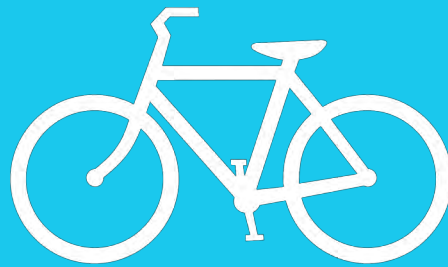
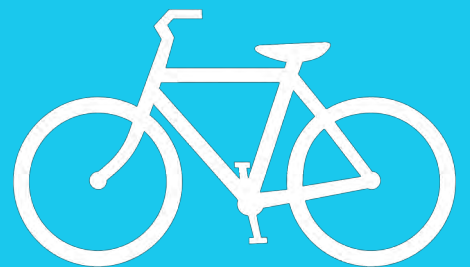
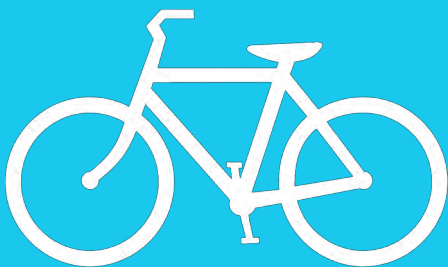
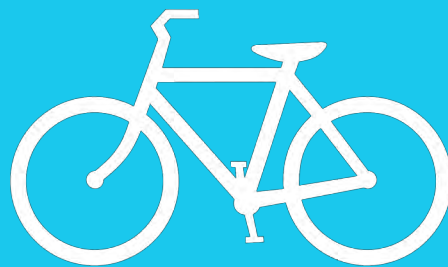


CONNECTING BOARDMAN

active transportation plan 2019





CONNECTING BOARDMAN

Active Transportation Plan

Boardman Township, Ohio

Completed: July 2019

Prepared by:

BOARDMAN TOWNSHIP
Planning &
ZONING

Department of Planning and Zoning
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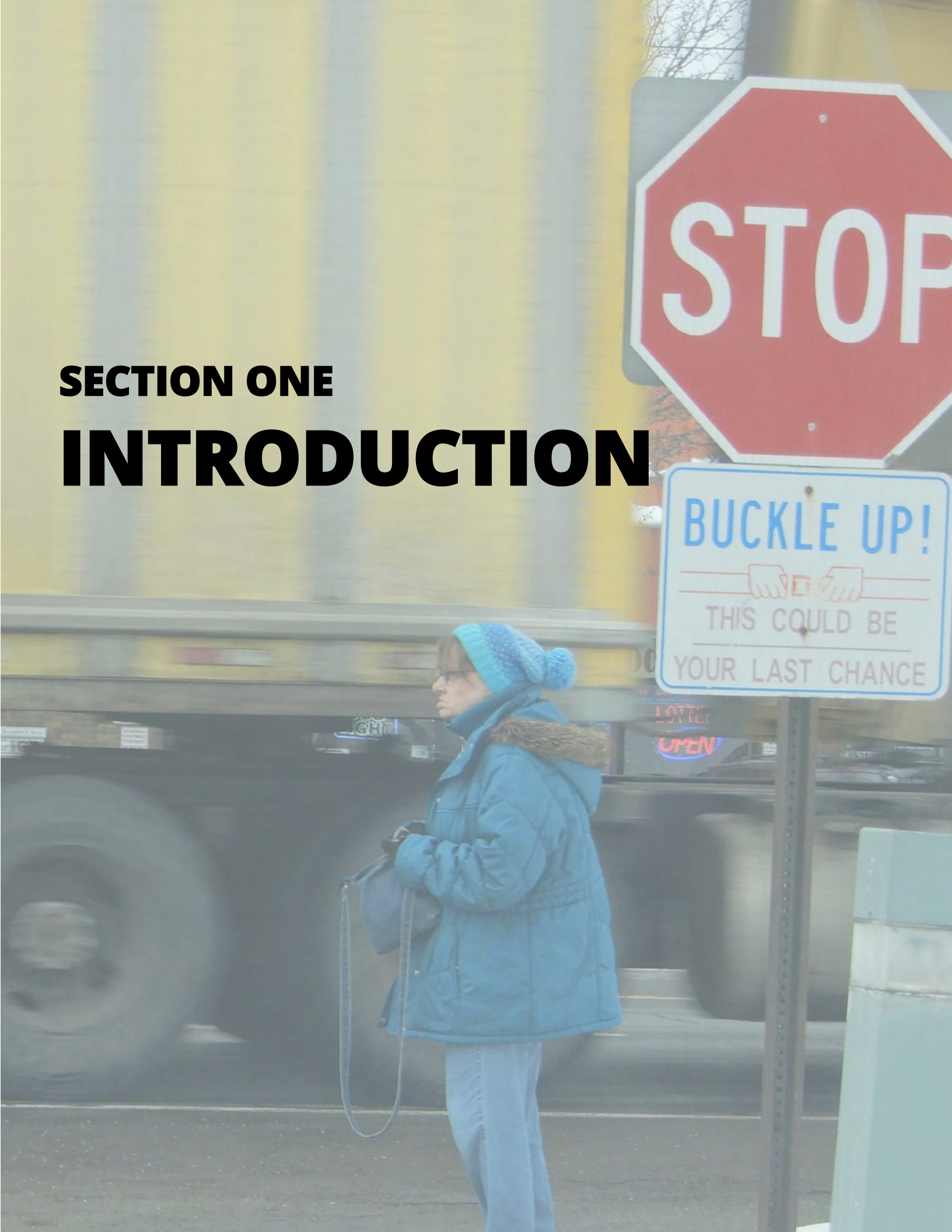
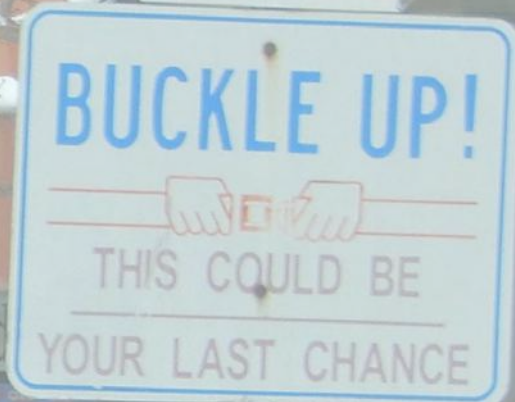
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SECTION ONE

INTRODUCTION



INTRODUCTION



Boardman Township is a large community with great schools, large parks systems, and wide variety of vibrant residential neighborhoods. It is also a regional retail and employment hub with strong shopping centers, health care providers, and industrial areas. Boardman's population and commercial areas developed rapidly at the same time as national trends toward more suburban residential developments and auto-oriented strip malls. These development patterns often did not include sidewalks or bicycle amenities in many parts of the Township making low cost healthier options like walking and bicycling difficult and dangerous. Today we are seeing the needs and wants of the community changing to want places that are vibrant walkable neighborhoods and spaces where people are able to live, shop, and socialize.

Creating an Active Transportation Plan is an important initial step in creating a connected pedestrian and bicycle network. While often thought of as a recreational amenity, bicycle and pedestrian connections are also a critical part of the transportation network providing an alternative to getting to work, school, or shopping. The Active Transportation Plan will inventory existing conditions, recommend and prioritize projects, and create an implementation strategy. Having a plan allows the Township to strategically identify projects and pursue funding to create connected bicycle and pedestrian network that is safe, functional, and convenient for all residents and people coming to work or shop in Boardman.

WHAT IS ACTIVE TRANSPORTATION?

Active Transportation, otherwise known as non-motorized transportation or active mobility is defined by the Rails-To-Trails Conservancy as a means of getting around that is powered by human energy, primarily walking and cycling.

A key part of Active Transportation is that it is not used primarily for recreation, but rather as a viable alternative to vehicular travel. Studies have linked Active Transportation networks to overall increased public health, cleaner air, and safer communities.

Active Transportation also plays a key role within larger public transportation networks. Often referred to as the first and last mile, the space between work, home, or the grocery store and the bus stop is often the most dangerous and difficult part of a public transit commute. A good active transportation network can bridge the gap between destinations and bus stops, provide increased ridership, and build a safer and more active community.





WHY CREATE AN ACTIVE TRANSPORTATION PLAN?

Boardman Township is at a critical transition where demographics, retail trends and what residents and businesses want is changing. Creating an Active Transportation Plan for the community will provide a vision and strategy for addressing many of the current conditions and safety issues in Boardman.

A cohesive active transportation plan would help connect residents to neighborhood assets such as employment, recreation, schools, and shopping without having to own or access a car. For example, families living in Applewood Acres should be able to safely walk to Boardman Park, but currently cannot due to having to cross SR 224. This forces families into their car for what should be a short walk that could in turn create a healthier family. People that can walk or bike to nearby amenities have better overall health outcomes versus car dominated neighborhoods. Increasing active transportation options would also provide additional low-cost ways for people to get to employment.

Boardman Township is currently undertaking many efforts which support active transportation. Comprehensive planning meetings centered on public input were completed in early 2018. Community feedback will continue to provide valuable information on the needs and wants of the community and how to prioritize active transportation. The Township is also in the process of updating the Zoning Code; a key piece of the zoning code update is to include language to incentivize development that promotes and supports active transportation, such as mixed-use traditional neighborhood development like the kind seen in the North Market District and many downtowns across the country. This would also grant the Township the ability to include requirements for new and redevelopment projects to include sidewalks or multi-use paths and connections. In order to pursue funding to make active transportation improvements a reality, a plan that compiles various measures of data is necessary to support and prioritize these projects.

While Active Transportation becomes an increasingly popular topic in cities and suburbs, it is essential that local governments create an Active Transportation Plan in order to effectively build and develop a cohesive and safe network for all users. In addition to looking at issues in our urban fabric, this plan will seek collaborative solutions from across departments in the township, as well as document and detail the community comments and involvement that lead to the creation of these solutions. Collaboration with outside organizations included Mill Creek Metro Parks, Boardman Park District, Boardman Local Schools, Mahoning County Engineer's Office, Eastgate Regional Council of Governments, and the Mahoning County Board of Health.

As Boardman Township continues to redevelop and become a center of residence and commerce in the Mahoning Valley, it is essential that plans guide this development to benefit all residents and users.

VISION AND GOALS

A COMMUNITY VISION

As shopping and commerce shifts from brick and mortar stores into the realm of e-commerce, communities like Boardman must look at alternative solutions to prevent the deterioration of the built environment. Communities that have already experienced similar challenges are choosing to repair the holes in their urban fabric with infill redevelopment, active transportation networks, road diets, and other measures taken to help create community spaces and connectivity.

Important changes must take place for Boardman to become a walkable community. Walkability is not just about having sidewalks and crosswalks; walkability is about having street trees (shade) and buildings close to the street that are inviting to pedestrians, density and urban life. Active Transportation is about recognizing the needs of all users and travelers, no matter their chosen means of transportation.

As the suburban landscape changes nationally we must look to the historic suburbs from the turn of the 20th century. Those like Cleveland Heights and Lakewood (inner ring suburbs of Cleveland) can demonstrate the level of density, connectivity, and walkability needed for a community to survive long-term.

This work towards a completely walkable and stable community will not happen overnight or through one plan alone. Rather will take decades as we work to update zoning codes, change community perceptions, revise parking standards, and work with and incentivize developers to build denser developments that can tackle and meet the challenges of a twenty-first century community.

ACTIVE TRANSPORTATION GOALS

- 1 Create a more connected Boardman through increasing cycling and building and expanding cycling infrastructure.
- 2 Build and increase walkability in Boardman Township by expanding the sidewalk network and making our community safer for pedestrians.
- 3 Increase citizen access to public transportation through a collaborative relationship with WRTA.
- 4 Encourage the adoption of Complete Streets policies.
- 5 Repair, replace, and install infrastructure to improve the awareness of pedestrians, cyclists, and non-motorists.



PUBLIC INVOLVEMENT

Boardman Township hosted two interactive community input meetings in order to help gauge feedback for some of the overarching strategic planning projects with residents prioritizing their main concerns. The first meeting was held at Good Hope Lutheran Church on Thursday, January 18th 2018 where approximately 60 residents participated. The second meeting was held at Boardman Park on Monday, February 5th 2018 with approximately 90 residents in attendance.

In 2018, Planning & Zoning Staff created an online survey as part of the Boardman Comprehensive Plan process to gather input from the community about how to strategically move the Township forward. Over 600 residents responded to the online survey to voice their opinions for the future of the Township. Topics included redevelopment and future development, transportation networks, environmental sustainability, and arts & culture.

In 2019, an online survey as part of the Zoning Code update saw over 1,000 responses, focused primarily on land use, as well as building density, which will aid in the future township development practices.

COMMUNITY ACTIVITIES

Boardman Township Planning and Zoning is currently working with organizations and groups like the Community Foundation of the Mahoning Valley Healthy Community Partnership Active Transportation Action Team, the North Boardman Neighborhood Association, and other neighborhood groups and action teams to engage community members and seek public input.

In the near future, the Planning & Zoning Department plans on hosting a Better Block in the North Market Street Historic District that includes a road diet, and community walks across the township. These activities will be used to increase awareness and let community members visualize what these spaces and places could become.

The Planning & Zoning Department is also hosting *Connect Boardman Community Walks* as a means to engage residents in the areas that they live and encourage them to assess their own spaces and places. Each Community Walk will involve a set path which residents and Department staff will travel, taking notes regarding things such as the sidewalk condition, intersection safety, and overall experience. This data will then be used to help direct both planning efforts as well as funding opportunities to areas and features that are of the most concern.

While working on the Safe Routes Boardman School Travel Plan, the Department hosted several stakeholder meetings in addition to soliciting survey data from parents regarding their perceptions of walking/cycling and safety in their neighborhood. One public meeting was conducted on November 27th, 2018 at Boardman Center Intermediate School, which served to introduce the community to the program and answer questions that residents might have about its effects.

COMMUNITY WALK AUDIT FEEDBACK

The first Community Walk Audit was conducted on October 20, 2018, with turnout of both neighborhood residents and elected officials. Residents were asked to fill out forms providing feedback regarding intersection safety and sidewalk comfortability, as well as scaling this comfortability from 1-4.

Overall, residents and elected officials agreed that sidewalks in some areas were in need of repair and that stretches of Market Street were very uncomfortable to walk. The Department staff also discussed how they are currently seeking funding sources for long-term maintenance of the sidewalks.

COMMENTS AND FEEDBACK

Cars speeding on Market Street

Need improvement to remove tripping hazard(s)

Most of the intersections feel safe to cross

The trees are going to cause upheavals

Beautiful neighborhood

Not very safe

Don't feel safe in uneven areas



SECTION TWO
EXISTING
CONDITIONS
AND DATA



EXISTING CONDITIONS



This section discusses the existing infrastructure conditions and context for walking and bicycling within Boardman Township, providing a general overview of our community's conditions, infrastructure, connectivity, and demographics. This will be used to help prioritize planning and action efforts.

COMMUNITY CONTEXT

Boardman Township, with a population of around 40,000, is an urban township with a majority of dense housing stock located in the northeast and northwest sections of the township, and traditional lower-density suburban style developments throughout the southern sections.

Outside of the North Market Street Historic District, most commercial development in the township is either in outparcels or located in strip mall-style buildings. This division of the uses has resulted in a community that is over-parked, which has contributed to the creation of a community that is viewed as hostile to non-motorists.

Within the boundaries of the township few bike paths exist. None of these are a suitable means of transportation as they do not connect residences to jobs or commercial districts, or branch outside of their respective parks. While sidewalks are present in some areas, many subdivisions lack adequate facilities, and many of the older facilities that do exist fail to meet ADA standards or are in a state of general disrepair. In some extreme conditions, the sidewalks have been overgrown completely with grass and debris. In these cases, the lack of a sidewalk has forced pedestrians and cyclists into the roadway, endangering both themselves and oncoming motorists.

Sidewalk near Stadium Drive Elementary (2018).



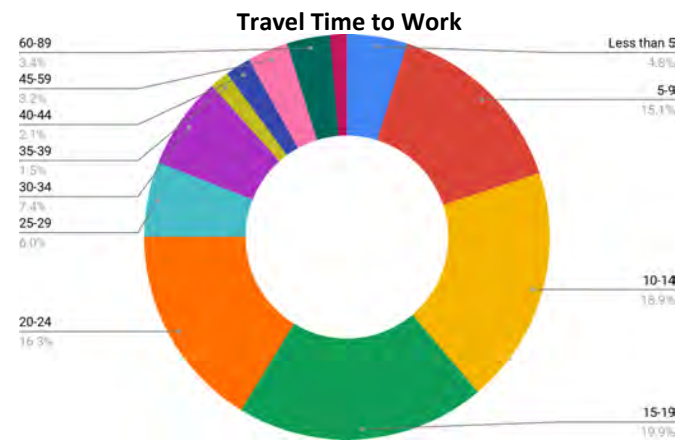
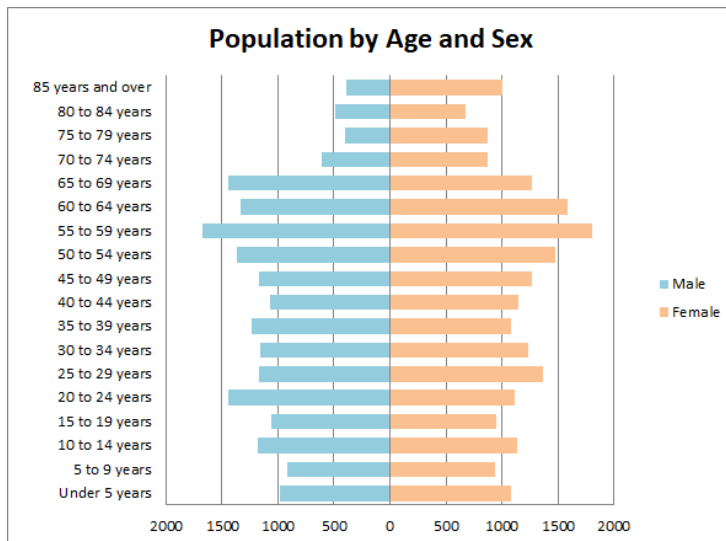
DEMOGRAPHICS

As of 2010, Boardman Township had a population of 40,889, making it the second most populous place in Mahoning County. Official census data also shows that around 70% of homes are owner-occupied, which is in-line for the county as a whole.

23.6% of Boardman residents are traveling more than 25 minutes to work, compared to only 19.9% who spend 9 minutes or less traveling to work, and about 65% of residents are traveling 10-24 minutes to work. With the exception of those traveling more than 30 minutes, most of those who live in the area also work here, which can provide the groundwork for a localized sense of place.

22% of Boardman residents are under the age of 19 and a vast majority of the housing is zoned for single-family use. A majority of commercial development is located along a few major corridors.

The 2016 American Community Survey reported that of individuals over 16, only 0.77% of users walked, 0.78% biked, and 0.52% took public transportation. This is in comparison to 88% of individuals who drove to work.*



All data is from the United States Census Bureau - American Fact Finder. Data is from 2010-2016.
 *Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates



SIDEWALKS



Sidewalks are often used as the main way to get around a neighborhood or close-knit community for anyone walking or using other modes of active transportation. In the past, Boardman Township as well as many other suburban communities have not required sidewalk installation. This has left Boardman with only twenty five (25) percent sidewalk coverage throughout the entire Township. This often pushes walkers, wheelchairs, and cyclists into the roadway alongside regular vehicle traffic with no additional protection.

Traditional cities installed sidewalks automatically as part of development because walking was the main form of transportation prior to the mass production of the automobile. As development shifted to an automobile centric society large retail plazas and strip centers dominated development trends. Many communities are starting to require sidewalks with new developments as way to add pedestrian facilities that haven't been required in the past. Incorporating language into the zoning ordinance requiring the installation of sidewalks into subdivision and new commercial development is one strategy the Township wants to employ in an attempt to allow residents the ability to walk to amenities.

Within the township, sidewalks are often missing alongside roadways. This forces pedestrians to either enter the roadway without adequate protection, or wear desire lines in the grass; neither of these options is ideal or an ADA-compliant.



LEFT: Desire Line on US-224. D'Avignon (2018).



TOP RIGHT: Shoulder on Truesdale Road NW of Lockwood Blvd. Darling (2018).



BOTTOM RIGHT: South Ave. & US-224 Darling (2018).

SIDEWALK ASSESSMENT



In mid-2018 the Department of Planning and Zoning began a comprehensive sidewalk assessment, using Loveland parcel surveying technology to take photos and document where sidewalks exist, what their condition is, and ADA compliance. The data collected would be used to determine where funding should be prioritized and determine what neighborhoods are considered walkable.

Some potential issues with sidewalk conditions occur when sidewalks heave (where pads rise), crack, or spar (the gravel-like texture). All of these issues result in a walkway that is no longer ADA-compliant and increases the difficulty of travel for pedestrians. Beyond this, overgrowth from both the tree lawn and from residents private lots (commonly from hedges) reduces the usable walking space, creating an uncomfortable walk.

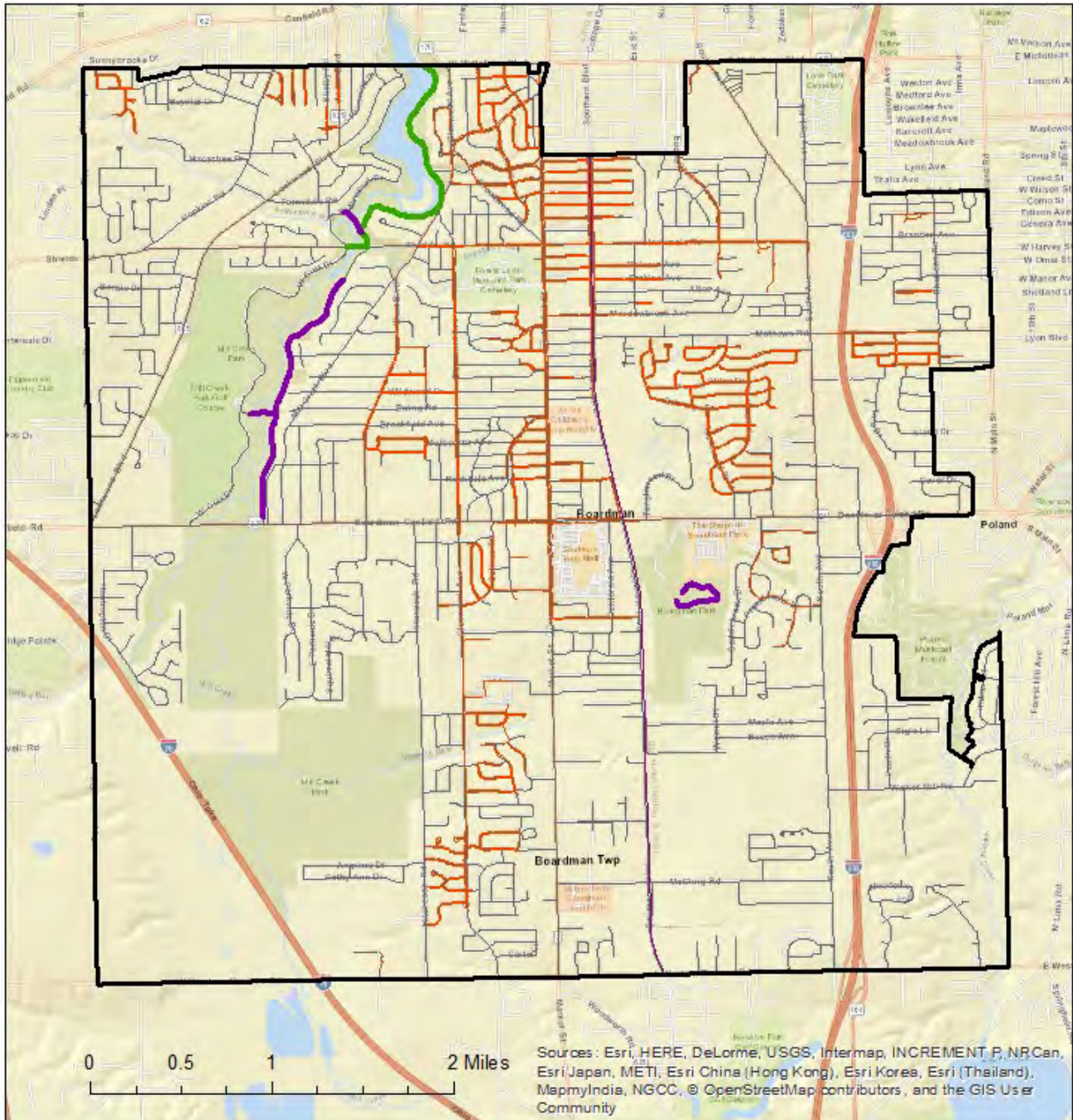
In some locations, homeowners have asphalted over (see below) the sidewalk, which results in a build up that makes this more difficult for disabled persons to use. Under no condition should homeowners or property managers consider this to be a viable solution.

A complete and comprehensive sidewalk assessment should be a top priority for the Township so that we can determine where sidewalks are, what condition they are in, and how we can best assure that these amenities are installed throughout the Township.



Top: Mill Creek Dr., 2018.
Bottom: Straley Ln. 2018.

Bike & Sidewalk Infrastructure, Boardman Township



-  Boardman
-  Sidewalks
-  Bike Paths
-  Bike Lanes
-  Bike Path Conceptual
-  Roads



Created by: Tricia D'Avignon
 Source: Eastgate Regional Council of Governments, 2017

CYCLING INFRASTRUCTURE



Cycling infrastructure in Boardman Township is primarily limited to bike paths in Mill Creek Park and Boardman Park, with one stretch of on-street bike paths along Shields Road. This lack of bike paths, lanes, or other multi-modal paths forces cyclists onto the roadway in locations that would generally be considered to be unsafe (such as some sections of Glenwood Avenue, US-224, sections of Market Street, South Avenue, and other arterial streets).

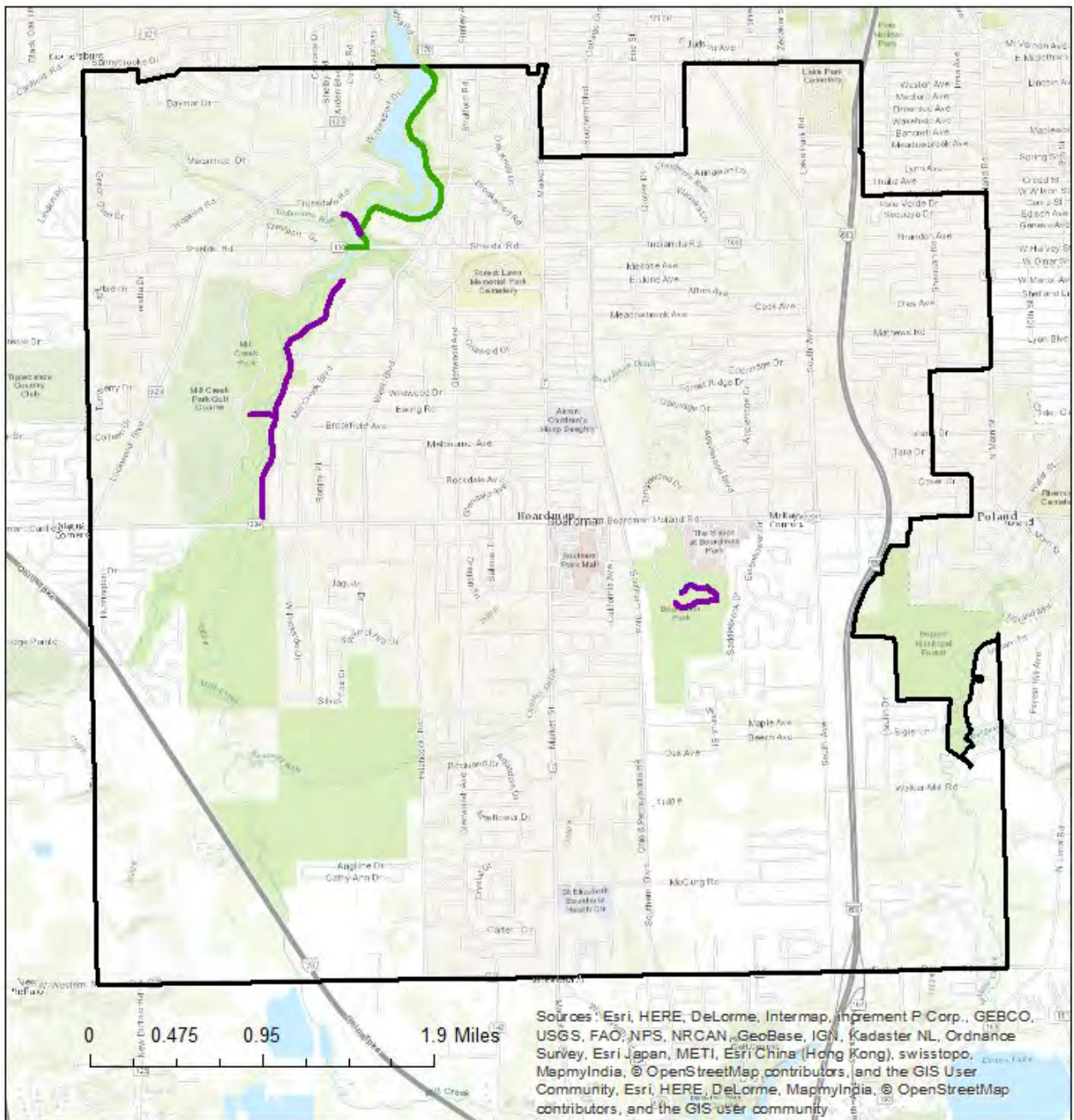
The Township does have one very short bike lane that is a part of a wider Mill Creek Metro Park network. This bike lane, however, appears to have been a wide shoulder with signage. While all roadways are legal bike facilities, a lack of adequate infrastructure both fail to address the needs of non-motorized forms of transportation, or are considered too dangerous by potential users.

Section Three (Page 45) of this plan outlines several potential options for bikeways, bike lanes, and other forms of cyclist-centric infrastructure that could be implemented along Boardman’s major corridors, as well as Boardman’s neighborhood streets.



Top: Shields Road near E Newport (Google Street View, 2018).
Bottom: Wikimedia, 2011.

Bike Paths in Boardman Township



-  Bike Paths
-  Bike Lanes
-  Boardman



Created by: Tricia D'Avignon
 Source: Eas tgate Regional Council of Governments, 2017

BICYCLE & PEDESTRIAN COUNTS

Bicycle and Pedestrian Counts were conducted by Boardman Township Planning and Zoning Staff from May to July 2018. These counts will be used to examine usage along routes, assist in prioritization, and ultimately show the type of amenities and infrastructure that should be placed at an intersection. These counts will also be used as a baseline to compare counts in the future to see if additional safety infrastructure helps to increase usage in these areas over time.

The most common issues found were a lack of ADA compliant sidewalks, unmarked crosswalks, crosswalk beacon signals that did not allow adequate time to cross an intersection, or intersection crosswalks that did not connect to a wider network.

Count sessions were done in two hour blocks (8-10am, 10am-12pm, and 1-3pm). These counts were spread out over a variety of days and rotated to assure the best representation of average use.

These counts were done in accordance with the standards set by the National Bicycle and Pedestrian Documentation Program (bikepeddocumentation.org). Photographs were also taken at each site to show both the facilities and use.



NEWPORT DRIVE AND MARKET STREET

Newport Drive and Market Street is rather unusual due to Newport's Y-shape. However, at this location, and at all of the adjacent roadways between Midlothian Blvd. and Shields/Indianola, there is not a single crosswalk that extends across Market St. The lack of designated crossing areas creates a situation which causes pedestrians to enter into the roadway without the protection of a marked crossing or anything alerting drivers to the possibility of pedestrians in the roadway. Market Street, at this location, is approximately 58 feet from curb to curb.

Transit riders often wait for buses near this intersection. There is no bus shelter or bench forcing users to stand, or sit on the ground. At the intersection, the stop bar and crosswalks have faded, making them unrecognizable to users and dangerous to pedestrians. Additionally, potholes in the crosswalks make it nearly impossible for wheelchair users to travel through this area. Asphalted-over tree lawns blur the lines between the roadway and the sidewalk and prevent tree cover from shading pedestrians.



ABOVE: Newport Dr. and Market Street. Google Maps, 2019.



BIKE AND PEDESTRIAN COUNTS	
Counts based upon (3) two hour count intervals	
Bicyclists	7
Pedestrians	11



NEWPORT DRIVE & BROOKWOOD RD

Newport Drive is an important historic connection between Market Street and Mill Creek Park. This intersection at Newport and Brookwood is the dividing line between the residential sphere and the park itself.

