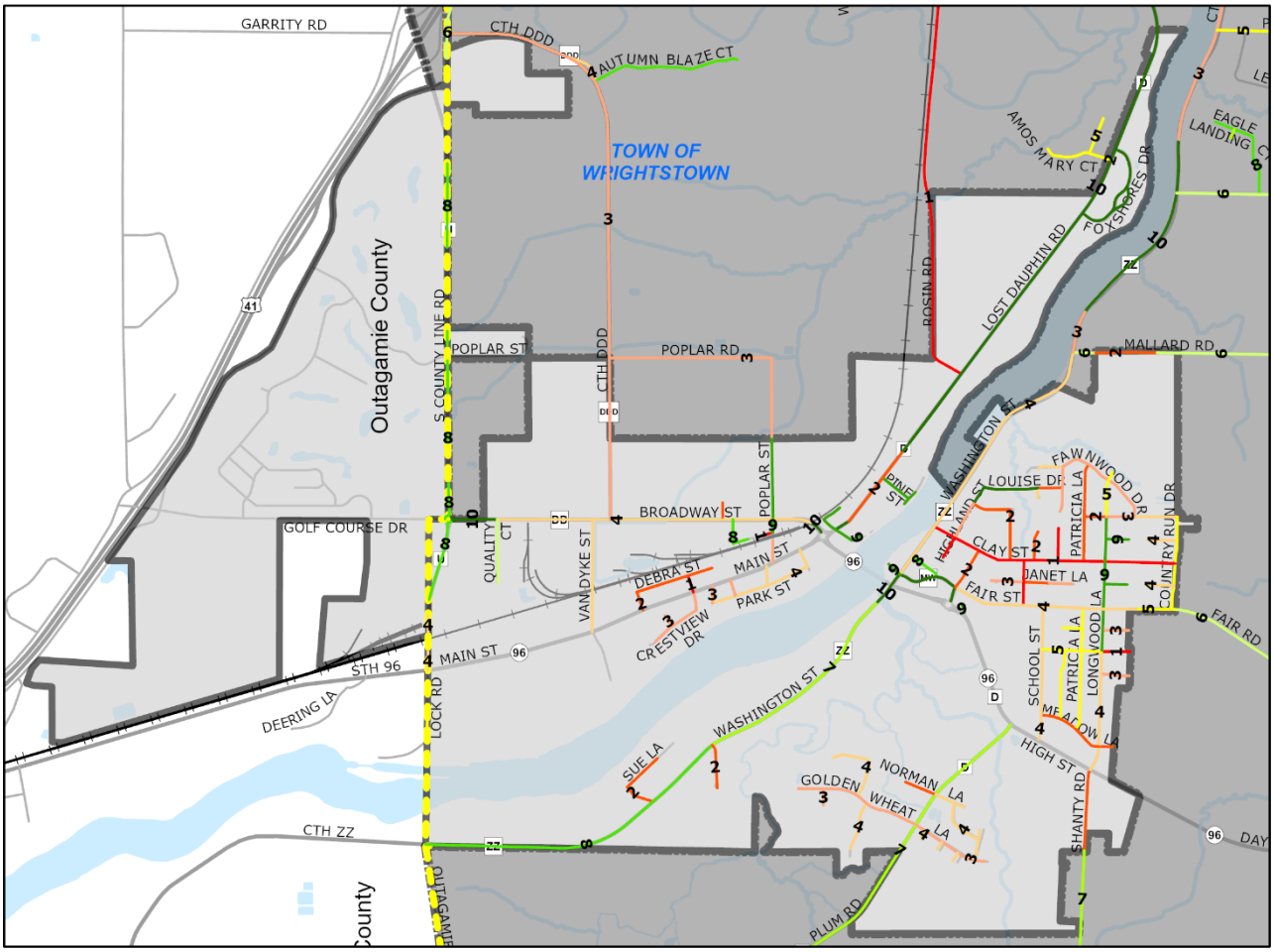
The numbers included on the roads represent the pavement surface rating on a scale of one to 10 with the lower values (red and orange) representing poor conditions and the higher values (green) representing better conditions.

Note: Village pavement conditions were mostly inventoried in 2020, but some were in 2018. Depending on when they were inventoried, pavements may have been resurfaced since then and no longer reflect displayed ratings.

Legend

Pavement Condition

1	3	5	7	9
2	4	6	8	10



1.5 Existing Conditions – Bicycle and Pedestrian Facilities

Existing Bicycle and Pedestrian Facilities

The map on the following page includes all existing bicycle and pedestrian facilities in the Village of Wrightstown.

Village of Wrightstown Existing Bicycle and Pedestrian Facilities
October 2021

Legend

Bicycle Facilities
- 5' Paved Shoulder
- Bicycle Lane
- Bicycle Parking

Municipalities
- Village of Wrightstown
- Brown County Community

- Sidewalk

Street Centerline
- Highway (Federal, State, or County)
- Local Road or Street; Ramp; Roundabout
- Private Road or Street

0 ¼ ½ 1
Miles

N

Date: 10/14/2021
Data Source: Brown County Planning Commission

1.6 Existing Conditions – Education, Enforcement, and Encouragement Efforts

Enforcement Efforts

The Village of Wrightstown Police Department (WPD) enforces the rules of the road during its daily patrol activities.

Education Efforts

To date, the village hasn't undertaken any extensive education efforts because the population level and relatively low pedestrian and bicycling activity had not necessitated it. With the population increase in the village and the desire from residents to provide bicycle and pedestrian amenities, the need for educational programs has increased.

Encouragement Efforts

The village has taken steps to encourage bicycling and walking in the village.

Sidewalks and Traffic Calming Devices

Fair Street on the east side of the village is a good example of a corridor that has a foundation to be a very bicycle and pedestrian friendly corridor. The curb bump outs separate parking lanes, complete sidewalks, and painted crosswalks all contribute to a pedestrian oriented neighborhood.

Mixing Compatible Land Uses

The village does allow mixing of compatible land uses through the PDD process. Allowing a variety of land uses to occur in the same area allows for shorter trips from residence to work, shopping, or other types of destinations.

Pedestrian- and Bicycle-Friendly Site Designs

Some parts of the village were developed with walking in mind. But the most impactful project was the reconstruction of STH 96 that included both bicycle and pedestrian accommodations. This project also linked the west side of the village to the east side with sidewalks on the bridge, and stripped bicycle lanes. To help further enhance the bicycling and walking culture, village staff can look to a *Model Ordinance for Pedestrian and Bicycle Friendly Site Design completed* by the Brown County Planning Commission in 2012 for ideas that could be incorporated into local codes and ordinances.

1.7 Public Input

Public Input

It was the desire of both the village and Brown County to conduct a robust public input element as part of this planning process. To conduct the public input, an online map and survey were created early in 2020; however, the COVID-19 pandemic struck at the same time and the public input tools were only distributed to the citizens of the village via the village website.

In lieu of this setback, about 50 individuals participated in the public input process. In addition to the online public input tools, the steering committee played an important role providing valuable local knowledge during a field review held in May of 2020. The field review consisted of the Steering Committee and Brown County Planning staff bicycling to various locations throughout the village to highlight bicycle friendly or unfriendly infrastructure and talk about how people travel around the village.

In addition to the information provided through the public input tools and from the steering committee members, the village provided results from a parks survey that they conducted in 2019. While the information that was gathered through this survey was focused on the village parks, village staff was hopeful that the information would also be helpful for this planning process.

Public Input Survey Results

The public input survey gathered important information the help the village understand what residents are looking for from their community. The survey results are summarized below.

- Survey respondents ages

Answers	Count	Percentage
15 or under	0	0%
16-24	0	0%
25-34	11	21.57%
35-44	23	45.1%
45-54	11	21.57%
55-64	3	5.88%
65 or older	3	5.88%

- Survey respondents ages were split with about 60 percent female and 40 percent male.
- Every survey participant indicated that they walk in the village.
- Bicycling was a popular activity amongst survey participants with 82 percent indicating that they bicycle in the village.

1.7 Public Input

- Most survey respondents feel that it is safe to walk in the village.

Answers	Count	Percentage
1	1	1.96%
2	4	7.84%
3	10	19.61%
4	12	23.53%
5	24	47.06%

1 represents not safe, 5 represents very safe.

- Survey respondents did not feel as safe when bicycling in the village. Overall people still felt safe but less safe as compared to walking.

Answers	Count	Percentage
1	2	3.92%
2	6	11.76%
3	15	29.41%
4	12	23.53%
5	13	25.49%

1 represents not safe, 5 represents very safe.

- When asked what type of facility is used when walking nearly all of the survey respondents used sidewalks while walking in the street and on a roadway shoulder were popular answers as well.

Answers	Count	Percentage
Sidewalk	48	94.12%
Off Road Trail	10	19.61%
In the street	39	76.47%
Roadway shoulder	34	66.67%

1.7 Public Input

- Survey respondents were asked how they describe themselves when bicycling. Most people fall into the following categories:
    - They are comfortable sharing the roadway with automobile traffic but prefer to do so in a striped bicycle lane or a protected on-street bicycle lane. (45 percent)
    - They are comfortable riding through their neighborhood to the local park, but they don't venture out onto the high traffic roadways that provide access to the major commercial and employment destinations they frequently visit. (37 percent)
- When asked what types of conditions of circumstances currently prevent them from walking or bicycling a variety of answers were given. A theme emerged from many of the answers that shows that many people do use the sidewalks in the village but if they are disconnected, they often feel unsafe or exposed having to walk either in the street or on the shoulder of a road.
- When asked why people walk or bicycle many answers included exercise or physical fitness as a primary reason. It should be noted however, that many of those same answers included secondary reasons such as going to school, parks, or the store.
- When asked how far they are willing to ride a bicycle, survey respondents were pretty evenly split amongst the answers.

Answers	Count	Percentage
Less than a mile	11	21.57%
1-2 miles	19	37.25%
3-5 miles	15	29.41%
6-10 miles	9	17.65%
11 or more miles	10	19.61%

- When asked how far they are willing to walk, nearly 75 percent of survey respondents are willing to walk 5 blocks or more to reach their destination.
- Survey participants were asked if they supported the addition of bicycle facilities when roads are constructed or reconstructed even if it were to cost slightly more. Overwhelmingly the survey respondents support the addition of bicycle facilities with just under 75 percent of responses stating yes while about 19 percent were neutral, and 8 percent were a no.
- Survey participants were asked if they supported the addition of sidewalks as part of new developments. Respondents supported the addition of sidewalks with nearly 65 percent answering yes, 19 percent were neutral and about 15 percent were a no.
- Survey participants were also supportive when asked if they want sidewalks in specific locations to connect existing neighborhoods to destinations in the community with 78 percent of responses in support.

1.7 Public Input

- Additional comments provided at the end of the survey:
  - Do you have any additional comments pertaining to walking and/or bicycling in the Village of Wrightstown?
  - A walking trail or lane to connect Royal Saint Pats Community to the Village of Wrightstown. Through high traffic areas.
  - A walking/biking path along the river and through the wooded areas would be nice.
  - Any improvements are welcome!
  - "Designated walking paths or sidewalks are definitely a necessity on our through way roads such as Longwwod Lane, Patricia Ln, Clay St, Broadway to connect the Golf course area another walk way on Cty Rd D. Etc. On another note the pedestrian crossings on Hwy 96 have certainly been a blessing".
  - Existing sidewalk plates in driveways are too far up in the yard.
  - Heavy truck traffic on main roads is a safety concern.
  - Highway D is a nightmare in the making. Need something better, bigger or wider to make safer for bikers and walkers.
  - I appreciate the crosswalks in place, and generally feel like it is a pedestrian friendly area. I think that, in order to keep and build upon the feeling of community, sidewalks should be included in all new developments. Connectivity should be built in whenever possible! Keep our kids and families safe!
  - I do not think we need a trail along the river. The road is fine and there are private residents that call that area home.
  - I do not want the addition of sidewalks in quiet neighborhoods that are new or existing.
  - I live in Royal St Patrick. My family and I love biking. We bike to subway, library, Dicks, school and the blue park. The scariest section is on Broadway!! I would love a sidewalk!
  - "I lived in Ripon from 1995-2000. During that time ANY new house/construction in the city of Ripon was required to have sidewalk within 1 year or home completion. It didn't matter if you lived on a cul de sac, dead end street, etc. every new building had to have it. As a former village resident, and a lifetime runner/biker I feel lighting at night or dawn is a concern, some of the streets are very dark with existing street lights. "
  - I love to walk in this village for the nature, tired of seeing nature (trees) being cut down for walkers & builders. Keep Wrightstown the way it is- low key and so much beauty to offer already. People will work either way.
  - I think this is a good idea to get more people to do exercise.
  - I would like to see sidewalks 'downtown' on Cty ZZ by the boat landing!

1.7 Public Input

- Additional comments provided at the end of the survey:
  - I would like to see the addition of sidewalks particularly in neighborhoods that are in walking distances to schools. While my kids aren't in school yet, we frequently walk to the playground at the grade school and don't like letting my 2-year-old walk in the street with me. Also, once they are in school, I would feel more comfortable letting them walk to school if they could be on sidewalks the whole way instead of walking on the same roads that new drivers are driving to high school on.
  - I would love to see a walking/biking trail connect the Royal St Pat's subdivision to the rest of the village giving families a safe connection. The traffic makes it too difficult to even attempt.
  - I would love to see more sidewalks and trails in the village. I live on a street with no sidewalks and get nervous about my children walking and riding right in the street.
  - I would really like to see the addition of more sidewalks in residential areas so I'm not walking on the streets with my toddler. While most neighbors drive respectfully there are a lot of high schoolers and others that live in my neighborhood (north of the high school) that drive too recklessly for my comfort.
  - "In order for village residents to feel safe riding their bikes, walking or jogging (either individual or as a family) we need to have better paved roads, and more clearly labeled pedestrian areas. Please, please do whatever it takes to make Wrightstown a safe walking and biking community!!"
  - It would be nice to have walking trail along the river.
  - Let’s focus on speed limits being enforced on Longwood and Fair as well as other roads that are longer in length. Never enforced and rarely see squads. They won’t have my vote for 24-hour coverage based on their current performance. (Police dept)
  - My husband and I would appreciate a bike trail from Wrightstown linking to other trails in Brown and Outagamie counties.
  - On some of the main roads, there needs to be sidewalks for safety but not on all roads by any means.
  - Once the village gets its debt level down, I could change my mind to include them in new developments only.
  - Start with annual build out and progress over a 10-year plan.
  - The road DD from U to 96 is terrible for foot and bike traffic. Someone is going to get hurt.
  - Too many streets with only a skinny shoulder and no bike lane, even around the village.
  - We definitely need a trail or sidewalk on County D from the Tigers Den Subdivision and the subdivision across D from the Tigers Den Subdivision. I see too many kids and adults having to use the shoulder of the road and there is too much traffic that is traveling well over the 35mph speed limit. Either a trail/sidewalk or a substantial widening of the road to accommodate foot traffic would be great. Lowering or better patrolling of the speed limit would assist too.

1.7 Public Input

- Additional comments provided at the end of the survey:
  - "We need a bike path attaching our community to the fox river trail on 32/57. Too many idiotic drivers on Fair Street to safely get out there with my family. Regarding sidewalks, I don't see them as necessary unless it's just the busy main streets, which most have. The exception being Longwood, which really needs them. "
  - Would love a bike lane or path on Plum Rd to the Golden Wheat neighborhoods. Our kids ride their bikes to school or the store, the shoulder is very narrow and drivers often speed.
  - Would love bike lanes. Sidewalks seem already appropriate.
  - Would only support sidewalks for high traffic areas of business, not in residential Wrightstown areas. Support for bike lanes depending on definition of "costs slightly more". Property taxes in Wrightstown are already out of control, so I'm not sure that my definition of fiscal responsibility matches that of the current administrator and board. Would suggest that our downtown needs repair and general up - example being the junkyard that is our water works building by the river - before bike lanes. Bike lanes sound nice, but I also distrust the framing of the costs given current state of taxes.

2. Bicycle and Pedestrian Network

2.1 Bicycle and Pedestrian Facility Planning

Overview

As the Village of Wrightstown continues to develop and add residents, the village will need to modify existing facilities, and add new ones to meet the growing needs and desire for bicycle and pedestrian facilities by its residents. Through this plan, the village should improve pedestrian and bicycle connectivity and safety throughout the village.

When designing bicycle and pedestrian facilities, there are a variety of design guidelines (right) that the village should consult when designing new facilities. Some general design elements are applicable to the planning, design, and implementation of both bicycle and pedestrian networks. The design guidelines listed are the leading national resources on bicycle and pedestrian facility design.

This section covers engineering treatments and techniques that can and should be used to further improve safety and create a walking and bicycling culture in the Village of Wrightstown.

Engineering for the Pedestrian

Engineering Considerations for Pedestrian Infrastructure

Pedestrians should receive the same respect as any other transportation mode, because everyone is a pedestrian at some point during a trip. Safe travel corridors for pedestrians should connect different village areas and be created along all streets and highways. These facilities should be designed for disabled pedestrians (curb cuts at intersections, etc.), for these facilities will also accommodate able-bodied pedestrians.

Engineering Resources

These documents are the leading state and national resources on bicycle and pedestrian facility design. Many of the design guidelines identified by these sources are discussed in this section.

- **American Association of State Highway and Transportation Officials' (AASHTO) Guide for the Development of Bicycle Facilities**
- **AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities**
- **Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD)**
- **FHWA Selecting Roadway Design Treatments to Accommodate Bicyclists**
- **The WisDOT Facilities Development Manual (FDM)**
- **The WisDOT Bicycle and Facilities Design Handbook**
- **Americans with Disabilities Act Accessibility Guidelines**

2.2 Existing Facilities

Working with Existing Facilities

The village already has a few assets for walking and biking in place, however; they do not necessarily connect the residents to the destinations they often visit. Network gaps make it difficult for people to walk and bike safely beyond those areas. An effective way to make improvements is to leverage the existing assets through addressing gaps and barriers in the villages existing network.

Sidewalks

The village has some existing sidewalks in the older parts of the community; however, newer subdivisions could be constructed without sidewalks. As a result, many village residents are not able to safely walk to destinations that are a short distance from their home.

The village is going to continue to grow, and the inclusion of sidewalks is an important feature that should not be left out. The village should highly consider sidewalks on both sides of public streets when new subdivision are proposed. When sidewalks are on both sides of the street, pedestrians of all ages and physical abilities can avoid crossing motor vehicle traffic to reach walkways. Placing sidewalks on both sides also eliminates the need to make what are often controversial decisions about where the single sidewalk should be constructed.

The only situation where sidewalks should not be required on both sides of a street is when physical or environmental constraints exist. In these situations, sidewalks should be required on at least one side of the street.

Typically, sidewalks are made of concrete, are six feet wide, and are located six to eight feet from the back of curb when along collector streets, and 12 feet when along arterial streets.

Fair Street – V of Wrightstown
Source: Brown County Planning Commission
March 2020

Washington Street – V of Wrightstown
Source: Brown County Planning Commission
March 2020

2.2 Existing Facilities

Curb Extensions (Bump Outs)

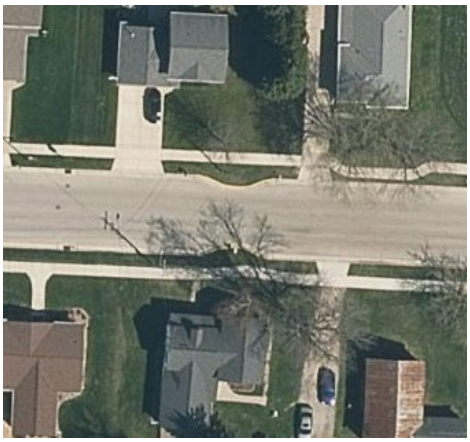
One of the more accommodating pedestrian features within the village are curb extensions. Located primarily along the Fair Street corridor, these features improve pedestrian safety because they help to maximize predictability and minimize speed and exposure at crossings. More specifically, curb extensions:

- Prohibit drivers from using parking lanes as passing or turning lanes at crossings.
- Encourage people to drive slowly through crossings when parked vehicles are not present.
- Minimize pedestrian exposure to traffic by providing short crossing distances.
- Maximize pedestrian visibility to approaching drivers by allowing pedestrians to essentially walk into the street.
- Enable pedestrians to clearly communicate to approaching drivers that they intend to cross the street.

It should be noted that, when assessing the applicability of curb bump outs, particular community destinations such as polling locations, parks, schools, public pools, and other places that tend to attract a high number of pedestrians and bicyclists are the primary candidates for these improvements.

Common Curb Extension Applications

Pinch point



Fair Street – V of Wrightstown
Source: Brown County Planning Commission
March 2020

Gateway with Stormwater Treatment

Hoboken, NJ
Source: NACTO
Retrieved: March 2020

Stormwater features

Consideration should be given to incorporating stormwater management features into the curb extensions when they are designed and constructed. The available space generated by curb extensions can be used for bioretention, plantings, and if stormwater features are not feasible, the bump out can be used for furniture, benches, and street trees.

2.2 Existing Facilities

Traffic Control Devices

While the Village of Wrightstown does not have a stop light, the village is utilizing traffic control devices to assist with pedestrian traffic near the three schools. These traffic control devices help improve conditions for people of all ages and abilities while ensuring compliance with ADA requirements.

Pedestrian Hybrid Beacon (PHB)

A PHB is a traffic control device design to increase motorists' awareness of pedestrian crossings at uncontrolled marked crosswalk locations. They are not typically found at intersections where other traffic control devices such as stop signs may be present, thereby providing an opportunity for a pedestrian to cross the street when traffic is stopped. PHB's are typically found at mid-block crossings where traffic would not otherwise have a reason to stop. PHB's are distinct from a pre-timed traffic signal because they are only activated by pedestrians when needed.

The PHB's found in the village (shown to the right) help alert traffic that a pedestrian is present and that they wish to cross the road. Traffic is required to stop when these devices are activated.

STH 96 – V of Wrightstown
Source: Brown County Planning Commission
March 2020

STH 96 – V of Wrightstown
Source: Brown County Planning Commission
March 2020

Roundabouts

Most modern roundabouts are designed with all modes of transportation in mind. With that said, the two roundabouts found in the Village of Wrightstown bookend the new STH 96 bridge and include both bicycle and pedestrian facilities.

STH 96 – V of Wrightstown
Source: Brown County Planning Commission
March 2020

2.2 Existing Facilities

Crosswalks

All pavement markings are governed by the Federal Highway Administration's (FHWA) MUTCD which provides specifications on the design and placement of traffic control signs and pavement markings within the right-of-way. The MUTCD however, does not define criteria for crosswalk location or striping options.

The MUTCD states that "Crosswalk markings provide guidance for pedestrians who are crossing roadways by defining and delineating paths on approaches to and within signalized intersections, and on approaches to other intersections where traffic stops. Crosswalk markings also serve to alert road users of a pedestrian crossing point across roadways not controlled by highway traffic signals or STOP signs. At non-intersection locations, crosswalk markings legally establish the crosswalk.

Undoubtedly, crosswalks play a fundamental role in creating a safe and convenient pedestrian network. When the village does consider installing crosswalks, it is recommended that the MUTCD is utilized for design and location suggestions.

School Street – V of Wrightstown
Source: Brown County Planning Commission
March 2020

STH 96 – V of Wrightstown
Source: Brown County Planning Commission
March 2020

2.2 Existing Facilities

Paved Shoulders

Paved shoulders are a common roadway feature that serves multiple uses. Paved shoulders can extend the service life of the road by reducing edge deterioration and reducing the amount of maintenance often required by gravel shoulders. If a vehicle has mechanical trouble, paved shoulders can provide space for temporary storage of the disabled vehicle. Paved shoulders can also improve bicycle safety. On higher speed and high-volume roads, paved shoulders provide separation between the vehicular traffic and the slower moving bicycles which improves the perception of safety. Because paved shoulders are typically recommended for rural areas, farmers may also find the additional pavement width beneficial for the large equipment used in agricultural processes.

STH 96 – V of Wrightstown
Source: Brown County Planning Commission
March 2020

Appropriate Applications:

- On roads without curb and gutter
- On high speed and/or high volume, rural arterials that serve as a direct route between key destinations

Bicycle Lanes

Bicycle lanes are designated portions of a roadway that are striped and marked for bicycle use. Bicycle lanes may use signs, but signs are not required for the designation of a bicycle lane. These facilities should be at least four feet wide excluding the curb and gutter and five feet wide when adjacent to a parking lane. The village has one roadway that was designed and constructed to include bicycle lanes; however, the bicycle lanes have not been defined by paint to date.

STH 96 – V of Wrightstown
Source: Brown County Planning Commission
March 2020

2.3 Network Treatments and Facilities

Traffic Control Devices

The village does not currently have any signalized intersections under its jurisdiction. However, in future instances where the village would install a signalized intersection or coordinate with an adjacent community or any other governmental entity to install a signalized intersection, the village should consider the following treatments.

Install Accessible Pedestrian Signal Activation Buttons at Signalized Intersections

When signalized intersections are projected to have only occasional pedestrian use, the village should ensure that signal activation buttons are available (or coordinate with other municipalities, the county, and/or state as needed). Also, any pedestrian signals that the village would install should comply with the Americans with Disabilities Act (ADA) and be reachable from the sidewalk.

Recognize Area Context When Considering Pedestrian Signal Activation Buttons

This strategy is an addendum to the one above. At signalized intersections that are heavily used by pedestrians, pedestrian signal activation buttons should generally be avoided. Instead, pedestrian signal phases should be built into every green light cycle to ensure that pedestrians have frequent opportunities to cross.

Do Not Use "Right Turn No Stop" Designations

"Right Turn No Stop" designations at intersections can confuse children and others who focus on the stop sign, assume that drivers will stop, and cross without realizing that the stop sign doesn't apply to turning vehicles. These designations can also confuse some drivers and cause them to run the stop sign even if they aren't making right turns. Lastly, chances are greater the driver will only look to the left to check for oncoming traffic; if someone is about to cross from the right, the driver may not see them at all. If the village allows this traffic control device, it is recommended that this device is not used for the inherent dangers presented above

Accessible Pedestrian Activation Button
Source: Brown County Planning Commission
Retrieved: March 2020

Include Lead Pedestrian Intervals at Wide and Heavily-Used Intersections

To give pedestrians a head start crossing streets and make them more visible to drivers, the village should include lead pedestrian intervals at signalized intersections that are very wide and/or have a relatively high number of pedestrians. The lead pedestrian intervals would be triggered when pedestrian signal buttons are activated, and the intervals would last approximately five seconds before motorized traffic receives a green light.

2.3 Network Treatments and Facilities

High Intensity Activated crossWalk (HAWK signals)/PHB

HAWK or PHB signals are a useful tool for improving pedestrian conditions. Studies have shown a better compliance rate by motorists with a HAWK signal than other devices at pedestrian crossings. The signals are designed for use in locations that do not meet traffic engineering 'warrants' for a conventional signal. The new signal is intended to aid pedestrians who desire assistance crossing a street with heavy traffic and it also provides visually impaired pedestrians audible information as to when the walk signal is on.

As the village continues to grow, it should continue to assess locations that are appropriate candidates for a HAWK or PHB and consult with county and state officials on roadways that are not under the village's jurisdiction.

	DRIVERS		PEDESTRIANS	
	Will See ...	Will Do ...	Will See ...	Will Do ...
1		Proceed with caution.		Push the button to activate the system.
2	FLASHING	**Slow down.** A pedestrian has activated the system.		Wait.
3		Prepare to stop.		Continue to wait.
4		**STOP.** A pedestrian is in the crosswalk.		Start crossing when all vehicles are stopped.
5	FLASHING	**STOP.** Proceed with caution if the crosswalk is clear.		Continue crossing; the signal will count down.
6		Proceed if the cross-walk is clear.		Push the button to activate the system.

HAWK Signal – V of Allouez
Source: Ayres Associates
Retrieved: March 2020

Safety Effectiveness Study

The FHWA completed a study on the safety effectiveness of the HAWK pedestrian crossing treatment. In summary, the study assessed 21 HAWK signals and found that there was a statistically significant reduction in total crashes. Below are some of the key findings.

- 29% reduction in total crashes
- 69% reduction in pedestrian crashes
- 15% reduction in severe crashes

Source:
https://www.fhwa.dot.gov/publications/research/safety/10045/

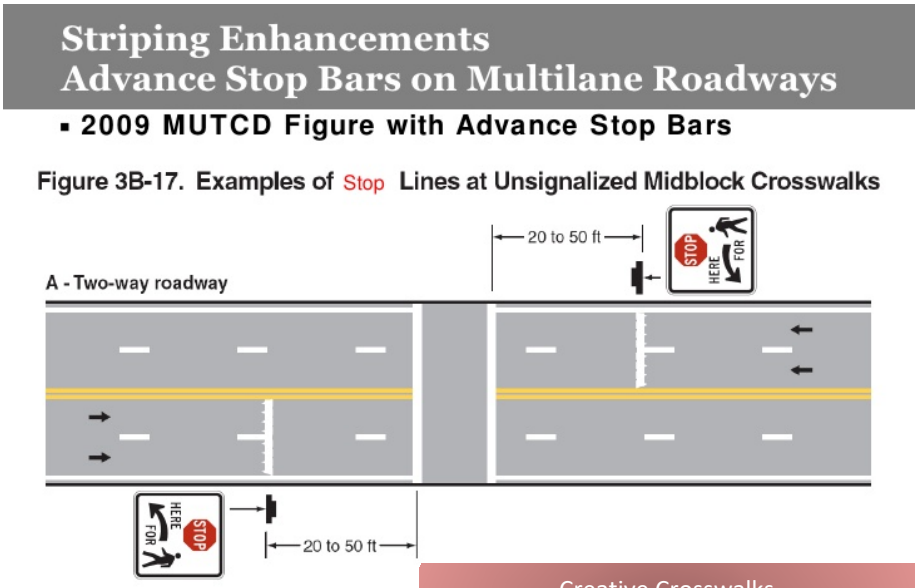
2.3 Network Treatments and Facilities

Crosswalks

Add Advance Stop Bars at Major Uncontrolled Street Crossings or HAWK Signals

Advance yield/stop line include the stop bar or "sharks teeth" yield markings placed 20 to 50 feet in advance of a marked crosswalk to indicate where vehicles are required to stop or yield in compliance with the accompanying "STOP Here for Pedestrians" or "YIELD Here for Pedestrians".

This discourages drivers from stopping too close to crosswalks and blocking other drivers' views of pedestrians and pedestrians' views of vehicles, minimizing the risk of "hidden threat" crashes. An AASHTO study found that a "sign alone reduced conflicts between drivers and pedestrians by 67 percent, and with the addition of an advanced stop or yield line, this type of conflict was reduced by 90 percent compared to baseline levels."[1]



Source: Kittelson & Associates, Inc.
Retrieved: March 2020

Creative Crosswalks

The FHWA has consistently stated since 1984 through eight Official Interpretations that nothing except **an aesthetic treatment is allowed between the white transverse lines of a crosswalk**

Distinguish Crosswalks in Higher Pedestrian Traffic Areas

As the downtown area continues to diversify its residential offerings and increase density, it is likely that pedestrian traffic will also increase. The village should consider using stamped and/or colored pavement to define the crosswalks and enhance the appearance of street corridors. To maximize crosswalk visibility for approaching drivers (especially at night), the crosswalks should also use reflective white paint to define the pedestrian area.

Source: Downtown Durham, Inc
Retrieved: March 2020

[1]American Association of State Highway and Transportation Officials, Guide for the Planning Design, and Operation of Pedestrian Facilities, July 2004. Pedsafe, U.S. DOT FHWA ttp://www.pedbikesafe.org/pedsafe/countermeasures_detail.cfm?CM_NUM=13

2.3 Network Treatments and Facilities

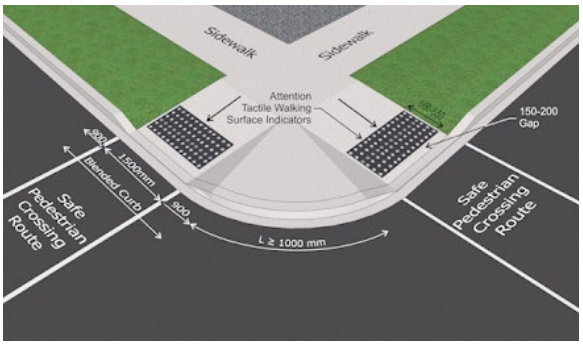
Use Medians and Pedestrian Refuge Islands at Pedestrian Crossings

When appropriate in more urban or suburban conditions in the village, the village should work toward installing pedestrian refuge islands in the center of arterial streets. In addition to calming traffic and enabling people to cross one direction of traffic at a time, the islands encourage drivers to yield to pedestrians in the crosswalks because their intentions are clear to drivers. Pedestrian refuge islands can be established at controlled intersections (e.g. as roundabout splitter islands, as already done at the roundabouts in Centennial Centre, or at the end of medians), but they are also very useful at uncontrolled intersections or at midblock crossings.

Source: Brown County Planning Commission
Retrieved: March 2020

Directly Align Curb Ramps with Crosswalks

Curb ramps should be included as sidewalks are constructed. This will allow the pedestrian to stay within the crosswalks upon entering and exiting the crosswalk. The best approach is to build perpendicular ramps that directly connect to each crosswalk, but well-placed single ramps can also work in certain situations. To prevent these types of issues, sidewalks should be included in all new construction projects.

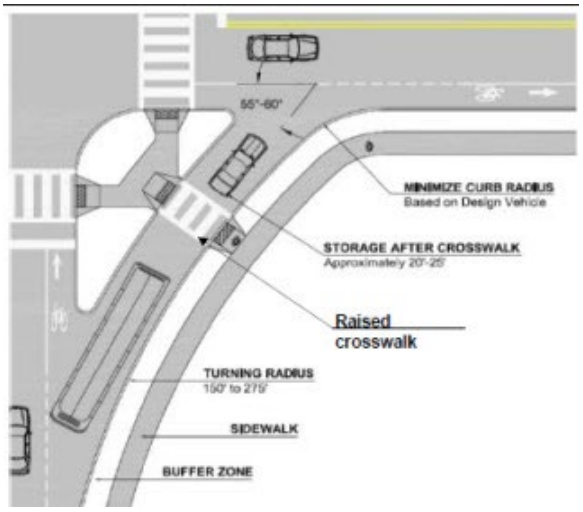


Source: Clearing Our Path
Retrieved: March 2020

Avoid Establishing Right Turn "Slip" Lanes at Intersections

Because right turn "slip" lanes expose pedestrians to vehicles that can turn corners at relatively high speeds, the village should work with the state and county to make sure slip lanes are not built at intersections, unless they are necessary, along heavy truck routes that have tight corners.

When slip lanes are necessary, the "pork chop" islands that separate the slip lanes from the other driving lanes should be designed to be easily and safely used by people of all ages and physical abilities.



Source: Toole Design Group
Retrieved: March 2020

2.3 Network Treatments and Facilities

Speed Management – Incorporate Vertical Traffic Control Measures to Reduce Speeds

To reduce traffic speeds on streets where speeding is an issue and/or pedestrians want to cross regularly, the village should consider installing vertical traffic controls. The most common application is a speed bump, which is frequently used in parking lots. Speed tables and speed humps are two other types of vertical control that could work in different applications in the Village of Wrightstown.

Speed Humps

Speed humps are typically three inches in height, and twelve feet in length along the vehicle travel path axis and extends across the length of the roadway at a right angle. The speed hump has a more gradual angle compared to a speed bump that cyclists will feel more comfortable going over them, but still enough discomfort to discourage motor vehicle speeding. They are more appropriate for residential streets, and where a street provides access to something like a school, park, or community center. Speed tables are generally not appropriate where there are a lot of long-wheelbase vehicles, such as in industrial areas. Speed humps are generally not appropriate on streets where the pre-implementation 85th percentile speed is 45 mph or more.

Speed Tables

A speed table is also a midblock traffic calming device like a speed hump, but they are longer than speed humps. Speed tables have a flat top and are generally long enough to accommodate the entire wheelbase of most passenger cars. Speed tables may be more appropriate when incorporated with a crosswalk (referred to as a raised crosswalk). Raised crosswalks may also incorporate elements such as pavers or integrally-colored concrete to accent the crossing area.

Speed Hump on a Neighborhood Street
Source: FHWA
Retrieved: March 2020

Raised Crosswalk
Source: FHWA
Retrieved: March 2020

Typical Speed Table
Source: FHWA
Retrieved: March 2020

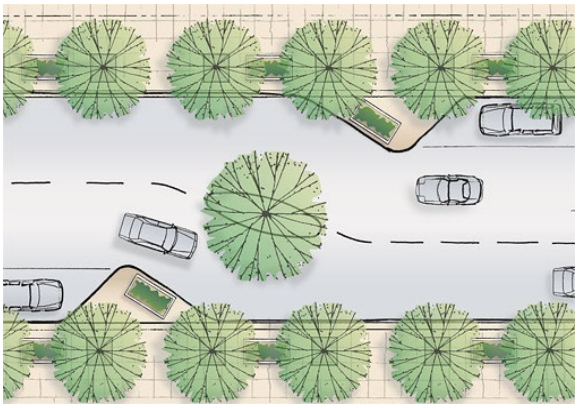
2.3 Network Treatments and Facilities

Incorporate Lateral Shifts to Reduce Traffic Speed

Laterally shifting the street alignment in one direction can help reduce motor vehicle speeds. If the village would like to incorporate lateral shifts into a street scope, it is most cost effective to incorporate during the design phase of new subdivisions. The following types of lateral shifts could be considered.

Chicanes

Chicanes are a series of alternating curves or lane shifts. Chicanes are a lateral roadway shift with a return to the original path. The maneuver will prompt the motorist to reduce their speed to go through the series of shifts. Chicanes can be created with curb extensions that alternate from one side of the street to the other. Another option to is shift on-street parking to create the chicane. Where neither of those options make sense, street landscaping features could achieve the desired effect.

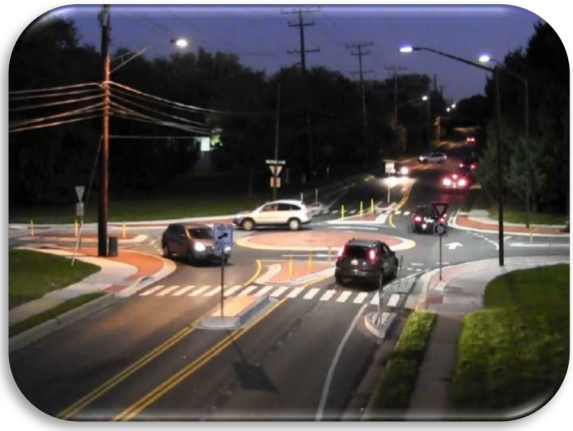


Chicane
Source: SF Better Streets
Retrieved: March 2020

Mini roundabouts

Roundabouts are already a familiar sight in Brown County. Mini roundabouts (and neighborhood traffic circles) are related, but can be used in physically-constrained locations, and are appropriate on lower traffic streets with uncontrolled intersections. They have also been shown to increase intersection safety. Traffic circles may be installed with simple markings or raised islands. They may also incorporate landscaping to beautify the streetscape, which also further calms traffic. Depending on the situation, the central island could also be sized to allow for truck traffic to pass over it to make a turn, while still diverting car traffic around the circle.