A vast majority of the traffic at this intersection was recreational, utilizing Mill Creek Park’s vast network of hiking and walking trails. The Township should capitalize on this usage to add a bike connection to the park alongside Newport Drive.

Despite Mill Creek Parks’ share the road policy, crosswalks need to be installed at this location to provide safe crossing along Brookwood. There is also no pedestrian or crosswalk signage along the roadway to denote potential upcoming pedestrians. Due to the roadways proximity to Mill Creek Park, it is recommended that park entrance signage be installed here.

Additional signage denoting both the park entrance, as well as trails and pathways within the park should be installed to aid in the establishment of a neighborhood gateway. The Township would like to work with Mill Creek Park to make this entrance more visible.



ABOVE: Newport Drive and Brookwood Road. Google Maps, 2019.



BIKE AND PEDESTRIAN COUNTS	
Counts based upon (3) two hour count intervals	
Bicyclists	4
Pedestrians	38



GLENWOOD AVE AND US-224

Glenwood Avenue and US-224 is almost entirely surrounded by the Boardman Plaza shopping center, which has an increased amount of pedestrian traffic due to close proximity of the stores.

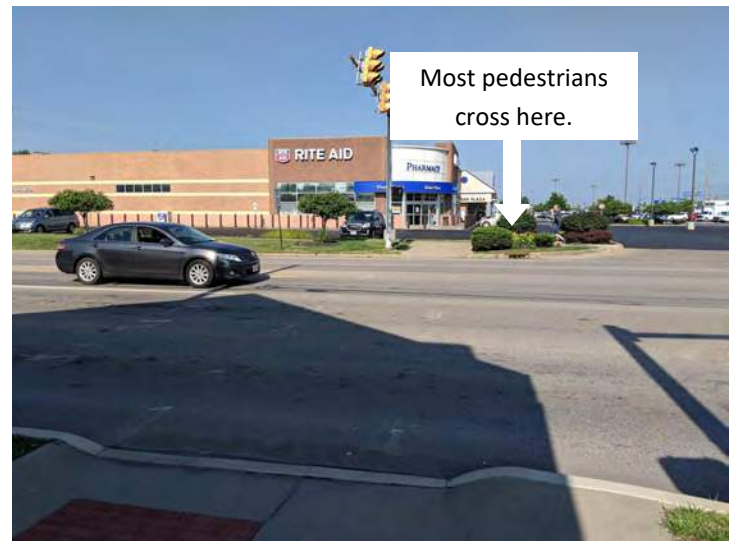
Low-visibility crosswalks and the stop bar have faded at this intersection. High visibility crosswalks and a stop bar should be repainted to provide safer pedestrian access here.

Despite being a major shopping corridor, Boardman Plaza lacks adequate bus facilities; such as signage and bus shelters. Glenwood Avenue is the only road along this stretch that has sidewalks (US-224 lacks them entirely). The pedestrian-activated button (lower right) is too far away from the sidewalk to be used by certain users.

Most pedestrian users at this intersection cross back near the plaza where crossing facilities are located rather than near 224.



ABOVE: Glenwood Avenue and US-224. Google Maps, 2019.



Most pedestrians cross here.

BIKE AND PEDESTRIAN COUNTS	
Counts based upon (3) two hour count intervals	
Bicyclists	4
Pedestrians	79



MARKET STREET AND OVERHILL ROAD

Market Street and Overhill Road is an active intersection between Boardman’s Newport-Glen neighborhood and Youngstown’s Handel’s neighborhood.

This intersection receives relatively high foot traffic levels, mostly due to the housing density of this area, and the number of small businesses and offices along the Market Street corridor. Many businesses in this area have blurred the line between the sidewalk and the parking lot by paving up to the sidewalk, which results in users going between sidewalk and parking lot, but also increases the risk of a collision.

Bike racks should be installed at the Family Dollar convenience store and a bus shelter should be installed near this section of Market Street. Crosswalks are starting to fade at this intersection and should be repainted with a high-visibility design. Additionally, pedestrians appear to be more comfortable using the plaza parking lot than the sidewalk, which could also be the more direct route to their destinations.



ABOVE: Market Street and Overhill Road. Google Maps, 2019.

BIKE AND PEDESTRIAN COUNTS

Counts based upon (3) two hour count intervals

Bicyclists	3
Pedestrians	54



SOUTH AVENUE AND MATHEWS ROAD

The intersection of South Avenue and Mathews Road is characterized by an inherent lack of sidewalks and an overwhelming amount of asphalt on all four corners, with no sidewalk or accessible spaces.

Oftentimes pedestrians were forced to walk in the grass or in the parking lot of adjacent properties, where the only space acceptable for ADA use would be in the roadway, along the shoulder. Bicyclists are forced to enter a five lane roadway, with a speed limit of 40 miles per hour (though it is safe to assume that many vehicle operators exceed this).

This intersection is lacking in pedestrian or non-pedestrian activated signals, curb ramps or sidewalks of any kind.



ABOVE: South Avenue and Mathews Road. Google Maps, 2019.

BIKE AND PEDESTRIAN COUNTS

Counts based upon (3) two hour count intervals

Bicyclists	4
Pedestrians	39



SOUTH AVENUE AND US-224

South Avenue and US-224 is the most dangerous intersection in Mahoning County according to Eastgate's crash map. With no connecting sidewalks, the curb ramps that do exist appear to be just for show, with no real purpose. The sidewalk along the BP gas station had a one foot drop off at the edge of the sidewalk, making it very dangerous for some using the sidewalk.

Crosswalks at this intersection have been severely worn away, which only adds to the highway feel of this intersection. Pedestrians seeking to cross at this intersection would have to cross 75 feet, 6 lanes of traffic, in a short period of time. Pedestrians that did choose to cross at this intersection were forced to run half way through their crossing because crossing time for pedestrians was not long enough.

Vehicles at this intersection appear to almost uniformly encroach upon the crosswalk, making it more difficult for pedestrians to cross. Temporary signage (see Red Cross photo below) was placed where it blocked what little sidewalk was available, adding to the difficulty that wheelchair users would face in using this intersection.

Signage in general was limited and accessible pedestrian signals were not present.



ABOVE: South Avenue and US-224. Google Maps, 2019.

BIKE AND PEDESTRIAN COUNTS

Counts based upon (3) two hour count intervals

Bicyclists	1
Pedestrians	8

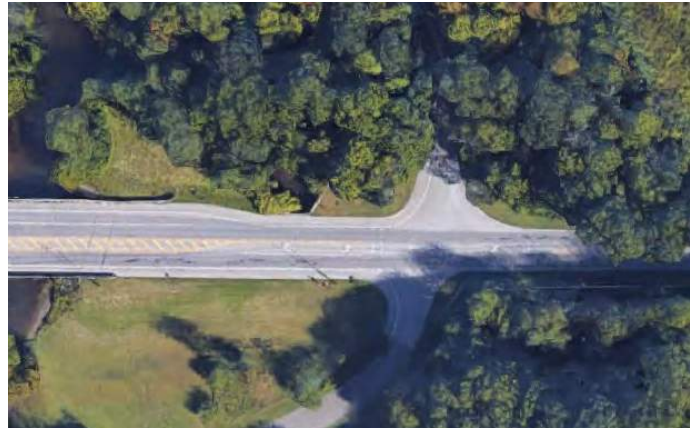


SHIELDS ROAD & EAST GOLF TRAIL

Shields Road and the East Golf Hike and Bike Trail is a major bicycle and pedestrian crossing. The current speed, faded crosswalk and traffic volumes make it very difficult for people to cross. Additional signage should be installed, particularly a pedestrian activated HAWK Beacon, which would help facilitate cross - Shields Road traffic, and allow pedestrians to better utilize both ends of the trail.

Traffic along Shields Road appears dangerous to many users, and a vast majority chose to turn around rather than risk the crossing. However there were a few cyclists who chose to endeavor out onto Shields Road. By creating a crossing at this location, we have the potential to make both leg s of the hike and bike trail accessible to all users while having a minimal impact on vehicular traffic.

The Federal Highway Administration recommends HAWK beacons on roadways where posted speed limits are 40-45 mph—which is within the posted 35 (safe speed) and 45 mph posted limits. However, the County Engineer will require a traffic study to be conducted before a HAWK beacon can be installed.



ABOVE: Shields Road and East Golf Trail. Google Maps, 2019.



Source: [City of Tacoma](https://www.cityoftacoma.gov/)

BIKE AND PEDESTRIAN COUNTS	
Counts based upon (3) two hour count intervals	
Bicyclists	52
Pedestrians	85
Users who Turned Around	37



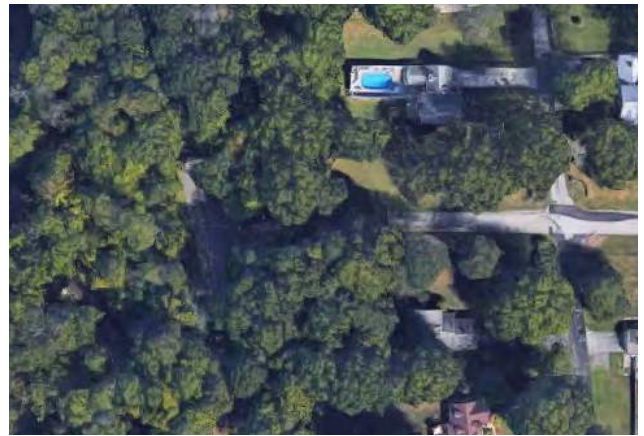
EAST GOLF HIKE & BIKE

Despite being designed primarily for recreational traffic, the East Golf Hike and Bike trail is one of the most heavily trafficked pedestrian routes in Boardman Township.

With two-hour count averaging 200+ pedestrians, this is evidence of a need for more destination-based trails in the Township that can be used for both transportation and recreation.

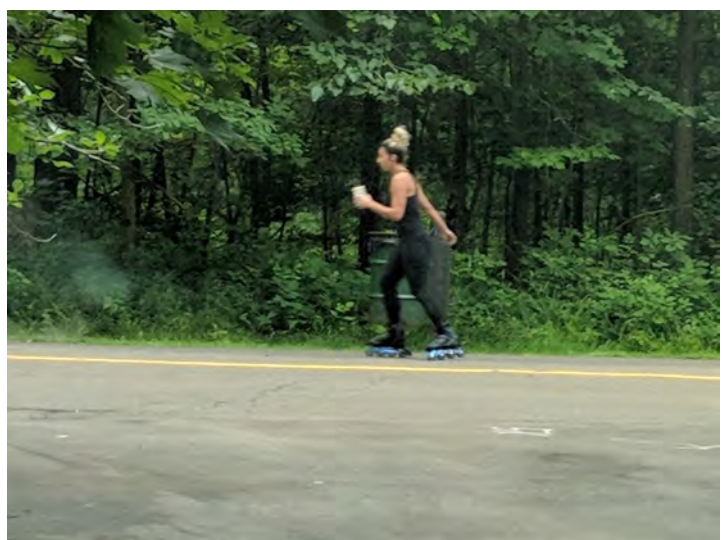
Trail users can be seen parking on Golfview in order to access this trail. Golfview has the best residential access/connection to the park, as many of the other side streets dead end before reaching a trail, park road, or access is restricted.

This entrance could function as a neighborhood gateway, with signage and designated parking spots (with time restrictions for the comfort of local residents). Additional neighborhood access points is something that has been discussed with Mill Creek Metro Parks as many residential streets dead end at the park. Pedestrian access points could be installed or improved at Plymouth Drive, Kiwana Drive, Wildwood Avenue, Ewing Ave, and Stuart Ave.



ABOVE: East Golf Hike & Bike and Golfview Drive. Google Maps, 2019.

BIKE AND PEDESTRIAN COUNTS	
Counts based upon (3) two hour count intervals	
Bicyclists	47
Pedestrians	523
Skaters/Roller Bladers	3



PUBLIC TRANSIT

Boardman simultaneously plays host to the most used and least used transit lines in the WRTA system. A majority of the WRTA system is based on the “hub and spoke” model, requiring riders to go to Federal Station to transfer onto another line. However, the Boardman East and Canfield/Boardman loops are closed systems that do not fully connect with the larger system, these lines have long wait times for transfers and because of their closed nature do not provide the user to the most efficient or direct way to reach their destinations.

An individual living in the Newport-Glen neighborhood would have to take two separate buses over the course of a 50+ minutes in order to get to from their home to the Government Center (these same buses only run once every 60 minutes). This, alongside restricted operating hours, greatly reduces the opportunity for individual without personal vehicles to access Township services and attend public meetings.

WRTA currently runs the #23 and #25 Boardman-Canfield loops with two buses running counter to each other, and making a cycle every 45 minutes. The #26 Boardman East loop runs with one bus going clockwise, and completes a full trip every hour.

RIDERS BY ROUTE	
TIME PERIOD: OCTOBER 1-5 AND 8-12**	
5 South	4,169
7 Glenwood	3,918
8 Market	8,688
23 Canfield/Boardman Loop	150
25 Boardman/Canfield Loop	94
26 Boardman East Loop	831

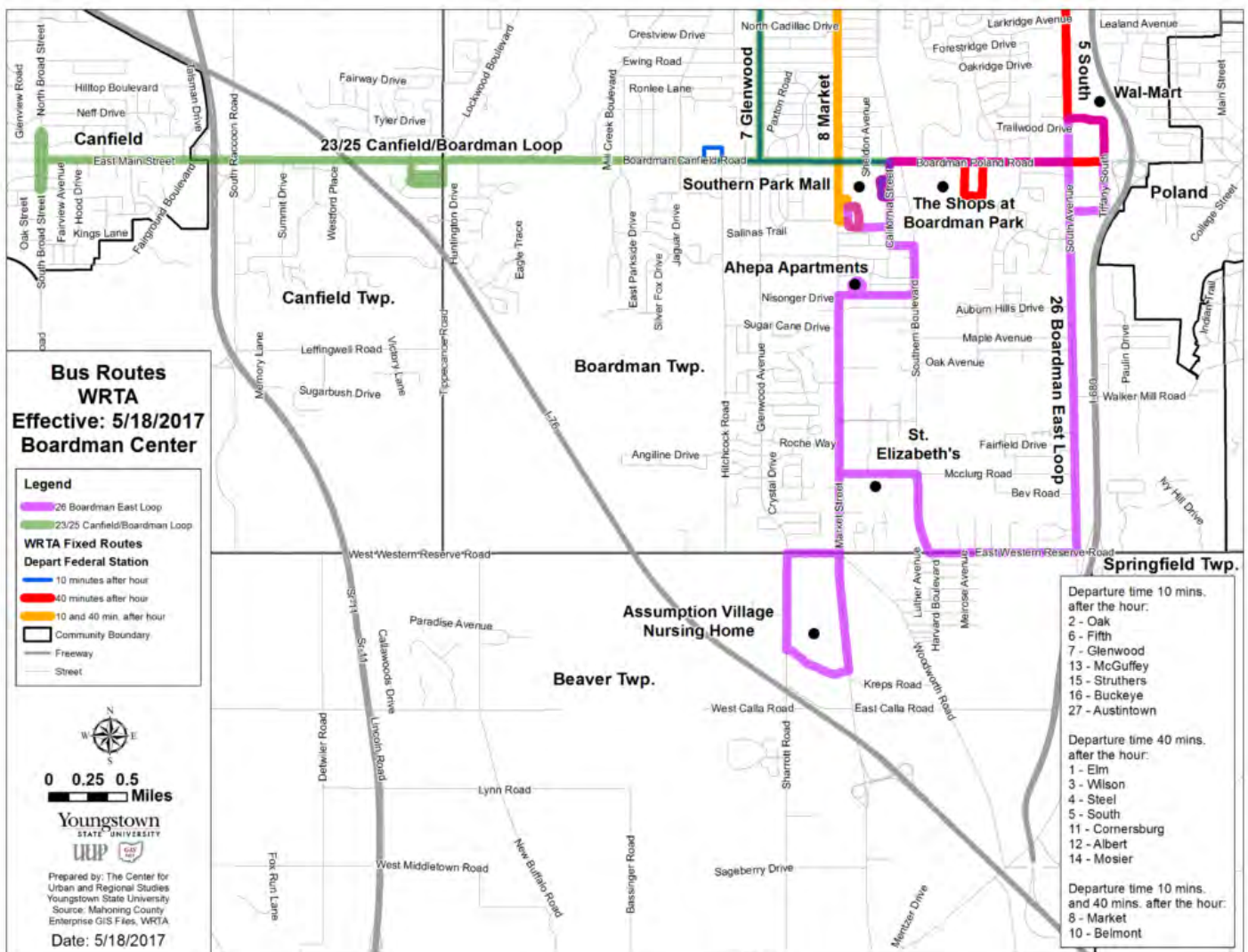


WESTERN RESERVE TRANSIT AUTHORITY

The Western Reserve Transit Authority (WRTA) is Boardman's only source of public transportation, and the only operating agency in Mahoning County. WRTA currently could use additional signage and bus shelters along their most highly trafficked routes. Overall, the Township is in need of marked stops as well as bus shelters for riders.

The Southwestern quadrant of the township is fully cut off from any public transportation, additionally, the section of Glenwood south of 224 does not have a single bus line running to it, and Boardman High School, Glenwood Junior High, and Boardman Library lack any access to public transportation (0.8 mile walk along Nisonger Road, which lacks sidewalks).

In 2017, the 5-South route had 106,633 riders, with an average of 8,886 per month. 7-Glenwood had 107,661 riders, with a monthly average of 8,971, and 8-Market saw the highest in the system, with 201,444 riders with an average of 16,787 per month. This data shows that 8 Market is the most used line in both Boardman Township and the wider regional system.



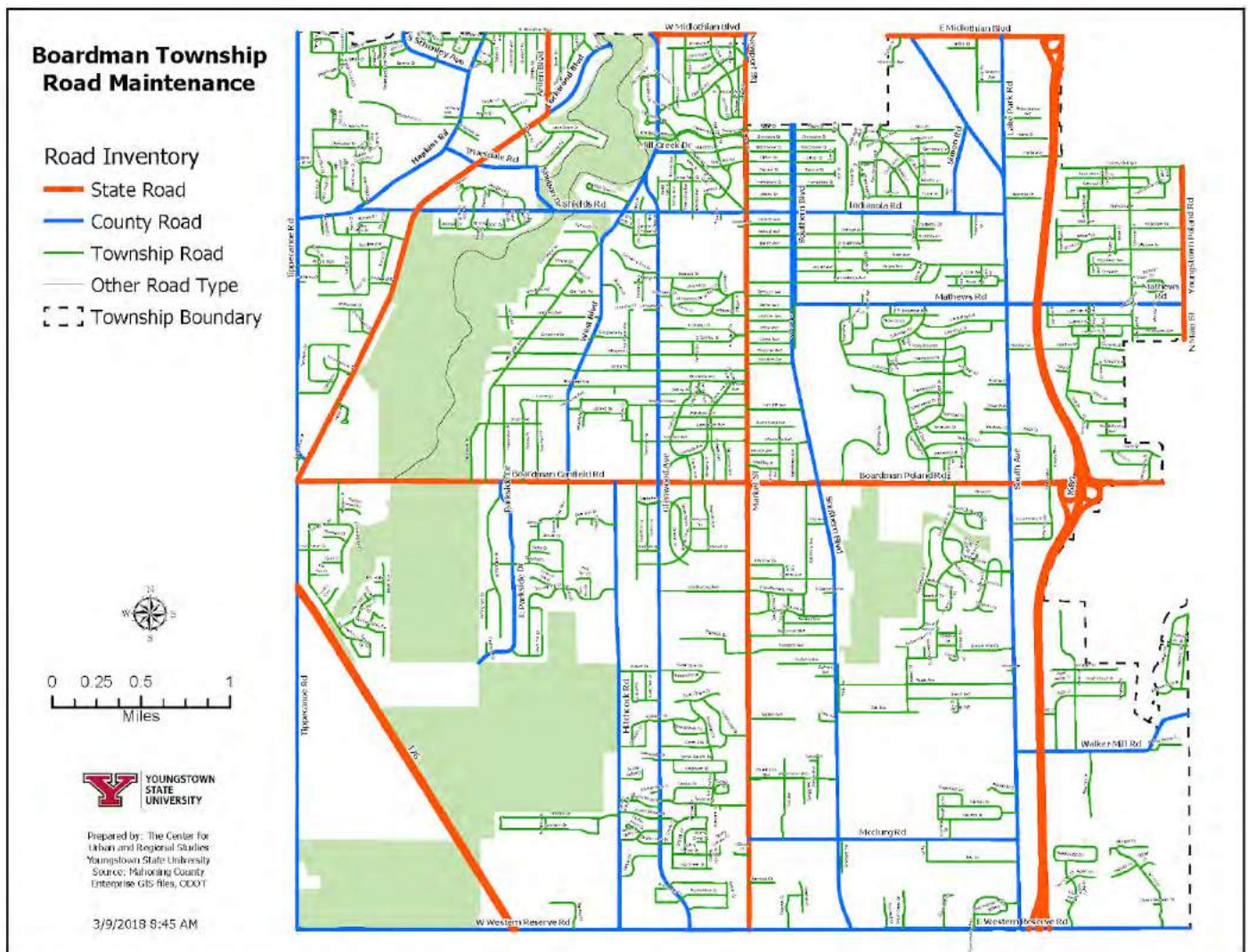
*Data has been provided by Judy Rodriguez, WRTA.

ROADWAY MAINTENANCE

One of the difficulties of being an unincorporated community is the fact that roadway maintenance is divided among many different agencies at many different levels of government, with less than desirable collaboration from other parties at times. Being able to bring all the different entities that conduct roadway maintenance together to collaborate on planning and resurfacing timelines could be a beneficial practice in the future.

Key arterials, such as Market, Lockwood Blvd, and US-224 are state controlled, which gives the Township little ability to implement pedestrian and cyclist infrastructure. Other minor arterials, such as Glenwood Avenue, West Blvd, Southern Blvd, and South Avenue are county controlled roadways. The Township has been working with the county to collaborate on funding sources for improvements, such as ODOT's Safe Routes to School program.

It should also be noted that many of these roads are on Eastgate's list of recommended road diets. Market Street, US-224, South Avenue, and Glenwood Avenue were all identified in Eastgate's 2017 Road Diet Information Guide as locations where road diets should be performed. The FHWA has suggested that roads with four lanes or more and an average daily traffic of 20,000 or less can be identified as candidates for a road diet. West Blvd., South Ave., and Glenwood Ave all meet this description.



AVERAGE DAILY TRAFFIC COUNTS



Average Daily Traffic Counts: Annual **average daily traffic**, abbreviated **AADT**, is a measure used primarily in transportation planning, transportation engineering and retail location selection. Traditionally, it is the total volume of vehicle traffic of a highway or road for a year divided by 365 days.

AVERAGE DAILY TRAFFIC COUNTS			
Street Name	Average Daily Traffic Count	Street Name	Average Daily Traffic Count
STATE ROADS		COUNTY ROADS	
Boardman-Canfield	35,440	Southern Blvd (West side North leg)	7,286
Boardman-Poland	31,400	Southern Blvd (West side South leg)	10,643
Market Street (North)	18,850	Glenwood Ave (N of Shields)	7,710
Market Street (North of 224 near Rockdale Ave)	15,510	Glenwood Ave (S of US-224)	8,348
Market Street (South)	12,190	South Avenue	21,725
W Midlothian Blvd	6,520	West Blvd (N of Shields)	5,147
E Midlothian Blvd	16,000	Brookwood Road	2,161
TOWNSHIP ROADS		Shields Road	11,165
Mill Creek Blvd	523	Indianola Road	9,412
Ewing Road	1,275		
Maple Avenue	5,553		
Sheridan Road	4,318		

Average Daily Traffic Counts have been provided by the Eastgate Regional Council of Governments.

SCHOOL WALK AUDITS



During the end of the 2017-2018 school year, Planning staff conducted School Walk Audits at all of the Boardman Local Schools buildings, and at Saint Charles School on 224 (the only parochial school in the Township). The purpose of these audits was to identify potential safety issues regarding pedestrian, cyclist, and motor vehicle transportation in the school zone. These walk audits were conducted in the morning as students were arriving to school.

Common safety issues included a lack of ADA compliant sidewalks and curb ramps, worn or unidentifiable crosswalks, and a lack of school zone beacon lights. These issues will be reviewed with representatives from Boardman Local Schools in collaboration with the Township officials and a community stakeholder team, for the planning and implementation of a township-wide Safe Routes to School program. This stakeholder team consisted of representatives from Boardman Local Schools, Akron Children's Hospital—Mahoning Valley, Boardman Township, Mahoning County Engineer's Office, Mahoning County Board of Health, Eastgate Regional Council of Governments, and the Boardman Police Department.

SAFE ROUTES TO SCHOOL

Safe Routes to School programs aim to make it safer and encourage students to walk and bike to school. Transportation, public health and planning professionals, school communities, law enforcement officers, community groups and families all have roles to play using education, encouragement, engineering (changes to the physical environment) and enforcement to meet a local community's needs. Traditionally underserved communities deserve particular attention, in part because they tend to have more pedestrian and bicyclist injuries. Data collection is critical to the planning, implementation and evaluation of programs.

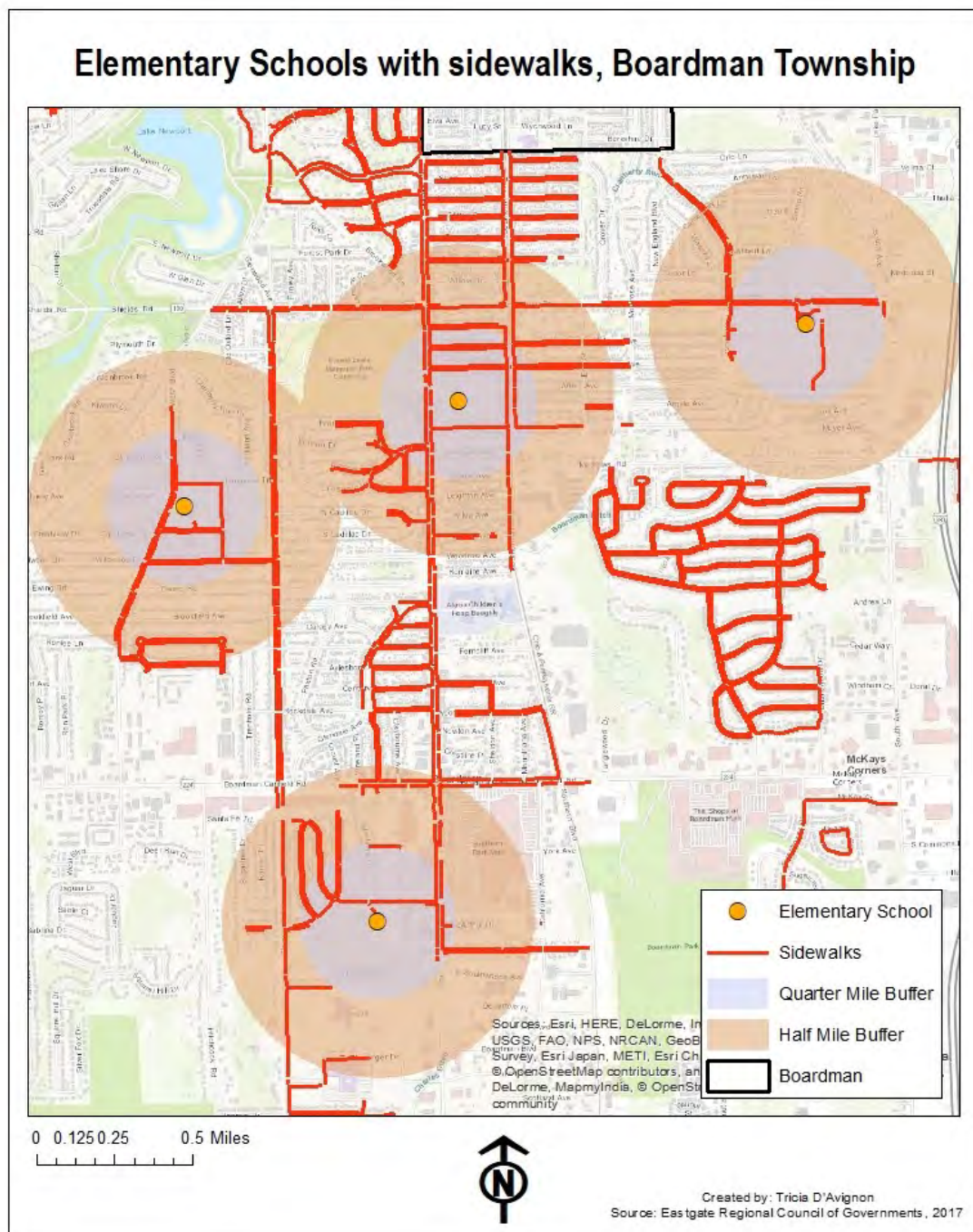
The Safe Routes Boardman School Travel Plan was completed in December 2018 and submitted to the Ohio Department of Transportation and approved to apply for funding in the 2019 program year. A funding request of around \$300,000 was submitted in early Spring 2019.



SCHOOL WALK AUDITS

Overall, the public and parochial schools in Boardman had issues mostly surrounding building access and pedestrian amenities. A top priority will be assuring that sidewalks are ADA compliant and that a complete network exists surrounding the schools.

Issues with ADA compliance in regards to sidewalks are a top priority that should be fixed as soon as possible, as this poses a obstacle to the general public, students, and disabled individuals. The other most common issue was in regards to crosswalk visibility with crosswalks either not being present or faded beyond recognition. While many of the school grounds were in good condition, these issues with ADA compliance and additional safety measures should be addressed in order to make it safer and more accessible for the community.



STADIUM DRIVE ELEMENTARY

Stadium Drive Elementary School is located at the intersection of Stadium Drive and Westview Drive.

The location has faded crosswalks, no pedestrian-scale lighting and bushes/foilage growing over the sidewalk. There is no sidewalk on the south side of Stadium Drive, directly in front of the school.

Additionally, the school has no curb ramps, meaning that the complex is not ADA accessible. Curb ramps and tactile pavers should be installed to bring this school into compliance.

The adjacent buildings and homes need sidewalks installed to connect the neighborhood to the school. The neighborhood also needs comprehensive code enforcement to ensure pedestrian, resident, and student safety. High visibility crosswalks should be installed, as well as upgrading the School Zone sign to a beacon.

Foliage and plants have overtaken sections of the sidewalk and need to be cut back, which can be addressed through Township code enforcement.



Boardman Township Planning & Zoning- D'Avignon (2018)

WALK AUDIT NOTES

SIDEWALKS

Sidewalks not present on south side of street near school

Sidewalk is not wide enough

Sidewalk is not continuous

STREET CROSSINGS AT INTERSECTIONS

The crossing does not have a pedestrian-activated button

Crosswalk is poorly marked—needs repainted

Intersection does not have curb ramps

COMFORT AND SAFETY

Pedestrian-scale lighting is NOT present

No street trees, shade , or benches

School Zone beacons are not present

DAILY AVERAGE TRAFFIC COUNTS

Stadium Drive	3,633 (2015)
Market Street	12,190



Example: Curb Ramps pedbikeimages.org Dan Burden (2006)

WEST BOULEVARD ELEMENTARY

West Boulevard Elementary is located on West Boulevard, north of Crestview Drive in the northwestern quadrant of the township.

Sidewalks in this area are overgrown and should be scraped, but otherwise appear to be in good condition. ADA curb ramps should be installed at all intersections and at residential driveways that are not flush with the sidewalk.

This area is in need of School Zone beacons, as well as signage along Northlawn Avenue and Crestview Drive.

A marked crosswalk should be installed at either the intersection of Crestview and West Blvd or Golfview and West Blvd to provide easy cross-road access.

Drivers in this area appear to be going over 25 miles per hour, it is recommended that a traffic speed study should be conducted and that police officers monitor this area during restricted speed times.

WALK AUDIT NOTES

SIDEWALKS

Sidewalks are broken, cracked, or have tip hazards

Sidewalk is not wide enough

STREET CROSSINGS AT INTERSECTIONS

The crossing does not have a pedestrian-activated button.

There is no crosswalk, or it is poorly marked.

The intersection does not have a curb ramp.

COMFORT AND SAFETY

Drivers appear to be speeding

Street lights are few or not present.

There are few or no street trees.

The street needs benches and places to rest.

DAILY AVERAGE TRAFFIC COUNTS

West Boulevard	5,147
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Boardman Township Planning & Zoning- D'Avignon (2018)

ROBINWOOD LANE ELEMENTARY

Robinwood Lane Elementary, located at the intersection of Robinwood Lane and Indianola Road, has a narrow sidewalk with faded crosswalk markings and poor signage. Faded *SCHOOL* road markings should be repainted

Street lights are present here, however they are not at an appropriate height for pedestrian use.