On streets where the village is considering a pedestrian/bicycle route, installing traffic circles may be a low-tech way to help improve intersection safety.



Mini roundabout with mountable apron and island
Source: Local Motion
Retrieved: March 2020

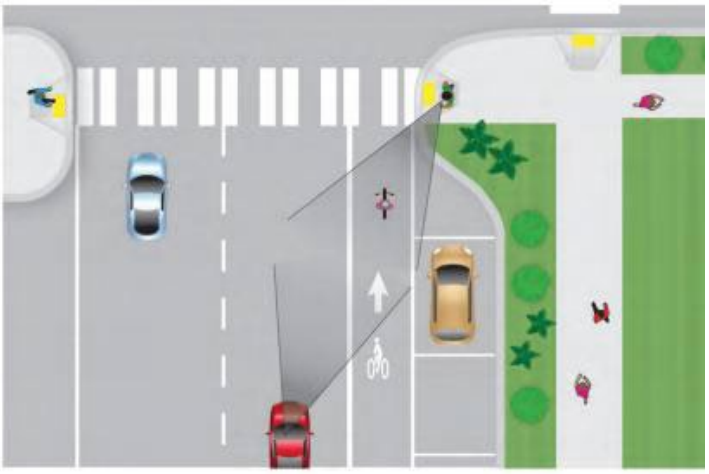
Mini roundabout with landscaping
Source: Local Motion
Retrieved: March 2020

2.3 Network Treatments and Facilities

Continue Utilizing Curb Extensions

As previous mentioned, the use of curb extensions has numerous benefits, and the village should continue to utilize them in high-priority areas. When the village approves new curb and gutter streets in known or anticipated high pedestrian areas, it should consider including curb extensions into the roadway design. Curb extensions improve pedestrian safety because they help to maximize predictability and minimize speed and exposure at crossings. Specifically, curb extensions:

- Prohibit drivers from using parking lanes as passing or turning lanes at crossings.
- Encourage people to drive slowly through crossings when parked vehicles are not present.
- Minimize pedestrian exposure to traffic by providing short crossing distances.
- Maximize pedestrian visibility to approaching drivers by allowing pedestrians to essentially walk into the street.
- Enable pedestrians to clearly communicate to approaching drivers that they intend to cross the street.



Curb Extension and improved visibility
Source: Pedsafe/Michele Weisbart
Retrieved: March 2020

While the village does not currently have any four-lane or four-lane divided roadways there may be a time when a four-lane road is needed and an example of how curb extensions can be used on a wider roadway is provided here.

Curb Extension and improved visibility
Source: Pedsafe/Michele Weisbart
Retrieved: March 2020

2.3 Network Treatments and Facilities

Develop a Continuous Sidewalk Network

In addition to providing a place for people of all ages and physical abilities to travel safely, sidewalks are a place for friends and neighbors to interact with each other, for children to play, and for commerce to occur. Sidewalks also provide the "street life" that helps to enhance neighborhood security. For these and other reasons, Wrightstown should install sidewalks along its neighborhood roads. A process for accomplishing this is summarized in this section.

Sidewalk Network Gap
Source: Brown County Planning Commission
Retrieved: March 2020

Require Sidewalks in all New Subdivisions

The village should begin the process of creating its comprehensive sidewalk system by requiring developers to install sidewalks on both sides of all streets in new subdivisions. Additionally, subdivisions that do not include sidewalks should not be approved. The only situation where sidewalks should not be required on both sides of a street is when physical or environmental constraints exist. In these situations, sidewalks should be required on at least one side of the street.

Install Sidewalks Along Major Streets and Home-to-school Walking Routes

Retrofitting sidewalks is difficult and should be avoided, however, it will be impossible to create a walkable community without retrofit projects. One way of building support and justification for sidewalks is identifying high priority walking corridors/routes. Destinations such as schools are always a high priority because of the number of children that walk or may want to walk but can't because of the lack of pedestrian facilities. This plan identifies several home-to-school walking routes that are good candidates for the addition of sidewalks. The home-to-school routes will not connect every student directly from their home to the school, but it will make conditions better and provide a foundation to further expand the pedestrian network in the future.

Require Sidewalks to be Installed During Construction and Reconstruction Projects

When constructing new streets, the village should require sidewalks as part of that initial construction. If sidewalks are not required until the time of occupancy permit issuance, network gaps will exist. Adding sidewalks at the time of street construction is less disruptive later.

Sidewalks installed as part of the subdivision
Source: Brown County Planning Commission
Retrieved: March 2020

2.3 Network Treatments and Facilities

Engineering for the Bicycle

The accommodation of bicycles should be considered during the planning, design, and construction or reconstruction of all transportation facilities in the street right-of-way. In addition, all streets should be made minimally acceptable for bicycling. Also, the village should provide pedestrian and bicycle facilities on all bridges, overpasses, and other transportation structures when constructing or reconstructing those facilities.

This plan recommends creating a system of bicycle corridors through a variety of different means. However, there are several design details that the village should observe on all streets to create a safe and efficient bicycle network. These design considerations are identified in the AASHTO Guide for the Development of Bicycle Facilities.

Drainage Grates

Drainage inlet grates and utility covers are potential problems for bicyclists when a new roadway is designed, and all such grates and covers should be kept out of a bicyclist's expected path. On new construction curb inlets should be used when possible to minimize the exposure of bicyclists to grate inlets. It is important that grates and utility covers be flush with the surface, and this uniformity should be maintained when a road is resurfaced

Above: Parallel bar grates are hazardous to bicyclists (top) vs. perpendicular grates that allow bicyclists to cross them safely.
Source: Brown County Planning Commission
Retrieved: March 2020

Railroad Crossings

The village has one of the best examples of a bicycle lane crossing a railroad track in Brown County. When reconstructing roads or retrofitting bicycle facilities on a road that crosses a railroad track consideration should be given to the angle at which the railroad tracks cross the road and assess whether additional space needs to be provided for the bicyclist to cross the tracks safely.

Left: Railroad crossing in the Village of Wrightstown that provides additional room for bicyclists to approach the tracks at a 90-degree angle to cross the tracks safely.
Source: Brown County Planning Commission
Retrieved: March 2020

2.3 Network Treatments and Facilities

Traffic Signal Timing

The Village of Wrightstown doesn't have any traffic signals at this time, however, if in the future the village installs traffic signals, it is recommended that the signals be timed such that a bicyclist and or a pedestrian have ample time to traverse the intersection safely. The MUTCD should be consulted to determine traffic signal timing depending on the existing conditions at the intersection, and that the signals be timed to create a safe environment for bicyclists and pedestrians.

Bicycle Facilities

Paved Shoulders

Paved roadway shoulders can create relatively safe bikeways on roads without curb and gutter. According to AASHTO, shoulders may be designated as bicycle facilities by signing and marking them for preferential use. AASHTO identifies the following guidelines for paved shoulders.

Appropriate Applications

- On roads without curb and gutter.
- On high speed, rural arterials that serve a high number of experienced cyclists when wide curb lanes are not practical.

Paved shoulder in the Village of Wrightstown
Source: Brown County Planning Commission
Retrieved: March 2020

Paved shoulder with rumble strips
Source: Minnesota Transportation Research - Crossroads
Retrieved: April 2020

Special Considerations

- Shoulders must be paved and maintained to an equivalent surface standard as regular travel lanes.
- Paved shoulders that are intended for bicycle use should continue through intersections and should not be routinely used as right turn lanes for vehicular traffic.
- Rumble strips should be placed in a manner that minimizes hazards to bicyclists and should not be extended across the shoulder area.
- Shoulders may be designed as lanes for preferential bicycle use through appropriate signage and pavement markings if they meet the recommended AASHTO width of four feet or greater.

2.3 Network Treatments and Facilities

Wide Curb Lanes

Wide curb lanes are characterized as a wider than standard lane (11-12 feet) that provides extra space so that the lane may be shared by motor vehicles and bicycles. A wide curb lane is typically 14-15 feet in width from curb face to lane stripe. Wide curb lanes are common practice when there are right-of-way constraints that don't allow for a slightly larger facility like a striped bicycle lane.

Wide curb lanes generally allow motorist and bicyclists to coexist on the road without conflict. Because of the extra lane width, motorists may not need to change lanes to pass a bicyclist. It is also thought that the wider lanes encourage bicyclists to operate more like motor vehicles and thus lead to more correct positioning at intersections, particularly for left-turning maneuvers.

Wide Curb Lane
Source: FHWA
Retrieved: April 2020

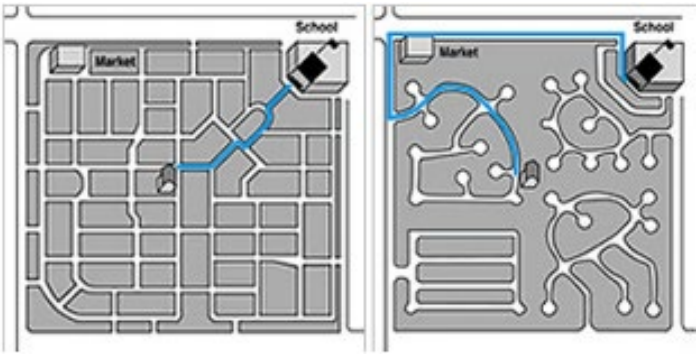
A wide curb lane does provide a bicycle facility; however, it is typically only used by more experienced and confident bicyclists. The use of wide curb lanes should be weighed against the likelihood that motorists will travel faster in them and that large vehicles will prefer them to inside lanes, resulting in decreased level of service (i.e., perceived safety and comfort) for bicyclists and pedestrians.

Provide Bicycle and Pedestrian Connections when Cul-De-Sacs are Necessary

If streets cannot be connected, the village should require the designation of public rights- of-way at or near the end of the cul-de-sacs, horseshoe roads, and other streets for multi-use paths that connect to neighboring subdivisions, schools, parks, and other destinations.

Developed Well-Connected Street Systems

To enable and encourage people to walk and bicycle throughout the village and to adjacent communities, Hobart should require well-connected street patterns within new developments that have frequent connections to the existing street system. The village should avoid cul-de-sacs and loop streets when physical or environmental constraints do not exist, but if these constraints prohibit street connections, the village should permit the development of cul-de-sacs only near the constraints.



Travel route for well-connected street grid vs. cul-de-sac developments.
Source: Brown County Planning Commission
Retrieved: April 2020

2.3 Network Treatments and Facilities

Bicycle Lanes

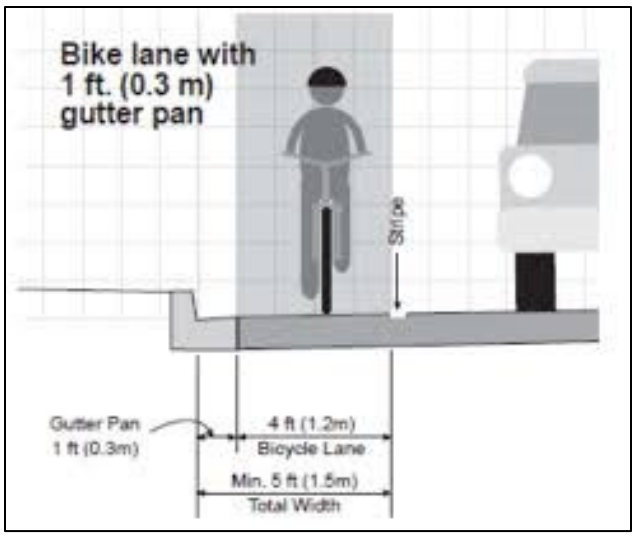
Bicycle lanes are designated portions of a roadway that are striped and marked for bicycle use. Some bicycle lanes may use signs in coordination with painted markings, but signs are not required. These facilities, which should be at least four feet wide excluding the curb and gutter, are added to a road for the following purposes:

- To improve conditions for cyclists of all abilities within a given corridor.
- To encourage increased bicycle use on a given roadway by providing a greater degree of comfort and perceived safety for less skilled cyclists.
- To provide for more predictable movements by cyclists and motorists.
- To establish an overall channeling effect and promote an orderly flow of traffic.

Bicycle lanes should always be one-way facilities that carry traffic in the same direction as adjacent motor vehicle traffic. Two-way bicycle lanes on one side of the roadway are unacceptable because they promote riding against the flow of motor vehicle traffic. Wrong-way riding is a major cause of bicycle crashes and violates the rules of the road stated in the Uniform Vehicle Code. In addition, bicycle lanes on one-way streets should be on the right side of the street except in areas where a bicycle lane on the left will decrease the number of conflicts.

Bicycle lanes should be used when:

- When it is desirable to delineate the right-of-way assigned to cyclists and motorists to provide for more predictable movements by each.
- Where significant bicycle demand is desired or expected on arterial streets and roadways, which are generally defined as having average daily traffic flows that exceed 10,000 or average vehicle speeds that exceed 30 mph.
- When a community wants to encourage bicycle use on a particular facility.
- On streets where lane designation is not complicated by frequent roadway intersections and commercial driveways.
- On streets with heavy bicycle traffic where cyclists must frequently pass each other traveling in the same direction.
- When the Route is anticipated to serve a high number of less experienced bicyclists.



Bicyclists Operating Space
Source: NCWRPC
Retrieved: April 2020

Bicycle Lane
Source: NACTO
Retrieved: April 2020

2.3 Network Treatments and Facilities

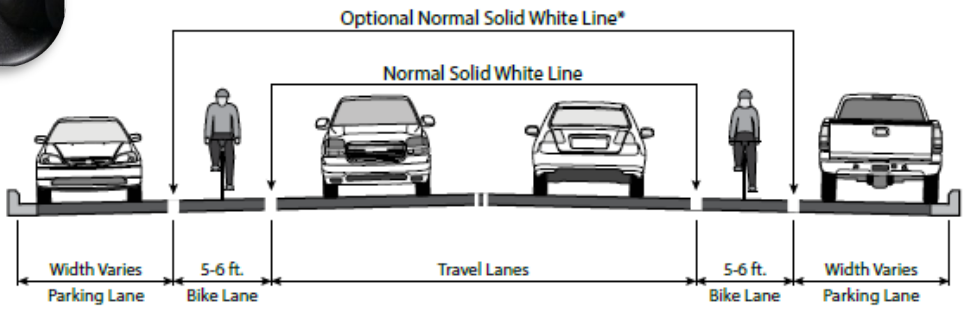
Incorporating Bicycle Lanes with Parking Lanes

Bicycle lanes should always be placed between the parking lane and the motor vehicle lanes. Bicycle lanes between the curb and the parking lane can create obstacles for bicyclists and reduce visibility at intersections and driveways. These lanes can also prohibit bicyclists from making left turns. The placement of bicycle lanes between the driving and parking lanes (right) is an important component of many of the corridor recommendations.

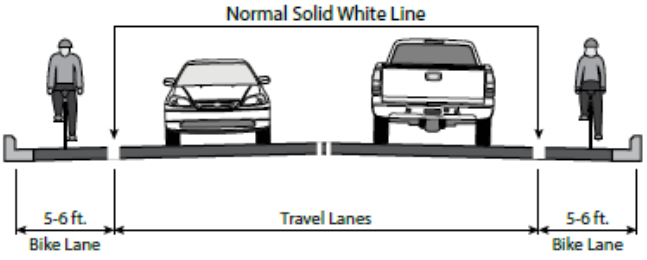
Bicycle lane adjacent to parking lane
Source: Ticket Snipers
Retrieved: April 2020

Integrated bicycle lane with parking lane
Source: Accident Analysis & Prevention
Retrieved: April 2020

Where parking is permitted but a parking lane is not provided, a combination lane that is at least 12 feet wide could be installed that accommodates motor vehicle parking and bicycle use (left). However, if it is likely the combination lane will be used as an additional motor vehicle lane, it is preferable to designate separate parking and bicycle lanes. In both instances, an additional one or two feet of width is desirable if parking counts are substantial, or turnover is high.



On Street Parking



Parking Prohibited

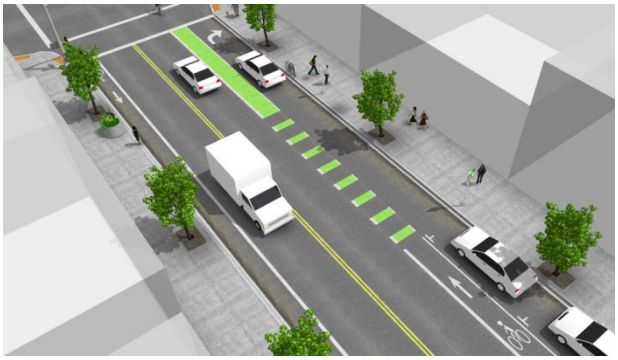
Roadway cross sections showing bicycle lands with on street parking (top) and without parking (bottom)
Source: FHWA Safety
Retrieved: April 2020

2.3 Network Treatments and Facilities

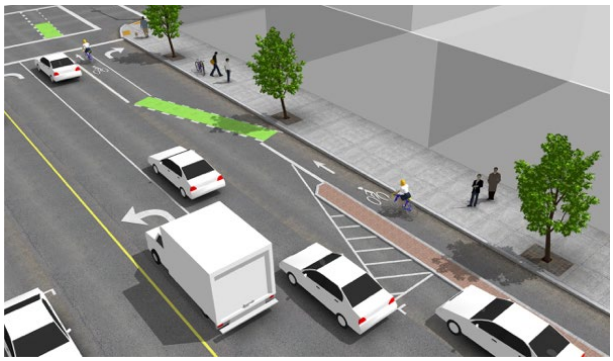
Intersections with Bicycle Lanes

Bicycle lanes tend to complicate bicycle and motor vehicle turning movements at intersections. Because they encourage bicyclists to keep to the right and motorists to keep to the left, both operators are somewhat discouraged from merging in advance of turns. As a result, some bicyclists will begin left turns from the bicycle lanes and some motorists will begin right turns from the left of the bicycle lane. Both maneuvers are contrary to the established rules of the road and can result in conflict.

At intersections, bicyclists proceeding straight through and motorists turning right must cross paths. Striping and signing configurations that encourage these crossings in advance of the intersection are preferable to those that force the crossing in the immediate vicinity of the intersection. To a lesser extent, the same is true for left turning bicyclists; however, in this maneuver, most vehicle codes allow the bicyclist the option of making either a "vehicular style" left turn (where the bicyclist merges leftward to occupy the same lane used for motor vehicle left turns) or a "pedestrian style" left turn (where the bicyclist proceeds straight through the intersection, turns left at the far side, and proceeds across the intersection again on the cross street). Examples of these turning situations can be found in Appendix B.



Bicycle lane with a right turn lane
Source: City of Redding, CA
Retrieved: April 2020



Bicycle lane with a right turn lane
Source: Bike East Bay
Retrieved: April 2020

For intersections that experience a significant number of left turning bicyclists, there are several options that should be considered depending on the conditions present at the intersection. The following page identifies some options to consider.

Bicycle Lane Essential Elements

- Appropriate signing at intersections to reduce conflicts.
- Pavement marking identified in the MUTCD. Safe and maintained pavement surfaces
- Bicycle-safe grate inlets
- Safe railroad crossings
- Traffic signals responsive to bicycles

2.3 Network Treatments and Facilities

Colored Bicycle Lanes and Bike Boxes

Colored bike lanes have been a feature utilized by many European countries. The use of colored bicycle lanes attempts to "highlight" the potential areas of conflict between bicyclists and drivers, warning both that they are entering a potential conflict zone and that caution should be used.

Some cities around the U.S. have incorporated colored bike lanes into their bicycle systems, and the colored bike lanes have shown decreases in crashes and increases in overall safety. The use of colored bike lanes also encourages new riders to use the bike lanes, which empowers more people to use a bicycle as a primary or secondary means of transportation.