Robinwood Lane (the adjacent roadway) appears to be an extension of the School parking lot (paved to the road), and there are no bike racks available for students.

Some of the school signage is bent, and should be replaced with school zone beacons. Additionally, sidewalks do not have ADA curb ramps. The crosswalk on Indianola Road should be marked with high-visibility markings and a pedestrian activated beacon. Stop bars are not present and should be installed.



WALK AUDIT NOTES	
SIDEWALKS	
Sidewalks are broken, cracked, and are tripping hazards.	
Sidewalk is not wide enough.	
STREET CROSSINGS AT INTERSECTIONS	
The crossing does not have a pedestrian-activated button.	
Crosswalk is poorly marked—needs repainted	
Intersection does not have curb ramps	
Marked crosswalks are too far apart.	
COMFORT AND SAFETY	
Drivers do not stop at crosswalk (Indianola Rd)	
There are NO street trees, benches or places to rest.	

DAILY AVERAGE TRAFFIC COUNTS	
Indianola Road	9,412



CENTER INTERMEDIATE SCHOOL

Boardman Center Intermediate School is located on Market Street across from the Southern Park Mall. This building is unique in that it is placed close to the road. This location provides ideal pedestrian access to the building for students, staff, and visitors.

The building, despite being at the geographic heart of the township, has little pedestrian access to the mall and outparcels across Market Street. Traffic along the Market Street corridor appeared to be going above the posted speed limit, perhaps due to the highway-like design of this major artery. A speed study and increased enforcement is recommended.

The campus at Boardman Center Intermediate lacks pedestrian level lighting, street trees, and marked crosswalks (Stadium and Market).

Additionally, the only marked student entrance was at the vehicle drop off located in the rear of the building, providing almost no signage or building information from the sidewalk along Market Street.

WALK AUDIT NOTES

SIDEWALKS

Sidewalks have trip hazards

Sidewalk is not wide enough.

STREET CROSSINGS AT INTERSECTIONS

Market Street is too wide to cross easily

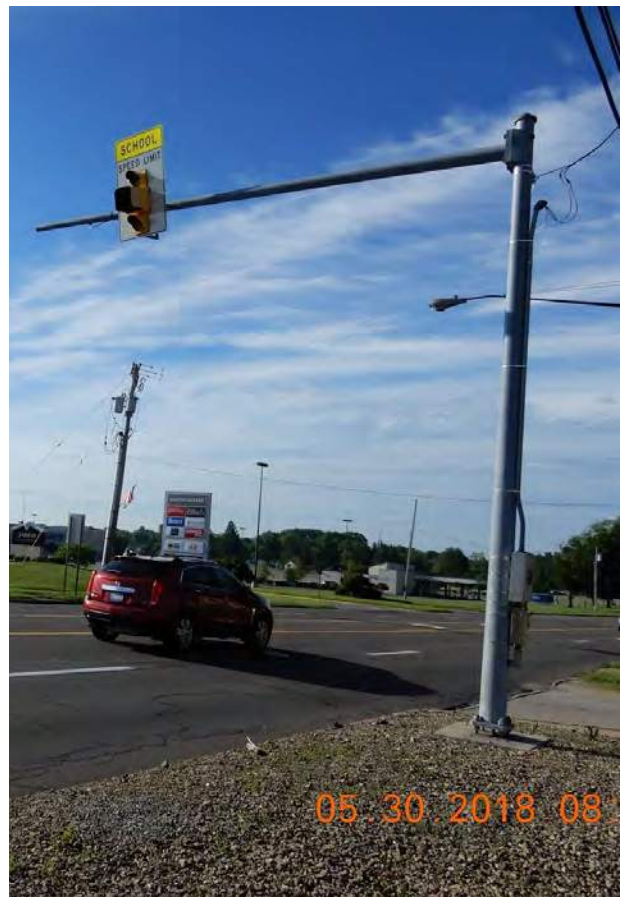
Stadium Drive/Market Street crossing does not have a pedestrian-activated button

Crosswalk is poorly marked (Market/Stadium)

Too long of a distance to a marked crosswalk

DAILY AVERAGE TRAFFIC COUNTS

Market Street (South of 224)	12,190
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Boardman Township Planning & Zoning- D'Avignon (2018)

GLENWOOD JUNIOR HIGH

Boardman Glenwood Junior High, which is located on Glenwood Avenue by the Boardman Library and Boardman High School. Sidewalks at this location are only on the East side of the street. The school does not have bike racks. School zone signage could be more prominent and the crossing between the school and library could benefit from a pedestrian hybrid beacon as not many stop lights exist along this portion of Glenwood Ave. Sidewalks at this location only allow for single-file walking and are not ADA compliant.

Additionally, the crosswalk that connects the school to the library has minimal visibility and is no longer functioning for its intended use. The Boardman Library has no sidewalks, the crosswalk instead goes into the driveway. Sidewalks should be installed here in order to prevent unnecessary vehicle-pedestrian points of contact.



Boardman Township Planning & Zoning D'Avignon (2018)



WALK AUDIT NOTES

SIDEWALKS

Sidewalks have trip hazards

Sidewalk is not wide enough

Sidewalk is not continuous

Sidewalk is blocked by overgrowth

STREET CROSSINGS AT INTERSECTIONS

Glenwood Ave is too wide to cross easily

Glenwood/School driveway does not have a pedestrian-activated button

Glenwood/School driveway does not have a curb ramp

There is not a safe marked crosswalk

SAFETY & COMFORT

Street lights are few or not present

Car speeds are too fast

There are few or no street trees along Glenwood

Access to the Public Library is limited.

DAILY AVERAGE TRAFFIC COUNTS

Glenwood Ave

8,348

BOARDMAN HIGH SCHOOL

Boardman High School is located adjacent to Glenwood Junior High and across from the Boardman Library.

Pedestrian level lighting is present on school property, but does not continue along Glenwood Ave. The driveway at this school is 1/10th of a mile with no benches for pedestrians to rest.

The curb ramps along Glenwood Ave and Sugarcane Drive are not ADA compliant. The sidewalks along Glenwood are wide enough for two people, however the school entrance is in need of a marked crosswalk, as well as a stop bar.

The crosswalk that connects the campus to the library is faded beyond recognition and should be replaced with a high-visibility design. Potholes have made the crosswalk impassable and is not ADA-compliant. Additionally, a Pedestrian Hybrid Beacon should be installed at this location to allow safe access between these learning centers. Existing signage should be upgraded to be high-visibility.



WALK AUDIT NOTES	
SIDEWALKS	
Sidewalks have trip hazards.	
No curb ramps.	
STREET CROSSINGS AT INTERSECTIONS	
Crosswalks are poorly marked	
Glenwood/School driveway does not have a pedestrian-activated button	
Glenwood/School driveway does not have a curb ramp.	
SAFETY & COMFORT	
Street lights are few or not present	
Car speeds are too fast	
There are few or no street trees along Glenwood	
Access to the Public Library is limited.	

DAILY AVERAGE TRAFFIC COUNTS	
Glenwood Ave	8,348



SAINT CHARLES SCHOOL

Saint Charles School, located on US-224, features a sidewalk along US-224, but that sidewalk does not continue along Westview Drive. The crosswalk at Westview Drive and US-224 is low-visibility and not easily crossed by young adults.

The school's tree lawn has been asphalted over, blurring the lines between the roadway and the parking lot with no clear designated area for pedestrians.

While school zone beacons do exist, there is minimal markings or signage on the street to increase awareness for drivers through the area. The crosswalk is low-visibility and needs to be repainted in a high-visibility design. STOP HERE ON RED signage should be installed where the stop bar is present in front of the crosswalk.

Passing cars did not appear to be respecting the School Zone, a speed study and increased enforcement is suggested.



Boardman Township Planning & Zoning- D'Avignon (2018)

WALK AUDIT NOTES	
SIDEWALKS	
Sidewalks are broken, cracked or have trip hazards	
Sidewalk is not continuous	
STREET CROSSINGS AT INTERSECTIONS	
Crosswalks are poorly marked/US-224	
Westview does not have a pedestrian-activated button	
US-224/Westview intersection does not have curb ramps	
US-224 is too wide to easily cross	
SAFETY & COMFORT	
The street lacks benches or safe places to rest	
Car speeds are too fast	
There are few or no street trees along Glenwood	
Access to the Public Library is limited	

DAILY AVERAGE TRAFFIC COUNTS	
US-224	31,400



SECTION THREE
NEEDS AND
SOLUTIONS



NEEDS ASSESSMENT



As Boardman begins to redevelop as a center of a much larger region, we must begin to look at new and innovative ways to connect our neighborhoods and make them more accessible to non-motorists.

Many subdivisions and neighborhoods in the Township lack adequate sidewalk facilities, safe access to neighborhood amenities such as parks, playgrounds, trails, cycling facilities, or centers of community engagement. In order to build a powerful and prosperous community, we must ensure that all residents have access to these amenities, no matter their form of transportation.

CONNECTIVITY

One of Boardman’s biggest problems moving into a more connected community will be dealing with the issue of cul-de-sacs. Developments such as Quail Hollow and Presidential Estates (the community that surrounds Presidential and Eisenhower Drives) are prime examples of the kind of development that makes it difficult to connect to the wider community. With an abundance of cul-de-sacs, this community has only two exits to the wider street network; on US-224 and on South Avenue. With limited sidewalks, it will be difficult to connect this neighborhood, which contains both multi-family and single-family homes, into the wider network.

It is suggested that all future developments be required to have main roads that connect the neighborhood to adjacent streets. Cul-de-sacs and other forms of dead-end streets should be used sparingly and only when absolutely essential. Cul-de-sacs also have the potential to install small multi-modal paths that connect them to main roads or trail networks. This would allow users to “leak through” without causing the need for additional construction.

Red Grouse Court.
Photo from Google Streetview.



RECOMENDATIONS



While pedestrian and cyclist infrastructure issues exist across the township, we are not alone in these issues. Communities across the country have been addressing similar problems over the years, and these solutions have resulted in a cohesive collection of best practices that a community can implement and understand the potential results. While not every problem is the same as those faced by other communities, we have the potential to solve our issues in a manner that befitting of our community.

These recommendations are divided into several categories based on the specific issue that they resolve. Additional recommendations can be found in **Appendix B: Complete Streets Design Guide**, where road and multimodal path styles are presented, along with specific sidewalk placement determined by appropriateness.

COMPLETE STREETS POLICY

From the legislative end, it is recommended that Boardman Township Board of Trustees enact a Complete Streets Resolution, similar to those ordinances passed by the Cities of Kent and Akron, and Liberty Township (Delaware County).

A Complete Streets Policy Resolution would assist in the process of connecting the township through multimodal paths, bike lanes, and sidewalks. Additionally it would stand as a legislative commitment to the Township's goal of creating a safe, sustainable, and accessible place to live.

Complete Streets Policies are beneficial not only to cyclists and pedestrians, but also to protected classes in society, such as children, the elderly, and the disabled. These populations are often considered to be most affected by the creation of un-walkable or dangerous spaces and places. Additionally, these individuals are also more likely to be financially insecure, which prevents them from being able to obtain a personal vehicle.

Such a policy would ensure that sidewalks are ADA compliant, that intersections are connected to wider sidewalk networks, high visibility crosswalks are installed, and that over time, the roadways are made accessible to all forms of transportation.

Glenwood Ave and US-224. Darling, 2018.



SAFE ROUTES TO SCHOOL



Beginning in Summer 2018, Boardman Township began to meet with the Boardman Local Schools administration, as well as other stakeholders in order to start discussions regarding the creation of a School Travel Plan for students.

A major part of the Safe Routes process was the creation and development of a School Travel Plan (see *Safe Routes Boardman: School Travel Plan*).

The Safe Routes Boardman School Travel Plan was submitted to the Ohio Department of Transportation in December 2018. The application was approved and the Township is currently applying for improvements around Robinwood Lane Elementary School.

The Safe Routes Boardman School Travel Plan outlined major infrastructure issues around the elementary and middle schools, as well as the need for sidewalk connectivity between and around these buildings.

BOARDMAN SCHOOLS

These recommendations are to be done in collaboration with the Safe Routes to School program. They are to be implemented as soon as possible to assure student and pedestrian safety. Those listed here are a brief summary of the more exhaustive recommendations included in the *Safe Routes Boardman School Travel Plan*, and will be implemented as funding becomes available (where these amenities have not yet been installed).

RECOMENDATIONS

Evaluate lighting at all the schools & install pedestrian-focused lighting

Repair and replace sidewalks directly in front of all school buildings

Install flashing 20mph school zone beacons at all schools

Install SCHOOL roadway markings and high-visibility crosswalks in front of schools

Install a sidewalk from Stadium Drive Elementary to Kidstown, a daycare facility that walks students to and from school every day.

Install directional signage at and around schools to mitigate new traffic flows and provide additional information.

Install, repair, and replace sidewalks in key neighborhoods, connecting these neighborhoods to local schools and the wider sidewalk network.



INTERSECTION INFRASTRUCTURE UPGRADES



Intersections are a crucial part of our built environment, however, they often pose as a very real roadblock for pedestrians and cyclists. Roadways like US-224 or Market Street are intimidating and very dangerous to cross if there is not a marked crosswalk at a controlled intersection. Often the case could be that there is no controlled crossing for an entire mile of roadway, such as on Market Street.

It is recommended that timed pedestrian signals be installed at locations, with the option for additional time. One of the common complaints about pedestrian timers is that they do not allow enough time for children, the elderly, and even young adults to cross without having to dash across. Sidewalks at intersections should be connected to the larger network and be ADA compliant, providing refuge islands where necessary. Additionally, benches should be placed at or near some intersections to provide spaces for those unable to stand for long periods of time to sit, especially at established bus stops, where shelters are not provided.

Stop bars should be installed at major intersections where crosswalks are present. It is recommended that this be done with “STOP HERE ON RED” signs to ensure that vehicles do not encroach onto the crosswalk. Within Boardman Township, the Boardman Township Police Department should increase enforcement on vehicles that pull into the marked crosswalk area when pedestrians have the right of way.



McClurg Road and Tod Avenue by Saint Elizabeth's Hospital—Boardman. Darling, 2019.

Additional recommendations include installing flashing beacons to alert drivers of pedestrians, like those installed near Saint Elizabeth's Hospital - Boardman, or HAWK beacons. High-Intensity Activated Crosswalk Beacons provide a means for pedestrians to cross at locations that otherwise would be dangerous and would involve them jay-walking.

The intersection of US-261 and SR-43 in Kent is an example of how we can create a safe crossing point through the installation of pedestrian cross beacons and high-visibility crosswalks.

US-261 and SR-43 in Kent, Ohio. Darling, 2018.



CROSSWALK UPGRADES

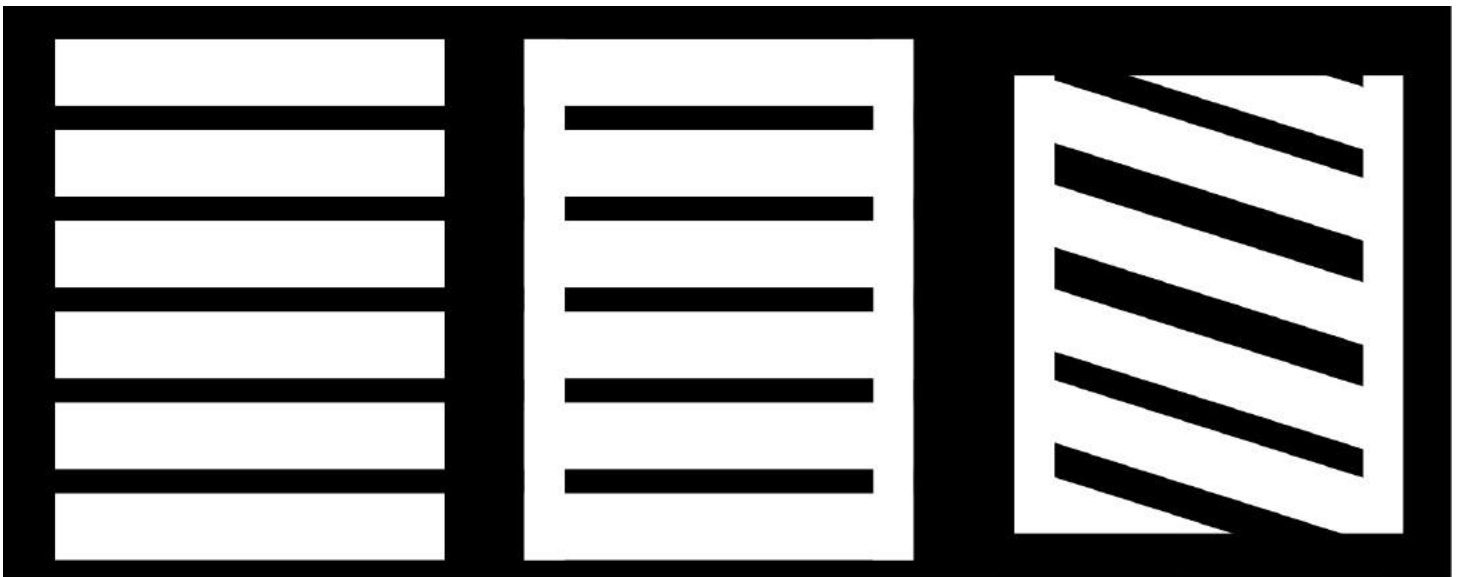


All major crosswalks throughout Boardman Township should be converted to high visibility crosswalk designs, with preferences given to ladder, continental, or diagonal styles (shown below). Standard parallel line crosswalks are often overlooked by motorists, which then results in them encroaching into the pedestrian right of way.

It is suggested that key intersections have a “STOP HERE ON RED” sign that would suggest vehicles to stop behind or at the stop bar, thus allowing pedestrians to cross with ease. Pedestrian crossing signal buttons should be located in accessible spaces and within reach of children and those in wheelchairs.

At mid-block and intersections where one direction does not stop (Market Street), YIELD FOR PEDESTRIANS signs are recommended in order to allow pedestrians to cross safely. It is also recommended that traffic islands or refuges be installed at these mid-block crosswalks to add protection for pedestrians. Market Street, with its lack of cross-street crosswalks and wide lanes is a prime example of a street that needs refuge islands in order to make the street safer to cross.

Nearly all of the crosswalks in Boardman are not designed for the visually impaired, which is both extremely dangerous for those individuals, and can prove to be a major barrier to their quality of life. It is recommended that Accessible Pedestrian Signals (APS) be installed. These devices can have customized recordings to detail the location and the directions for this intersection (ex. “Wait. Wait to cross Glenwood and 224. Wait.” or “Market. Walk sign is on to cross Market.”). These signals should be adjusted for volume, and effort should be taken to assure that they are not too loud as to disturb residents.



From left to right, continental, ladder, and diagonal. [A study](#) from the Federal Highway Administration found that these crosswalk designs were the most effective and increased drivers stopping.

SHARROWS

According to the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, (4.3) shared lanes (commonly referred to as Sharrows”) should be placed on roads that have very low to low volumes of traffic, and appropriately low speed limits (AASHTO recommends no more than 35 mph). In the context of Boardman, low volumes of traffic should mean less than 2,500 vehicles per day. Jaguar and Nisonger Drives are examples of this.

Sharrows are not an ideal solution on roadways with more than two travel lanes, or where the speed limit exceeds 25 mph. If shoulders are more than four feet wide and in good condition, it would be ideal to mark the shoulder as a bike lane. Sharrows are only ideal for minor collector streets, where vehicle speeds are low enough to allow even novice cyclists to feel safe using the roadway.

Shared lane markings should be placed on low-traffic roads that have been deemed suitable for bike traffic without the need for marked or separated lanes. Most residential streets should fall into this category.

In a 2019 study conducted by researchers from the University of Colorado - Denver and the University of New Mexico found that sharrows were more dangerous and received less overall increases in use when compared to bike lanes or no new infrastructure. This study also analyzed cyclist injuries, which decreased in most areas with the all types of infrastructure, but decreased the least (around 20%) in sharrow areas. The researches also point to an overall lack of beneficial research regarding the safety or impact of shared lane markings. (Ferenchak and Marshall).

It should be noted that “SHARE THE ROAD” signage does not replace adequate facilities and infrastructure and conveys an obscure and potentially dangerous message. This active transportation plan does not recommend “Share the Road” signage, rather the “MAY USE FULL LANE” sign is recommended. This sign, with different language and color, alerts motorists that bicyclists have legal use of the full lane in places where other infrastructure does not exist.



Images: MUTCD, FHA, 2009 Edition.

Sharrows, Image: Eric Gilliland/Flickr

PROTECTED BIKE LANES & SIGNED ROUTES



Protected bike lanes are the ideal form of cyclist infrastructure for Boardman Township. Either separated by paint markings or bollards, these options are considered ideal because of the added protection that is provided to the cyclists. Through separating bike lanes from the main flow of vehicular traffic, we can increase accessibility of the bike lanes to those who would otherwise not feel comfortable or safe cycling in the regular travel lane.

In areas where the shoulder is wide enough (4-6 ft.), it is recommended that it be remarked as a bike lane and signed as such. In areas where a shoulder is not present, a redesign of the roadway might be necessary in order to accommodate appropriate lane spaces. Roadways like Glenwood Avenue should be redesigned to provide a more comfortable space for both motorists and cyclists without the need to expand the roadway (Appendix A).

Protected bike lanes have the opportunity to be installed along our major corridors, since they provide a safe and designated space to ride. Their development and use should be urged by both the township and county road departments as a means to address transportation-related disparities in the community.

Multi-purpose trails or shared paths are paved, off-road facilities designed for travel by a variety of non-motorized users, including bicyclists, pedestrians, skaters, joggers, and others. These are recommended in places throughout the township as an alternative to cyclists and pedestrians using the road to get to destinations.



A separated bike lane protected by paint and flex-posts. Image: Montgomery County Planning, Maryland.



Source: WCPO Cincinnati



A separated bike lane protected by parallel parked cars. Image: NACTO.org

Signed Routes allow for a cohesive network to be easily identified and allows for users to better understand where they are and how far their destination is. The Federal Highway Administration states that cyclists are more likely to use a bicycle facility if it is part of a comprehensive network.

While not ideal on their own, signed routes can act as a quick solution, only requiring that signs be installed at first, while other sources of funding are obtained.

The Federal Highway Administration does provide some guidance on signage for bicycle facilities, however this signage can be confusing and alienating for those who do not already know about the whole system. It is recommended that instead the Township adopts a system of strategically placed wayfinding signs like those seen in other cities (such as Cincinnati on the right). These signs could feature maps and directions to key destinations, schools, cultural institutions, and parks while also giving the route a unique brand.

PARKWAY DESIGN

The North Boardman Greenway and the Southern Railroad Parkway are only two of many potential locations for multi-use trails in Boardman Township. The North Boardman Greenway project was selected due to the precedent established in other communities for trails along utility lines. The Southern Railroad Parkway was selected based on the potential for the Rails to Trails program, which uses decommissioned rail lines as the basis for multimodal pathways.

As set by the American Association of State Highway and Transportation Officials (AASHTO), multimodal paths are to be at a minimum of 8 foot wide, with a preference for 10-12 foot wide paths (divided into directional lanes where necessary). This width can be reduced to fit into a set environment (such as having to fit between a roadway and a body of water), but this reduction should only be used where absolutely necessary.



Holmes Run Trail, Alexandria, Virginia.
Source: AlexandriaVa.Gov

PARKWAY DESIGN—INTERSECTIONS

Due to the size and shape of the easement, several intersections will have to be accounted for. Depending on the design of the intersection, two different variations might be required. The first design would combine the greenway traffic and regular pedestrian traffic, meeting before the intersection. The second design would require the installation of a HAWK beacon, although many of these crossings in the Mill Creek Metropark network only feature stop signs, like what is shown on the right.



This is an example of a non-intersectional crossing, where vehicles have the right of way.
From Third Wave Cycling Blog - Coeur d'Alene Trail.

PARKWAY DESIGN-SIGNAGE

The National Association of City Transportation Officials (NACTO), in their Urban Bikeway Design Guide, sets out general considerations and suggestions for signage along bicycle routes. NACTO further subdivides these signs into three categories, confirmation signs, turn signs, and decision signs.

Confirmation signs are designed to both assure cyclists that they are on a preferred pathway, as well as warn motorists that they might encounter cyclists on this roadway (where cycle paths and roadways meet). NACTO recommends that these be placed every $\frac{1}{4}$ to $\frac{1}{2}$ mile on off-street facilities (such as a Greenway), and every 2-3 blocks along on-street facilities, unless another type of sign is used (turn or decision).

Turn signs are to be used in areas where the greenway or path changes (these are not to be confused with decision signs, which act as wayfinding, but rather show changes in a set path).

Decision signs are perhaps the ones that most people are familiar with. These signs provide directions to destinations, neighborhoods, and key assets. NACTO recommends including arrows, distances, and travel times in order to enhance the user experience and provide as much information as possible. These should be placed near intersections along streets that have bicycle facilities, or the capacity for cyclists to travel safely.

Destinations included on decision signs should be ranked as primary, secondary, and tertiary, with primary destinations (such as North Market District, Southern Park Mall, or the Government Center) getting wayfinding for the whole route, secondary destinations (such as bus stops or hospitals) included up to two miles away, and tertiary destinations (such as local parks or schools) included one mile away.

Along the North Boardman and Southern Boulevard Greenways, it is recommended that wayfinding signage, like those pictured below, be placed at exit points or intersections along the route. These signs can help create a sense of neighborhood identity while also acting as wayfinding signage.



Oakland, CA

This sign is an example of a confirmation sign (above) and destination sign (bottom). Ideally, this sign would also include the distance to those destinations in miles. *From NACTO - Urban Bikeway Design Guide.*



Simplified signage, such as this sign from Portland, can help create a modern, unified look for a cycle network. *From BikePortland.org.*

SPEED



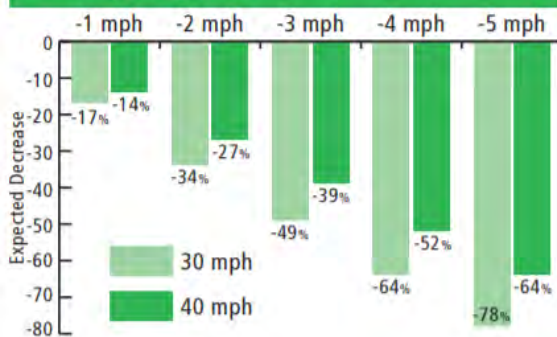
In a pedestrian-motorist crash, one of the most crucial elements is speed. Lower speeds can save lives. According to Ohio LTAP, being hit by a vehicle going 20 miles per hour, there is a 9/10 rate of survival. This decreases to 5/10 when being hit by a vehicle going 30 miles per hour, and down to 1/10 when hit by a vehicle going 40 miles per hour.

Many of Boardman’s main corridors have speed limits of 40-45 miles per hour, a speed that statistically, pedestrians have the lowest survival rate. It is recommended that these speeds be reduced to 35 miles per hour where appropriate in order to balance the need for speed and the safety of pedestrians and cyclists. Additionally, it is recommended that all non-arterial streets are reduced to 25 miles per hour. As a township, Boardman does not have the power to reduce speed limits below 25 miles per hour and can not change speeds on state or county maintained roads. This restriction greatly limits the impact that the township can have on US-224 and Market Street, and would require collaboration with the Ohio Department of Transportation and the Mahoning County Engineer’s Office. See the map to the right for Boardman’s current speed limits.

One example in the Township where a speed study is recommended for a reduction in speed limit is on Shields Road near Millcreek Metro Parks Hike & Bike Trail. This section of Shields goes up in speed from 35 to 45 MPH prior to reaching the trail crossing and bike lane along Shields.



Figure 1. Expected decrease in fatal crashes based on reduced operating speeds



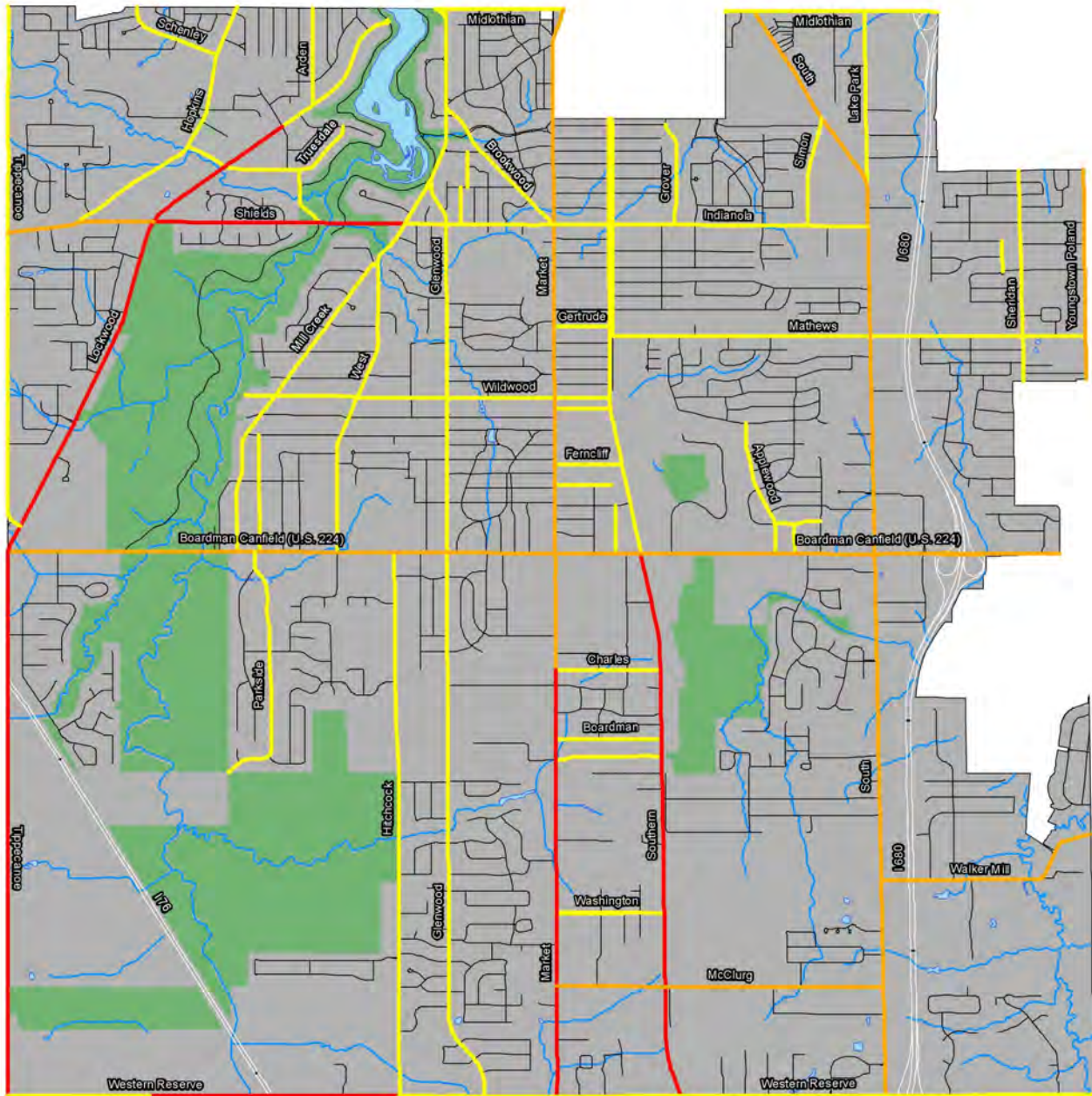
Expected decrease in fatal crashes based on reduced operating speeds.
Source: Pedestrian and Bicycle Information Center.

Speed reductions are one of the most effective and impactful ways to reduce risks to pedestrians and cyclists. In 2016 speeding was involved in 427 pedestrian and 56 bicycle crashes. The Pedestrian and Bicycle Information Center notes that while these numbers are substantial, many more crashes are likely to have occurred where speeding was a factor because current reporting systems rely heavily on police reports and personal interpretations of post-crash scenes. An operating speed reduction of just 5 mph reduces the amount of fatal crashes by 78% in 30 mph zones (operating speeds of 25 mph), and by 64% in 40 mph zones (operating speeds of 35 mph).

At 40 mph, pedestrians have a 1:10 chance of surviving, while reducing speed by just 10 mph increases that chance to 5:10.