Bike boxes are designated areas at the head of a traffic lane (typically at a signalized intersection) that provide bicyclist with a safe and visible way to get ahead of queuing traffic during the red signal phase. Bike boxes are an excellent solution at intersection that have frequent left turning bicyclist.

Bike Box, Madison, WI
Source: NACTO
Retrieved: April 2020

This plan recommends that the Village of Wrightstown consider incorporating colored bike lanes if/when the time and location are appropriate.

Purpose of Colored Bike Lanes

- Define bicyclist and motorist rights-of-way.
- Create awareness for both the motorist and cyclist that an area of conflict is approaching.

Colored bicycle lane highlighting a conflict area.
Source: Portland, OR
Retrieved: April 2020

Other benefits of bike boxes include:

- Increases visibility of bicyclists.
- Reduces signal delay for bicyclists.
- Facilitates bicyclist left turn positioning at intersections during red signal indication. (Bike box must cross all lanes of traffic if more than one lane in each direction)
- Facilitates the transition from a right-side bike lane to a left-side bike lane during red signal indication.
- Helps prevent 'right-hook' conflicts with turning vehicles at the start of the green indication.
- Provides priority for bicyclists at signalized bicycle boulevard crossings of major streets.
- Grouping bicyclists together to clear an intersection quickly, minimizing impediment to traffic.
- Pedestrians benefit from reduced vehicle encroachment into the crosswalk.

2.3 Network Treatments and Facilities

Shared-use or Multi-use Paths/Trails

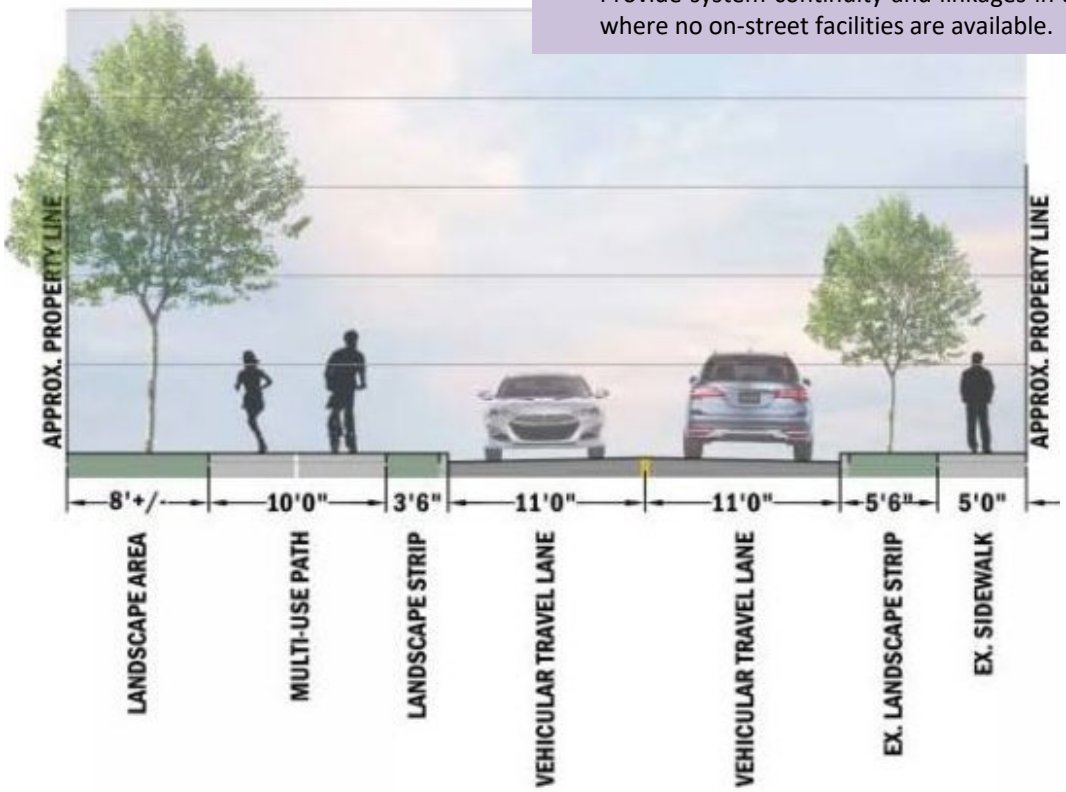
Shared-use paths are designed for both transportation and recreation purposes and are used by pedestrians, bicyclists, skaters, equestrians, and other users. Some common locations for shared-use paths are along rivers, streams, utility rights of way, and abandoned railroad rights of way; within college campuses; and within and between parks as well as within existing roadway corridors. It is common to see shared-use paths used to close gaps in bicycle networks. There might also be situations where such facilities can be provided as part of planned developments.

Shared-use facilities are typically designed between ten and twelve feet wide and are bi-directional facilities separated by a centerline. Shared-use facilities are usually separated from the roadway and design for the exclusive use of bicycle and other non-motorized modes of transportation.

This plan recommends the development of shared-use facilities along rail corridors that are proposed for abandonment ("rails to trails" projects), along utility easements, along waterways, and as sidepath projects when sidepaths are found to be suitable.

Shared-use Trail Purpose

- Serve as significant generators of bicycle use, especially for less skilled bicyclists.
- Provide enjoyable recreational opportunities as well as desirable commuter routes.
- Provide system continuity and linkages in areas where no on-street facilities are available.



Typical cross section including a sidepath (multi-use path shown)
Source: Decatur, GA
Retrieved: April 2020

2.3 Network Treatments and Facilities

Sidepath Suitability

A method of estimating the relative safety of bicyclists on trails (or paths) that run parallel to streets was developed by the League of Illinois Bicyclists (LIB). This "Sidepath Suitability Index" is designed to enable communities to rate the safety of existing parallel paths, determine if a new path would be an appropriate option, and identify methods for making existing or planned paths as safe as possible. Appendix A has a more detailed explanation of the algorithm, and specific examples.

To assess the suitability of placing a path along a road segment, the following factors are considered:

- Intersection traffic: Consideration of vehicle volumes, speeds, number of driveway and street intersections, and other conditions.
- Path continuity: Measures the impact of gaps (unpaved areas, etc.) that exist along the path.
- Curb cuts: Considers whether curb cuts exist at street and driveway crossings.
- Pedestrian Use: Considers the level of pedestrian use and the conflicts that exist or could exist between walkers and bicyclists.
- Crosswalks: Measures the visibility of crosswalks at intersections.
- Separation: Considers the proximity of the path's intersection and driveway crossings to the parallel road.

Each of these factors is assessed and scored, and the final score is used to determine the overall suitability of the path by comparing the score to the categories shown in the table at the bottom of the right column..

Sidepath Suitability	Points
Most Suitable	0-7
Somewhat Suitable	8-9
Least Suitable	10-11
Not Suitable	12+

If the Village of Wrightstown intends to utilize parallel paths, it is important that those who will be involved in developing these paths carefully consider where the paths should and should not be built. The following two examples illustrate how the suitability index works.

Example 1: *A street segment with very few access points that has curb cuts and highly visible crosswalks at intersections. The sidepath crosswalks are close to the parallel street at the crossings, and pedestrian use of the path is moderate.*

After completing an analysis, this segment's suitability rating was found to be 4, which falls within the Most Suitable category. This result suggests that a path along this segment that includes the features summarized in example 1 would be acceptable.

Example 2: *A street segment that intersects often with commercial driveways and streets. This segment has curb cuts and highly visible crosswalks at street intersections. The sidepath crosswalks are close to the parallel street at the street intersections, but the driveway crossings are not close to the parallel street. Pedestrian use of the path is moderate.*

After completing an analysis, this segment's suitability rating was found to be 11, which falls within the Least Suitable category. This result suggests that a path along this segment that includes the features summarized in Example 2 would not be as safe as on-street bicycle lanes because of the relatively high number of street and driveway crossings and the possibility that drivers will not see oncoming bikers because the drivers will tend to look for gaps in traffic instead of bicyclists on the path.

In situations where parallel paths are found to fall within the Not Suitable or Least Suitable categories, the village should strongly consider adding on-street bicycle lanes and sidewalks instead of the path. The same decision should be made where the parallel path falls within the "Somewhat Suitable" category. However, if the community still wants to build paths when undesirable conditions exist, they should try to maximize the paths' suitability by minimizing the number of conflict points and making the paths as visible as possible to drivers.

2.3 Network Treatments and Facilities

Bicycle Routes

When providing a connection between bicycle facilities, a bicycle route can be relatively short, or it could continue for several miles. Bicycle routes of any length should use a standard bicycle route sign while longer bicycle routes should use a marker with a numerical designation in accordance with the MUTCD. The number may correspond to a parallel highway, indicating the route is a preferred alternative route for bicyclists. It is often desirable to use supplemental plaques with bicycle route signs or markers to display distance and destination information.

Most bicycle routes in this plan are relatively short. For short segments standard bicycle route signs should be sufficient. However, the drainage grates, pavement, and other road characteristics along these routes should be corrected as necessary to safely accommodate bicycles. For the longer bicycle routes, and for the specific neighborhood connecting routes, wayfinding signage will be useful. The example sign to the right displays the standard route sign with a simple text sign below directing the user to a destination.

Town of Ledgeview
Source: Brown County Planning Commission
Retrieved: April 2020

Oakland, CA

Confirmation Sign
Source: NACTO
Retrieved: April 2020

Wayfinding for Bicycle Routes

Using a comprehensive wayfinding system, a community may identify its preferred bicycle routes and destinations along them and encourage cycling by familiarizing riders with the network and making it easier for them to reach preferred destinations. The three types of bicycle wayfinding signs are:

- Confirmation signs reassure bicycle riders that they are on a designated route, and to make motorists aware they are driving along a route they can expect to encounter bicyclists.
- Turn signs indicate where a bike route turns onto a new street, or when the rider has reached a particular destination.
- Decision signs inform riders of different options they have from a given point and may provide additional information such as time and/or distance.

While wayfinding signs will need to adhere to specific placement standards, individual communities have flexibility for the signage design elements.

Pavement marking may also be installed along routes to help reinforce routes and directional signage.

Chicago, IL

Turn Sign
Source: NACTO
Retrieved: April 2020

Portland Metro Cities, OR

Decision Sign
Source: NACTO
Retrieved: April 2020

2.3 Network Treatments and Facilities

Lighting

Fixed-source lighting improves visibility along paths and at intersections. In addition, lighting allows the bicyclist to see the path direction, surface conditions, and obstacles. Lighting for shared use paths is important and should be considered where night usage is expected such as paths servicing college students or commuters and at highway intersections. Lighting should also be included in underpasses and tunnels or when nighttime security could be an issue. Depending on the location, average maintained horizontal illumination levels of 5 lux to 22 lux should be used. Where special security problems exist, higher illumination levels may be considered. Light standards (poles) should meet the recommended horizontal and vertical clearances. Luminaries and standards should be at a scale appropriate for a pedestrian.

Lighting technology has also improved through LEDs, resulting in more efficient lighting systems. Adaptive lighting technology also allows for more fine-tuning of lighting for a specific area, and for lighting levels that can adjust depending on ambient lighting and other factors.

Trail Lighting
Source: Fayetteville Flyer
Retrieved: April 2020

Utilize a Complete Streets Approach to Develop Policies That Guide Street Design and Construction

The State of Wisconsin made modifications to State Statute 84.01(35) which was known as the "Complete Streets Law". Despite the changes, communities are still required to give "due consideration" to providing bicycle and pedestrian accommodations in projects that utilize state or federal monies. Brown County and all Brown County communities are encouraged to develop roadway design policies that utilize complete streets principles to ensure that bicyclists, pedestrians, and motorists can be safely and conveniently accommodated on all streets. The communities should also work with the state and county to ensure that state and county highways in the metropolitan area are built and rebuilt to safely and conveniently accommodate all transportation modes.

Complete Streets Project
Source: Larisa Ortiz Associates
Retrieved: April 2020

2.3 Network Treatments and Facilities

Shared Lane Pavement Marking (Sharrows)

Shared lane pavement markings (or "sharrows") are bicycle symbols carefully placed to guide bicyclists to the best place to ride on the road, avoid car doors, and remind drivers to share the road with cyclists. Unlike bicycle lanes, sharrows do not designate a particular part of the street for the exclusive use of bicyclists. They are simply a marking to guide bicyclists to the best place to ride and prompt motorists that they should expect to see and share the lane with bicyclists.

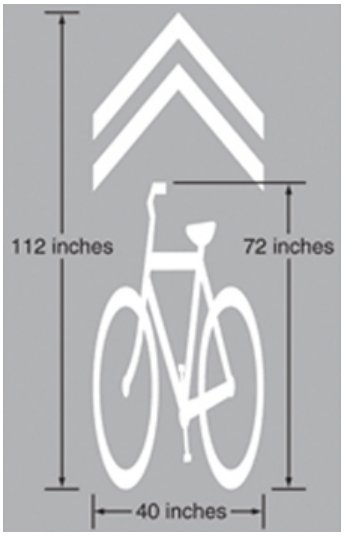
What do sharrows mean for motorists and bicyclists?

<u>Motorists:</u>

- Expect to see bicyclists on the street.
- Remember to give bicyclists three feet of space when passing.
- Follow the rules of the road as if there were no sharrows.

<u>Bicyclists</u>

- Use the sharrow to guide where you ride within the lane.
- Remember not to ride too close to parked cars.
- Follow the rules of the road as if there were no sharrows.



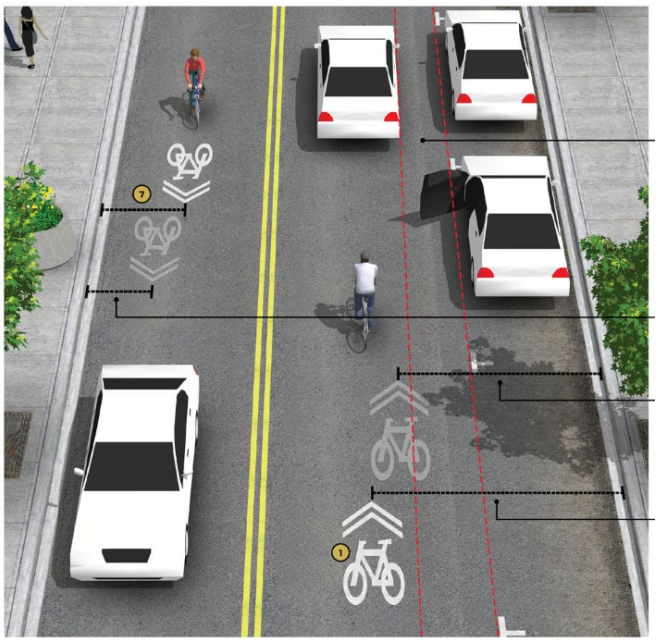
(Right) Typical Sharrow Marking
Source: FHWA
Retrieved: April 2020

While properly-placed sharrows do provide benefits, they should not be considered a substitute for bike lanes or other separation treatments where those types of facilities are otherwise warranted or space permits.

The NACTO Urban Bikeway Design Guide recommends placing shared lane markings, or sharrows, every 250 feet or more on low-traffic streets. Another placement consideration is how difficult it is for bicyclists to maintain the proper travel path; for these and higher traffic streets, placement more frequently (every 50 to 100 feet) may be necessary.

NACTO Design Guidance

Design guidance for shared lane markings. On streets with no parking, markings should be far enough into the street to direct bicyclists away from gutters, seams, and other obstacles (left lane). Where parking is present, the markings should be laterally far enough into the lane to stay out of the "door zone" (right lane). Source: Urban Bikeway Design Guide, National Association of City Transportation Officials.



Complete Streets Project
Source: Larisa Ortiz Associates
Retrieved: April, 2020

2.4 Programs and Operations - Education

The success of any bicycle and pedestrian program hinges upon educating the general public and public officials of the rights and rules that apply to these transportation modes. This education process includes learning where problems exist through the collection of accurate crash statistics, teaching children and adults proper methods of operating bicycles in traffic and increasing motorist awareness of cyclists and pedestrians.

Crash Reporting

Police officers are currently required to complete a form when a crash involves a motor vehicle, or the damage associated with a crash exceeds a certain cost. As a result of this policy, many bicycle crashes are not reported. To improve the information available for monitoring bicycle crashes, all incidents involving bicycles should be reported and placed on file.

Bicycle and Pedestrian Education Programs

Several methods should be used to educate people about the rights and responsibilities of cyclists and pedestrians. Examples of these methods are below.

- Primary schools should incorporate bicycle safety into the physical education curriculum. The local law enforcement agency could donate bicycle to be used in the physical education classes and could also offer to have an officer attend class and speak about the law and safety.
- Bicycle and pedestrian training should be offered to all law enforcement officers and included in driver's education courses. This would result in an increased level of awareness by law enforcement personnel and young motor vehicle operators.
- Send monthly or quarterly press release and public service announcement series on bicycle safety to local media during warm weather months.
- Bicycle education programs should be sponsored by law enforcement agencies, bicycle shop owners, bicycle clubs, communities, media groups, or other interested groups and individuals. Typically, a bicycle education program includes small seminars and demonstrations on bicycle maintenance, safe riding, and the rules of the road. It is important to extensively advertise these programs and to staff them with knowledgeable people.
- Community service programs would be effective in educating children and adults. Special presentations at schools, bicycle education programs, and education and enforcement programs have been helpful in many communities. For example, a spokesperson from a local law enforcement agency could talk to classes or entire schools about bicycle and pedestrian rules and safety.
- Village law enforcement officers can help with driver education through running "Operation Frogger" exercises. Law enforcement officers work with adult volunteers and monitor vehicular traffic for how well they stop for pedestrians. Officers will issue warning and citations, if warranted, for drivers that do not properly yield to the volunteer pedestrians.

Regardless of the program or programs chosen, the primary goal should be the establishment of policies and ordinances that promote safe and effective bicycle and walking. Educating the public about these policies and ordinances is the key to reaching the desired goals of any program.

Bicycle Education Course
Source: League of American Bicyclists
Retrieved: August 2020

2.4 Programs and Operations - Education

Pedestrian and Bicycle Signage

Bicycle and Pedestrian Education Programs

The Yield to Pedestrians in Crosswalk signs are becoming increasingly common and they are often installed after a difficult or dangerous crossing situation is observed and reported. Instead of reacting to problems, the village should identify crosswalks where these signs would be beneficial and place the signs in the crosswalks before receiving requests. These signs should be considered in areas around schools, parks, and other public gathering places where people tend to walk.

Share the Road Sign
Source: Bicycling.com
Retrieved: August 2020

Install Share the Road with Bicycles Signs Along Bicycle Routes and Other Streets Where Bicycle is Common

The Village of Wrightstown should consider installing "Share the Road with Bicycles" signs along its signed bicycle routes and on other streets where bicycle is common. This will remind drivers to look for bikes and remind bicyclists that they belong on the street.

Install Signs at Controlled Intersections that Remind Drivers to Look for Crossing Pedestrians

Several pedestrian crash reports from around the county stated or suggested that drivers did not see the pedestrian before hitting them. In many cases, it appears that drivers did not see pedestrians crossing at intersections because the drivers were looking for gaps in traffic prior to making turns.

To remind drivers that pedestrians could be present, signs should be posted at controlled intersections that tell drivers to look for crossing pedestrians before proceeding. The signs should be posted at the intersections where pedestrians were hit, and this program should be extended in the future to other intersections that are identified as potential hazards for pedestrians.

Share the Road Sign
Source: Bicycling Matters
Retrieved: August 2020

2.5 Programs and Operations - Enforcement

Bicyclists are subject to the same rules of the road and privileges of operations motorists in the state of Wisconsin. However, adult bicyclists often disregard traffic regulations thereby setting a poor example for young riders. This perpetuates the view that bicycles are toys rather than a legitimate mode of transportation. Motorists also often fail to follow basic rules of the road and fail to understand bicyclists'' rights and responsibilities. This results in dangerous situations for bicyclists and other road users and discourages many people from using bicycles for transportation.

Motorists and bicyclists are responsible for knowing and following the rules of the road. It is necessary for an enforcement program to allow bicyclists and motorists to be reprimanded for dangerous behavior and, if necessary, have their privileges revoked. Failure to follow the rules is often a result of people not knowing the rules or thinking that the rules do not apply to them. However, everyone must follow the rules in order to prevent crashes and allow for the safe and efficient movement of traffic.

Law Enforcement Education

Brown County and its communities rely on the local police departments and the Brown County Sheriffs Department to keep our communities safe. One of the aspects of the community that is often overlooked is the enforcement of the laws governing pedestrians and cyclists. This is often a result of the police officers not knowing those laws well enough for them to be consistently enforced. It should be a priority of all law enforcement agencies in Brown County to further their education in bicycle and pedestrian laws by attending the Wisconsin Pedestrian and Bicycle Law Enforcement Training Course or other similar classes.

Install Signs at Controlled Intersections that Remind Drivers to Look for Crossing Pedestrians

This program is designed to boost the level of enforcement exhibited toward cyclists while at the same time educating people about the safe and proper use of a bicycle on the road. This program would encourage police officers to issue citations to motorists, bicyclists, and pedestrians that are committing infractions. Each community could develop and hold a bicycle and pedestrian safety class similar to the class attended by drivers looking to reduce the number of points deducted from their driver's license after committing a traffic violation. This class could be held once a month to provide an opportunity for the offenders to gain a better understanding of bicycle and pedestrian scenarios and laws. The person receiving the citation will have the option of attending this class to reduce or eliminate the fine or if the offender choses not to attend the class, a fine commensurate with the violation shall be issued.

Develop a Pedestrian and Bicycle Law Enforcement Plan for the Village

The police department, in collaboration with village staff, should develop a bicycle and pedestrian law enforcement plan that identifies additional enforcement activities, training opportunities, and other actions that will help to achieve the plan's goal of developing a walking and bicycling culture in the village.

Bicycle Safety Training
Source: United Steel Workers
Retrieved: August 2020

2.5 Programs and Operations - Enforcement

Treat Enforcement Actions as Education and Outreach Opportunities

As Wrightstown's pedestrian and bicycle systems continue to be developed and residents are being educated on how to use them properly, the police department should support these efforts by enforcing the rules of the road as they apply to drivers, pedestrians, and bicyclists. These enforcement activities should initially be treated as education outreach programs where officers see offenses, stop the offenders, explain what they did wrong, and give them a leaflet or other piece of literature. The department could issue citations for serious violations and repeat offenses, but most ticketing should not occur until after the outreach element has been in place for several months.

2.6 Programs and Operations - Encouragement

Special events have been proven effective in inspiring students, parents, elected officials and school leaders to try something new, which often results in the development of ongoing programs to encourage walking and bicycling. Walk to School Day and Bike to School Day are some of the most popular events taking place at schools across the country each year.

The village may also implement specific design tools that help improve safety and convenience for pedestrians and bicyclists.

Bicycle Parking

The provision of bicycle parking facilities is essential in the effort to promote bicycling, for people are discouraged from bicycling if adequate parking is not available.

Bicycling parking needs vary depending on the location, duration of use, and the type of parking available. The Associate of Pedestrian and Bicycle Professionals (APBP) developed the *Essentials of Bike Parking*, which is designed to provide guidance for governments and businesses that are planning to purchase or install bicycle parking fixtures. The following are suggested performance criteria for bicycle parking racks.

- Supports bike uprights without putting stress on wheels.
- Accommodates a variety of bicycles and attachments.
- Allows locking of frame and at least one wheel with a U-lock.
- Provides security and longevity features appropriate for the intended locations.
- Rack use is intuitive.

Left:
Bike Parking – Badger State Brewing
Source: Brown County Planning Commission
Retrieved: 2018

Below:
Conceptual Bicycle Parking
Source: Brown County Bicycle Plan
Retrieved: 2018

Bike Arc Design
Source: Pinterest
Retrieved: August 2020

2.6 Programs and Operations - Encouragement

Bicycle Parking Standards

The APBP recommends using the bicycle racks to meet the parking performance criteria; however, they also recommend that a rack be tested before committing to a mass installation project. While there are different bike rack types, the three bicycle parking examples on the right, when properly designed and installed, typically meet all performance criteria and are appropriate for use in nearly any application. Other types of bicycle parking may work in certain instances but are not considered ideal for performance concerns.

The proposed bicycle corridor system presented in this document is designed to provide direct connections to several activity centers in the village. However, this system will not be very attractive to cyclists if their destinations lack secure bicycle parking facilities. The provision of bicycle parking by schools, businesses, commercial establishments, local governments, and other major destinations is one of the most significant incentives for people to use bicycles.

The generally accepted bicycle parking requirements are listed below.

Bicycle Parking Space Requirements	
Type of Establishment	Minimum # of Parking Spaces
Primary or Secondary School	10% of the # of students plus 3% of the number of employees
College or University	6% of the # of students plus 3% of the number of employees
Dorms, Fraternities, & Sororities	1 space per 3 students
Shopping Center	5% of the number of automobile spaces
Commercial Street	1 space per 3,000 sq. ft. of commercial spaces
Sport and Recreational Center	12% of the number of automobile spaces
Office Building	10% of the number of automobile spaces
Government Building	10% of the number of automobile spaces
Movie Theater or Restaurant	5-10% of the number of automobile spaces
Manufacturing Facility	4% of the number of automobile spaces
Multi-unit Housing	1 space per 2 apartments
Public Transit Station	20 spaces minimum

2.6 Programs and Operations - Encouragement

Mix Compatible Land Uses to Enable and Encourage Walking and Biking

The Village of Wrightstown has provisions within the zoning code to allow for mixing of land uses through the P-1 Planned Development District. Mixing land uses increases the number of destinations that can be easily reached by pedestrian and bicyclists. The village should continue to focus on these locations by incorporating the appropriate types of transportation facilities to allow key areas to become more accessible.

Require Bicycle and Pedestrian-Friendly Site Designs and Direct Walkway Connections Between Buildings and Sidewalks

To enable and encourage people to travel to and within the mixed-use areas proposed in the village, village staff should consider amending its zoning ordinance to ensure that new and redevelopment projects have buildings with zero or minimal setbacks, parking along the side or rear, and other similar features. Requiring direct walkway connections to the sidewalk and between buildings will ensure that pedestrians are able to easily access the site.

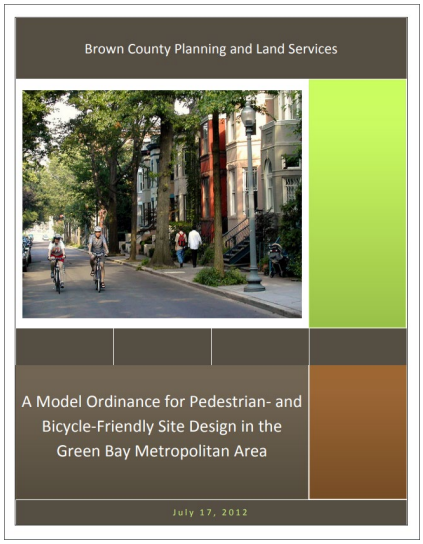
Maintaining Pedestrian and Cycling Facilities

Pavement Surface irregularities can do more than cause an unpleasant ride. For example, gaps between slabs or overlay faults that run parallel to the direction of travel can trap a bicycle wheel and cause a fall, and holes and bumps can cause bicyclists to swerve into the path of motor vehicles traffic as they attempt to avoid these hazards. Therefore, the pavement along the recommended bicycle corridors should be maintained to avoid these potential problems. This could involve filling joints, adjusting utility covers, and possibly resurfacing streets to make them suitable for bicycling. Uneven sidewalks with gaps or ledges also pose hazards for pedestrians. The village should ensure that a process is in place for citizens to report hazards.

Resources

A Model Ordinance for Pedestrian- and Bicycle-Friendly Site Design in the Green Bay Metropolitan Area

This document provides numerous techniques that help improve walking and bicycling conditions. These techniques should be considered for incorporation into local codes and ordinances where/when appropriate.



Deteriorated fault line in the middle of a bicycle lane
Location: City of Green Bay
Source: Google Street View 2019
Retrieved: 2020

2.6 Programs and Operations - Encouragement

Organize Walk and Bike to School Days

To educate students and their parents about safe walking and bicycling practices and encourage parents to allow their children to frequently walk and bike to school, the village should work with the West De Pere School District and the Wrightstown Community School District to organize walk and bike to school days at some or all of the schools within the districts. These events could be held in October to coincide with international walk and bike to school day events, and the National Center for Safe Routes to School has several resources available to help make programs like this a success.

Source: US Dept. of Transportation
Retrieved: 2020

Other Encouragement Methods

In addition to bicycle parking facilities, there are several other improvements that complement bicycle paths and roadway improvements. These include:

- Rest areas on long, uninterrupted bicycle paths.
- The installation of bicycle racks on Green Bay Metro buses. Adding bicycle racks to the busses in 2007 has been a success. While the Village of Wrightstown is outside of the Green Bay Metro service area, people could still ride to the west side of De Pere or Ashwaubenon and take a bus from that location.
- Bicycle corridor maps. Maps are helpful tools that help cyclists navigate corridors and locate parking and other transportation facilities. Brown County Planning most recently updated the bicycle map with an online version that is kept current and can be accessed via a mobile device (phone).
- Coordinate with Google Maps to provide information about bicycle and pedestrian facility locations to enable better routing when requesting directions.
- Work with local bicycle clubs, cycling teams, and other organizations to help promote cycling and serve as an educational resource for people who are learning about cycling in the area.

Walking School Bus
Source: Mead & Hunt
Retrieved: 2020

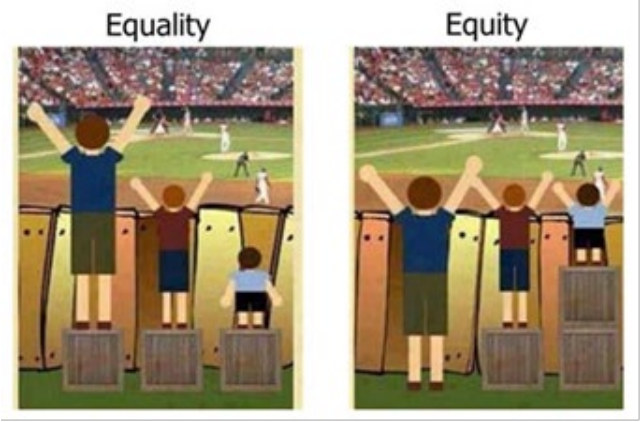
Fox River Trail Rest Stop
Source: Google Street View
Retrieved: 2020

2.7 Programs and Operations - Equity

Equity has emerged as an important consideration for transportation officials working on developing connected multimodal systems that provide meaningful choices in transportation. Equity in transportation seeks fairness in mobility and accessibility to meet the needs of all community members. A central goal of transportation equity is to facilitate social and economic opportunities through equitable levels of access to affordable and reliable transportation options based on the needs of the populations being served, particularly populations that are traditionally underserved. Traditionally underserved groups include individuals in at least one of the following categories:

- Low Income
- Minority
- Elderly
- Limited English Proficiency, or
- Persons with Disabilities

It is important to note that transportation equity does not mean allocating transportation resources in equal amounts to all people. This highlights the difference in equality versus equity. The left graphic below depicts the difference.



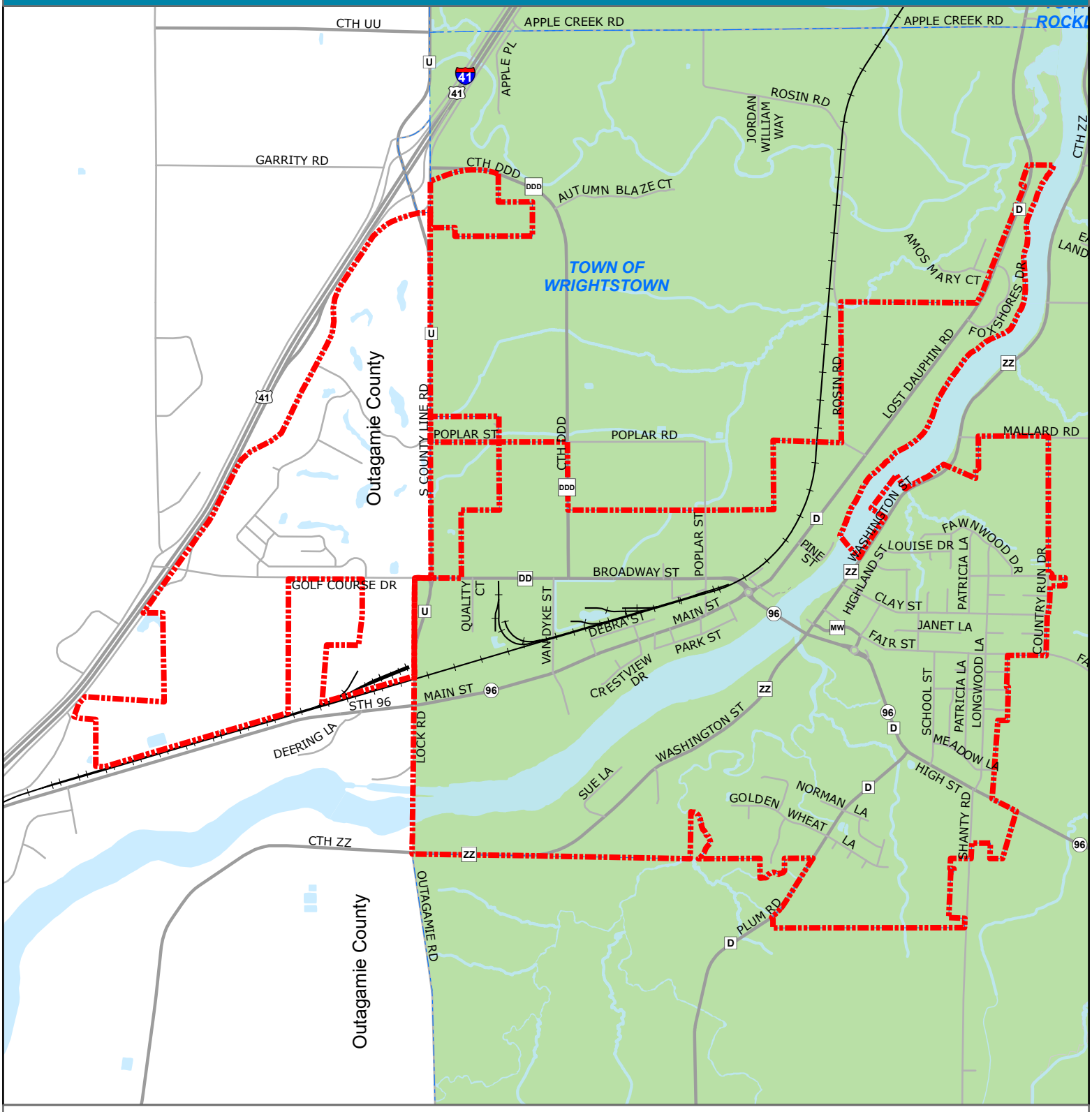
Equality vs. Equity
Source: FHWA and Out Front Minnesota
Retrieved: October 2020

Equity for Planning and Project Prioritization

An equitable transportation plan considers the unique circumstances impacting various community members' mobility and connectivity needs and uses this information to determine appropriate resources to allocate to different people and places so that the transportation network more effectively serves all members. The following maps look at various aspects of equity within the village such as minority populations, income and access to essential services.

In summary, it does not appear that the village has any majority equity issues currently; however, as the village continues to grow, the demographics will likely change.

Equity Analysis
Income by Census Block Group



Legend

Household Income by Census Block Group

$0 - $21,720	(Poverty Level)
$21,721 - $45,420	(Low Income)
$45,421 - $56,775	(Low to Median Income)
> $56,775	(Above Median Income)

Municipalities

- Village of Wrightstown
- Surrounding Municipalities

Street Centerline

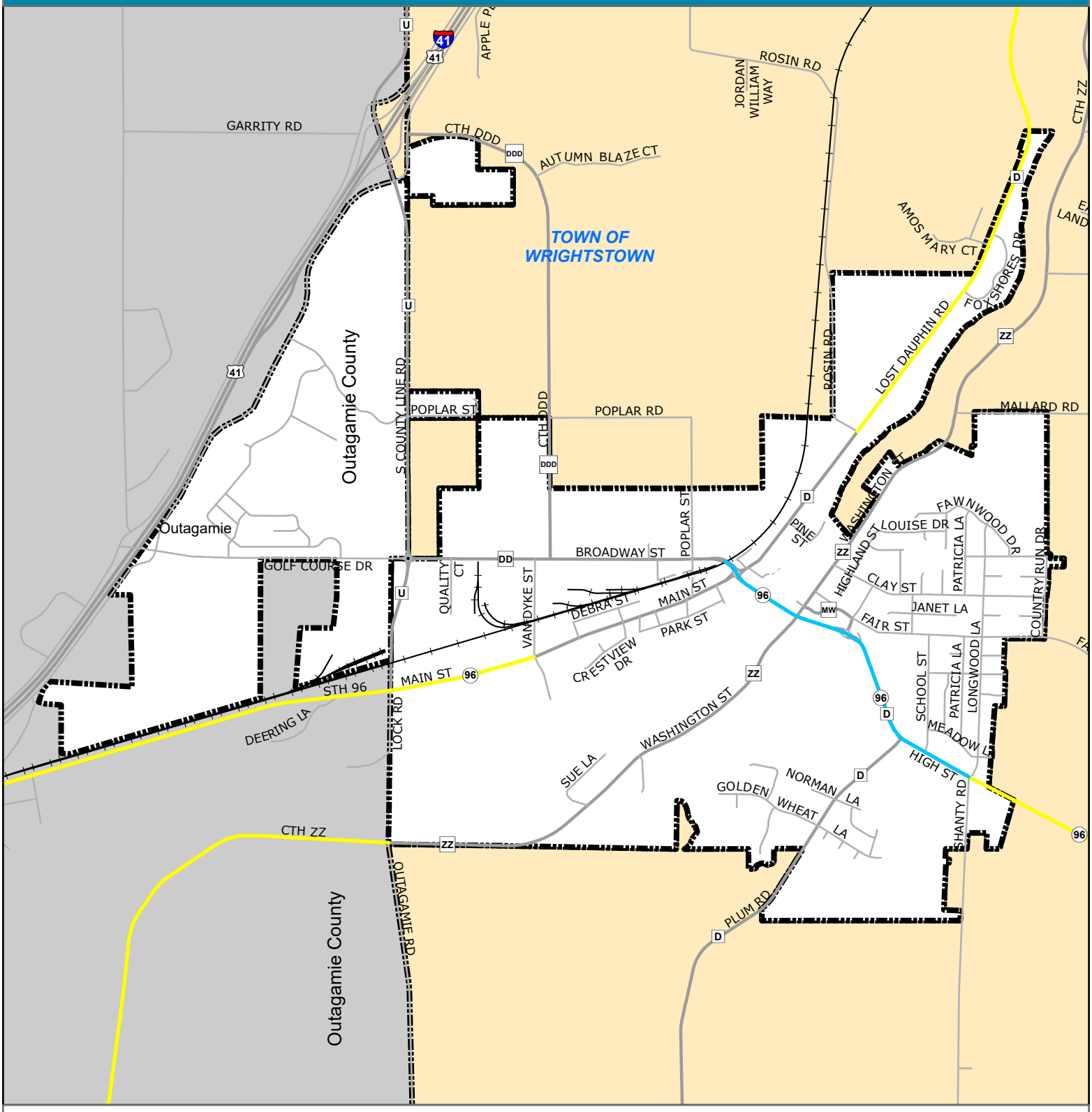
- Highway (Federal, State, or County)
- Local Road or Street; Ramp; Roundabout
- Private Road or Street