BOARDMAN SPEED MAP

Boardman Township



Legend

25mph	Stream/River
35mph	Lake/Pond
40mph	Park
45mph	Boardman Twp



VEHICLE TYPE

With the recent rise in SUV and other large-vehicle sales, it is important to address the issue of pedestrian safety in regards to changing vehicle types. A recent study from the Insurance Institute for Highway Safety showed that pedestrian deaths have increased 46% since 2009, with a majority happening in urban and suburban areas, along arterials, at mid-blocks. (Vock, 2018) Non-intersection (mid-block) pedestrian deaths have increased 50% and pedestrian deaths occurring at night have increased 56% since 2009.

Pedestrian-SUV fatalities have increased 81% since 2009, nearly double the next highest vehicle category (41% - cars). (University of Washington, College of the Environment, 2018) One of the authors of this study cites SUV's stiffer and more blunt geometry, which, when compared to the low-lying and aerodynamic figure of cars, results in a higher chance of death. (Vock, 2018)

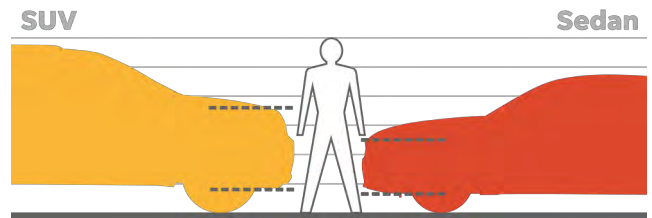
LIGHTING

Pedestrian-oriented lighting is an important element of creating a safe and vibrant community space. Traditional "highway" style lighting results in a large amount of dark spaces between lights and is often alienating to pedestrians, while pedestrian-oriented lighting is closer to the ground and closer together. This closeness of the lights results in a continuously lit area ideal for pedestrian use and increases a feeling of safety in the area.

Cities such as San Antonio require that lighting be no taller than fifteen feet, essentially requiring that all lighting in the right of way be pedestrian-oriented. Pedestrian level lighting along well-used corridors in residential areas also allows for the appearance of a well defined and collected neighborhood, while also assuring that sidewalks are well lit and walkable well into the evening.

Size does matter

SUV front ends are taller, so they strike pedestrians higher on their bodies. That means they are more likely to kill a pedestrian than a car that would strike a person's leg.



Source: [Detroit Free Press](#)

Annual Change in Pedestrian Fatalities Since 2009

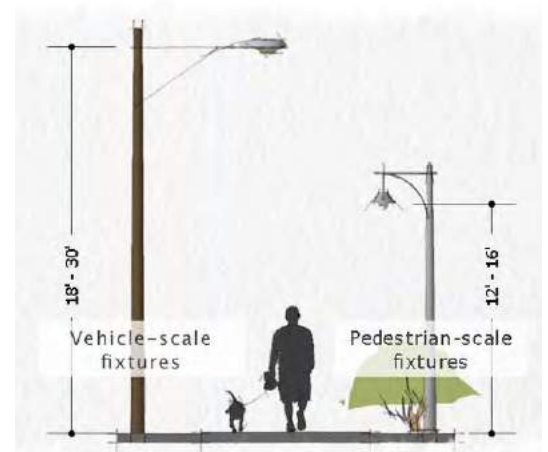
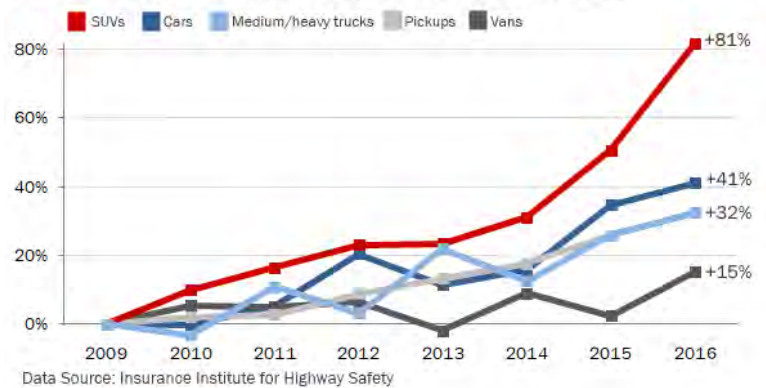


Image source: [Spokane Municipal Code](#)

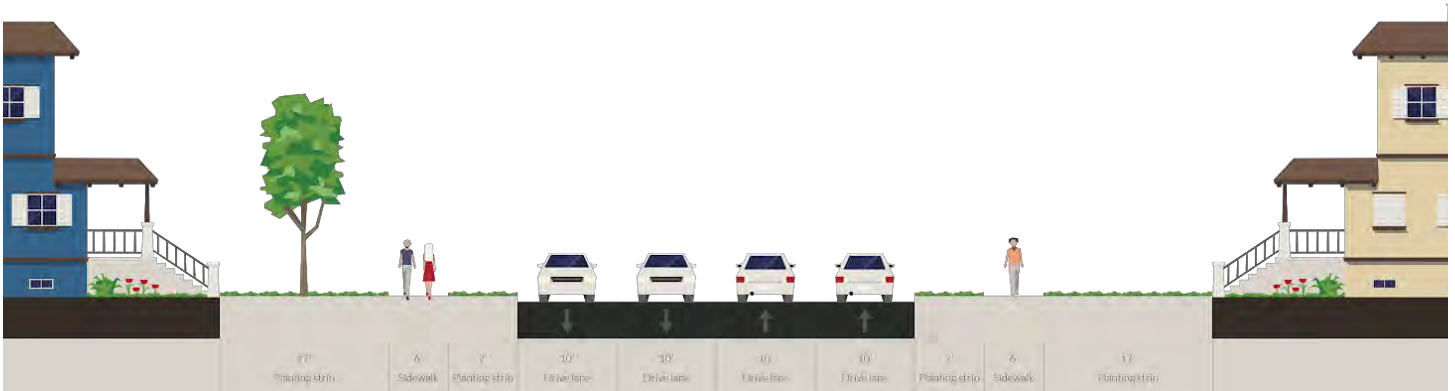
GLENWOOD AVENUE



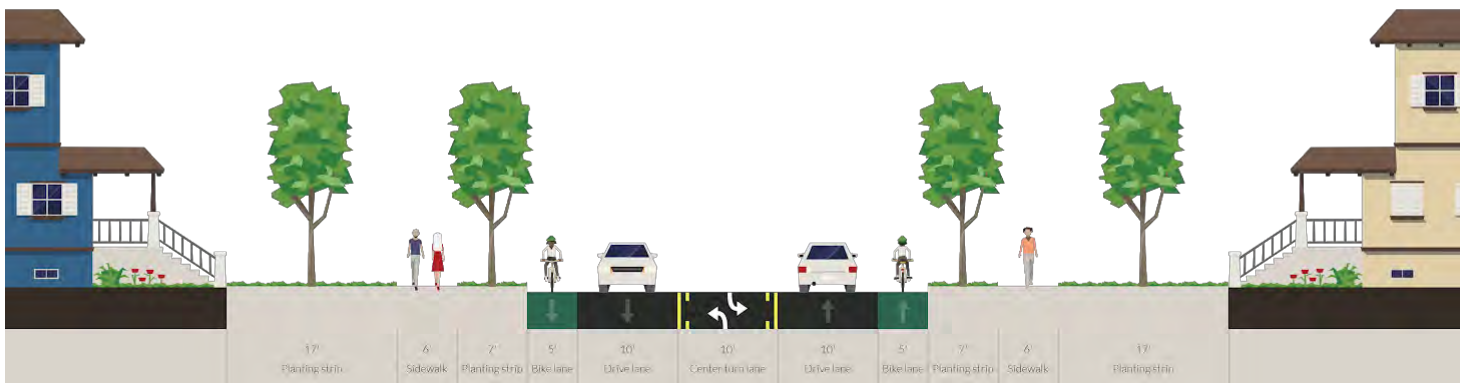
Glenwood Avenue is an example of a main thoroughfare that can be redesigned without changing the actual footprint of the road. This re-striping of the road is in accordance with the Design of On-Road Facilities in the Guide to Bicycle Facilities (AASHTO).

Glenwood Avenue, from West Midlothian Boulevard to West Western Reserve Road, consists of two travel lanes in each direction, which are oftentimes considered too narrow to comfortably travel in for many vehicle operators.

The recommendation shown below focuses only on repainting the road to include both a center turn lane and a bike lane on either side of the street. By installing a bike lane on Glenwood, we will be able to create a major north/south arterial stretching the full length of the township, as well as providing access to destinations in both the City of Youngstown and Beaver Township. Other destinations would include the Boardman High School, Glenwood Junior High, The Boardman Performing Arts Center, the Boardman branch of the Mahoning County Library, and the Boardman Plaza.



Glenwood Avenue - Current



Glenwood Avenue - Potential remix.

SOUTHERN RAIL GREENWAY

The Southern Boulevard Greenway is a proposed multimodal rails-to-trails project that would reuse the current rail line along Southern Boulevard as a mixed-medium path. This trail would run north/south and connect key commercial, industrial, and residential neighborhoods.

This trail would see the connection of the Field of Dreams, Boardman Park, The Shops at Boardman Park, Akron Children’s Hospital - Beeghly Campus, The Surgical Hospital at Southwoods, and the Southwoods development area. At the northern terminus, the trail would provide access to the City of Youngstown’s Bancroft Park and the Valley Christian Schools’ main campus.

The impacted neighborhoods would include Utopia, The Willows, Shadyside, Indianola Heights, Maple Grove, Rowland Heights, North Newton Farm, Hollywood Park, Woodland Allotment, and Southern Park Estates.

Rails-to-Trails is one of the most well known methods of trail building. However, because the Youngstown and Southeastern Railroad is currently considered an active rail line, it would be impossible to convert it to public use. Due to the strategic location of this semi-active rail line, it is essential that it be included in long-term plans, in the event that the rail line is decommissioned or declared as inactive.

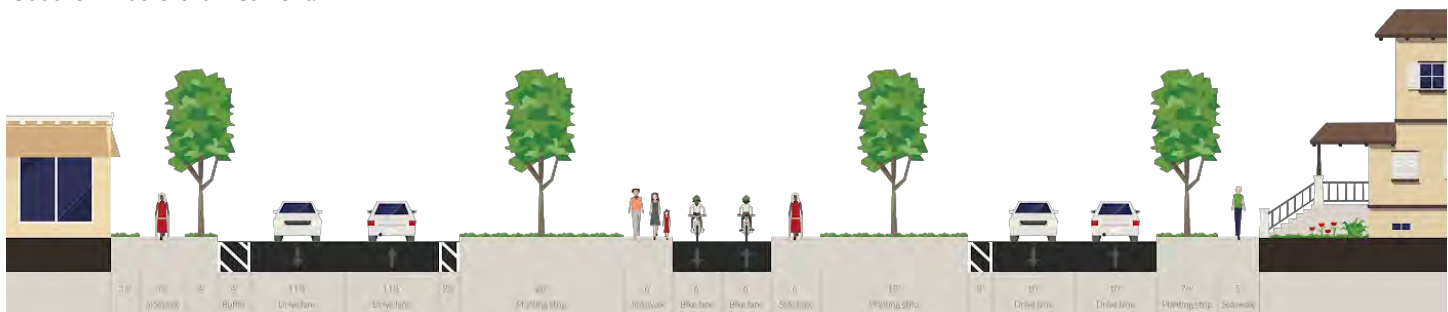
The conversion of the Southern Boulevard rail to a multimodal trail would connect Boardman, Youngstown, North Lima, Columbiana, and Struthers to Darlington, Pennsylvania. Additionally, this line has the potential to connect with the Mahoning River corridor, which then feeds into multiple other trails based out of Warren.



Source: “Ohio’s Ohio & Erie Canalway Towpath Trail”, Rails to Trails Conservancy.



Southern Boulevard—Current.



Southern Boulevard—Potential Remix.

NORTH BOARDMAN GREENWAY

The North Boardman Greenway (NBG) is a proposed 3-mile multimodal project that would be placed almost entirely along a First Energy utility line. The project would extend from Straley Lane and S. Schenley Ave in the north, all the way to the intersection of Ewing Road and Market Street, with a possible future connection linking Market and Southern Blvd. At the northern terminus, the trail would provide access to the City of Youngstown's Cornersburg neighborhood and has the potential to be continued into the city and terminate near Mahoning Avenue and S Meridian Road.

The NBG will travel through residential neighborhoods and Mill Creek Park, before users are given access to Market Street's commercial corridor. While a vast majority of the trail would travel through neighborhoods, providing direct access for residents, it could also feature a park-and-ride/walk station at various locations along the path, which would allow users who do not live directly along the trail to access this community asset.

If fully built out by all adjacent communities, the North Boardman Greenway has the potential to connect Austintown, Boardman, Youngstown, Canfield, Poland, and Lowellville. Additionally, the Greenway could also intersect with the Southern Blvd. Greenway, allowing for even more destinations, including potentially the Western Reserve Greenway. Connected to the East Golf Hike and Bike Trail, the NBG would be drawing from one of the most widely used trails in the system, with East Golf receiving more than 570 users counted in 2018 3 two-hour screen line counts.

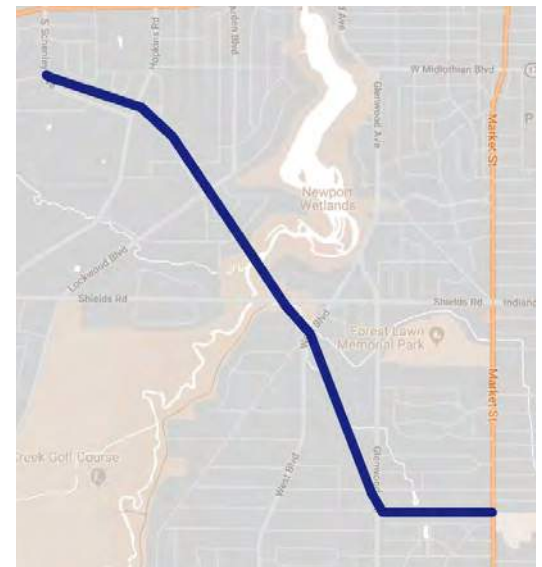
Trails and greenways themselves have many benefits, both to communities and adjacent property owners. Increases in public health, and the ability for residents to get to their destinations without the use of motor vehicles can help build a healthier and more sustainable community.

Similar trails have been built in other communities with great success. The Warren Greenway Trail is one example, which features a limited section of trail along the an easement. Another example is the Akron Bike and Hike Trail, where the trail runs directly beneath the legs of the utility towers.

The greenway also has the potential to provide First Energy with access to their utility lines, with the ability to drive trucks on the asphalt surface if needed.



Source: "[Transmission rails Offer Natural Beauty](#)", T&D World.



Proposed path of the North Boardman Greenway.

BUS RAPID TRANSIT (BRT)

Bus Rapid Transit (BRT) is a public transportation model that places buses in dedicated lanes and reduces bus interaction with regular traffic, allowing buses to run more efficient and compete with cars for convenience. Bus Rapid Transit has often been likened to a subway on wheels, with a considerably lower cost. The Greater Cleveland Regional Transit Authority's HealthLine has become the gold-standard for BRT systems. The HealthLine operates 24-hours a day and ranges in 30 minutes between rounds during the late night to 7-8 minutes during peak usage. With 39 stops, the HealthLine goes from Public Square at Tower City to the Louis Stokes Station at Windermere, which links to other transportation options for users on each end. The HealthLine also features traffic signal priority, allowing the buses to access stops faster than traditional bus services.

The Cleveland HealthLine has also been an economic driver along Euclid Avenue, which has resulted in transit-accessible development. The [Detroit Free Press](#) reported that for every \$1 spent in construction and set-up cost there has been a \$114 match in private development, to the tune of \$6.3 billion for a \$200 million project. Overall these systems also act to facilitate the creation of a less-car dependent society, which will help reduce carbon emissions, reduce rush-hour traffic, and create a healthier and more active community. Between 2009 and 2014 the Center for Population Dynamics at Cleveland State University found that the Euclid Avenue corridor saw a 51% increase in jobs; of the 72,080 jobs in the corridor, 56% paid more than 40k a year.

In Boardman, a proposed Bus Rapid Transit system would consist of two lines, Market Street and US-224. Of these two options, Market Street is considerably more likely given the line's status as Boardman's most heavily used bus line. By converting the 8 Market line into a BRT, WRTA can reduce travel time along our region's most densely populated corridor, as well as provide a superior service to residence who currently choose to drive over use public transportation.

The potential Market Street BRT line would be extended south to Saint Elizabeth's Hospital—Boardman and the Davis Family YMCA, so that essential medical and health services could be accessed by all residents.

Additionally, this would allow residents living in neighborhoods adjacent to Market Street to access government services both in Downtown Youngstown (Social Security, county services, law enforcement, etc.), as well as Township services located at the Government Center on the other end of Market Street. Additionally it has the potential to spur transit oriented development along the corridor.

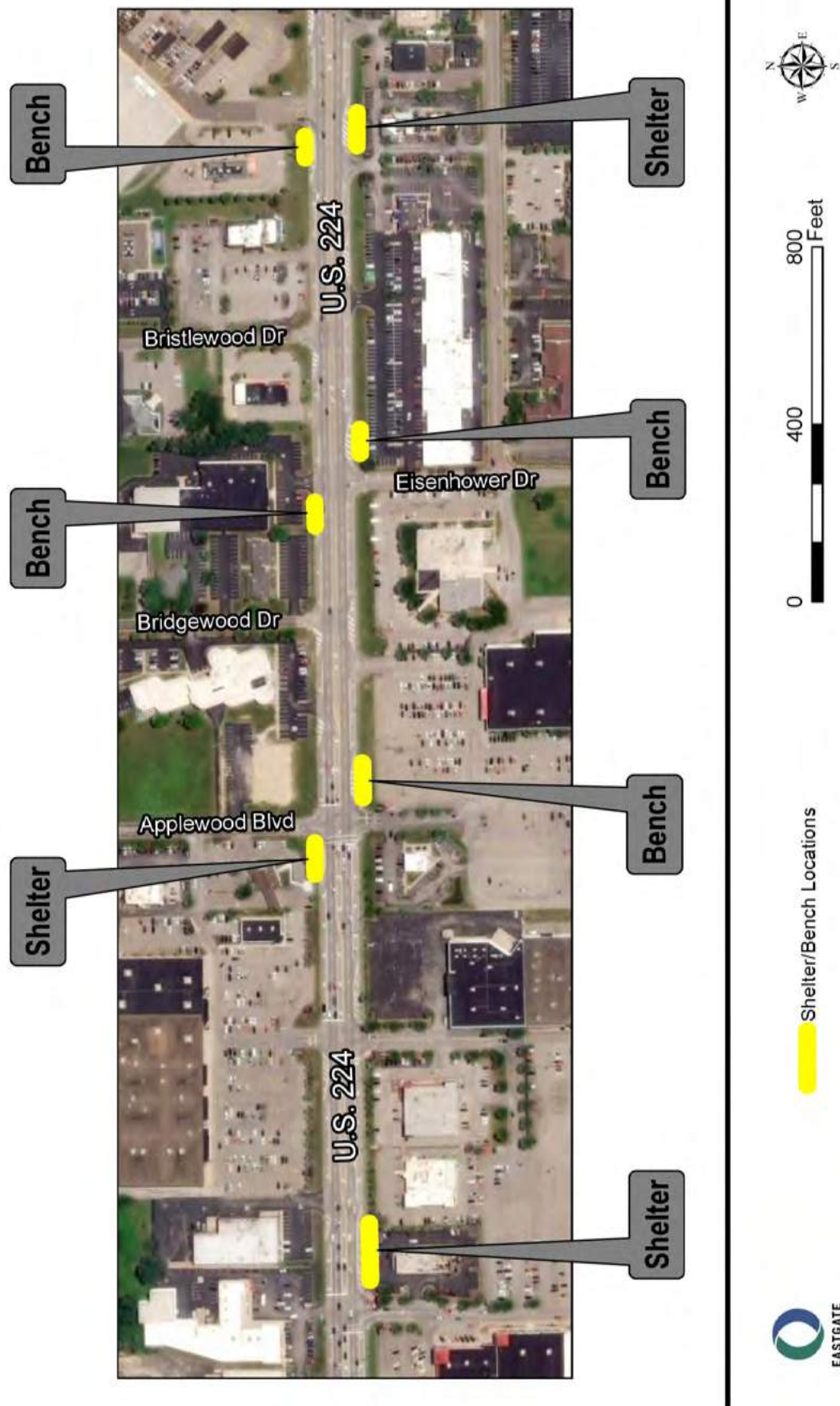
A BRT line along US-224 can provide more convenient transit services between Poland, Boardman, and Canfield. Such a line would replace the 23/25 Canfield/Boardman Loop, and provide access to Poland Village, which currently exists outside of any public transit system.



Source: "[Cleveland's HealthLine: A Model for Detroit Rapid Transit?](#)" Transportation for Michigan.

As shown below, WRTA is currently working on establishing set stops along US-224, which is the first step towards a more efficient system.

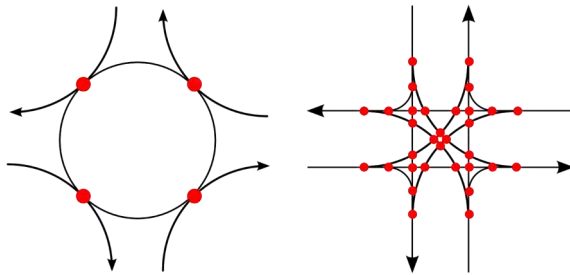
Proposed Shelters/Benches for U.S. 224



Source: Eastgate COG, from data provided by WRTA.

ROUNDBABOUTS

While traditional speed-reducing methods are often designed for dense urban areas, there are a few that are applicable for Boardman. Design concepts like roundabouts/traffic circles and chicanes can provide simple and safe means to reduce speed.



Points of potential conflict at an intersection compared to a roundabout.

Source: [Wikimedia Commons](#)

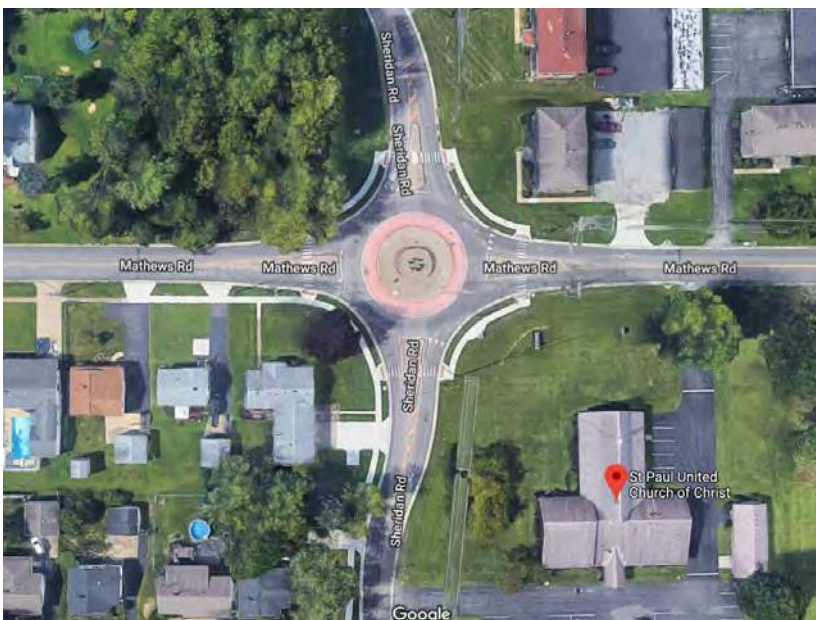
Roundabouts have recently been introduced to the region with the construction of the Mathews-Sheridan Roundabout in 2014. This project was hailed as the county's first modern roundabout and was federally funded. The County Engineer has also constructed a second roundabout at Western Reserve Road—5 Points in Poland and Springfield Townships.

The Engineer's Office reports that the project cost for the Mathews-Sheridan Road roundabout was \$647,815, considerably lower than the Western Reserve—5 Points roundabout, with an estimate cost of \$1,556,000.

Roundabouts are designed to be significantly safer than traditional intersections. ODOT reports that they are designed to enforce effective speeds of less than 30 mph, as well as eliminate T-bone and left-turn crashes ([ODOT](#)). As shown on the left, roundabouts have only 4 potential conflict points in comparison to the over 25 presented at traditional intersections.

Additionally, the Washington State Department of Transportation (WDOT) reports that roundabouts reduce pedestrian collisions by 40%, and fatal collisions by 90%, while also reducing long-term costs comparable to that of a traffic signal. Pedestrian crosswalks are also placed much farther back from the intersection, allowing drivers both time to react to pedestrians, and placing them at a better position to be seen ([WDOT, 2019](#)).

One of the most well known roundabout systems is in Carmel, Indiana, a suburb of Indianapolis. The IndyStar reported that roundabouts save around 24,000 gallons of gas per year, reducing the community's carbon footprint while also creating more green space and creating an all-around safer environment ([Contreras, 2019](#)).



Roundabout at Mathews & Sheridan Rd. Google 2019



Roundabout at Mathews & Sheridan Rd. Mahoning County

LANE REDUCTIONS (ROAD DIETS)

Road Diets, also called lane reduction or road rechannelization, is a technique in transportation planning whereby the number of travel lanes and/or effective width of the road is reduced in order to achieve systemic improvements.

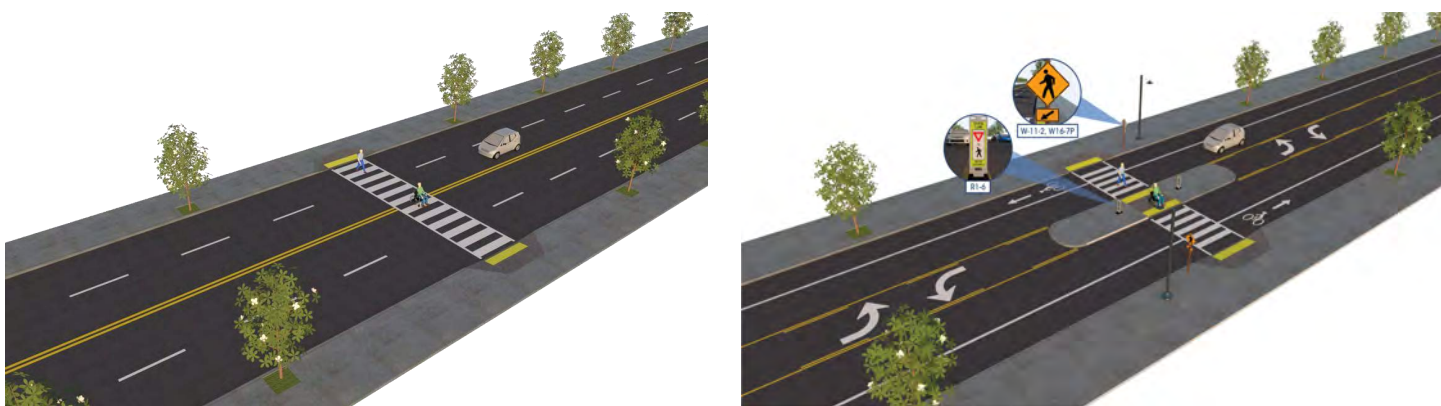
A typical road diet technique is to reduce the number of lanes on a roadway cross-section. One of the most common applications of a road diet is to improve safety or provide space for other modes of travel

Lane reductions allow for pedestrians to travel more quickly across the road, reducing the chance that they might be hit by a car while crossing. While pedestrians are supposed to cross at legal crossings (which are not always marked), mid-block crossings are a normal part of pedestrian life and are often necessary to reduce travel time. Reduced lanes also help reduce vehicle speeds, as vehicle operators are required to be more cautious and the freeway-like feel of the road is reduced.

In a case study featured by the Federal Highway Administration, a road diet conducted in Edgewater, Florida saw a four-lane roadway reduced to two lanes with a center turning lane and bike lanes. This shift saw a 34% reduction in crashes, while also seeing a 68% reduction in injuries. Three-lane roadways also cause a shift in the operating speed of a roadway, with the Edgewater case study showing a reduction in the amount of users traveling over 36 mph by ~10%. Another major element of this is active transportation volumes, which saw a 23% increase in Pedestrian usage and 30% increase in cyclists. As discussed below, reduced speeds are directly correlated to pedestrian safety, as well as a higher chance of surviving a vehicular crash.

Road Diets, in their most common form exist essentially as paint—with all changes occurring within existing rights of way on existing pavement. This greatly reduces the cost of construction and allows designs to be changed between repaving as a part of regular road maintenance, or as a part of repaving.

The Federal Highway Administration's Road Diet Informational Guide states that most four lane roads are already operating as three lane roads, meaning there would not be an undesirable decrease in level of service or in usable capacity. Additionally, if the number of lanes is reduced but lanes are either widened or remain the same (if they are already wide), there is a chance that average speeds could increase, reducing the effectiveness of this measure. However, if lanes are appropriately wide, speed reductions are both possible and will have a positive impact.



Lane reduction example.
Source: PedSafe.org

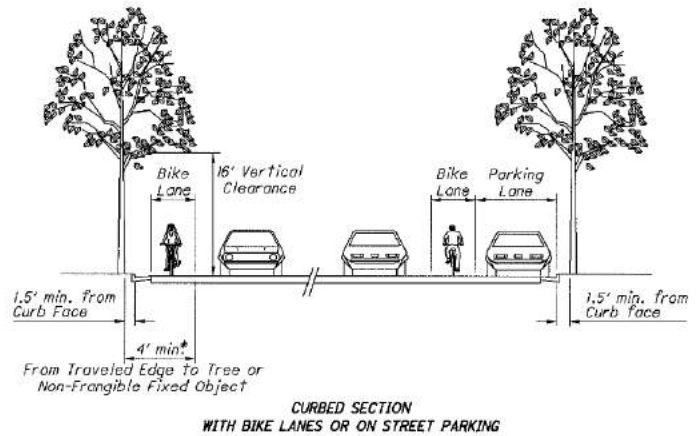
STREET TREES

Street trees are a fundamental part of any community's urban fabric. Street trees function as a traffic calming measure. They assist in reducing the heat retention of roadways, help protect the road, and reduce maintenance costs. They decrease cooling costs for home owners and help provide a safer and nicer place to walk. Street trees are a cheap and aesthetically pleasing solution to some of the issues impacting our community.

According to the University of Washington street trees improve driving safety. UW cited a study that showed a 46% decrease in crash rates along arterial and highways after landscape improvements (trees) were installed. Studies conducted on arterial roadways in Toronto, Canada and small metropolitan areas show that some trees can help reduce mid-block crashes by between 5-20%. ([University of Washington, College of the Environment](#)) Street trees that provide shade onto roadways also provide a major economic benefit to road departments. The US EPA states that streets with trees need to be repaved less often than their treeless counterparts. Additionally trees increase residential property value and attract shoppers to commercial districts (US EPA Stormwater Trees Technical Memorandum, 2016).

Collaboration with ODOT is necessary for Market Street because all tree plantings within ODOT's right of ways are allowed only through permitting. The Township is currently in the process of coordinating a "Approved Tree List" which would give developers, neighborhood groups, and township employees a list of native trees for use as street trees. The Township is also working with ODOT to coordinate approved tree plantings along ODOT controlled rights of way (mainly Market Street).

Rendering 904-2 details what street trees along Market Street could look like, with trees having to be 4ft back from any travel lane and at least 1.5ft back from the curb. This rendering also shows placement for bike lanes and on-street parking. Bike lanes can be placed on the existing shoulders.