0 ¼ ½ 1
Miles

N

Date: 10/14/2021
Data Source: Brown County Planning Commission

Equity Analysis
Minority Population by Census Block Group



Legend

Bicycle Facilities
- 5' Paved Shoulder
- Bicycle Lane

Street Centerline
- Highway (Federal, State, or County)
- Local Road or Street; Ramp; Roundabout
- Private Road or Street
- Outagamie County

Minority as a Percent of Total Population by Census Block Group
- < 18.4%
- 18.5 % - 25 %
- 25.1 % - 50 %
- > 50.1 %

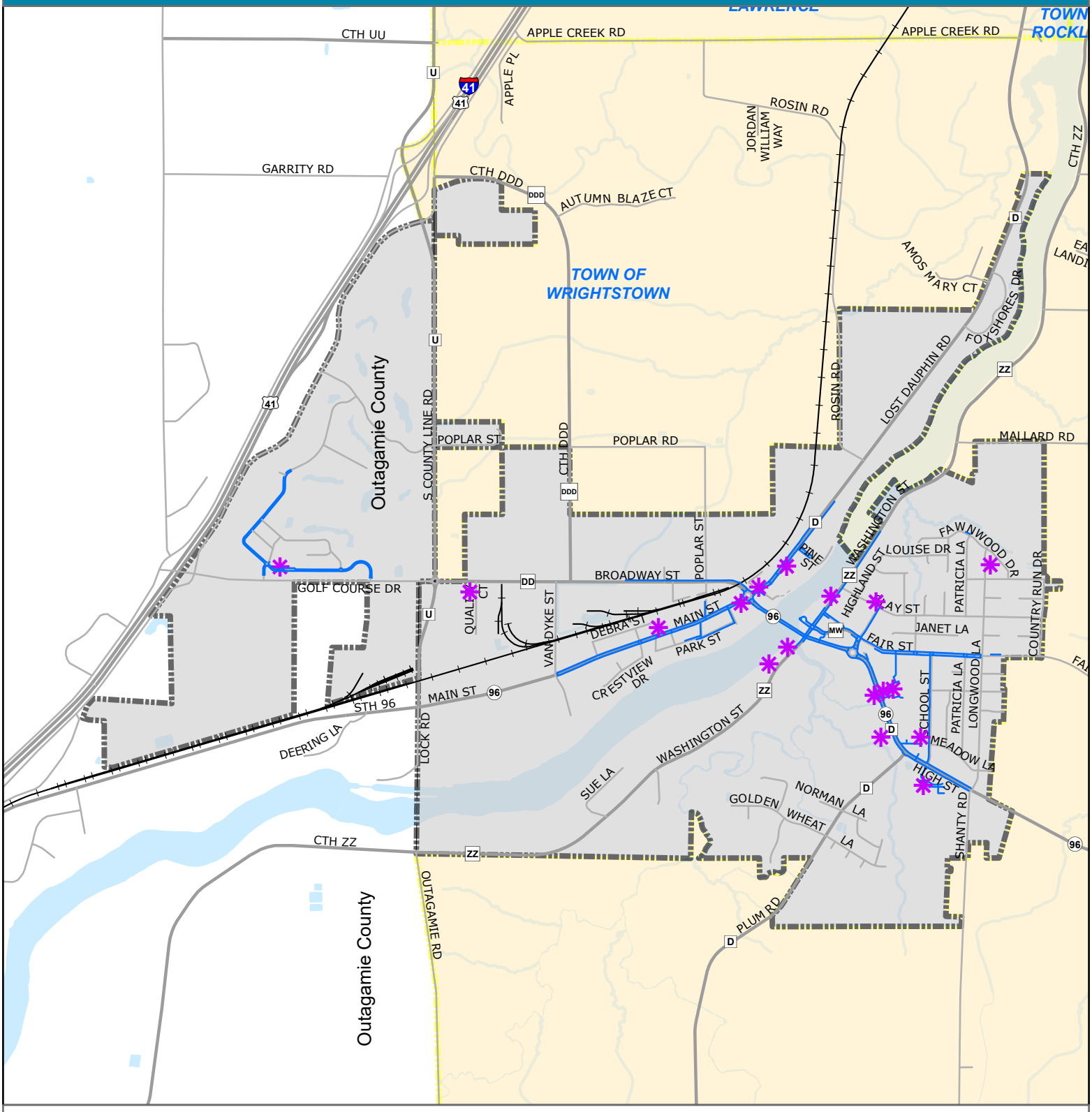
Municipalities
- Village of Wrightstown
- Brown County Community

0 ¼ ½ 1 Miles

N

Date: 10/14/2021

Sidewalk Access to Essential Services



Legend

- Essential Services
- Sidewalk

Street Centerline

- Highway (Federal, State, or County)
- Local Road or Street; Ramp; Roundabout
- Private Road or Street
- Outagamie County

Municipalities

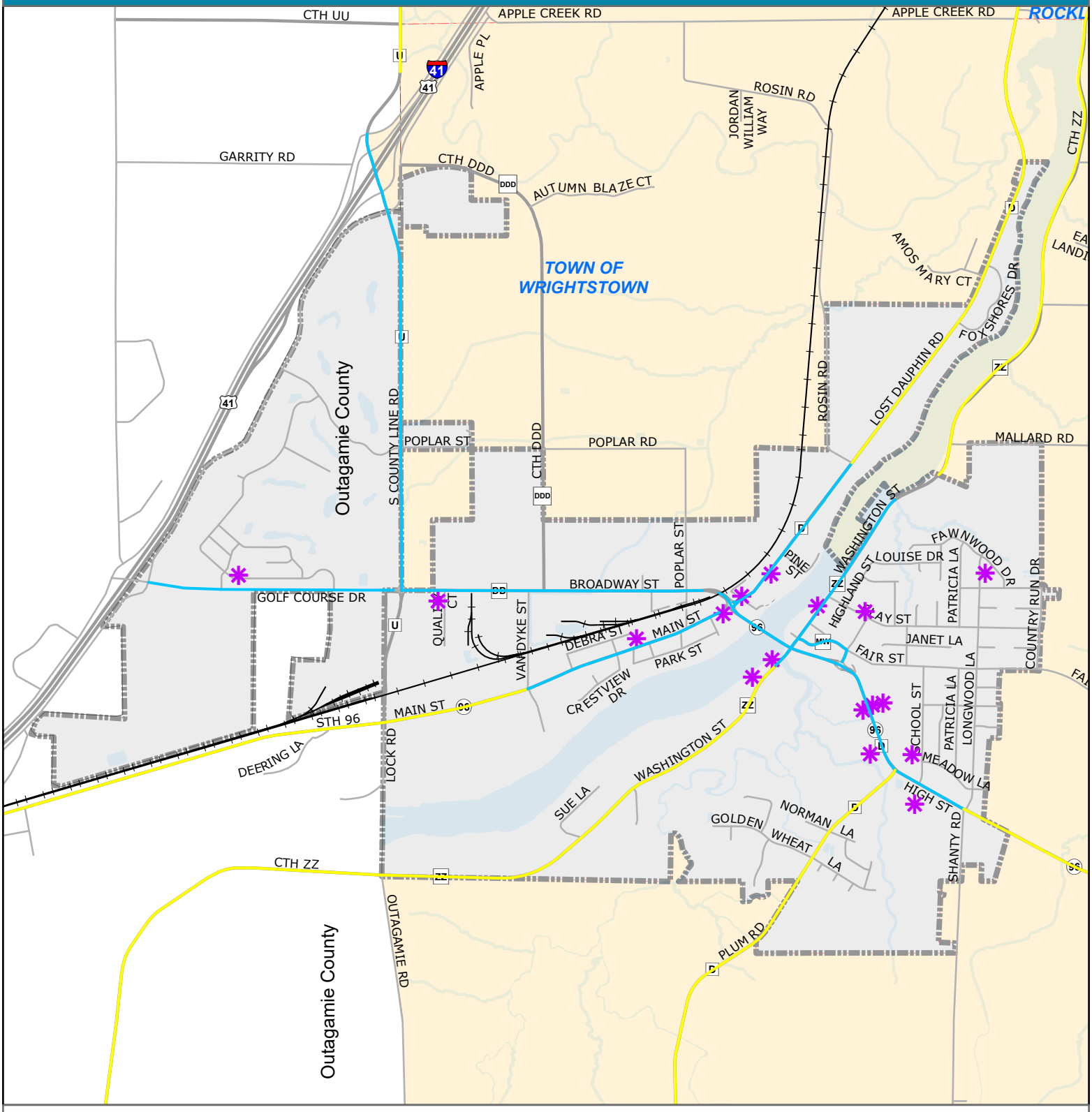
- Village of Wrightstown
- Brown County

0 ¼ ½ 1 Miles

N

Date: 10/14/2021
Data Source: Brown County Planning Commission

Bicycle Facilities to Essential Services



Legend

- Essential Services

Street Centerline

- Highway (Federal, State, or County)
- Local Road or Street; Ramp; Roundabout
- Private Road or Street

Municipalities

- Village of Wrightstown
- Surrounding Municipalities

Bicycle Facilities

- 5' Paved Shoulder
- Bicycle Lane

0 ¼ ½ 1 Miles

N

Date: 10/14/2021
Data Source: Brown County Planning Commission

3. Recommendations and Implementation

3.1 Network and Infrastructure Recommendations

Proposed Pedestrian and Bicycle Facilities

The Village of Wrightstown is small and compact which creates a scenario that encourages walking and bicycling. The drawback for the village currently is more recent development that is occurring near the community boundaries that does not connect to important community destinations such as schools and the village hall. Another challenge facing the village is the Fox River that acts as a natural barrier separating the east side from the west side of the village. The following table details the recommendations for improving or installing bicycle and pedestrian facilities.

Map Point	Location	Termini	Rec. Facility	Priority PVMT Rating	Justification
1	Plum Road / CTH D	Golden Wheat Lane to Day Street / STH 96	Multi-use Trail (west side of road)	High WISLR Pavement Condition Rating: 7 and above	Future development in this area is imminent. Many families with children live in these neighborhoods and they are disconnected from the schools. Current traffic conditions on CTH D are not conducive to encouraging people (including children) to walk and ride their bicycle to school and to other destinations in the village.
2	Longwood Lane	STH 96 / Day Street to Fawnwood Drive	Buffered Bicycle Lanes and Sidewalks	High WISLR Pavement Condition Rating: Varies between 4 and 9	Longwood Lane presents an opportunity to create a north/south bicycling and walking corridor that connects current and future development to existing sidewalks on Fair Road and on Day Street. The existing sidewalks then connect to the Schools as well as other destinations near downtown. The current road width is 36'. The road can be striped to create 2 11' drive lanes and 2 5' bicycle lanes that include a 2' painted buffer between the bike lane and the drive lane.
3	Meadow Lane and Nicole Lane	Longwood Lane to School Street	Sidewalks	High WISLR Pavement Condition Rating: NA	These two roads are direct connections to the school. A sidewalk on the north side of Meadow Ln and sidewalks on both sides of Nicole Ln would improve access to the school grounds.
4	Fair Road	Country Run / Community Boundary to Turner Street	Sharrows	Medium WISLR Pavement Condition Rating: Between 5 and 4	This section of Fair Road sees a fair amount of traffic and the traffic is transitioning from a 45mph speed limit to the east to 25mph as drivers enter the village. Fair Road does have some traffic calming devices (curb bump outs) however, adding a stripe to the parking areas and including sharrows would help delineate the parking lane from the travel lane where cyclists should be riding.

3.1 Network and Infrastructure Recommendations

Map Point	Location	Termini	Rec. Facility	Priority	Justification
				PVMT Rating	
5	Main Street / CTH ZZ	STH 96 Bridge to Community Boundary	5' Paved Shoulder	Low 7 and above	This section of CTH ZZ is the last remaining "gap" between the Village of Wrightstown and the City of Kaukauna. Pavement conditions according to WISLR are still excellent so improvements are not going to occur soon. The village and Brown County need to consider including 5' paved shoulders on this section of CTH ZZ when the road is ready for resurfacing or reconstruction.
6	Main Street / STH 96	Van Dyke Street to Green Street	40' Plan	High State Rating: Poor & Below	Implementing the 40' plan consists of restriping the road to include an 8' parking lane on the west side of the road a 5' bike lane, two 11' drive lanes, and another 5' bicycle lane. If the 40' plan is implemented, the addition of curb bump outs, like the ones on Fair Road, could be added at the intersecting streets on the west side of the road. Coordination with WisDOT must occur prior to implementing this plan.
7	Main Street / CTH D	Hickory Street to the end of curb and gutter	40' Plan	Low 9 and above	Implementing the 40' plan consists of restriping the road to include an 8' parking lane on the west side of the road a 5' bike lane, two 11' drive lanes, and another 5' bicycle lane. An additional improvement to consider is an enhanced crosswalk between St. Clare Parish and the parking lot across the street. This should include a curb bump out on the west side of the street to help reduce the crosswalk distance and the help define the on-street parking areas.
8	Broadway Street / CTH DD	Poplar Street to Steffins Street	32' Plan and sidewalks on north side of the road	High 4	This section of road is getting close to requiring repairs. The current road width could be maintained however, the road should be restriped to include 5' bike lanes and two 11' drive lanes. Improvements should also include a sidewalk on the north side of the road to connect the existing sidewalks to a future pedestrian facility to the west.
9	Broadway Street / CTH DD	Steffins Street to CTH U	32' Plan and multi-use trail on north side of road	High Unknown	This section of road is currently rural and is planned to be reconstructed soon. The road should be designed to match the 32' plan that is recommended to the east and it should also include a multi-use trail on the north side of the road.
10	STH 96	Shanty Road to Turner Street Roundabout	Stripe and sign bicycle lanes	Medium State Rating: Excellent	STH 96 was recently reconstructed and includes bicycle lanes. The village should coordinate with the WisDOT to stripe and sign this section of road to create a bicycle facility.

3.1 Network and Infrastructure Recommendations

Map Point	Location	Termini	Rec. Facility	Priority	Justification
				PVMT Rating	
11	Golf Course Drive	CTH U to Royal St Pats Drive	32' Plan and multi-use trail on north side of the road	Low WISLR Pavement Condition Rating: Unknown	Golf Course Drive is the main road connecting the Royal St. Patrick's neighborhood to the proposed improvements on Broadway Street/CTH DD that lead into downtown. Striping this road with bike lanes would create a connection to the proposed bike lanes east of CTH U and adding an off-street multi-use trail on the north side of the road would provide pedestrians a connection to the proposed sidewalks on the northside of Broadway Street/CTH DD.
12	Clay Street	Highland to Short Street	Sidewalks on both sides of the street	High NA	Clay Street is one of only two uninterrupted east/west corridors on the east side of the Fox River. The addition of sidewalks on both sides of Clay street will create connections to existing sidewalks on Washington Street and Turner Street and it helps connect students to St. John Evangelical Lutheran School.
13	Clay Street	Short Street to Country Run Drive	Sidewalks on both sides of the street	Medium NA	This portion of Clay Street is a lower priority due to its proximity to the schools and its connection to existing facilities. This is still an important portion of the corridor that should be implemented in the future.
14	Country Run Road	Fair Road to Windy Wood Lane	Sidewalk on west side of road	Low NA	As the village continues to develop, providing pedestrian facilities along certain corridors will be important. The addition of sidewalks on the west side of this road would help keep walkers out of the road but it is not an immediate need.
15	Windy Wood Lane	Country Run Drive to Longwood Lane	Sidewalks on both sides of the street	Medium NA	This east/west corridor is not long but it does provide a connection between two other recommended sidewalk installations. These intermediate connections help to create a more complete pedestrian network that makes destinations more accessible to residents in the village.
16	Highland Street	Clay Street to Louise Drive	Sidewalks on east side of road	Low NA	Providing sidewalks on the east side of the road would create a connection between the higher density residential units that are home to many families and the schools and downtown businesses.
17	High Street / CTH MW	STH 96 to CTH ZZ	Bicycle lanes	High WISLR Pavement Condition Rating: 10	Road was constructed to accommodate a 5' bicycle lane. The village can stripe the road at a minimal cost and gain a bicycle facility that connects existing facilities on STH 96 to downtown.

3.1 Network and Infrastructure Recommendations

Map Point	Location	Termini	Rec. Facility	Priority PVMT Rating	Justification
18	Louise Drive	Highland Street to creek	Sidewalks on south side of road	Low WISLR Pavement Condition Rating: Unknown	Like the proposed sidewalks on Highland Street, sidewalks on the south side of Louise Drive would create a connection between the higher density residential units that are home to many families and the schools and downtown businesses.
19	Washington Street	Plum Creek to Northern Community Boundary	Sharrows	Medium WISLR Pavement Condition Rating: 4	The village is working with Brown County Highway to design and reconstruct this section of Washington Street. The new design will include an off-street trail adjacent to the Fox River, on street parking on the west side of the street and two travel lanes. Due to the restricted area, bike lanes could not be included however sharrows an appropriate signage will be sufficient for this section of the CTH ZZ corridor.

Additional Recommendations

The following recommendations did not fit the format above, however, are recommendations that have can help foster a walking and bicycling culture in the village.

Crossing Guard

Based on feedback received from the Steering Committee during the field review activity held in May of 2020, many kids need to cross Fair Road to get to school. Fair Road is also busy in the mornings when school is in session, and it makes for a dangerous situation. Adding a crossing guard at the intersection of Fair Road and Short Street would improve the situation for drivers and pedestrians alike.

Stop Sign

Based on feedback received from the Steering Committee during the field review activity held in May of 2020, vehicles travel well above the posted speed limit on Fair Road. This is a bad scenario when the village is actively working toward creating better and safer conditions for bicyclists and walkers. Creating a four-way stop at the intersection of Longwood Lane and Fair Road would help to reduce speeds on Fair Road and it would help motorists' transition to a slower speed though the neighborhood and past the school properties.