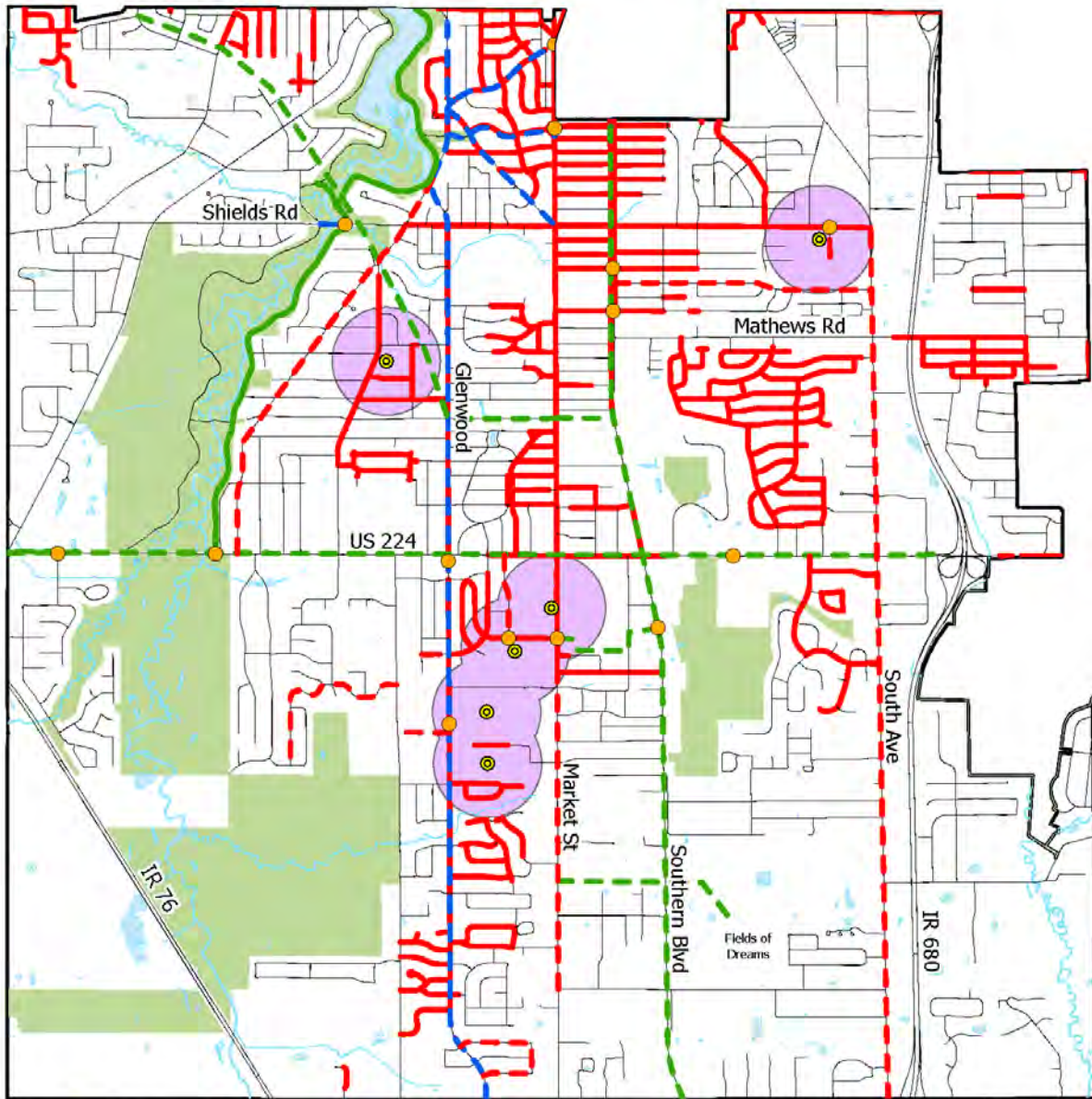
Urban Landscaping Design: ODOT Roadside Safety Landscaping Guidelines.



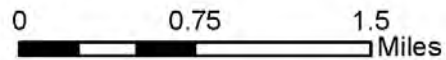
Street Trees. Street Fighters. [The Woodland Trust](#). WoodlandTrust.org.uk

PRIORITY AREAS

Boardman Township: Active Transportation Plan



- Boardman Schools
- Proposed Crosswalk Improvements
- Existing Multimodal Trail
- - - Proposed Multimodal Trail
- Existing Bike lane
- - - Proposed Bike lane
- - - Proposed Sidewalk
- Existing Sidewalks
- Parks
- 1/4 Mile Buffer



PRIORITY AREAS

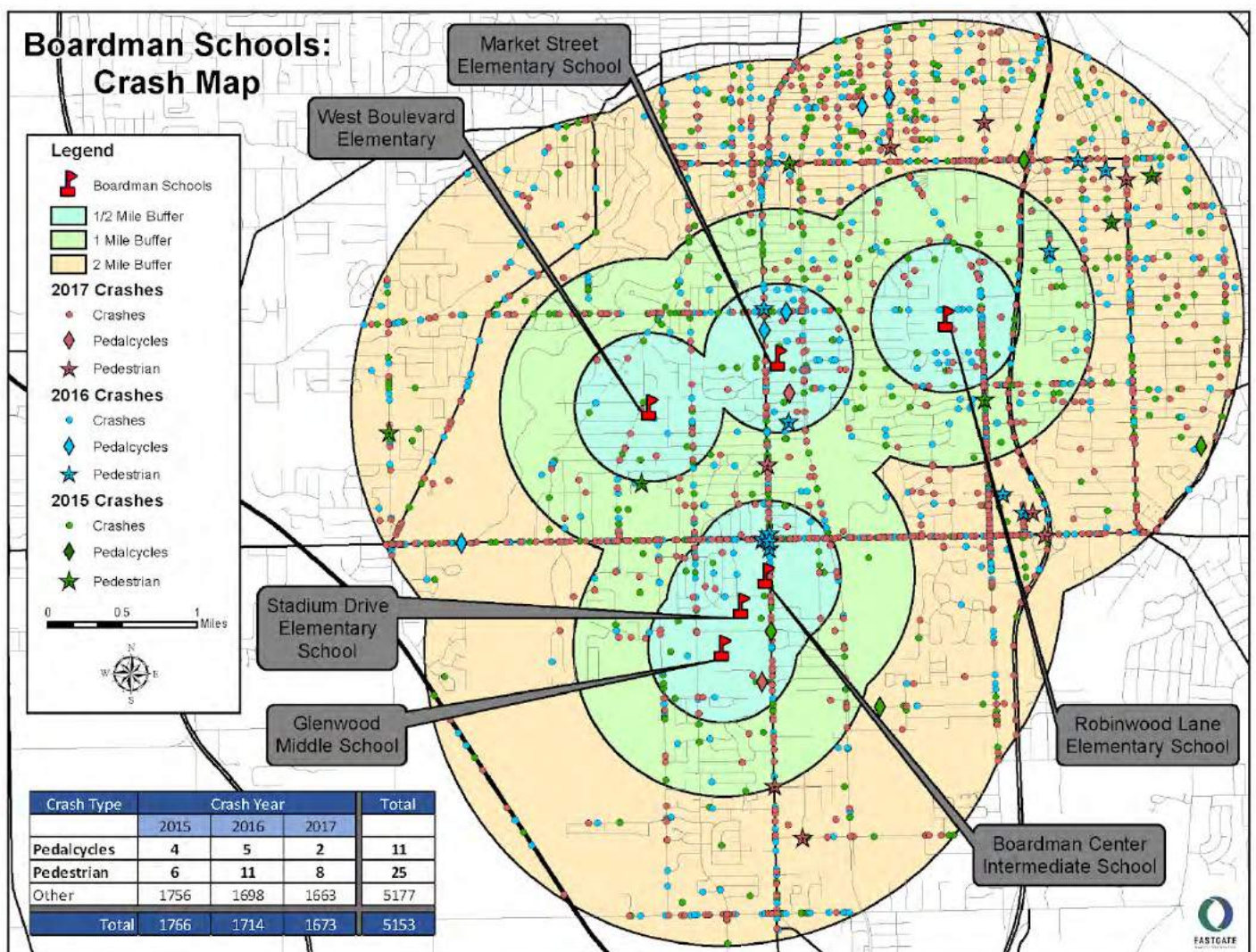


Boardman Township consists of a diverse combination of urban, suburban, and exurban elements, which results in this unique township. The priority areas are focused around the elementary and intermediate/junior high schools, which act as community anchors for their respective neighborhoods. The North Market Historic District / Newport Glen neighborhood, as well as Glenwood Avenue, Overhill Road, and Newport Drive are also priority areas.

These priority areas will be target areas for both Safe Routes to School and complete streets implementation. A vast majority of the projects highlighted in this plan will be focused on these areas.

The Safe Routes Boardman program extends these priority areas out from one mile around each school to two miles, covering a vast majority of the township (though the map below only shows the marking at one mile).

These neighborhoods and corridors were selected due to their high level of density, walkability, and the level of improvements necessary to make them more accessible amenities.



School Crash Map.
Source: Eastgate Regional Council of Governments.

SCHOOL ZONES



School Zones, with traffic from visitors, students, and staff members, are one of Boardman's major areas of concern. Safety of children is often exemplified by strictly enforced 20 MPH beacons placed near the entrances to schools, increased penalties for some crimes committed near schools, as well as increased security.

As part of an expanded Safe Routes to School program, we would like to see all streets within one mile of a school be equipped with updated pedestrian and cyclist amenities. This is including but not limited to high visibility crosswalks, pedestrian actuated crossing beacons, stop light crossing beacons directly outside of schools, wide sidewalks, and additional signage

In Ohio urban areas, 1 out of 446 students is hit by a car, while this number decreases to 1 in 1,473 for suburban areas, the likelihood of being struck by a vehicle is still high. (CityLab, Sarah Goodyear, 2013) Additionally, a Dutch study has shown a connection between walking or biking to school and the ability for a child to concentrate in the classroom - going even further, it is believed that active transportation has more of an impact than food consumption. (CityLab, Sarah Goodyear, 2013)

Schools such as Glenwood Junior High and Boardman High School are set further back on their respective properties than would be ideal, however, we can still assure that the facilities are in place for a comfortable and safe walk or ride to class. Boardman's elementary schools are all located relatively close to the road and most are in neighborhoods that would be conducive to walking to and from school.



A section of badly broken sidewalk near Stadium Drive Elementary. D'Avignon, 2018.



School Zone Beacon with Speed Feedback sign. Source: RAI Products.

NORTH MARKET STREET HISTORIC DISTRICT

The Newport Village Allotment and Forest Glen Historic Districts (collectively referred to as the “Newport Glen neighborhood”) were built in the early 1920s, and were Youngstown’s first automobile accessible suburban developments. The Newport Glen neighborhood consists of a wide variety of historic brick Tudor and Colonial Revival homes. In all efforts and programs, the Department will seek to preserve the historic integrity of the neighborhood.

Plans include: using Newport Drive as the main entrance into Mill Creek Park from Market Street, installing bike lanes along the shoulder of Brookwood Road, and improving pedestrian access along the Market Street Corridor.

Establishing Newport Drive as a main entrance point into Mill Creek Park would help provide additional access to the park, as well as increased usage of this historic thoroughfare. This process would require wayfinding signage to be installed that conformed and complimented the historic nature of the neighborhood, as well as bike and pedestrian amenities to ensure equal access.

Ideally, improving pedestrian access along the Market Street Corridor would be done in collaboration with the City of Youngstown, in order to include the section between East Midlothian Ave and Pinehurst Drive in the Handel’s neighborhood.

Long-term there are plans to work with neighborhood residents and stakeholders to develop a neighborhood action plan. This plan will focus on increasing neighborhood assets, developing a clear identity, and working towards a more complete neighborhood with pedestrian and bike amenities. The intention of this plan is to allow for dense mixed-use development, potentially increased public parking for businesses, enhanced streetscape, and hopefully the inclusion of cycling and pedestrian amenities along Market Street.

The Department of Planning & Zoning contracted with GPD Group to conduct a multi-modal feasibility study in this historic district, with funding support from the Western Reserve Health Foundation. The goal is to conduct a road diet while also allowing for multi-modal transportation on Market Street. The Department recently received the final report, which will help determine whether this is a possibility.

Commercial development along Market Street. D’Avignon, 2018.



NORTH MARKET HISTORIC DISTRICT RECOMMENDATIONS

RECOMMENDATIONS

Work with the North Boardman Neighborhood Association to establish a North Market District Action Plan

Install high-visibility crosswalks along all the arterial streets (ladder or continental style is preferred)

Continue to install pedestrian-level lighting along the sidewalks further North & South on Market Street

Bring all sidewalks up to ADA standards (including curb ramps and repairing heaved pads)

Increase pedestrian crossing time (where applicable)

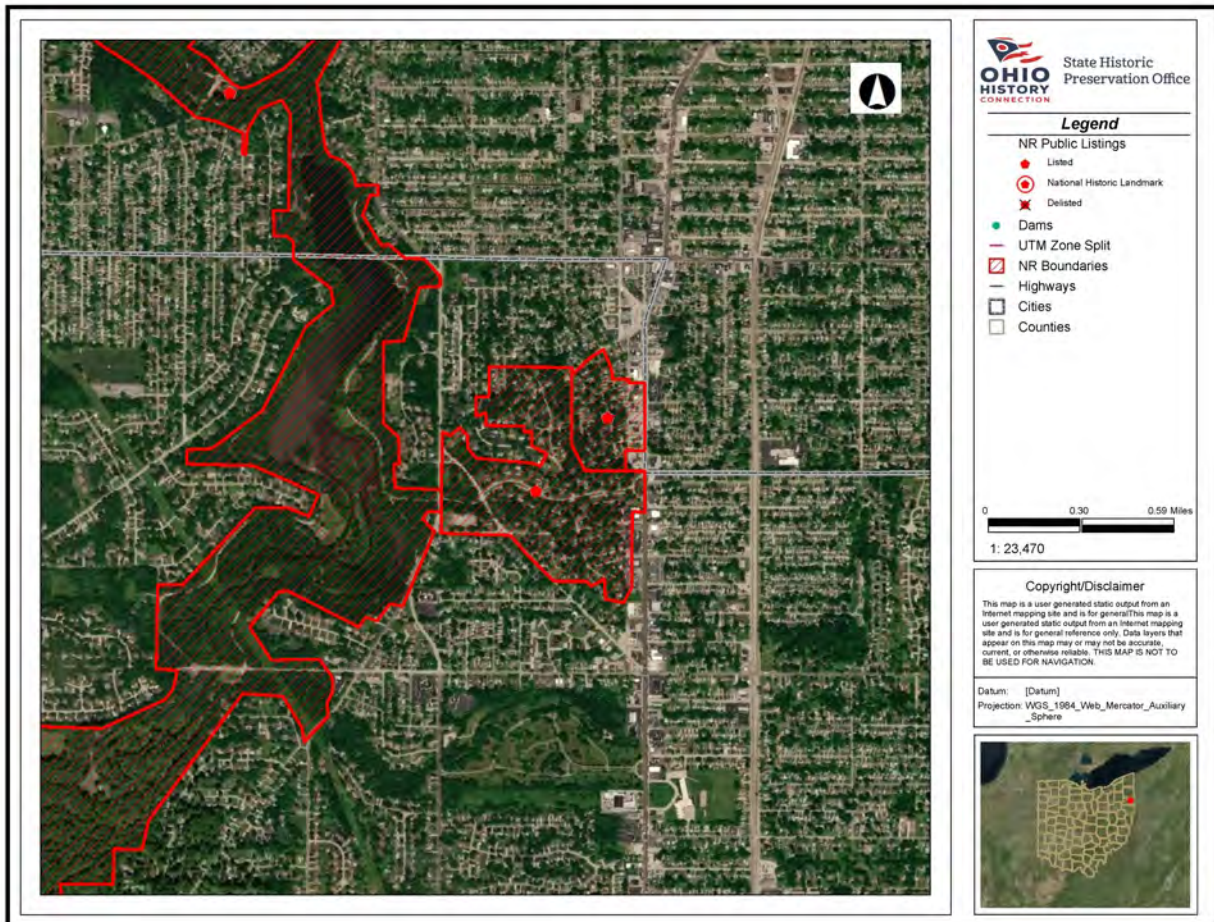
Cut back all brush and remove all debris impeding sidewalk travel

Plant street trees and install benches along the main roadway

Install Bus Shelters and WRTA signage at specific spots along established use - encourage riders to use these spots.

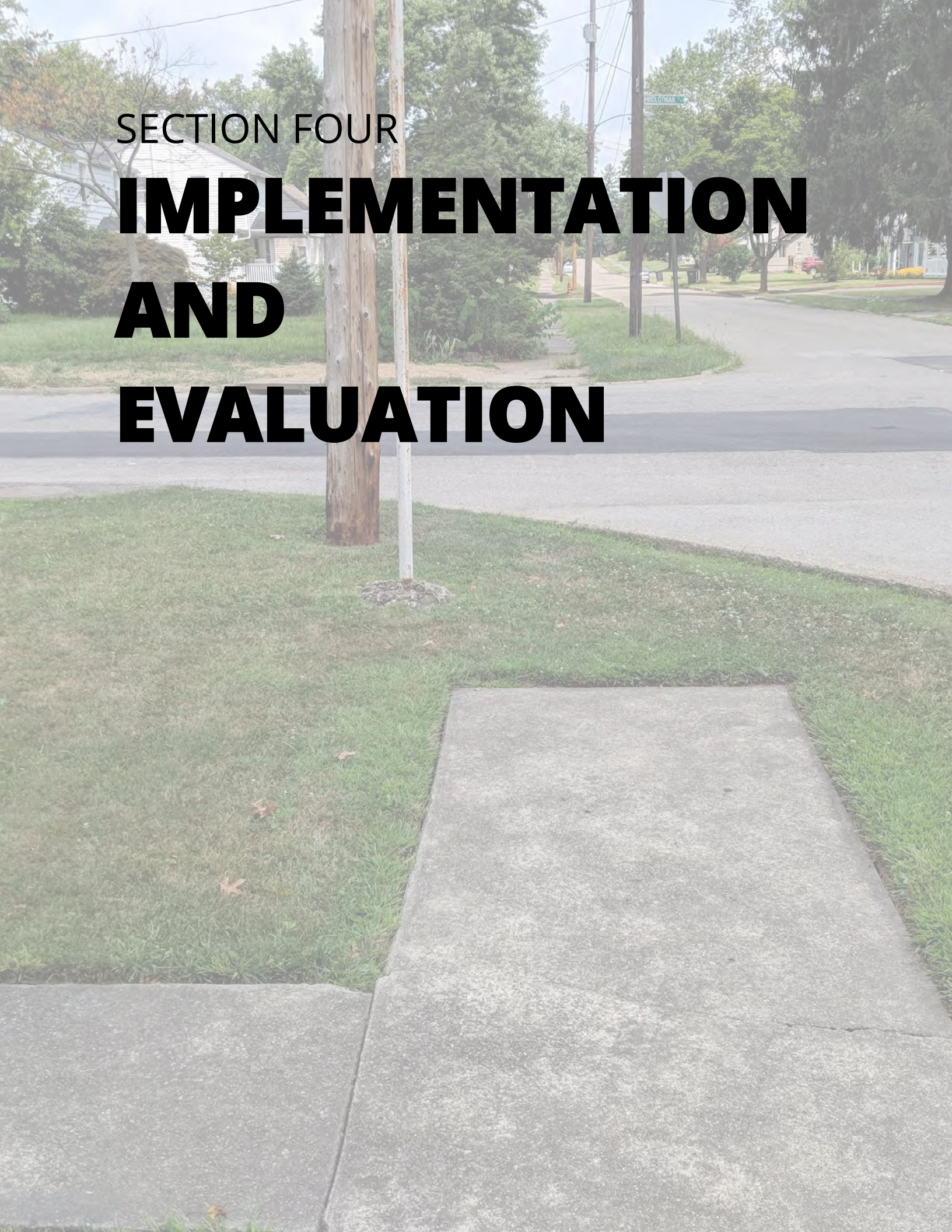
Install mid-block crosswalks with beacons (where appropriate)

Install bicycle parking racks in dense business areas - this can be placed in the tree-lawn



SECTION FOUR

IMPLEMENTATION AND EVALUATION



IMPLEMENTATION PLAN



The projects, partnerships, and goals outlined in this implementation plan are derived from various sources;

1. Those found during initial active transportation planning discussions
2. Those that were included in the *Safe Routes Boardman: School Travel Plan*
3. Those that were found during the Comprehensive Plan public meetings & the Comprehensive Plan online survey.
4. Those from the *Building a Better Boardman Zoning Code* survey

The main focus of these goals is to improve quality of life in Boardman Township, with special detail paid to creating a safer and more sustainable and humane environment for non-motorist. Actionable items are sorted by their respective Active Transportation Goal, and have been sorted by short-term, mid-term, and long-term respectively. Items are also marked with their categorization, which organizes the projects based on mode.

ACTIVE TRANSPORTATION GOALS

- 1 Create a more connected Boardman through increasing cycling and building and expanding cycling infrastructure.
- 2 Build and increase walkability in Boardman Township by expanding the sidewalk network and making our community safer for pedestrians.
- 3 Increase citizen access to public transportation through a collaborative relationship with WRTA.
- 4 Encourage the adoption of Complete Streets policies.
- 5 Repair, replace, and install infrastructure to improve the awareness of pedestrians, cyclists, and non-motorists.

PROJECT RANKINGS

Ongoing	Ongoing
Short-term	1—5 years
Mid-term	5—10 Years
Long-term	10+ years

Short-term Projects

Projects listed as short-term capital projects are considered high priority. These short term projects have been selected both due to their proximity to the main focus areas and neighborhoods, as well as their status as being more easily implemented due to local control. These projects will lay the foundation for long-term program implementation. Short Term projects are defined as between 1-5 years, and include a wide variety of projects selected to boost community support for the program.

Mid-term Projects

Projects listed as mid-term capital projects are less of a priority than the short-term projects as well as likely have more complexity. These projects will be conducted over five to ten years but will not need as much funding or multi-level approval as the long-term projects. The complexity and use of these projects will vary considerably.

Long-term Projects

Projects listed as long-term capital projects are considered more complex and time consuming. These projects will also require considerable ground-work, funding, and multiple layers of approvals before they can begin. Long-term projects are defined as longer than 10 years. This ranking is reserved for the most long-range of goals defined and outlined in this plan. These projects will also generally be the most expensive to produce, or will be phased out in smaller stages.

Beyond this Plan

This plan is designed to specifically address the issues related to active transportation in Boardman Township with relation to our current condition and current ODOT approved practices. It is recommended that this plan be updated every five years in order to address new issues, provide an update in the approved practices, as well an update on the recommendations (regarding completion and additional changes). Addendums, updates to the Connecting Boardman Executive Summary, and other supplementary documents may be provided from time to time without the updating of the whole plan.

PROJECT CATEGORIES

Projects and actionable items have been organized into specific categories in order to provide additional structure and organization to actionable items.

Community Engagement	These elements focus exclusively on engaging the wider community, presenting project ideas and topics and receiving feedback. Educational programming is included in this category.
Pedestrian	Pedestrian projects focus predominantly on the pedestrian and their experience in the public rights-of-way. Walking, running, skateboarding, and other non-traditional forms of pedestrian transportation fall into this category.
Cyclist	Cyclist projects will focus on cyclist infrastructure and cyclist-centric design elements.
Transit	Transit projects focus predominantly on issues related to public transportation and will be worked collaboratively with WRTA.
Multi-modal	These projects are unique in that they combine two or more elements from the above modes of transportation (i.e.; pedestrian and cyclist, or pedestrian, cyclist, and transit) to create a multi-modal element.
Study/Planning	These projects focus on data collection, examining best practices, and coordinating with other agencies to ensure proper procedures are followed.



IMPLEMENTATION PLAN

What is an implementation plan?

Based on the Township’s analysis, the listed projects here are a priority for the township, our residents, and potential users. These projects have been approved by the Director of Zoning and Development, as well as the Road Superintendent. This project list is not meant to be exhaustive, but rather to act as a starting point for a program that will take Boardman into the next generation. From time to time the Township may choose to update this list, providing new project ideas, programs, and countermeasures to address active transportation issues. Future implementation plan updates will seek a variety of input from residents, users, and community leaders.

Community Engagement Measures	Partner	Timeframe
Conduct Community walk audits to show conditions and need with both community members and community leaders.	NG, BTT	Short-term
Work with local stakeholders to conduct community workdays to do things such as clear and scrape sidewalks, remove dead trees from rights of way, etc.	NG, BTT	Short-term
Work with neighborhood groups to install shade trees in the tree lawn of residential neighborhoods	NG, BTT	Short-term
Utilize local artists in the creation of cultural trails where artists can paint the sidewalks or display outdoor installations.	NG, HCP, YSU, POA, LY	Short-term
Assess resident feedback concerning where sidewalks need to be replaced or installed.	NG, HCP	Short-term
Assess resident feedback concerning Safety Corridors and progressive ticketing practices.	NG, Police, ODOT, Eastgate	Short-term

Potential Project Partners			
HCP	Healthy Community Partnership	POA	Power of the Arts
Eastgate	Eastgate Regional Council of Governments	LY	Lit Youngstown
ODOT	Ohio Department of Transportation	Police	Boardman Township Police Department
ABC	ABC Stormwater District	Road	Boardman Township Road Department
SPM	Southern Park Mall	BP	Boardman Park
MCMP	Mill Creek Metro Parks	COY	City of Youngstown
Cty Eng	County (Mahoning County Engineer)	NG	Neighborhood Groups
ORDC	Ohio Rail Development Commission	BTT	Boardman Township Trustees
WRTA	Western Reserve Transit Authority	BLS	Boardman Local Schools
YSU	Youngstown State University	SRTS	Safe Route to School (ODOT)

IMPLEMENTATION PLAN

Pedestrian	Partner	Timeframe
Sidewalks on Market Street currently stop at or around Chares Avenue. Sidewalks should be installed along Market Street from Charles Ave to Western Reserve Rd. Sidewalks should be installed on both sides.	ODOT, Eastgate	Short-term
Add requirements to Zoning Resolution for new development or redevelopment to install/repair sidewalks	Compass Point, ODOT, Cty Eng	Short-term
Install high visibility crosswalks at all 4 of the legs of the intersection at Mill Creek Dr. and Glenwood Ave	Cty Eng	Short-term
Install a countermeasure to reduce the turning radius at the intersection of Brookwood and Mill Creek Drive. This could just be paint until a more permanent solution is available.	Cty Eng, Eastgate, HCP	Short-term
Install high visibility crosswalks at the intersection of Brookwood and Mill Creek Drive (HV along Brookwood)	Road, Cty Eng	Short-term
Install two high visibility crosswalks at the intersection of Brookwood and Glenwood	Road, Cty Eng	Short-term
Install three high visibility crosswalks at the intersection Overhill Road and Market Street	Road, ODOT, Eastgate	Short-term
Install three high visibility crosswalks at the intersection at Forest Hill Road and Brookwood Road	Road	Short-term
Install high visibility crosswalks at all legs of the intersection of Indianola, Shields, Market, and Brookwood.	Cty Eng, ODOT, Road	Short-term
Install high visibility crosswalks at all legs of the intersection at Market Street and Midlothian Blvd	ODOT, Eastgate, COY	Short-term
Install a high visibility crosswalk at the intersection of Glenwood Avenue and the Prestwick Dr. multi-modal connector path	Cty Eng, Road	Short-term
Establish leading pedestrian intervals to reduce conflicts between pedestrians and turning vehicles where appropriate (Market/US-224, Indianola/South, etc.)	Eastgate, ODOT, Cty Eng, Road	Short-term
Install and repair sidewalks along Sierra Madre Trail and Stadium Drive .	ODOT, HCP, SRTS	Short-term
Install pedestrian signals and high visibility crosswalks at Stadium Drive and Market Street.	ODOT, SPM, BLS, HCP, SRTS	Short-term
Add sidewalks along Glenwood Ave on West side of the street.	Cty Eng	Short-term
Install and Replace sidewalks along Glenwood Avenue from Longview Trail to Shields Road.	Cty Eng	Short-term
Install a pedestrian activated beacon at Golfview/West Blvd	Eastgate, Cty Eng, Road	Short-term
Install pedestrian countdown signals to provide pedestrians with a better understanding of the time remaining for crossing at the intersection of Market Street and 224.	Eastgate, ODOT,	Short-term
Install pedestrian countdown signals to provide pedestrians with a better understanding of the time remaining for crossing at the intersection of South and Indianola.	Cty Eng, Eastgate	Short-term
Install crosswalks at Stadium and Westview Drive	SRTS, HCP, Road	Short-term

IMPLEMENTATION PLAN

Pedestrian, cont.	Partner	Timeframe
Install, repair, and replace sidewalks along Glenwood Avenue from W Midlothian Blvd to Brainard Drive	Cty Eng, Road, Eastgate	Mid-term
Install sidewalks along Crestview Dr. to connect Mill Creek Blvd to West Blvd.	Road	Mid-term
Encourage the installation of amenities such as benches, landscaping, or art along major corridors (pedestrian improvement projects).	ODOT, Cty Eng, NG, Businesses, HCP	Mid-term
Install and repair/replace sidewalks along Mill Creek Blvd from West Blvd to US-224	Road	Mid-term
Install and repair sidewalks along Salinas Trail, as well as install crosswalks and curb ramps at all intersections.	Road	Mid-term
Install sidewalks along Newton Ave and Sheldon Ave to provide neighborhood access to US-224 and Southern Park Mall, as well as alternative pedestrian access away from Market Street.	ODOT, Eastgate, Road, SPM	Mid-term
Install and repair sidewalks along Green Bay Dr. and Forest Lake Drive and to provide a southern connection between Glenwood and Market Street	Road	Mid-term
Install a sidewalk along Squirrel Hill Drive to provide a neighborhood connection to Hitchcock Road.	Road	Mid-term
Install, Repair, or Replace sidewalks along Presidential Drive and Eisenhower Drive to connect South Avenue and US-224	Road	Mid-term
Consider connection from vacant lots on Saddlebrook Dr. to the Boardman Plaza	Road	Mid-Term
Install sharrows along Beech Avenue from South Avenue to Southern Blvd	Road	Mid-term
Install a walking trail from Hitchcock Road to Glenwood Avenue on property owned by the Boardman Library to connect neighborhood to schools and library	Mahoning County Library, BLS, SRTS	Mid-term
Install a Pedestrian Walkway along Boarder Avenue right of way to connect Mathews Road and Meadowbrook Avenue	Road, SRTS	Mid-term
Install cross-railroad facilities for pedestrians at the intersection of Southern Blvd and Erskine.	Cty Eng, ORDC	Mid-term
Install and repair sidewalks and curb ramps along Beechwood Drive	Road	Mid-term
Install and repair sidewalks and curb ramps along Clifton Drive from Erie Street to Market Street.	Road	Mid-term
Install sidewalks along Afton Avenue from Argyle Avenue to Southern Blvd	Road, SRTS	Mid-term
Install sidewalks along Arlene Avenue from Southern Blvd to Market Street	Road	Mid-term
Install sidewalks along Pheasant Drive, to connect the neighborhood, Creekside Plaza, and US-224	Road	Long-term

IMPLEMENTATION PLAN

Pedestrian, cont.	Partner	Timeframe
Install sidewalks on Ridgewood Drive, Griswold Drive, and Wolcott Drive.	Road	Mid-term
Repair sidewalks and install curb ramps along Hudson Drive, Alburn Drive, and Windsor Road	Road	Mid-term
Install, repair, and replace sidewalks along Indianola Road from South Avenue to Market Street.	Cty Eng	Mid-term
Install count-down style crosswalk beacons to better allow pedestrians adequate time to cross at areas identified as issues	Cty Eng, ODOT, Eastgate	Mid-term
Install sidewalks along New England Blvd from Euclid Blvd to Tudor Lane to connect to Euclid to expand neighborhood sidewalk network (Robinwood)	Road, SRTS	Mid-term
Install sidewalks along Tudor Lane from Montrose Ave to Euclid Blvd to Euclid to expand neighborhood sidewalk network (Robinwood)	Road, SRTS	Mid-term
Repair and replace sidewalk sections along Euclid Blvd (whole length)	Road	Mid-term
Repair or install sidewalks along Glenwood Avenue from Midlothian to Shields Road to connect with the rest of the Glenwood sidewalk system. Some sections of sidewalk do exist along the west side of Glenwood, they need to be cleared.	Cty Eng	Mid-term
Repair sidewalks along Applecrest Court, Applecrest Drive, and Oakridge Drive.	Road	Mid-term
Repair sidewalks along Edenridge Drive and Glenridge Road	Road	Mid-term
Install sidewalks along Simon Road from South Avenue to Indianola Road	Cty Eng	Mid-term
Install pedestrian crossing signals at the crosswalk at Indianola Road and Simon Road	Cty Eng	Mid-term
Install pedestrian level lighting at the intersection of US-224 and Market Street	ODOT	Mid-term
Install and repair sidewalks along Mathews Road from Southern Blvd to South Avenue	Cty Eng	Mid-term
Install a sidewalk along South Avenue from Indianola Road to Mathews Road	Cty Eng	Mid-term
Install Sidewalks along Firnley Avenue and Forest Park Drive	Road	Mid-term
Install and repair sidewalks along Oakley Avenue, Between Glenwood Avenue and Market Street	Road	Mid-term
Install and repair sidewalks along Pembroke Road, Between Glenwood Avenue and Market Street	Road	Mid-term
Install sidewalks along Shields Road from Firnley Ave to Lemans Drive	Cty Eng	Mid-term
Install sidewalks along Lemans Drive to Brookwood Road.	Road	Mid-term
Equip major crosswalks with leading pedestrian intervals to give priority to pedestrians.	Eastgate, Road, ODOT, Cty Eng	Mid-term
Install High-Intensity Activated Crosswalk Beacons at E Newport Drive and Shields Road to provide through access for the bike trail and the North Boardman Greenway	Cty Eng	Long-term