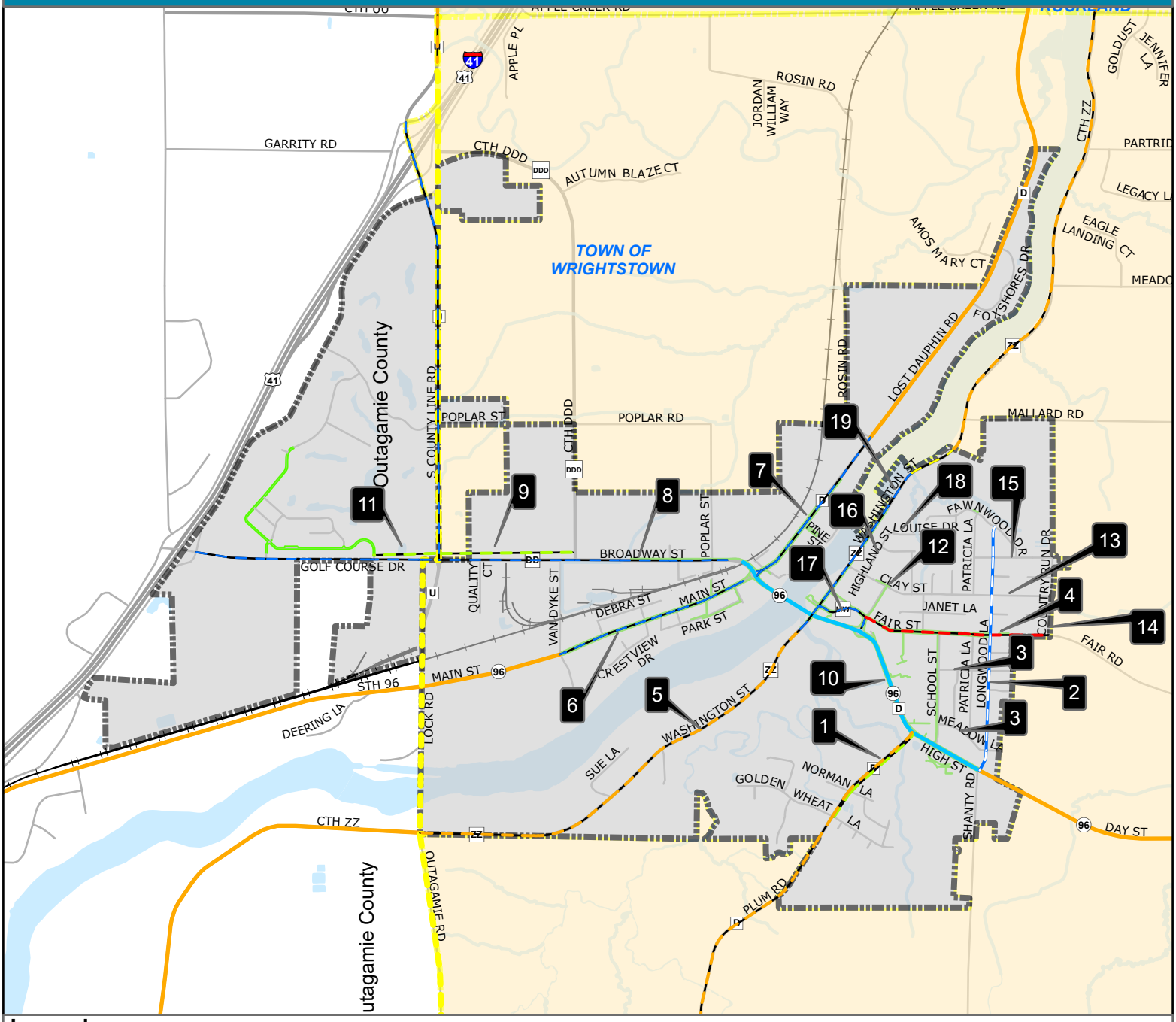
Connect Existing and Future Neighborhoods to the High School

Wrightstown High School is connected to the sidewalk network along STH 96, however, there is an opportunity for the village to make a connection to the neighborhoods to the south as development is proposed in this area. The village needs to work with developers to create a safe and convenient corridor that would connect the existing and future development to the school grounds.

Traffic Control Devices

The village should consider adding traffic control devices at high-traffic areas near the school campus, such as School Street and Fair Street, that will help pedestrians safely cross the street.

Village of Wrightstown Proposed Bicycle and Pedestrian Facilities



Legend

Name

- Village of Wrightstown
- Brown County

Street Centerline

- Highway (Federal, State, or County)
- Local Road or Street; Ramp; Roundabout
- Private Road or Street
- Sidewalk
- Railroad

Bicycle Facilities

- Existing, 5' Paved Shoulder
- Existing, Bicycle Lane
- V Wrightstown Sidewalks in Outagamie County

Proposed Bicycle Facilities

- 4' Paved Shoulder
- 5' Paved Shoulder
- Bicycle Lane
- Buffered Bicycle Lane
- Multi-Use Trail
- Sharrow

N

0 ¼ ½ 1
Miles

Date: 10/14/2021
Data Source: Brown County Planning Commission

3.2 Code Change Recommendations

Proposed Revisions to the Village of Wrightstown Zoning Code

Based on a review of the Village of Wrightstown Municipal Code of Ordinances, various sections were identified with recommended changes to improve walkability and bikeability in the village.

Article III Subdivision Layout

Section 205-8 Blocks

A. Restricted. The Length, Width and Shape of a block shall be appropriate for the locality of the type of development contemplated, but block lengths in residential areas shall not exceed 1,500 feet between right-of-way lines ***with reserved pedestrian ways a minimum of 500 feet apart*.**

Justification: Pedestrian and Transit-Friendly Design
(https://archive.epa.gov/greenbuilding/web/pdf/ptfd_primer.pdf)
High levels of walkability shall be achieved though limiting block lengths to around 300 feet. Block lengths of 400 to 500 feet still work well, however, as block lengths exceed 600 feet or more, adjacent blocks become isolated from each other.

Article III Subdivision Layout

Section 205-15 Village Streets

B. See table below for recommended changes. The recommended changes are from Brown County Planning Commission staff and are based on looking at ways to potentially modify the street widths that allow for pedestrian and bicycle facilities while allowing for more buildable area on individual lots and still facilities smooth vehicular movement.

Roadway Type	R/W Widths (feet)	Class 1 Min. Urban Street Width (feet)	Design Specifications
Arterial	62-70	39	Includes two 11’ drive lanes and two 8’ parking lanes, 5’ sidewalks on both sides of road, 6-10’ terrace on both sides of road
Arterial with bike facility	72-80	49	Includes two 11’ drive lanes, two 8’ parking lanes, and two 5’ bike lanes (48’ plan), 5’ sidewalks on both sides of road, 6-10’ terrace on both sides of road
Collector	60	31	Includes two 11’ drive lanes and one 8’ parking lane, 5’ sidewalks on both sides of road, 6-10’ terrace on both sides of road
Collector with bike facility	70	41	Includes two 11’ drive lanes, two 5’ bicycle lanes, and one 8’ parking lane (40’ plan), 5’ sidewalks on both sides of road, 6-10’ terrace on both sides of road
Minor	50	25	Includes two 12’ drive lanes, 5’ sidewalks on both sides of road, 5-8’ terrace on both sides of road
Minor with bike facility	58	33	Includes two 11’ drive lanes and two 5’ bicycle lanes, 5’ sidewalks on both sides of road, 5-8’ terrace on both sides of road

3.2 Code Change Recommendations

Article V Subdivision Improvements

Section 205-19 Required Improvements

F. Pedestrian Ways: The subdivider shall be responsible for the design and installation of all required pedestrian ways including but not limited to sidewalks and multi-use trails. These pedestrian ways can be installed at the time of the street improvements.

Justification: Reductions in the amount of required ROW from the previous recommendations and the reduced pavement widths will offset the cost of the developer installing the sidewalks.

Article VIII Off Street Parking and Loading

Section 206-51 Design standards for parking facilities

A. Parking areas may be located in any yard space for commercial uses; ***however, uninterrupted walkways shall be provided between the commercial uses and adjacent sidewalk or trails to allow pedestrians to safely access the uses without crossing the parking areas.*** All other uses, parking may be located in any yard but the front yard for other uses but shall not be closer than 10 feet to any street line. No parking space or area shall be permitted within five feet of a property line in a side yard.

Justification: Site plans designed to accommodate pedestrians and bicyclists help encourage walking and bicycling in the village. Communities that encourage and support walking and bicycling tend to be desirable places to live and work for people across a variety of life stages.

Article III Site Plan and Design Review

Section 207-1 Purpose and intent

A. Provide for safe, efficient vehicular, pedestrian, ***and bicycle circulation.***

Justification: The village should recognize bicyclists as one of the transportation network users to help encouragement efforts.

3.3 Program and Operational Recommendations

Include Bicycle Lanes in Planned Projects

Any new planned street construction or reconstruction in the village should include bicycle and pedestrian facilities. The cost of adding bicycle facilities would also be lower if they were included in construction or expansion projects because of the economy of scale. Essentially, it would be less expensive to add a few extra feet of pavement during a road project than it would to build bike lanes as stand-alone projects.

Construction of Lanes as Conditions of Jurisdictional Transfers

If or when roads are being considered for transfer to other jurisdictions (county to town, state to county, etc.), each entity involved should examine the possibility of adding bicycle and pedestrian facilities as conditions of the transfer. This could save money by avoiding having to retrofit bicycle and pedestrian facilities in an area that was not planned to accommodate that type of infrastructure.

Education

The village can start building awareness around pedestrians and bicyclists by purchasing and incorporating signage to highlight key areas so that all users know to look for and expect those users, and to establish designated pedestrian/bicycle routes. The village can also partner with village law enforcement officers and the Wrightstown School District to create and implement community educational opportunities.

Enforcement

The Village of Wrightstown Police Department should continue pedestrian and bicycle law enforcement/education programs that anticipates new pedestrian and bicycle facilities. When the village installs new facilities, such as the potential sidewalks on Nicole Lane and Meadow Lane, should monitor these locations to ensure that additional enforcement measures such as crossing guards or other forms of traffic control are not necessary.

Encouragement

As the village continues to see new development, it should strive to ensure that pedestrian and bicycle facilities are included. This may be done through code revisions, and through the site review process.

3.4 Implementation and Evaluation

The completion of this plan should be celebrated as a significant milestone for the Village of Wrightstown. The goals, objectives, and recommendations that were created during the planning period provided guidance for the development and evaluation of new facilities, educational efforts, and other policies and programs. However, the key to any successful plan is the implementation of its recommendations and the evaluation of its successes and shortcomings.

The recommendations for the village are not intended to be implemented in one year. Some of the recommendations might take many years to be implemented due to limited funding, public works scheduling, or a variety of other factors. But other recommendations such as starting to designate pedestrian and bicycling routes, restriping roads, and creating educational and outreach opportunities could be implemented more quickly.

Evaluation

Evaluation is typically the first and last of the "E's" of Safe Routes to School planning, and it is a critical component of the program. As the recommendations contained within this plan are implemented, the village and the school district can work together to survey students and parents to see if the improvements are impacting their travel patterns or their mode of travel to schools. Another evaluation method is to observe vehicle speeds in school zones and ask parents and crossing guards if they believe driver behavior has changed since physical improvements have been installed or after educational and enforcement components have begun.

3.5 Possible Funding Sources

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) established several federal programs that could fund bicycle and pedestrian improvements on or near roads that are included on the federal functional classification system. Passed in 1998, the Transportation Equity Act for the 21st Century (TEA-21) sought to improve safety, protect public health and the environment, and create opportunity for all Americans. The Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law in July of 2012. MAP-21 created a streamlined and performance-based surface transportation program and built on many of the highway, transit, bike, and pedestrian programs and policies established as part of ISTEA . In December of 2015 the Fixing America's Surface Transportation (FAST) Act was signed into law. This is the first federal law in over a decade to provide long-term funding certainty for surface transportation infrastructure planning and investment. The FAST Act maintains a focus on safety, keeps intact the established structure of the various highway-related programs, continues efforts to streamline project delivery and, for the first time, provides a dedicated source of federal dollars for freight projects. The FAST Act is important because it provides some level of funding certainty through 2020. Bicycle and pedestrian funding is estimated to be $800 million a year.

The following list of programs can support the development of a comprehensive bicycle and/or pedestrian network. Many of the bicycle facilities and multi-use trails in Brown County have been built using state or federal transportation grants from the following list.

Transportation Alternatives Program (TAP)

TAP provides funding for a variety of alternative transportation projects including construction, planning, and design of on-road and off-road facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation and safe routes to school programs and facilities. TAP grants for smaller communities located outside of the urbanized area are available through the statewide TAP program (the Brown County Planning Commission, as the area's MPO provides the grants for the urbanized area). TAP grants can cover up to 80% of a project's cost.

Surface Transportation Block Grant (STBG)

The Fixing America's Surface Transportation (FAST) Act converts the long-standing Surface Transportation Program (STP) into the Surface Transportation Block Grant Program (STBG) acknowledging that this program has the most flexible eligibilities among all Federal-aid highway programs and aligning the program's name with how the Federal Highway Administration (FHWA) has historically administered it. The STBG promotes flexibility in State and local transportation decisions and provides flexible funding to best address State and local transportation needs. The STBG Program for the Green Bay Urbanized Area is administered by the Brown County Planning Commission as the area's MPO, and STBG funds can cover up to 80% of a project's cost. More information regarding the STBG program including funding details and eligibility can be found by visiting the FHWA webpage.

3.5 Possible Funding Sources

Surface Transportation Block Grant - Rural (STBG-Rural)

The STBG-Rural program allocates federal funds to complete a variety of improvements to rural highways (primarily county highways) that are located outside of urbanized areas. These projects must be used for streets classified as major collectors or higher, and these funds can cover up to 80% of a project's cost.

Safe Routes to School (SRTS) Program

The SRTS program is one of several programs under the Transportation Alternatives Program "umbrella". The SRTS program is specifically designed to improve walking and biking travel options, promote healthier lifestyles in children at an early age, and decrease auto-related emissions near schools. SRTS grants can cover up to 80% of a project's cost. Information about SRTS can be obtained from the Brown County Planning Commission or Wisconsin DOT.

Knowles-Nelson - Stewardship Program

The Wisconsin Legislature created the Knowles-Nelson Stewardship Program in 1989 to preserve valuable natural areas and wildlife habitat, protect water quality and fisheries, and expand opportunities for outdoor recreation. The conservation and recreation goals of the Stewardship Program are achieved through the acquisition of land and easements, development of recreational facilities (such as off-street trails), and restoration of wildlife habitat. Stewardship Program grants can cover up to 50% of a project's cost.

The village should consider applying for funds from the Knowles – Nelson Stewardship Program to assist in funding the construction of off-street trail systems. Interested parties are encouraged to contact the Wisconsin Department of Natural Resources for information about the Stewardship Program.

Highway Safety Improvement Program (HSIP) (formerly the Hazard Elimination and Safety [HES] Program)

Hazard Elimination and Safety (HES) Program grants funded 90% of a roundabout project in the City of De Pere. Safety funds were also used to install positive-offset left turn lanes on Ashland Avenue and STH 172 in Ashwaubenon, and other safety-related projects in the County have been funded through this program in the past. The village should apply for federal safety funds through what is now the Highway Safety Improvement Program (HSIP) to correct safety problems while other grant programs through WisDOT's Bureau of Transportation Safety should also be investigated to address safety issues.

3.5 Possible Funding Sources

CMAQ Program

If Brown County is designated as an air quality non-attainment area in the future, the County and the County's communities should seek funds from the Congestion Mitigation and Air Quality (CMAQ) Program administered by WisDOT to implement projects that will improve the area's air quality.

People for Bikes - Community Grants

The People for Bikes Community Grant Program provides funding for important and influential projects that leverage federal funding and build momentum for bicycling in communities across the U.S. These projects include bike paths and rail trails, as well as mountain bike trails, bike parks, BMX facilities, and large-scale bicycle advocacy initiatives. For more information including application timelines and grant guidelines, visit the People for bikes webpage: https://peopleforbikes.org/our-work/community-grants/

Funding Source	Timeline/Deadline
Transportation Alternatives (TA) – Set-Aside	Green Bay MPO: January State: July or August
Surface Transportation Block Grant (STBG)	June; Projects solicited in odd years
Surface Transportation Block Grant – Rural (STBG-Rural)	Late Summer
Safe Routes to School (SRTS) Program	See TA funding
Knowles-Nelson – Stewardship Program	May 1st
Highway Safety Improvement Program (HSIP)	July/August
CMAQ Program	No funding is available right now.
People for Bikes – Community Grants	Spring – April Fall - October

4. Appendices

A. Bicycle Facility Design Elements

B. Speed Management – Speed Bumps, Humps, and Tables

C. Pedestrian and Bicycle Facility Cost Estimates

D. Potential Environmental Permitting Requirements

E. Sidepath Suitability Index Examples

A. Bicycle Facility Design Elements

General Roadway Improvements

The recommendations contained herein include several types of bicycle facilities, off street paths, sidewalks, and traffic calming measures such as stop signs and crossing guards. When these facilities are developed, it is important that several design details be observed to make the new facilities as safe and user-friendly as possible. The following is a summary of the design elements that are recommended in the AASHTO Guide for the Development of Bicycle Facilities, the FHWA's Manual on Uniform Traffic Control Devices, and the FHWA's Selecting Roadway Design Treatments to Accommodate Bicyclists for different types of bicycle facilities.

Drainage Grates
- Curb inlets are preferred.
- Do not use a parallel-bar grate.
- Advance pavement markings are recommended.

Railroad Crossings
- Ideally, the bicycle lane should cross the railroad tracks at a 90-degree angle.
- The bicycle travel way should be widened if the angle is less than 45 degrees.
- Warning signs should not be less than 315 feet before the crossing.
- Pavement marking should not be less than 265 feet before the crossing.

Traffic Control Devices
- An intersection clearance interval should be a bicycle speed of 10 mph with a 2,5 second braking time.

Signage
- Signs should be situated between two and 12 feet from the edge of a road.
- Signs should be at least five feet off the ground.

Paved Shoulders
Shoulder Width
- A four-foot paved shoulder is recommended for roads that carry traffic at of below 35 mph.
- Additional width is desired if speeds are greater than 35 mph.

Wide Curb Lanes- Right Hand Lane Width
- Minimum of 14 feet, 15 feet preferred.

Signage
- No signage is necessary for wide curb lanes, but bicycle route signs should be considered.

A. Bicycle Facility Design Elements

Bicycle Lanes

Bicycle Lane Widths

- Bicycle lanes should be a minimum of four feet wide excluding the curb and gutter.
- Bicycle lanes next to parking lanes should be at least five feet wide.
- A bicycle lane that is combined with a parking lane should be at least 12 feet wide.

Land Placement

- When parking is present, bicycle lanes should be placed between the driving lanes and parking lanes.

Signage

- Designated lane signs should be placed beside the road.

Colored Bike Lanes

- Colored bike lanes should be used at locations of high levels of bicycle traffic.
- Colored bike lanes are necessary at points of conflict between motor vehicles and bicycles.

Designated Bicycle Route

Signage

- Signs should designate routes as well as markings (sharrows).

Bicycle Path, Multi-use Trail, Parallel Path

Path Width

- The width of a two-directional path should be a minimum of 10 feet.
- The width of a multi-use trail should be at least 12 feet.

Clearance

- The graded shoulder area of a path should be at least two feet on each side of the path.
- The path should be situated at least three feet from trees, poles, etc.
- The path's vertical clearance should be at least eight feet and 10 feet is desired.

Grades

- The longitudinal grade of a path should be no more than five percent.
- A path's grade on a cross slope should be at least two percent.

Design Speed

- The general design speed for a path is a minimum of 20 mph.
- The design speed should be at least 30mph if a path's grade is greater than four percent.

Curves

- A path should have at least a 95-foot radius.
- A path's superelevation should be between two and five percent.

Stopping/sight Distance

- Stopping and sight distances are grade and speed dependent.
- The minimum stopping and sight distance is 125 feet.

A. Bicycle Facility Design Elements

Pavement Structure
- Pavement structure is based on site conditions

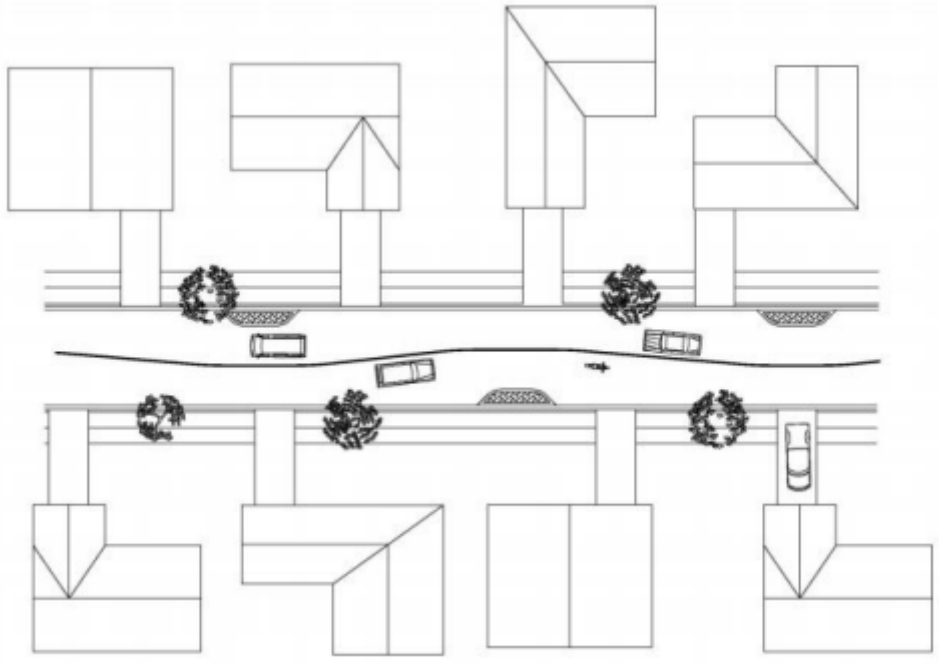
Intersections
- Path crosswalks could include diagonal or longitudinal lines to increase visibility.
- Bike crossing signs on rural roads should be placed 750 feet before the path crossing.
- Bike crossing signs on urban streets should be placed 250 feet before the path crossing.
- Ten-foot paved aprons should be added on both sides of a path at gravel road intersections.
- Vehicular access should be limited.