IMPLEMENTATION PLAN

Pedestrian, cont.	Partner	Timeframe
Install Cross-Railroad Pedestrian facilities at Meadowbrook and Southern Blvd	Cty Eng, ORDC	Mid-term
Install Pedestrian Crossing Signals and high visibility crosswalks at Meadowbrook and Southern Blvd	Cty Eng	Mid-term
Install a sidewalk along Angiline Drive to Hitchcock Road	Road	Long-term
Install crosswalks at Charles Avenue and Market Street across Charles	Road	Long-term
Install sidewalks connecting Yarmouth Ln and Euclid Blvd to connect these neighborhoods	Road	Long-term
Install curb ramps and repair sidewalk pads along Green Garden Drive to Glenwood Ave.	Road	Long-term
Install mid-block crosswalks and refuge islands on Market Street where controlled intersections are too far away (Market St Multimodal Feasibility Study)	Eastgate, ODOT, Road	Long-term
Install sidewalks on the south side of Meadowbrook Ave, as well as curb ramps along the roadway.	Road	Long-term
Install sidewalks on South Ave from Mathews Road to E Western Reserve Road	Cty Eng	Long-term
Repair damaged, heaved, or spalled sidewalk pads along Market Street from Midlothian Blvd to Charles Ave	ODOT	Mid-term
Install, repair, and replace sidewalks along Meadowbrook Avenue from Afton Avenue to Market Street.	Road	Long-term
Install sidewalks along Orlo Lane from Euclid Blvd to Simon Road	Road	Long-term

Cyclist	Partner	Timeframe
Make Newport Drive a gateway to Mill Creek Metro park; add bike lanes or convert it into a bike boulevard.	MCMP	Short-term (2020)
Work with Mahoning County to add bike lanes on Glenwood Avenue as part of a road diet project.	Cty Eng	Short-term
Install bike lanes on Brookwood Road	Cty Eng	Short-term
Construct a bike lane along Mill Creek Blvd from West Blvd to US-224 to provide closer access to Creekside Plaza and Starrs Corners	Road	Mid-term
Install signage along recommended cycling routes to help guide users to multi-modal connections This can occur before bike lanes or sharrows are installed.	Cty Eng	Mid-term
Add sharrows on Wildwood from Southern Blvd to Mill Creek Blvd to provide an northern east/west axis.	Cty Eng	Mid-term
Install a bike lane along West Blvd from Mill Creek Blvd to US-224	Cty Eng	Long-term
Install a bike lane along Pheasant Drive, to connect the neighborhood, Creekside Plaza, and US-224	Road	Long-term

IMPLEMENTATION PLAN

Transit	Partner	Timeframe
Sidewalks along Transit routes	WRTA, Eastgate, ODOT, Cty Eng, Road	Mid-term
Transit stops marked and ADA-compliant	WRTA, Road, Eastgate, ODOT, Cty Eng	Short-term
Install ADA-compliant Bus Shelters in recommended locations along US 224 and Market Street	WRTA, Road, Eastgate, ODOT, Cty Eng	Ongoing
Complete a feasibility study for a Bus Rapid Transit system along Market Street from Downtown Youngstown to Saint Elizabeth's Hospital	Eastgate, WRTA, ODOT, COY	Short-term
Work with WRTA to increase accessibility and improve ridership numbers for Township Residents	WRTA, HCP	Ongoing
Work with WRTA to increase accessibility to key destinations, community services and parks.	Road, WRTA, Eastgate, Cty Eng, ODOT	Short-term
Complete a feasibility study for a Bus Rapid Transit system along US-224 from Poland Village, through Boardman, to Canfield.	ODOT, Eastgate, WRTA	Short-term

IMPLEMENTATION PLAN

Multi-Modal	Partner	Timeframe
Overhill Road Complete Streets Demonstration Project: Installing pedestrian amenities along Overhill Road to increase safety for non-motorized users. (2019)	Road, HCP	Short-term
Evaluate pedestrian-focused lighting near all schools, parks, and public spaces.	Ohio Edison, Cty Eng, BLS, MCMP, BP	Short-term
Designate Newport Drive and Overhill Road as Active Transportation Priority Areas. These roads will include updated sidewalks, bike lanes, high visibility crosswalks, etc.	Road	Short-term
Reduce speed limits near all park entrances to 35 mph at most (with a preference for 25 mph) to assure that pedestrians have a safer crossing environment.	Cty Eng, MCMP, BP, ODOT	Short-term
Work with landscape architects to install trees along Market Street, in accordance with ODOT standards.	Road, ODOT, ABC	Short-term
Construct a multi-use path between Prestwick Drive and Glenwood Avenue to aid in neighborhood access to Mill Creek Park.	Cty Eng, MCMP	Mid-term
Work with WRTA to analyze transit rider data and install bus shelters, fixed-stops, and potentially bus pull-offs where appropriate.	WRTA, Eastgate, ODOT	Mid-term
Install a multi-modal connection between Glenwood Avenue and E Newport Drive (near the terminus of West Blvd into Glenwood) to provide additional pedestrian access to Mill Creek Park. (worn path already there, cut curb and create access point) Add Signage.	MCMP, Cty Eng	Short-term
Include facilities that support active transportation in all new development projects. This is to include pedestrian/bicycle connections to arterials/collector streets, bicycle parking at shopping/businesses, and sidewalk installation or replacement.	Compass Point Planning, ODOT, Eastgate, Cty Eng	Mid-term
North Boardman Greenway Project: Construction of a multi-use path along the Ohio Edison easement that runs across the northern sections of the township.	First Energy, Mill Creek Metro parks	Long-term
Convert the underutilized railway line along Southern Boulevard into a multi-use trail	Rails to Trails Conservancy, Cty Eng, BP, ORDC	Long-term
Old Ohio Avenue Multi-Modal Path along US-224 extending from Lockwood Blvd to Tiffany Blvd	ODOT, Cty Eng, Eastgate	Long-term
Construction on the Field of Dreams multi-modal trail connector along the East Ohio Gas property running from Market Street, across South Avenue, and to the Field of Dreams park—an extension of the Southern Blvd multi-use trail.	East Ohio Gas, Boardman Soccer Association	Long-term

IMPLEMENTATION PLAN

Study/Planning	Partner	Timeframe
Seek formal adoption of the Complete Streets Policy	Road, Trustees	Ongoing
Speed study at Shields and East Golf Hike and Bike Trail	Eastgate, Cty Eng	Ongoing
Seek formal adoption of the Active Transportation Plan by the Board of Trustees		Ongoing
Develop a program to increase sidewalk snow removal and inform property owners of their legal obligation to keep sidewalks clear, as well as include such language in the zoning code rewrite.	Road, Trustees	Short-term
Install temporary speed feedback sign at problem locations, such as Maple Avenue or US-224 near Boardman Park. Use the collected speed data to suggest appropriate countermeasures.	Road, Eastgate, HCP	Ongoing
Complete a comprehensive study and analysis of all sidewalk conditions throughout the township. Use data from Sidewalk assessments to formulate a prioritized plan to repair sidewalks over the next 10 years	Road, Eastgate	Short-term
Work with the County Engineer and Township Road Superintendent to form an Complete Street design for each years predicted resurfacing projects.	Road, Cty Eng	Short-term
Conduct speed studies at locations where speeding is suspected or identified as a concern.	Road, Eastgate, Cty Eng	Short-term

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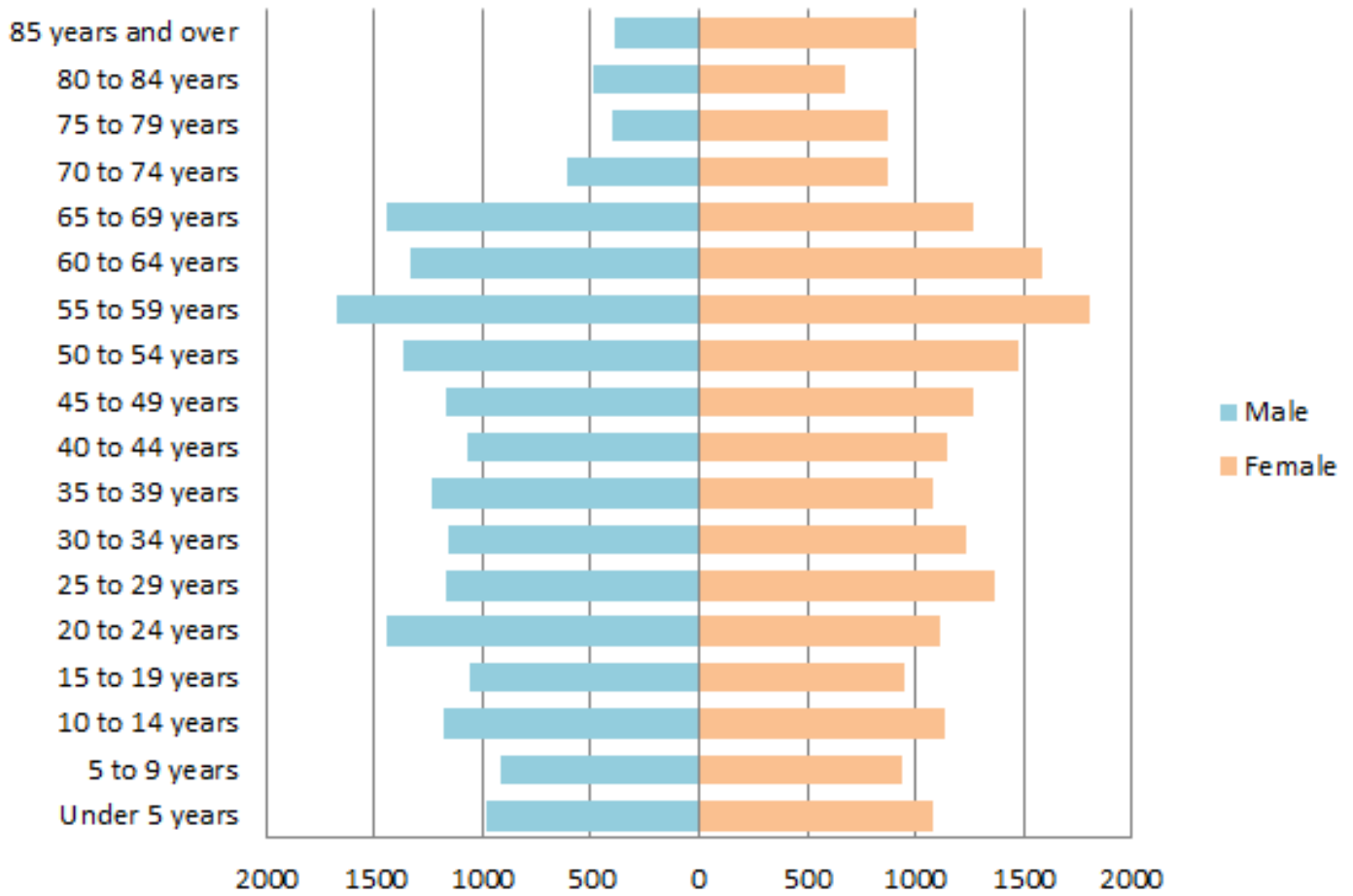
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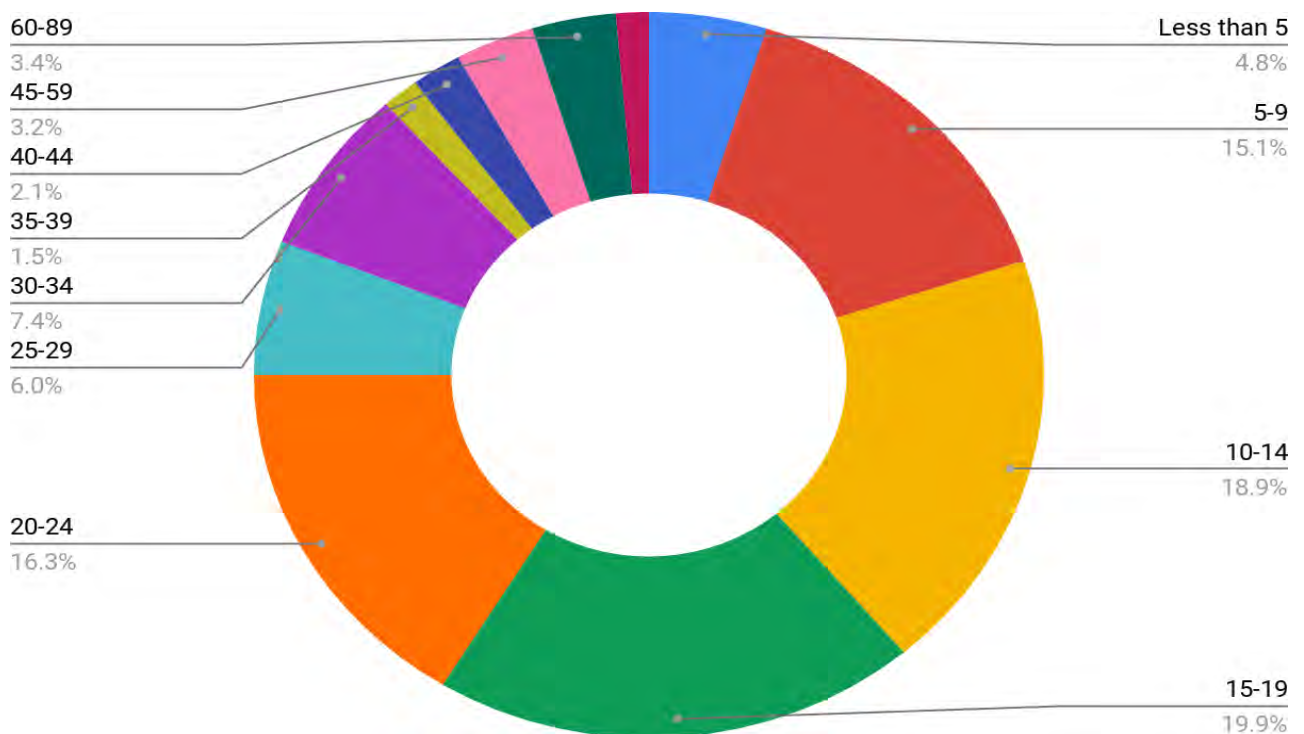
APPENDIX A MAPS & DATA



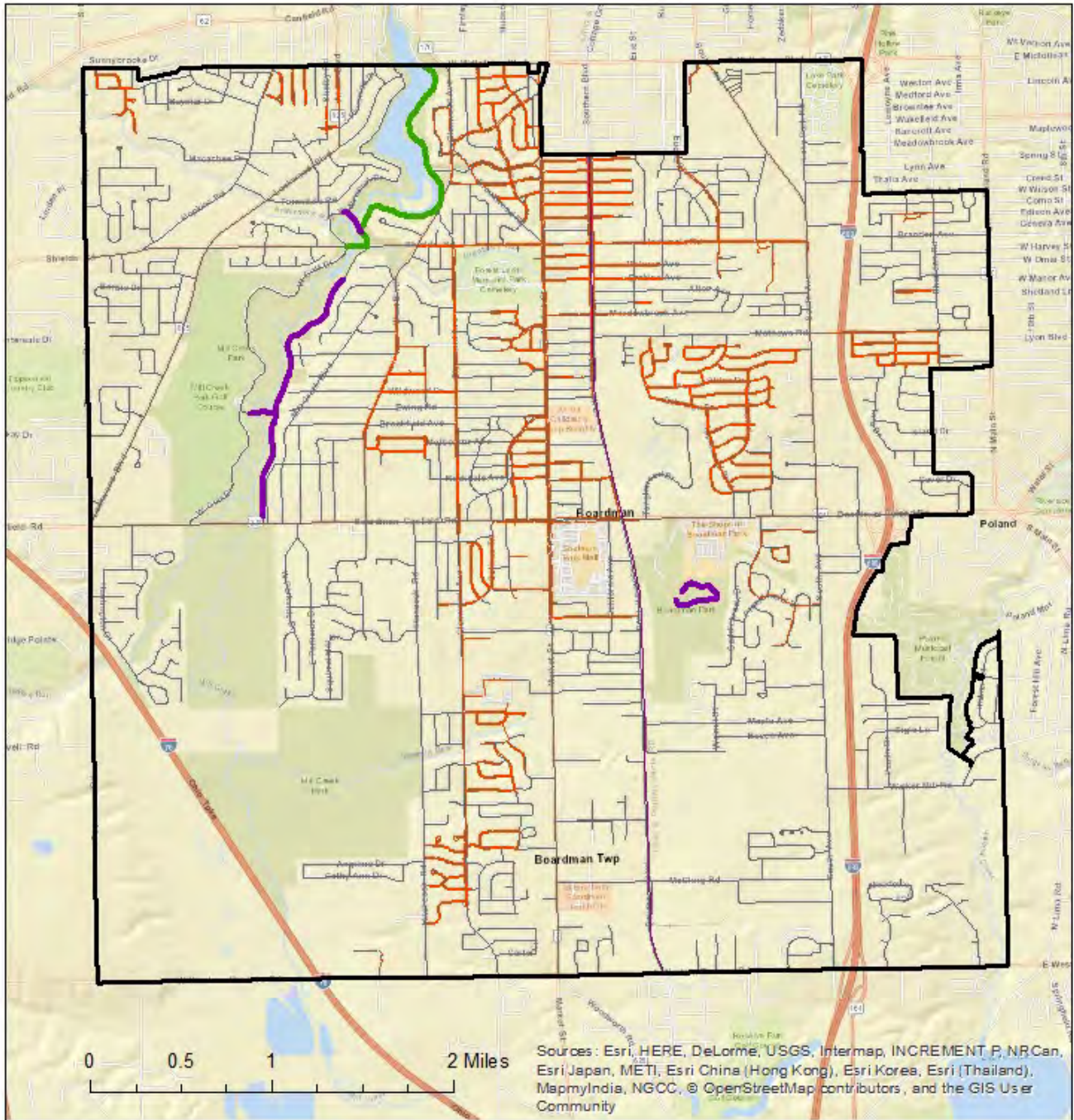
Population by Age and Sex



Travel Time to Work



Bike & Sidewalk Infrastructure, Boardman Township

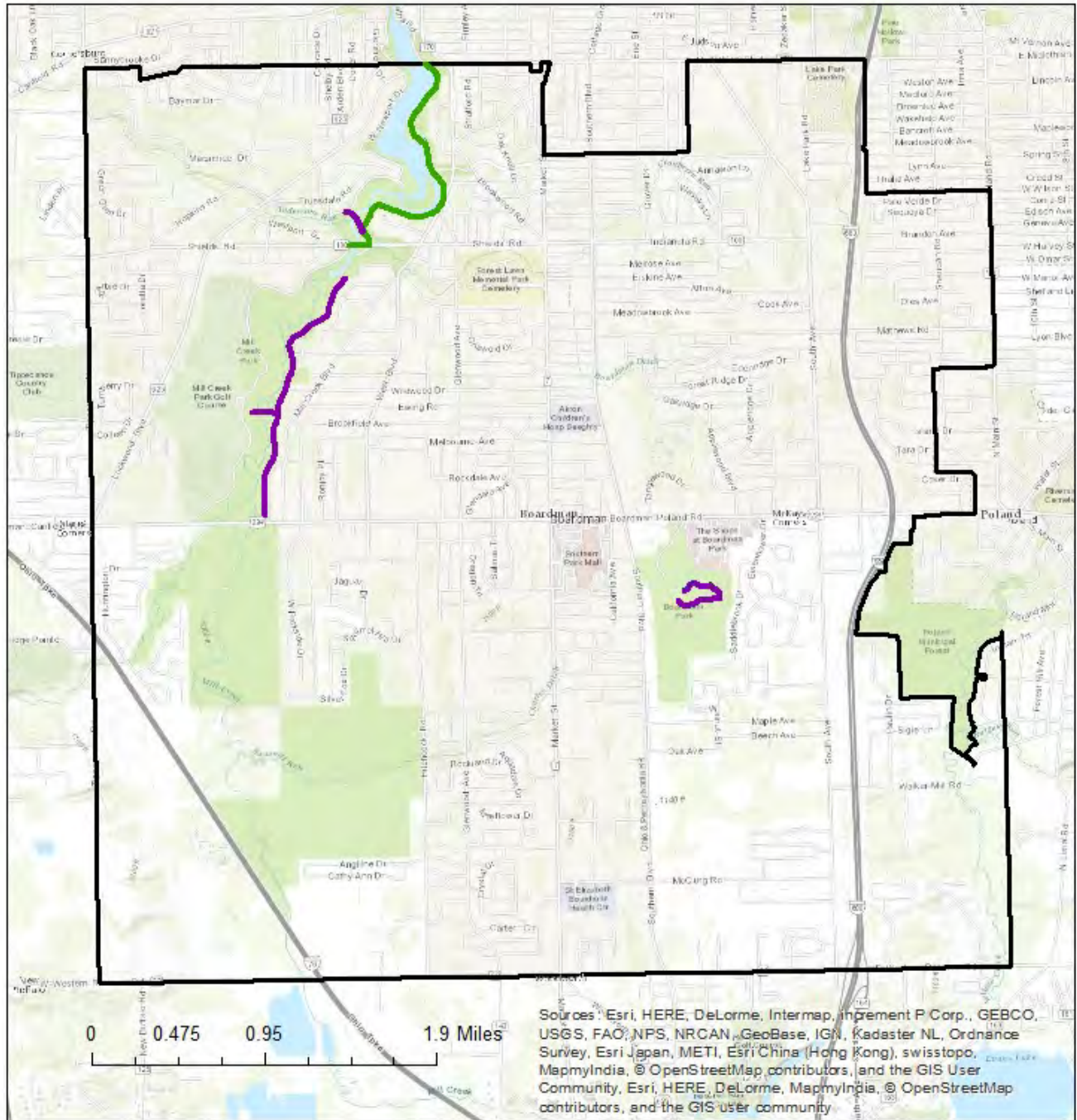


-  Boardman
-  Sidewalks
-  Bike Paths
-  Bike Lanes
-  Bike Path Conceptual
-  Roads



Created by: Tricia D'Avignon
Source: Eastgate Regional Council of Governments, 2017

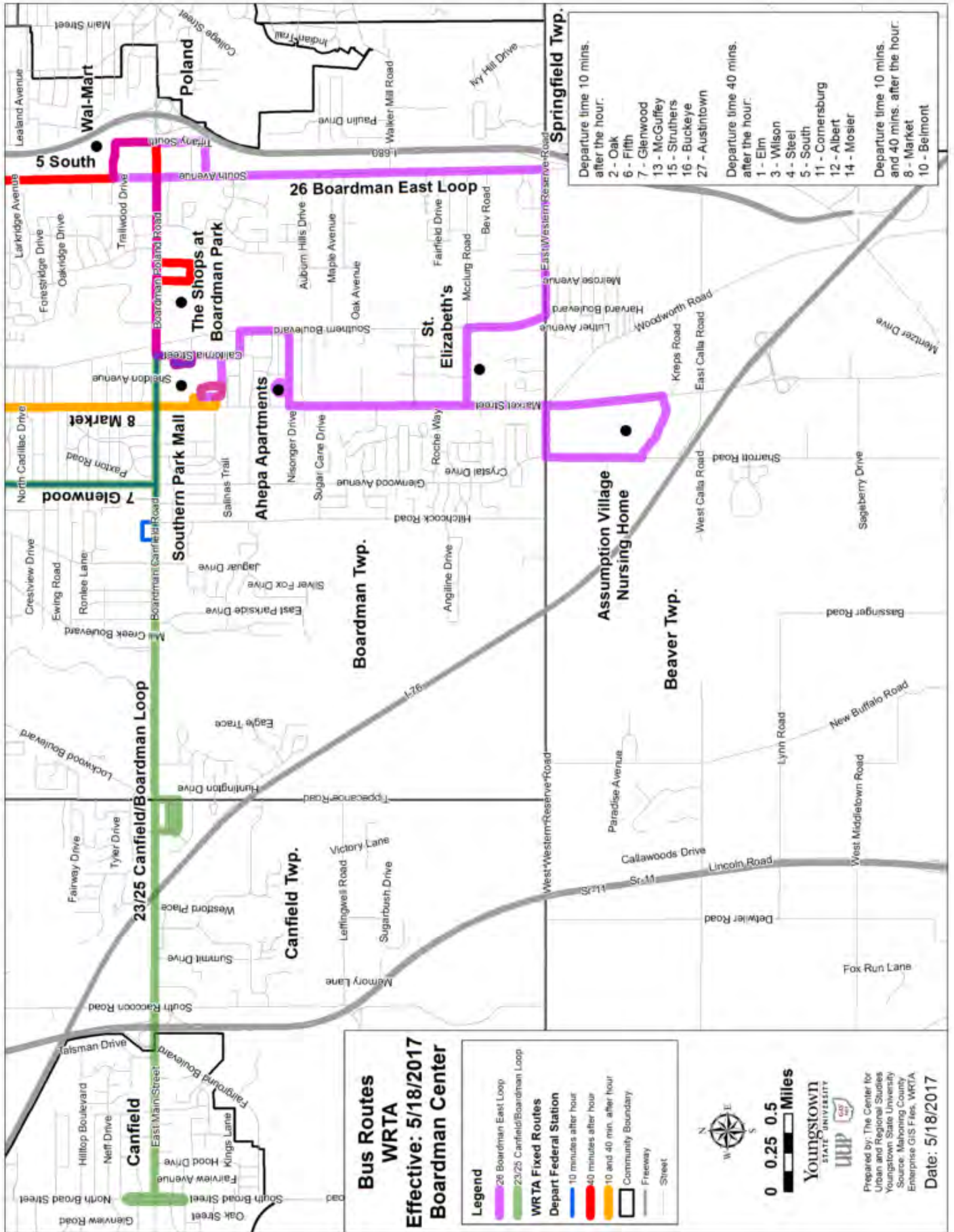
Bike Paths in Boardman Township



-  Bike Paths
-  Bike Lanes
-  Boardman

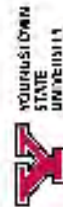
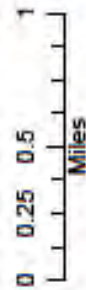


Created by: Tricia D'Avignon
 Source: Eastgate Regional Council of Governments, 2017



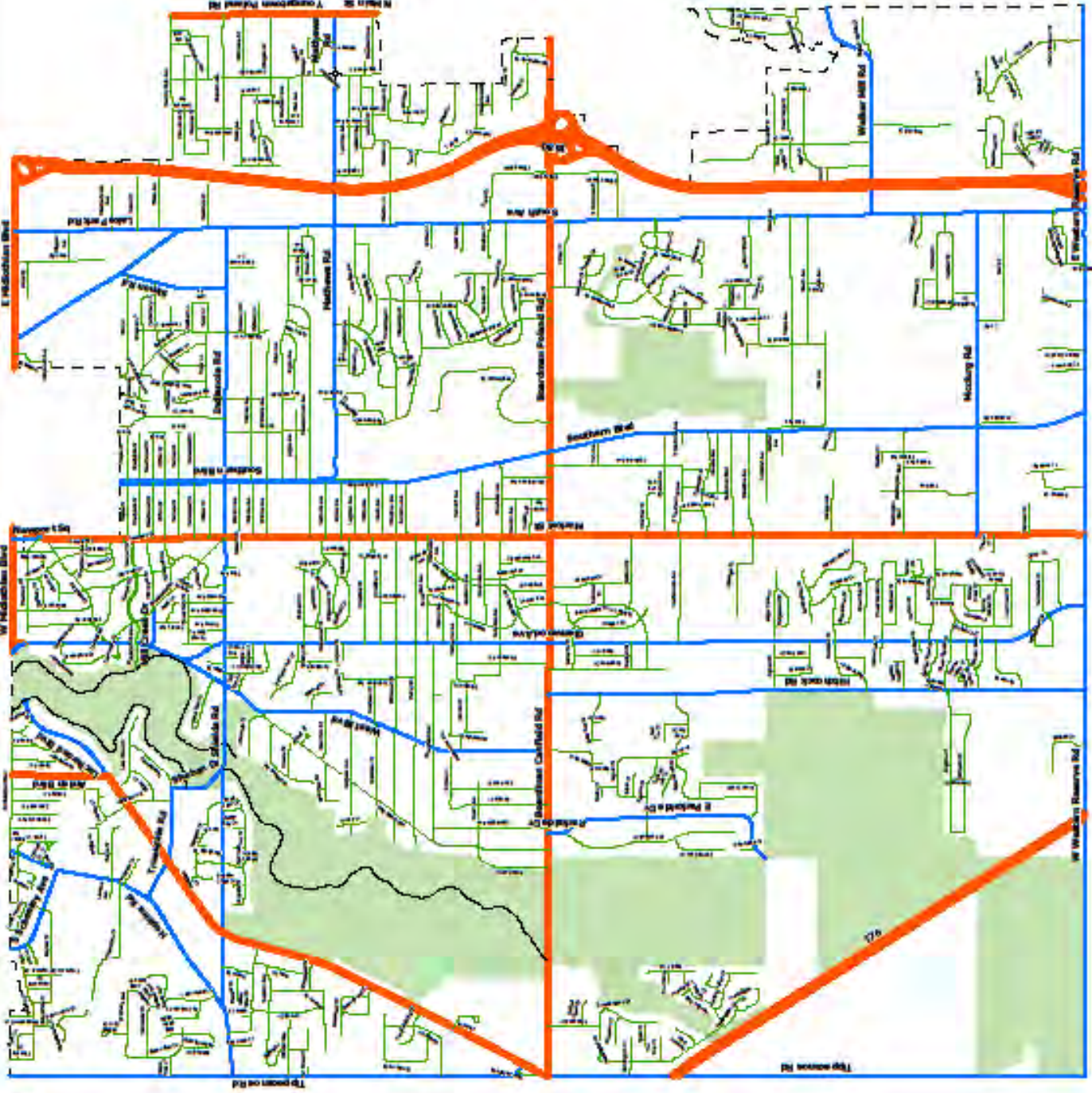
Boardman Township Road Maintenance

- Road Inventory**
- State Road
 - County Road
 - Township Road
 - Other Road Type
 - Township Boundary

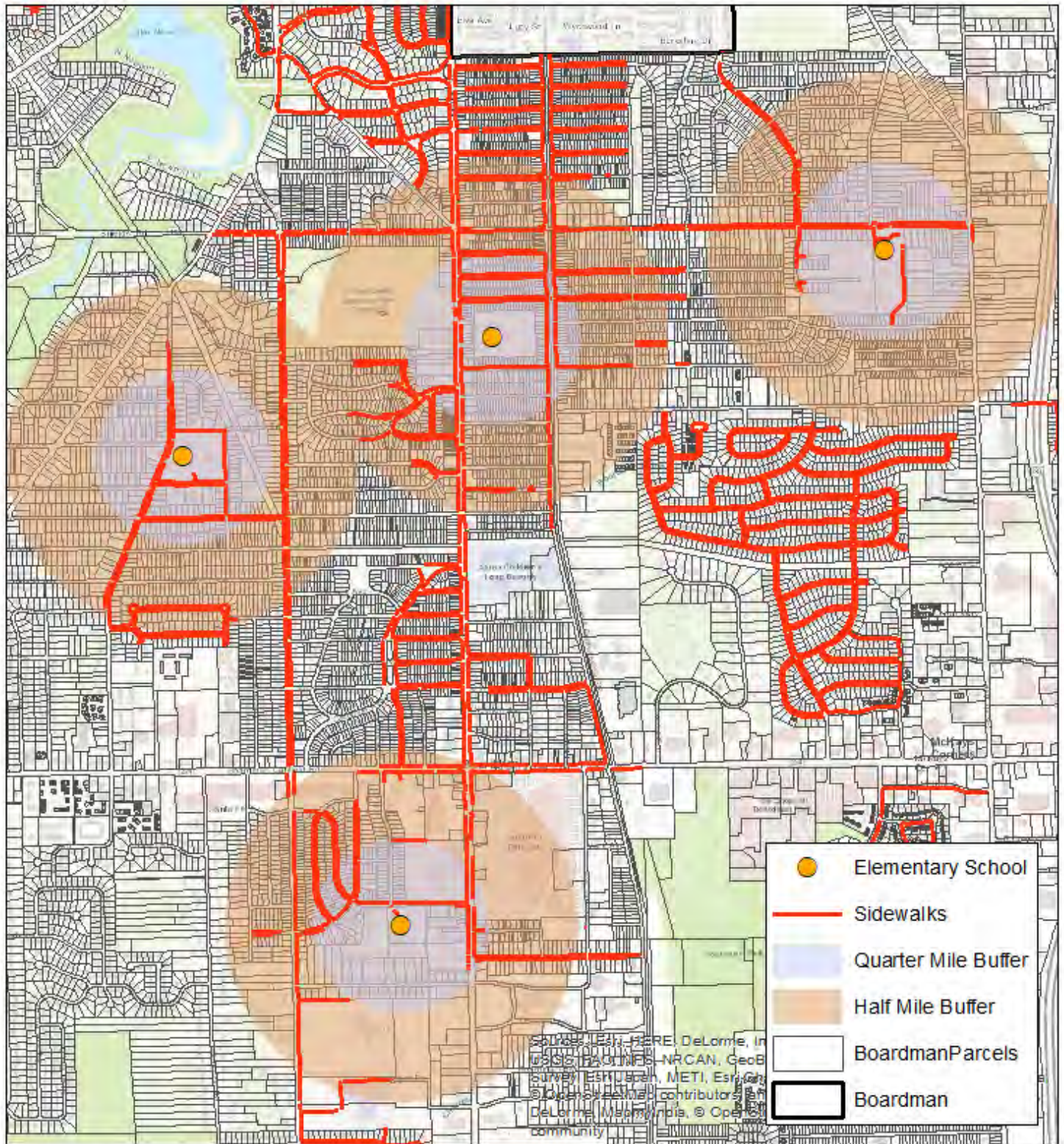


Prepared by: The Center for
Urban and Regional Studies
Youngstown State University
Source: Mahoning County
Enterprise GIS files, ODOT

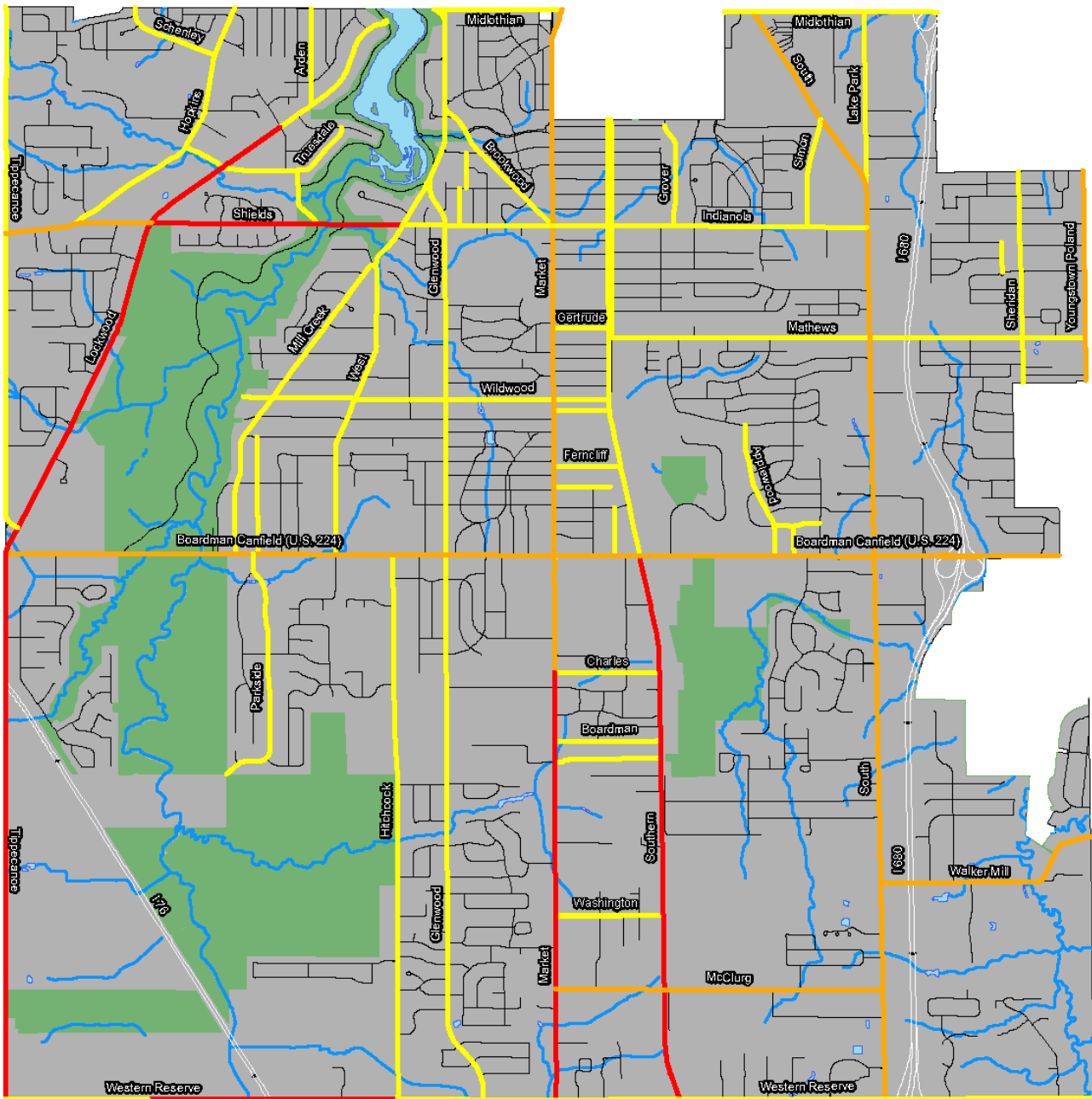
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Elementary Schools with sidewalks, Boardman Township



Boardman Township



Legend

Speed Limits			
25mph	Stream/River		
35mph	Lake/Pond		
40mph	Park		
45mph	Boardman Twp		



Boardman Schools: Crash Map

Legend

- Boardman Schools
- 1/2 Mile Buffer
- 1 Mile Buffer
- 2 Mile Buffer

2017 Crashes

- Crashes
- Pedalcycles
- Pedestrian

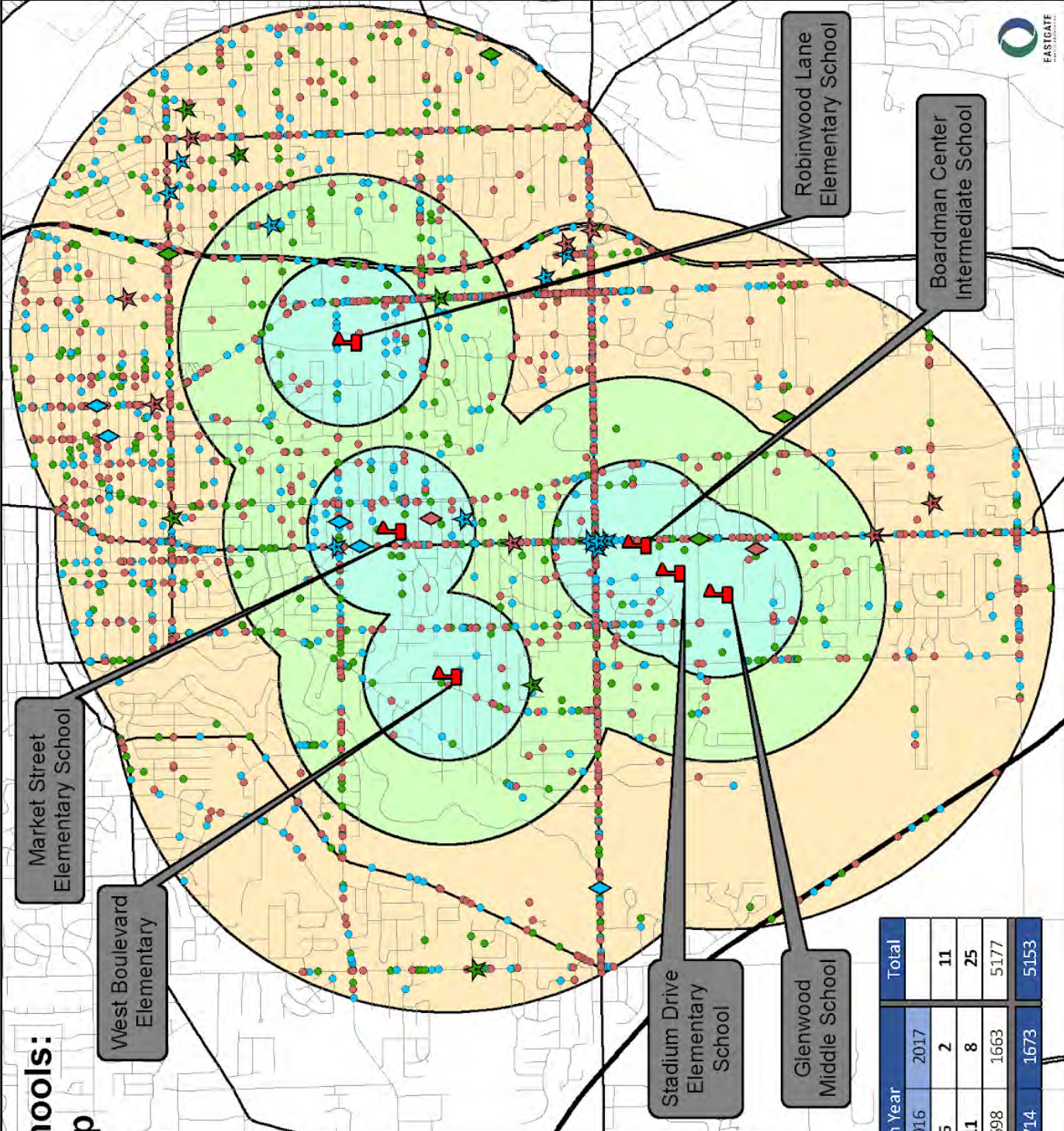
2016 Crashes

- Crashes
- Pedalcycles
- Pedestrian

2015 Crashes

- Crashes
- Pedalcycles
- Pedestrian

0 0.5 1 Miles

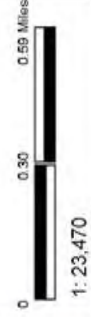


Crash Type	Crash Year		Total
	2015	2016	
Pedalcycles	4	5	11
Pedestrian	6	11	25
Other	1756	1698	5177
Total	1766	1714	5153



Legend

- NR Public Listings
 - Listed
 - National Historic Landmark
 - Delisted
- Dams
- UTM Zone Split
- NR Boundaries
- Highways
- Cities
- Counties



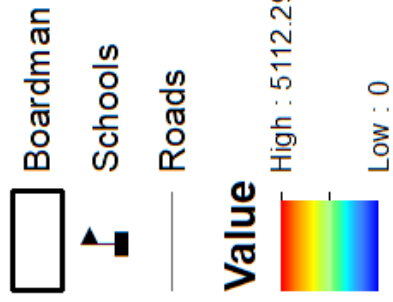
Copyright/Disclaimer

This map is a user generated static output from an internet mapping service and is for general use only. This map is a user generated static output from an internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

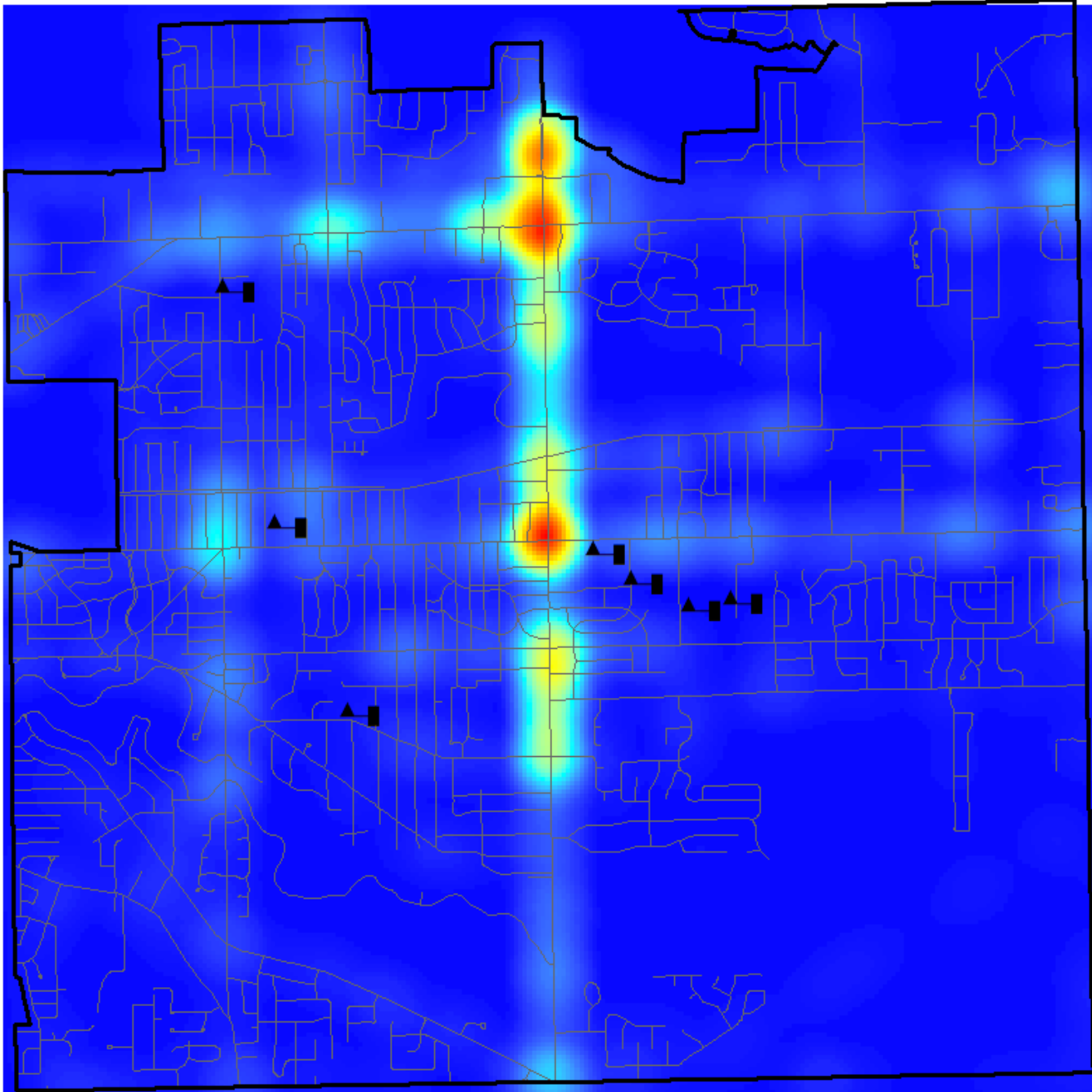
Datum: [Datum]
 Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere



Vehicle Crashes Boardman Township 2015-2017

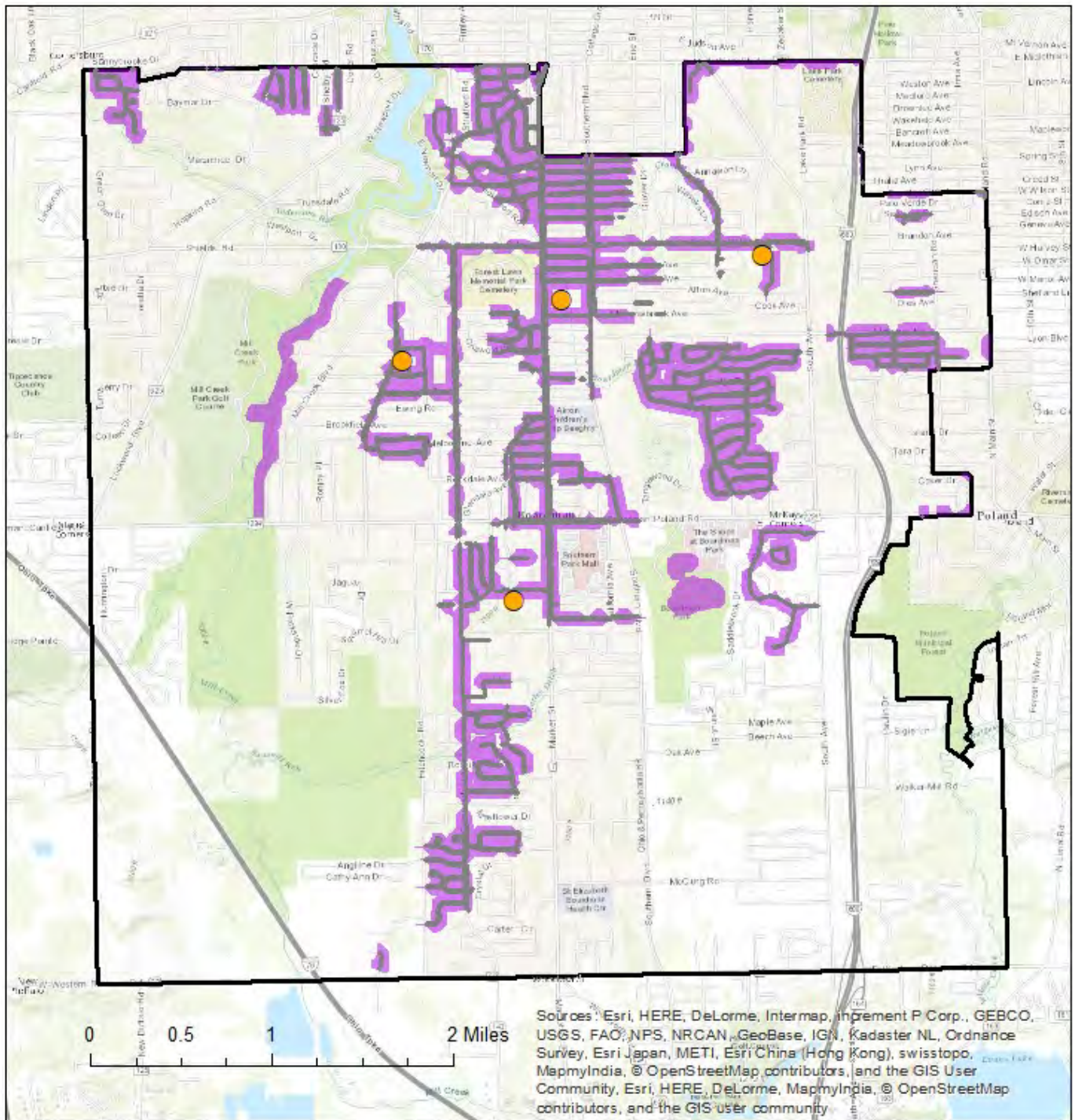






1.5 Miles



Created By: Tricia D'Avignon Source: Eastgate Regional Council of Governments, 2017

Walkable Areas in Boardman Township

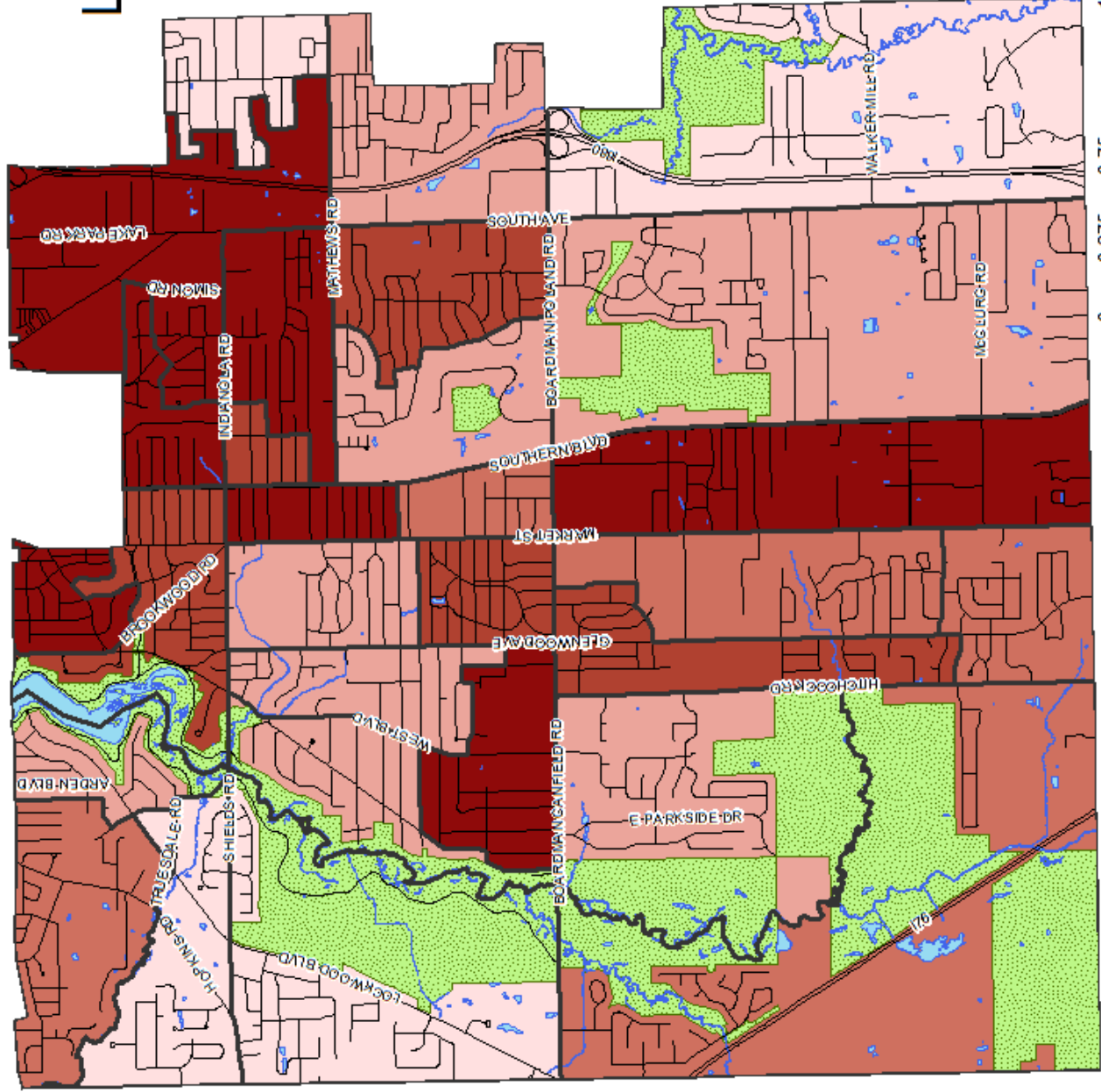


-  Elementary School
-  Sidewalks
-  Walkable Zones
-  Boardman

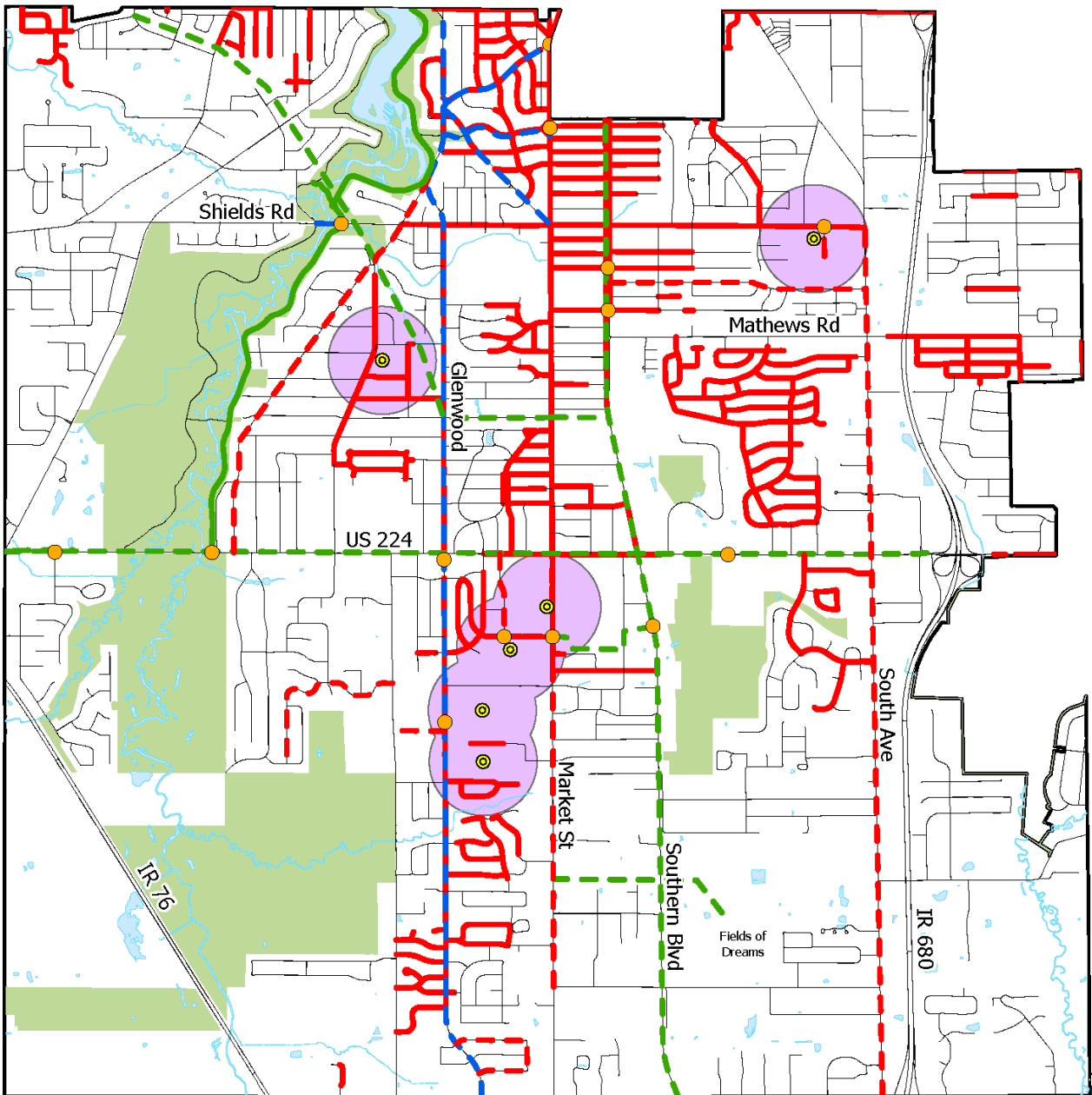


Created by: Tricia D'Avignon
 Source: Eastgate Regional Council of Governments, 2017

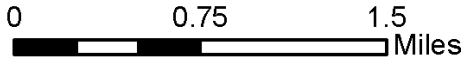
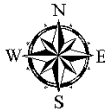
2014 Percent Living in Poverty



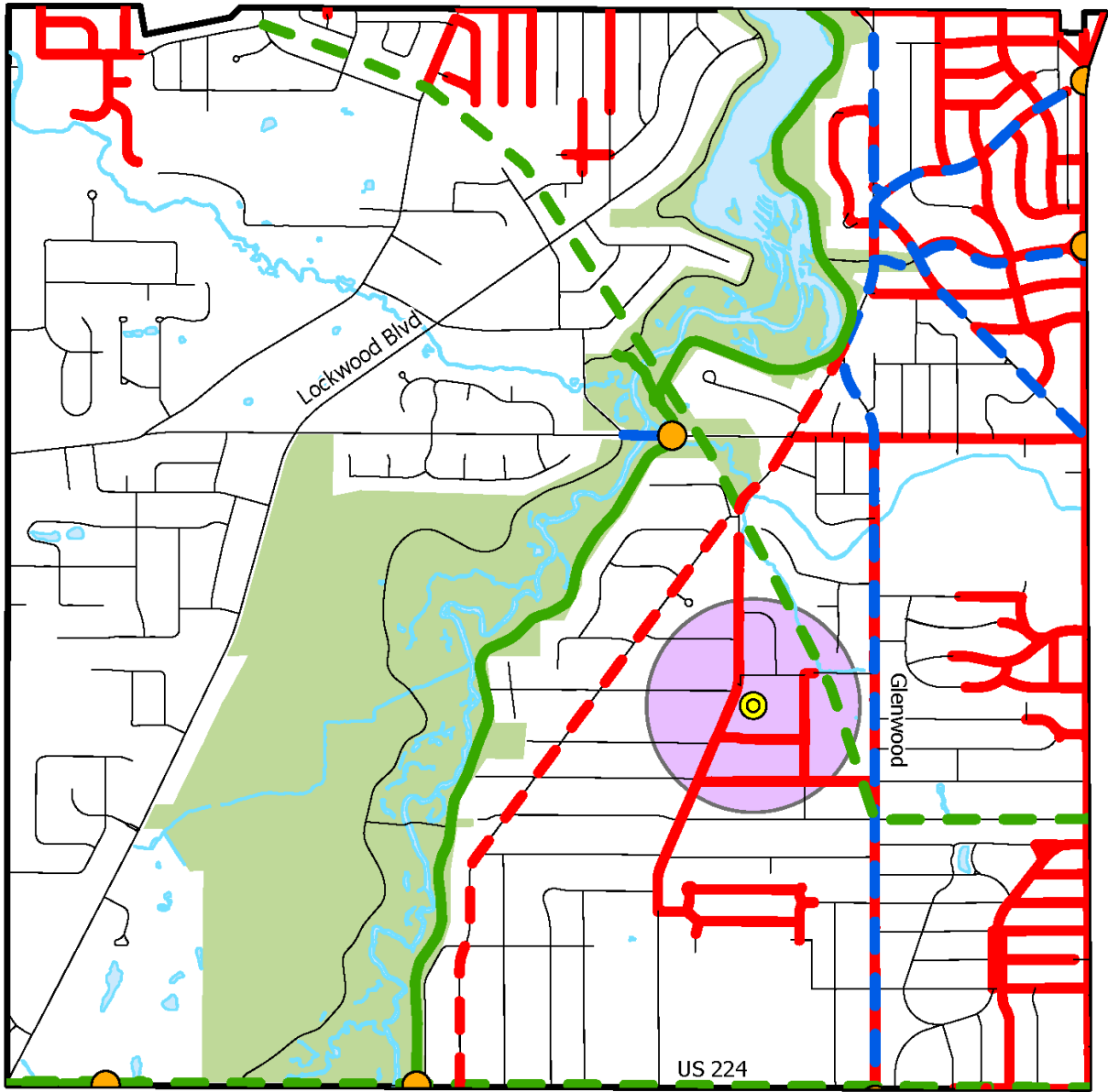
Boardman Township: Active Transportation Plan



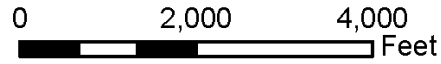
- ⦿ Boardman Schools
- Proposed Crosswalk Improvements
- Existing Multimodal Trail
- - - Proposed Multimodal Trail
- Existing Bike lane
- - - Proposed Bike lane
- - - Proposed Sidewalk
- Existing Sidewalks
- Parks
- 1/4 Mile Buffer



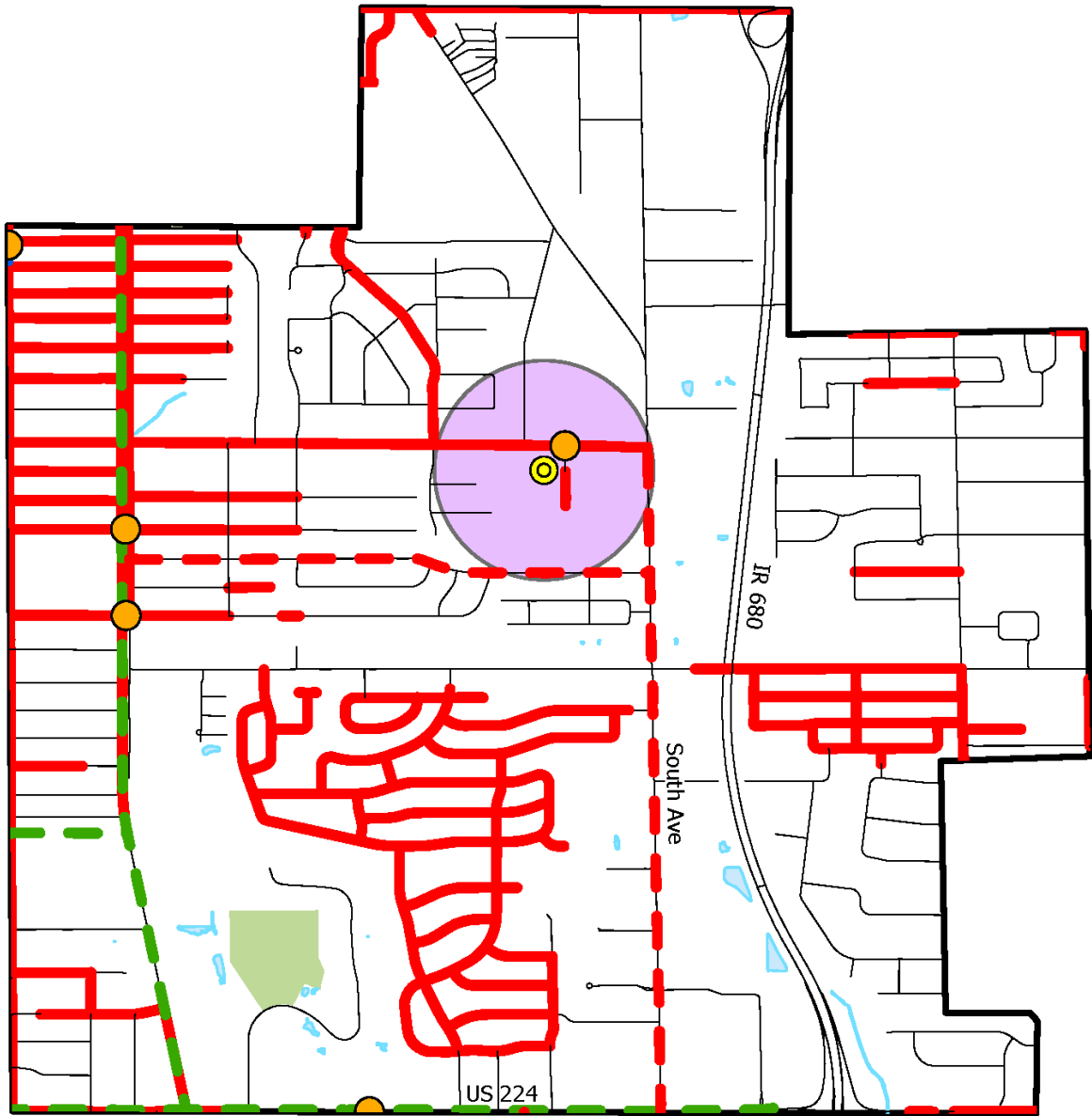
Boardman Township: Active Transportation Plan