Path Pavement Markings
- A four-inch yellow line should be placed in the center of the path.
- Symbols of written messages should be placed before intersections.

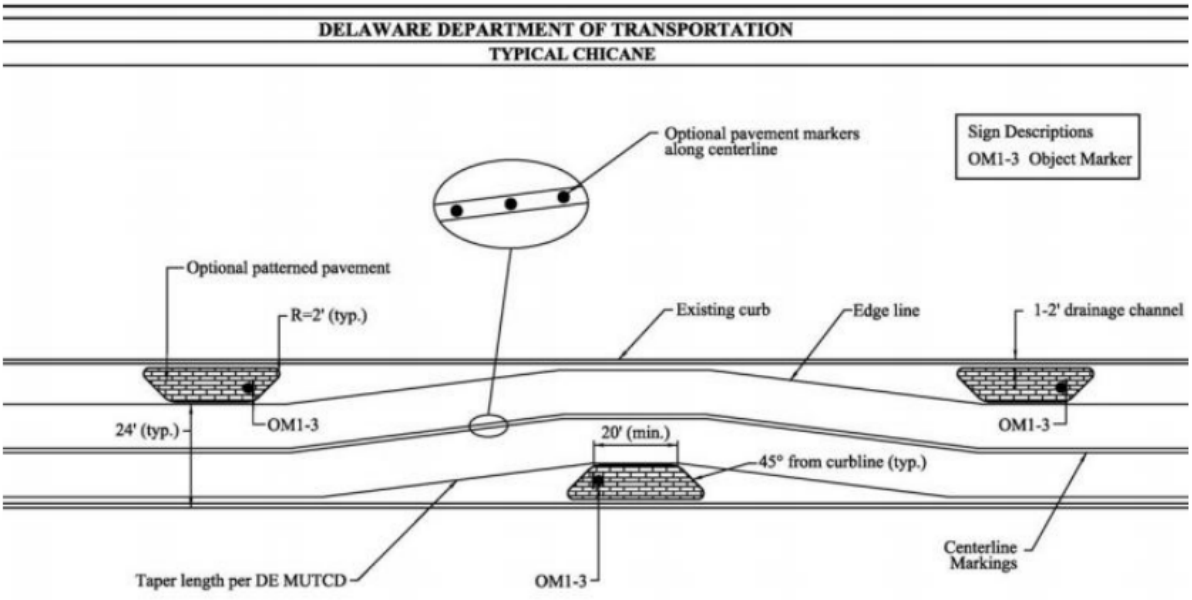
Path Signage
- Signs should be situated between three and five feet, but at least a minimum of two feet, from the edge of the path.
- Signs should be between four and five feet off the ground.
- Regulatory signs should be placed at the location where a regulation applies.
- Hazard warning signs should be placed at least 50 feet before a hazard.
- Railroad crossing signs should be placed at least 315 feet before a railroad crossing.
- Path signs do not have to be as large as bicycle signs along roads.

B. Speed Management – Speed Bumps, Humps, and Tables

Speed management measures on low/slow traffic streets help bring motor vehicle speeds closer to those of bicyclists and pedestrians and help improve the pedestrian and bicycling environment.



Above: Example of a chicane on a residential street. Below: Chicane Design Diagram
Source: Delaware DOT Traffic Calming Design Manual, Chapter III – Appropriate Applications and Geometric Design, Nov 2012.



B. Speed Management – Speed Bumps, Humps, and Tables

Figure 3B-29. Pavement Markings for Speed Humps without Crosswalks

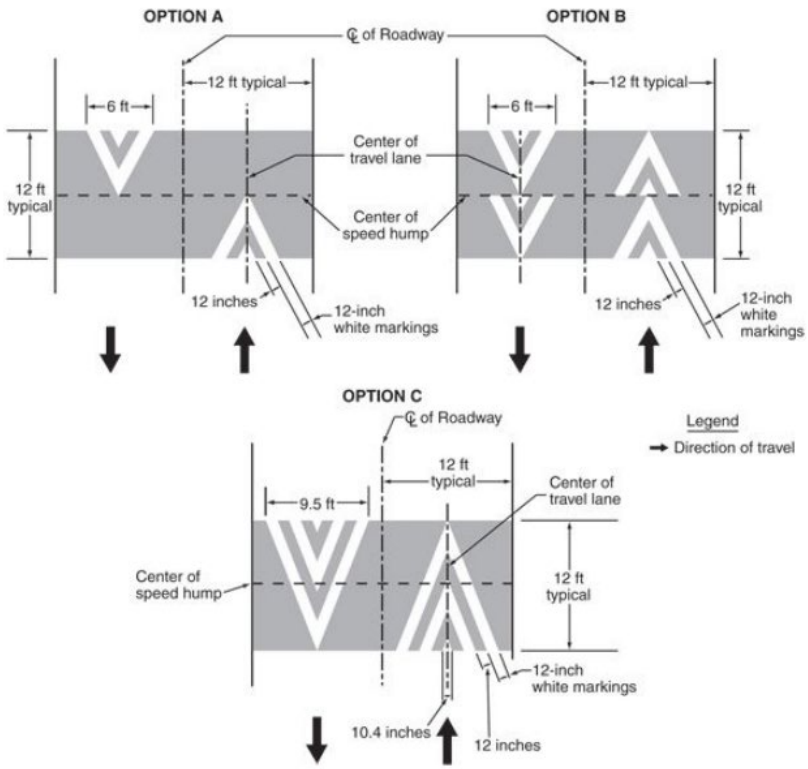
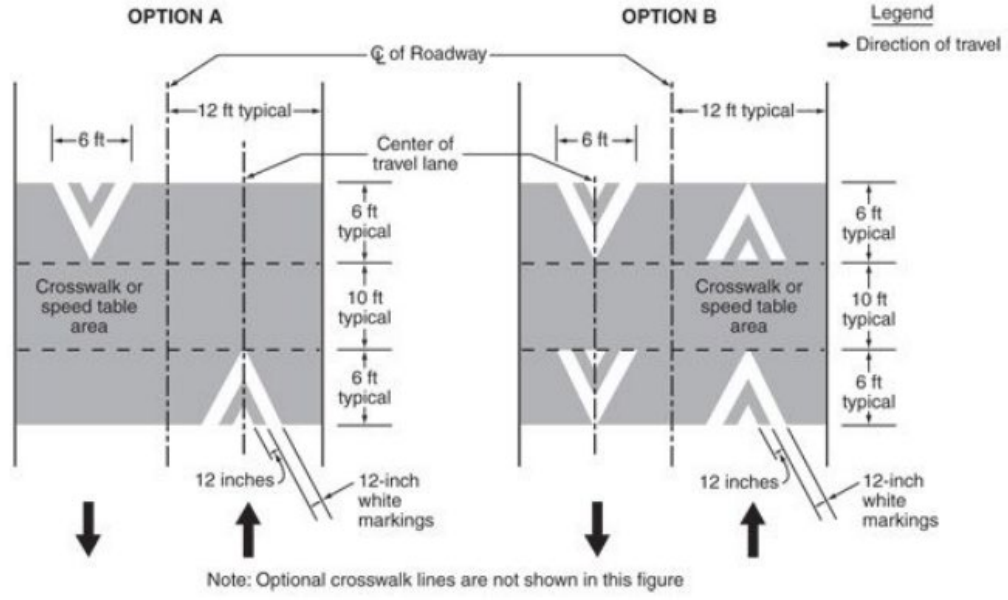


Figure 3B-30. Pavement Markings for Speed Tables or Speed Humps with Crosswalks



Above: Pavement markings for speed humps.
Source: 2009 MUTCD, Chapter 3B. Pavement and Curb Markings.

C. Pedestrian and Bicycle Facility Cost Estimates

The following information is provided as an initial step in estimating probable costs for implementation projects so that decision makers can make informed decisions when dedicating funding and investing in infrastructure improvements. These estimates are taken from Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researchers, Engineers, Planners, and the General Public, prepared for the Federal Highway Administration by the UNC Highway Safety Research Center (2013), and from Cost Analysis of Bicycle Facilities: Cases from cities in the Portland, OR region, from Portland State University's Center for Urban Studies (2013). The Robert Wood Johnson Foundation supported both projects through its Active Living Research program. The estimates listed in the table are taken from the median and average costs presented in the Costs report, since the average could be skewed by very expensive projects.

Please note that the following figures are rough cost estimates, and that actual costs may vary due to cost and/or availability of materials, labor, existing road conditions, and other external factors. The infrastructure estimates do include general engineering and design costs, which will also vary in practice.

Treatment	Unit	Median Cost ($)	Average Cost ($)
General cost per type of facility			
Multi-use Trail – Paved	Mile	261,000	481,140
Multi-use Trail – UnPaved	Mile	83,870	121,390
Bicycle Lane	Mile	89,470	133,170
Overpass/underpass – Wooden bridge	Each	122,610	124,670
Overpas/underpass – Pre-fab steel bridge	Each	191,400	206,290
Signs, signals, and wayfinding			
Pedestrian and bicycle crossing signs	Each		200/sign
Wayfinding sign	Each		200-440/sign
Rectangular Rapid Flash Beacon (RRFB)	Each	14,160	22,250
Pedestrian hybrid beacon (PHB/HAWK)	Each	51,460	57,680
Pavement Markings			
Bike lane symbol (paint)	Each		250-270/stencil
Sharrows	Each		250-339/sharrow
Crosswalks			
High visibility crosswalk	Each	3,070	2,540
Striped crosswalk	Each	340	770
Raised crosswalk with speed table	Each	7,110	8,170
Curb Ramp – Truncated Dome/Detectable Warning	Square Foot	37	42
Curb Ramp – Wheelchair Ramp	Each	740	810

C. Pedestrian and Bicycle Facility Cost Estimates

Treatment	Unit	Median Cost ($)	Average Cost ($)
Intersection treatments/traffic calming			
Curb extensions/choker/bulb-out	Each	10,150	13,000
Speed hump (more gradual compared to speed bump)	Each	2,130	2,640
Speed bump (small, more extreme angle)	Each	1,670	1,550
Speed table (broad, long speed bump)	Each	2,090	2,400
Raised crosswalk	Each	7,110	8,170
Raised intersection	Each	59,160	50,540
Median	Square foot	6.00	7.26
Crossing island	Each	10,460	13,520
Chicanes	Each		5,000/chicane
Traffic circles	Each		20,000/circle
Other			
Bicycling parking (rack)	Each	540	660
Bicycle parking (locker)	Each	2,140	2,090
Street lights	Each	3,600	4,800
Bollards	Each	650	730
Street trees	Each	460	430
Bench	Each	1,660	1,550
Trash/recycling receptacle	Each	1,330	1,420

D. Potential Environmental Permitting Requirements

Depending on the location of pedestrian and bicycle infrastructure projects, the village may need to obtain permits from the Wisconsin Department of Natural Resources.

The DNR would need to review project proposals if/when materials are placed in wetlands or waterways. Depending on the site specifics, the village may need to obtain a wetland disturbance – municipal development general permit of an individual permit.

- If the project does not meet the general permit standards, or general permit conditions are sufficient to ensure the wetland discharge will cause only minimal adverse environmental impacts, then the individual permit would apply.
- For individual permits, the DNR requires a pre-application meeting with DNR staff prior to submitting the completed application.

E. Sidepath Suitability Index - Examples

This appendix is to supplement the Sidepath Suitability section introduced in Chapter 2, to present the equation in more detail. The following algorithm rates the suitability of a sidewalk or sidepath as a bicycle facility. A sidepath is a trail parallel to, but separated from, a roadway. In addition to rating existing sidepaths, it can be used to plan safety improvements for new or existing sidepaths. At present, no such nationally accepted suitability index exists. This algorithm was developed by the League of Illinois Bicyclists and has been used by transportation professionals across the county to evaluate and implement sidepath projects.

The factors considered are intersection traffic, continuity, curb cuts, pedestrian use, crosswalks, and path/road separation at intersections. For a particular segment, add the following terms:

1. **Intersection Traffic Score.** The volume and speed of motor vehicular traffic – especially turning traffic – directly after the risk of collision: Determine the intersection traffic score X from the following: X = [R+(2xA)+(4xB)] / M x [Spd x Vol]

   Where:
   R = Number of residential driveway intersections
   A = Number of minor street/minor commercial driveway intersections (<1,000 ADT)
   B = Number of major street/major commercial driveway intersections (>1,000 ADT)
   M = Street segment length (in miles)
   Spd = Posted speed limit on parallel street (≤30 mph = 1, 35-40 = 2, ≥45 = 3)
   Vol = Traffic volume factor, parallel street, <2000 ADT = 1, 2000-10000 ADT = 2, >10000 ADT = 3)

   Add the following number of points for the intersection traffic score X.

X	Points
0	0
1-40	1
41-80	2
81-120	3
121-160	4
161-200	5
201-240	6
> 240	7

2. **Continuity.** Interruptions in the network (major gaps, or sidepath end points) may force cyclists to ride through grass, etc., and enter the roadway awkwardly. Cyclists will often avoid sidepaths with these gaps. Add 4 points if major interruptions exist.

3. **Curb cuts.** Uncut curbs compromise cyclist's movement and attention at intersections. Add 3 points if any intersections are lacking curb cuts.

E. Sidepath Suitability Index - Examples

4. **Pedestrian use.** Sidewalks and sidepaths are used by both bicyclists and pedestrians. Insufficient width increases user conflict. (However, extra width encourages higher cyclist speeds – which becomes a problem at incorrectly-designed intersections.) Add points according to the following chart:

Low (rare) pedestrian use	Medium (sometimes) pedestrian use	High (often) pedestrian use
< = 5' – 1 point	< = 5' – 2 points	< = 5' – 4 points
> 5' – 0 points	6-7' – 1 point	6-7' – 2 points
NA	> = 8' – 0 points	> = 8' – 0 points

5. **Crosswalks.** Visible crosswalks can help make motorists more aware of nonmotorized traffic. Sometimes two parallel painted stripes are sufficient. At busier intersections, "ladder" or "zebra" crosswalks and other techniques enhance visibility. Add 2 points if there are no crosswalks. Add 1 point if there are some crosswalk markings, but more visibility is warranted for that intersection type. Add 0 points for appropriately marked crossings. Take the worst-case crossing for the segment.

6. **Intersection sidepath/road separation.** AASHTO recommends that sidepaths be brought closer to the parallel road at intersections, so motorists more easily see and consider bicyclists during their approaches. The vehicular stop line should be in back of the sidepath crossing – cyclists must not weave through stopped traffic when crossing. Add 5 points if the crossing goes through stopped traffic. Add 3 points if the crossing is not brought "close enough" to the parallel road. Add 1 point when the crossing is brought close to the road. (Paved shoulders and bike lane crossings – 0 points.) Again, take the worst-case crossing for the segment.

Add together all the points for the sidepath suitability score. Ranges of suitability are:

Suitability Score	Suitability
< = 7	High suitability
8-9	Medium suitability
10-11	Low suitability
> = 12	Not suitable (poor)

Sidepath Suitability Algorithim Source: North Aurora (IL) Plan
http://rideillinois.org/wp-content/uploads/2015/10/NorthAuroraPlan.pdf

E. Sidepath Suitability Index - Examples

Village of Wrightstown Example 1 – Sidepath along north side of Broadway Street from Steffins/CTH DDD to Royal St. Pats Drive.

The first example will calculate the sidepath suitability of a path along the above referenced corridor.

1. **Intersection Traffic Score.**
   R = 4
   A = 0
   B = 1
   M = 0.72
   Spd = 35 mph (2 points)
   Vol = 3,900 ADT (2 points)

   [R+(2 x A) + (4 x B)] / M x [Spd x Vol] = [4+(2 x 0) + (4 x 1)] / 0.72 x [2 x 3] = 2.78 **(1 point)**

2. **Continuity –** NA, no current path to connect to. **(0 points)**
3. **Curb Cuts –** No curb cuts at CTH U, **(+3 points)**
4. **Pedestrian Use –** Assuming at least 8' wide path and high pedestrian use, **(=1 point)**

Low (rare) pedestrian use	Medium (sometimes) pedestrian use	High (often) pedestrian use
< = 5' – 1 point	< = 5' – 2 points	< = 5' – 4 points
> 5' – 0 points	6-7' – 1 point	6-7' – 2 points
NA	> = 8' – 0 points	> = 8' – 0 points

5. **Crosswalks.** Currently no crosswalks along this segment, **(+2 points)**
6. **Intersection sidepath/road separation.** Since a path doesn't exist yet, this should be accommodated for during the design phase, assuming this can be achieved, **(=0 points)**

7. **Total Suitability Score = 7 (High Suitability)**

A sidepath along Broadway Street would have a high suitability and could maintain a high suitability as the land along the north side of Broadway Street develops over time by following the recommendations of this plan and implementing the best management practices outlined in the variety of documents mentioned in earlier chapters.

Suitability Score	Suitability
< = 7	High suitability
8-9	Medium suitability
10-11	Low suitability
> = 12	Not suitable (poor)

E. Sidepath Suitability Index - Examples

Village of Wrightstown Example 2 – Sidepath along west side of Plum Road/CTH D from Golden Wheat Lane to High Street/STH96

The second example will calculate the sidepath suitability of a path along the above referenced corridor.

1. **Intersection Traffic Score.**
   R = 1
   A = 1
   B = 0
   M = 0.41
   Spd = 45 mph (3 points)
   Vol = 1,900 ADT (1 points)

   [R+(2 x A) + (4 x B)] / M x [Spd x Vol] = [4 + (2 x 1) + (4 x 0)] / 0.41 x [3 x 1] = 2.45 **(1 point)**

2. **Continuity –** NA, no current path to connect to. **(0 points)**
3. **Curb Cuts –** No curb at all, **(+0 points)**
4. **Pedestrian Use –** Assuming at least 8' wide path and high pedestrian use, **(=1 point)**

Low (rare) pedestrian use	Medium (sometimes) pedestrian use	High (often) pedestrian use
< = 5' – 1 point	< = 5' – 2 points	< = 5' – 4 points
> 5' – 0 points	6-7' – 1 point	6-7' – 2 points
NA	> = 8' – 0 points	> = 8' – 0 points

5. **Crosswalks.** Currently no crosswalks along this segment, **(+2 points)**
6. **Intersection sidepath/road separation.** Since a path doesn't exist yet, this should be accommodated for during the design phase, assuming this can be achieved, **(=0 points)**

7. **Total Suitability Score = 4 (High Suitability)**

A sidepath along Plum Road/CTH D would have a high suitability and could maintain a high suitability as the land along the north side of Broadway Street develops over time by following the recommendations of this plan and implementing the best management practices outlined in the variety of documents mentioned in earlier chapters.

Suitability Score	Suitability
< = 7	High suitability
8-9	Medium suitability
10-11	Low suitability
> = 12	Not suitable (poor)