- Boardman Schools
- Proposed Crosswalk Improvements
- Existing Multimodal Trail
- - - Proposed Multimodal Trail
- Existing Bike lane
- - - Proposed Bike lane
- - - Proposed Sidewalk
- Existing Sidewalks
- Parks
- 1/4 Mile Buffer



Boardman Township: Active Transportation Plan



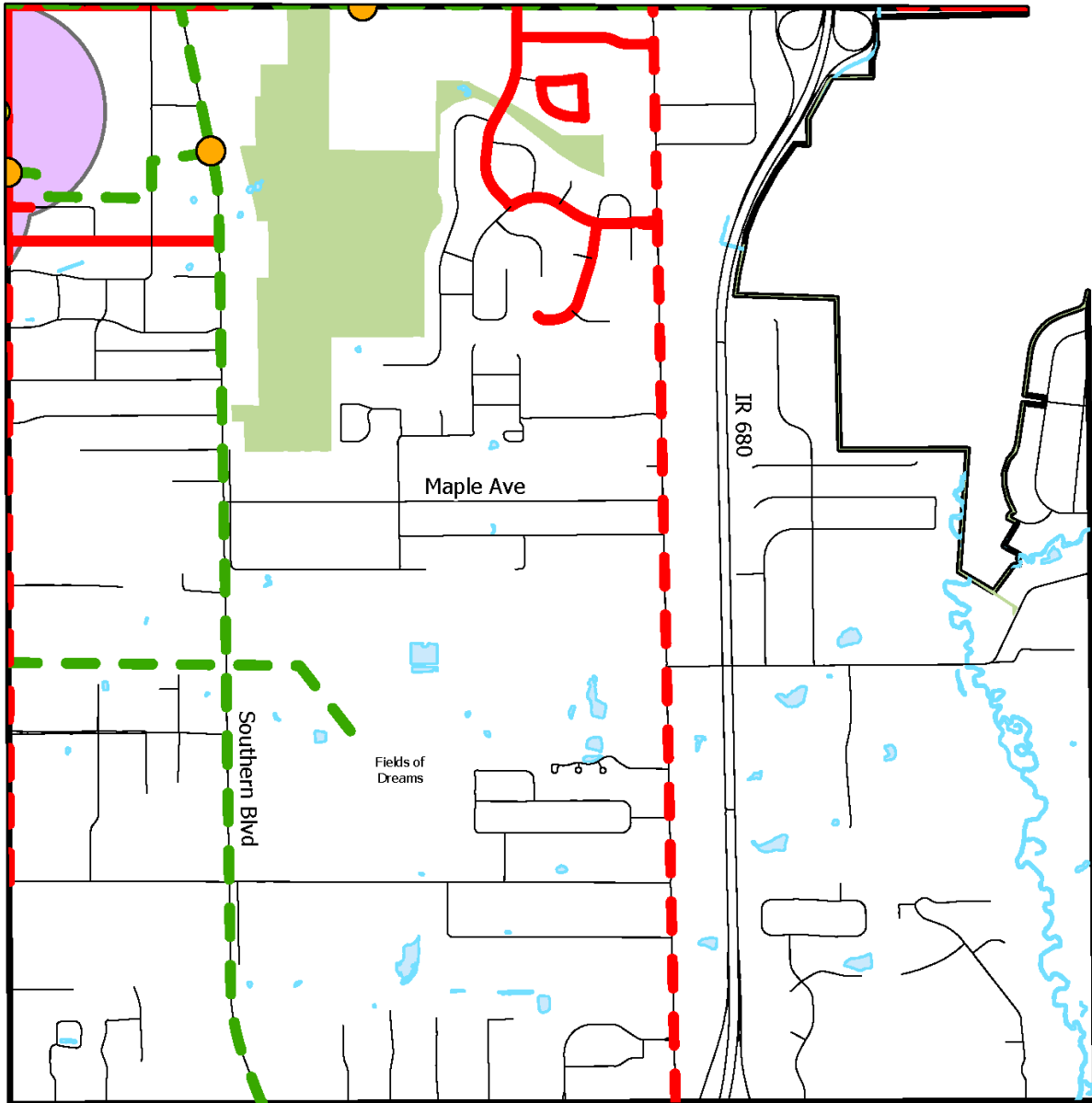
- ⊙ Boardman Schools
- Proposed Crosswalk Improvements
- Existing Multimodal Trail
- - - Proposed Multimodal Trail
- Existing Bike lane
- - - Proposed Bike lane
- - - Proposed Sidewalk
- Existing Sidewalks
- Parks
- 1/4 Mile Buffer



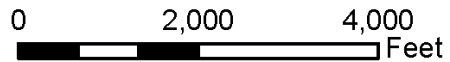
0 2,000 4,000
Feet



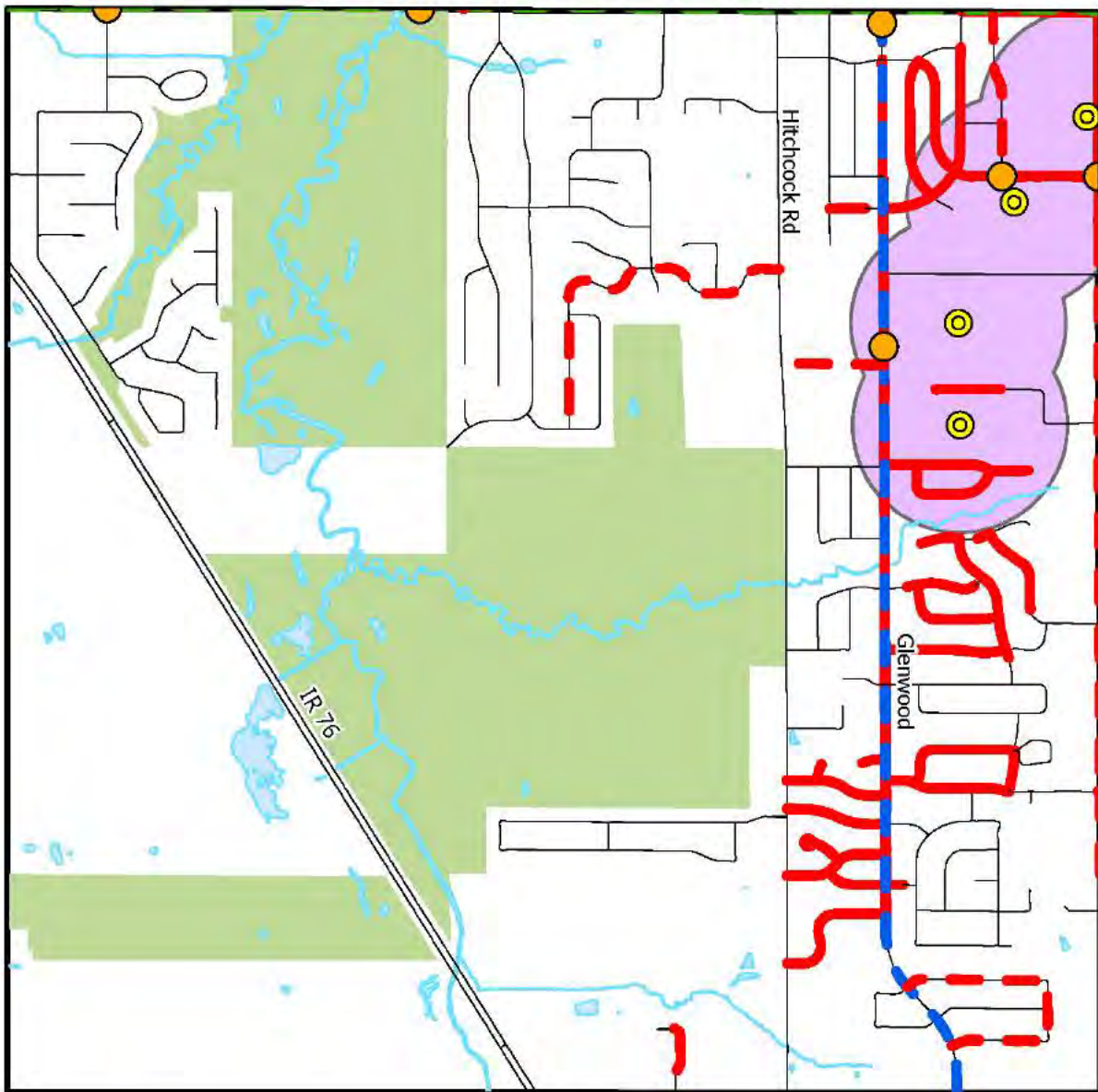
Boardman Township: Active Transportation Plan



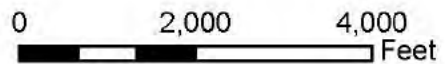
- ⦿ Boardman Schools
- Proposed Crosswalk Improvements
- Existing Multimodal Trail
- - - Proposed Multimodal Trail
- Existing Bike lane
- - - Proposed Bike lane
- - - Proposed Sidewalk
- Existing Sidewalks
- Parks
- 1/4 Mile Buffer



Boardman Township: Active Transportation Plan



- ⊙ Boardman Schools
- Proposed Crosswalk Improvements
- Existing Multimodal Trail
- - - Proposed Multimodal Trail
- Existing Bike lane
- - - Proposed Bike lane
- Proposed Sidewalk
- - - Existing Sidewalks
- Parks
- 1/4 Mile Buffer



APPENDIX B

**COMPLETE
STREETS
DESIGN
GUIDELINES**



ROAD STYLES

Complete Streets are roadways designed to be safe for all users, including pedestrians, cyclists, public transit riders, and motor vehicles. Complete Streets also focuses on assuring that sidewalks are ADA compliant and that wheelchair users are able to access the public amenities. Attention is paid to where pedestrian-activated buttons are located in relation to the sidewalk, sidewalk drop offs, and require the installation of tactile pavers to aid the visually impaired.

Complete Streets are the basis for strong, healthy and resilient communities, with their focus on walkability and bikeability, they allow residents to lead a more active lifestyle.

DESIGN GUIDELINES

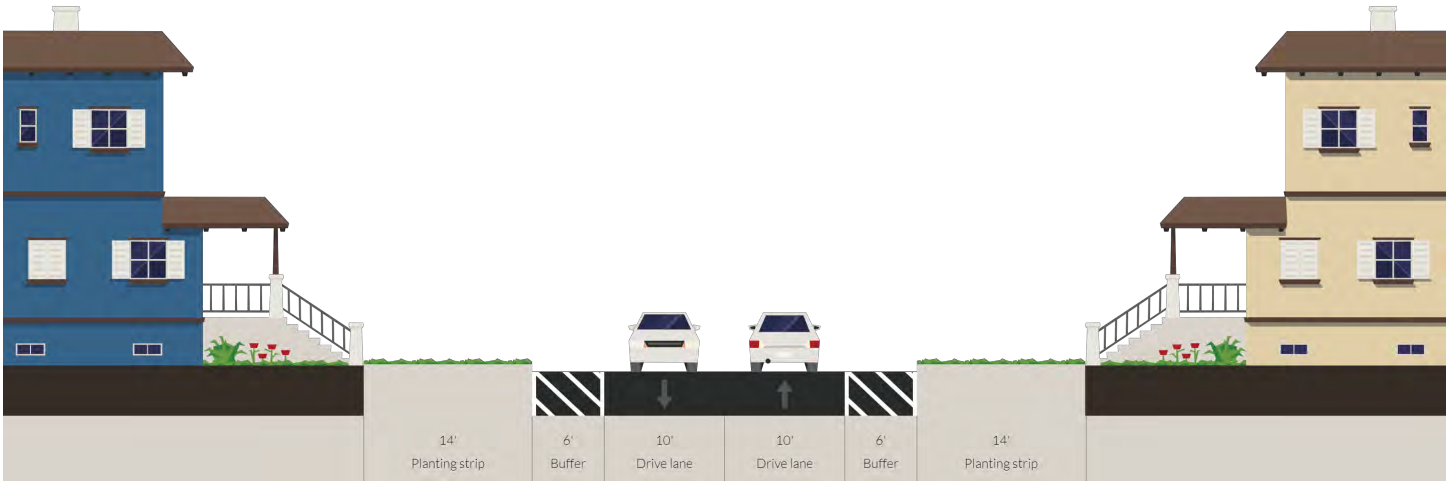
While many municipalities establish design guidelines for downtown areas, business districts, or neighborhoods, these design guidelines are general and adaptable to a variety of implementation variations.

All of the previous infrastructure improvements in this plan have been related to the overall vision of building a safe community of complete streets, however this specific section deals directly with the design standards of these same elements.

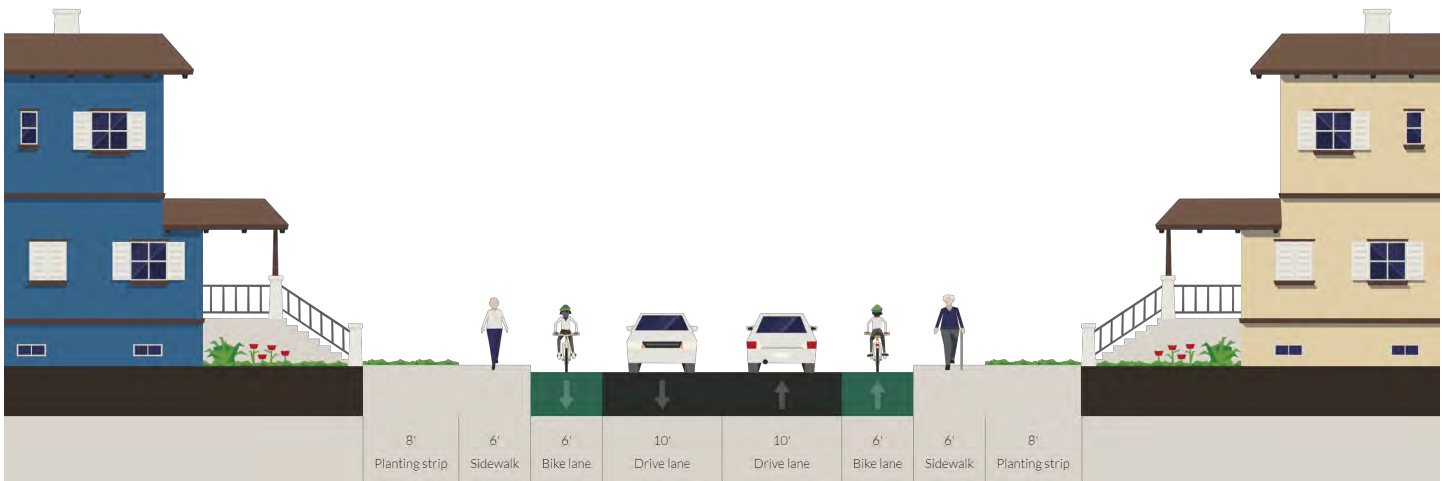
In many locations, we are limited in what changes can be implemented. These limitations are either due to a lack of road maintenance (either maintained by Mahoning County or the Ohio Department of Transportation), or due to a lack of right-of-way on a road.

Definition of Complete Streets is from [Smart Growth America](#).

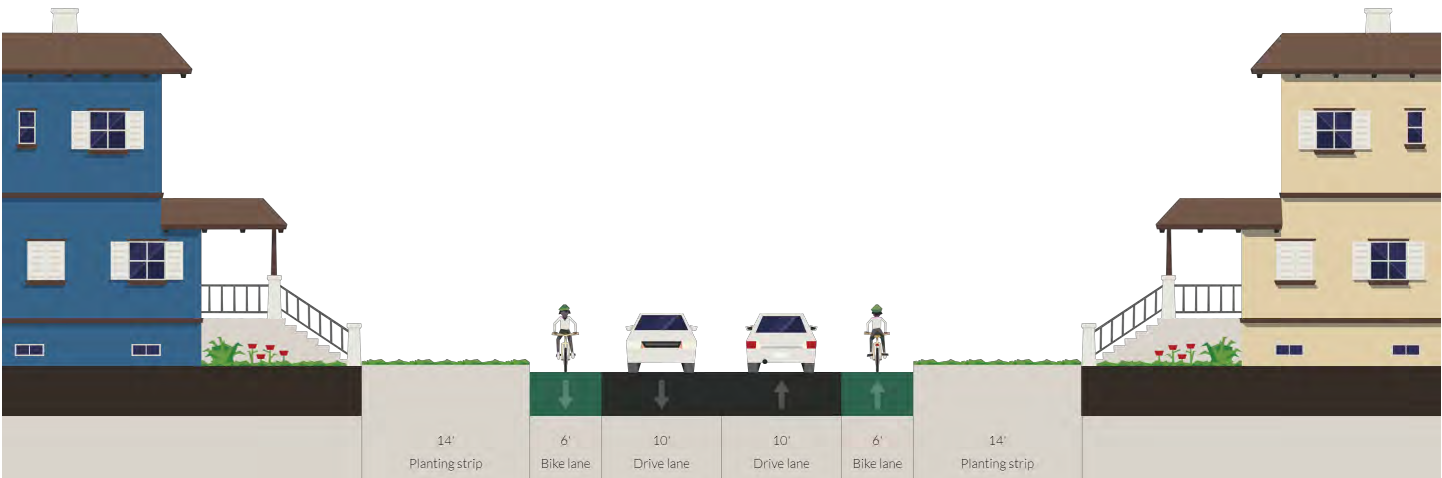
BROOKWOOD OPTIONS



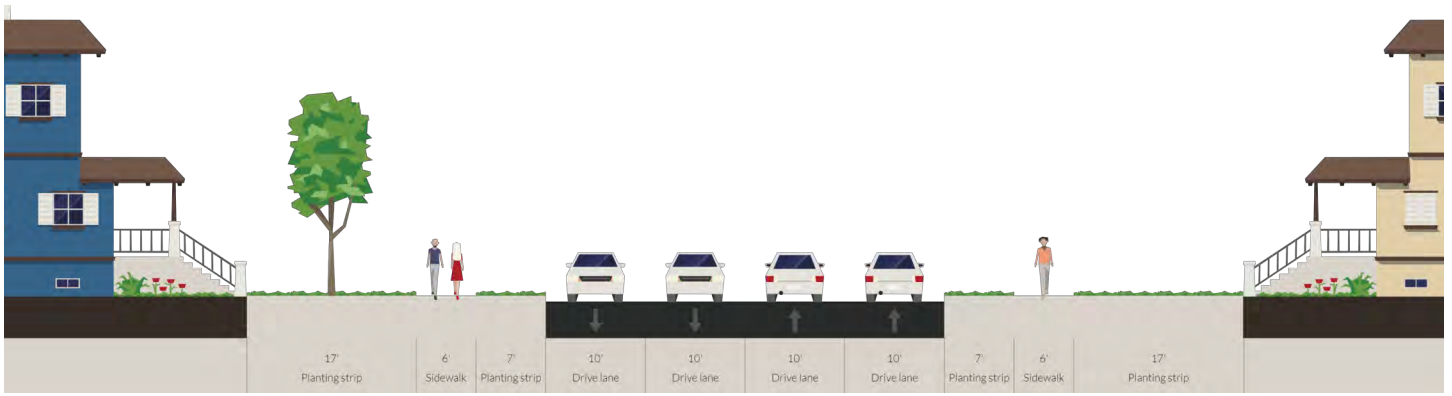
Brookwood Road, current.



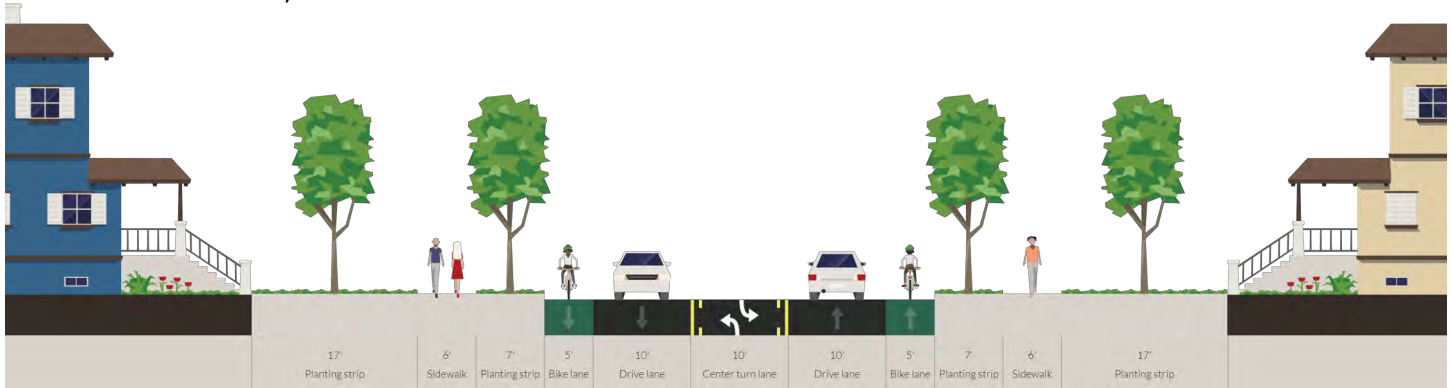
Brookwood Road, remix. Complete Street



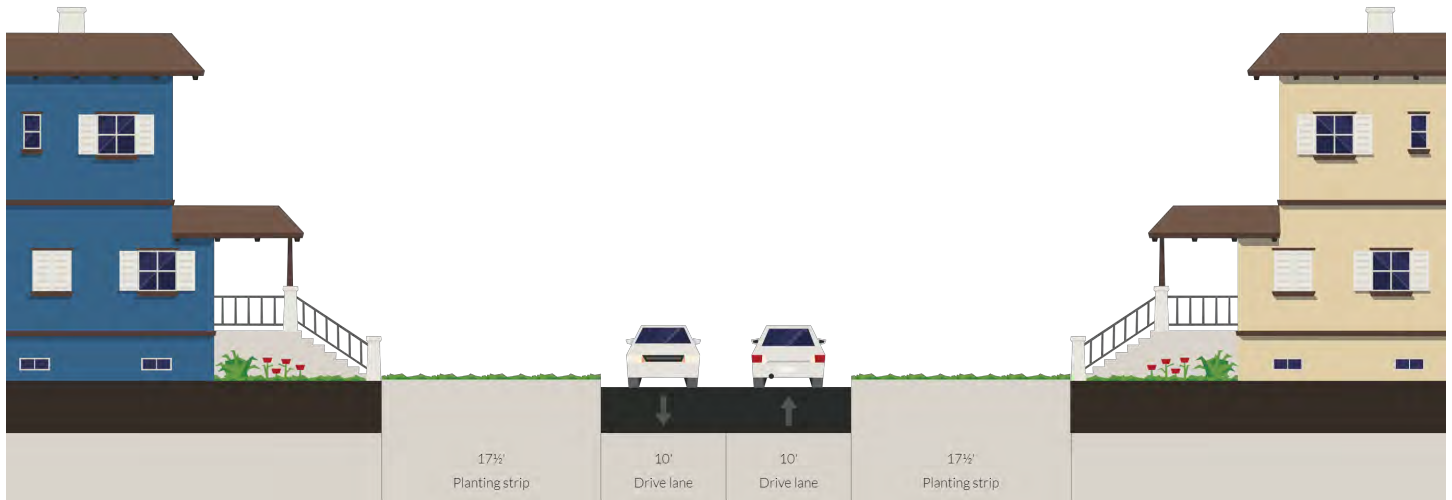
Brookwood Road, remix (alternative)



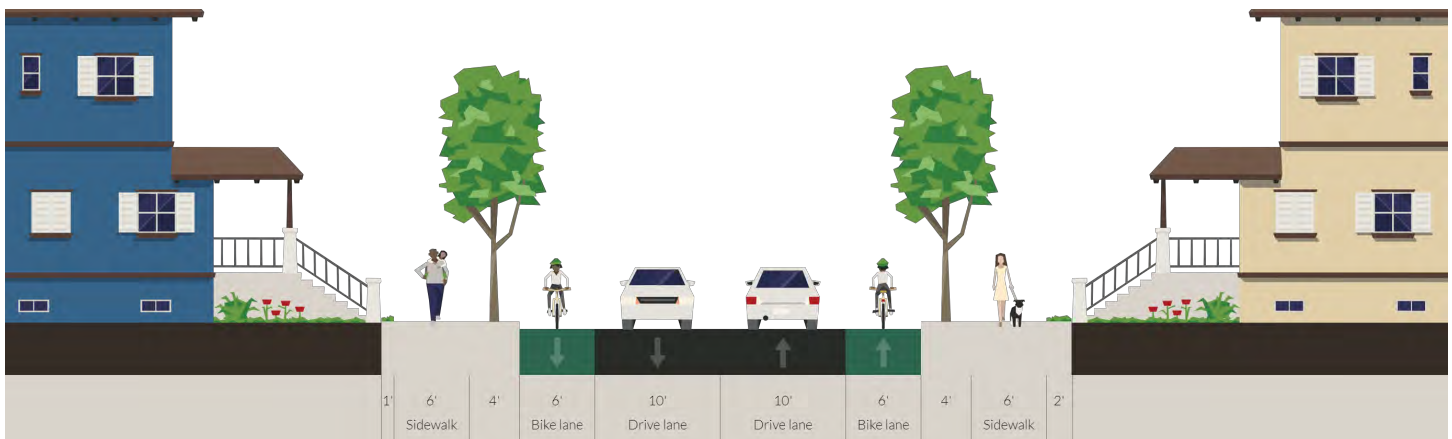
Glenwood Avenue, Current.



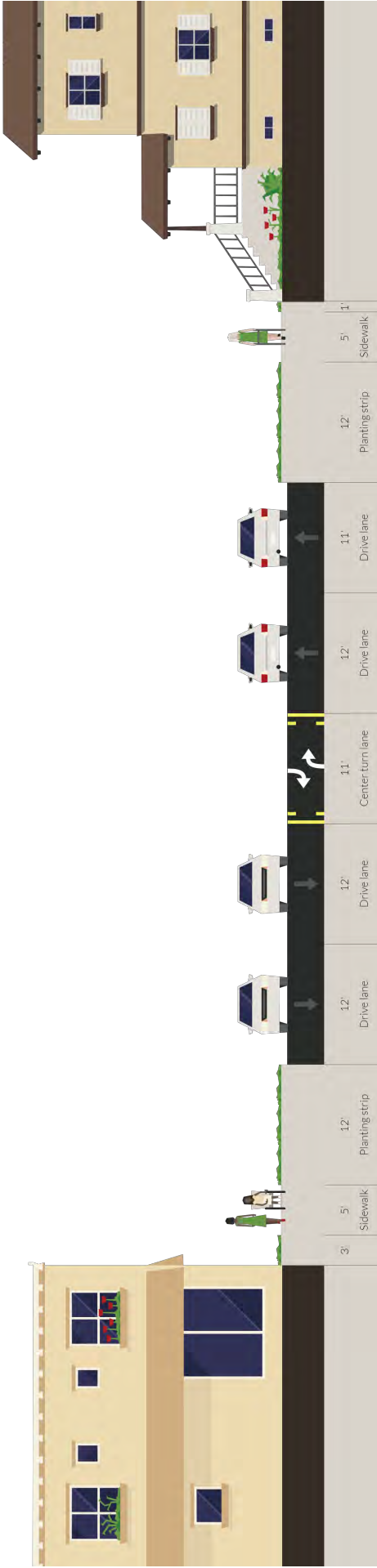
Glenwood Avenue, Remix. Complete Street



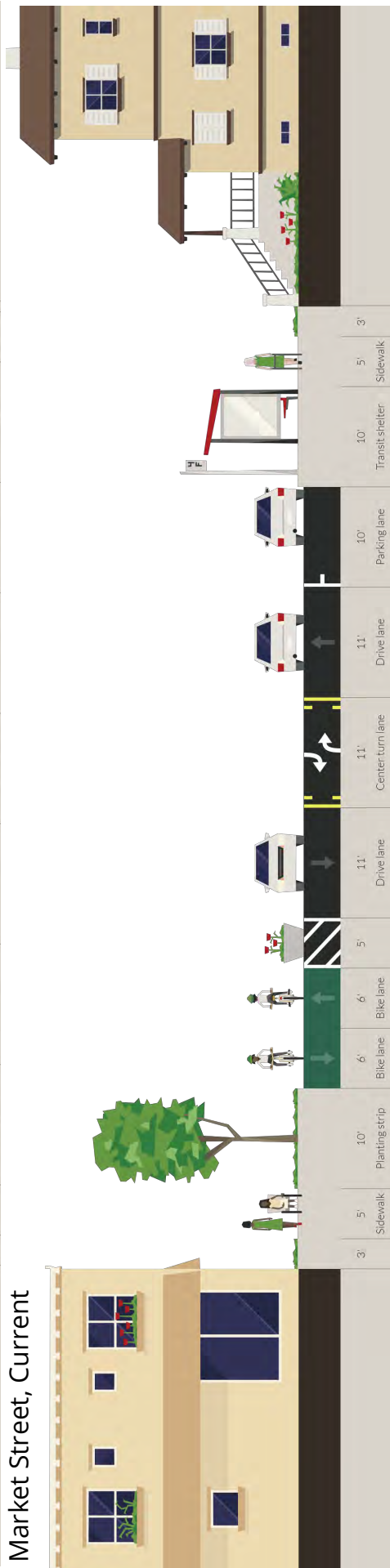
Hitchcock Road, current.



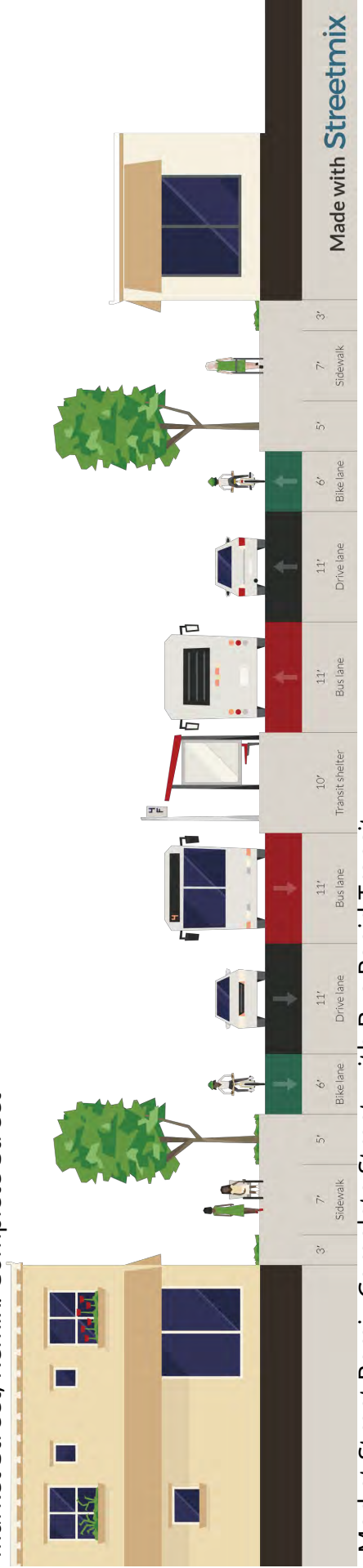
Hitchcock Road, Remix. Complete Street



Market Street, Current

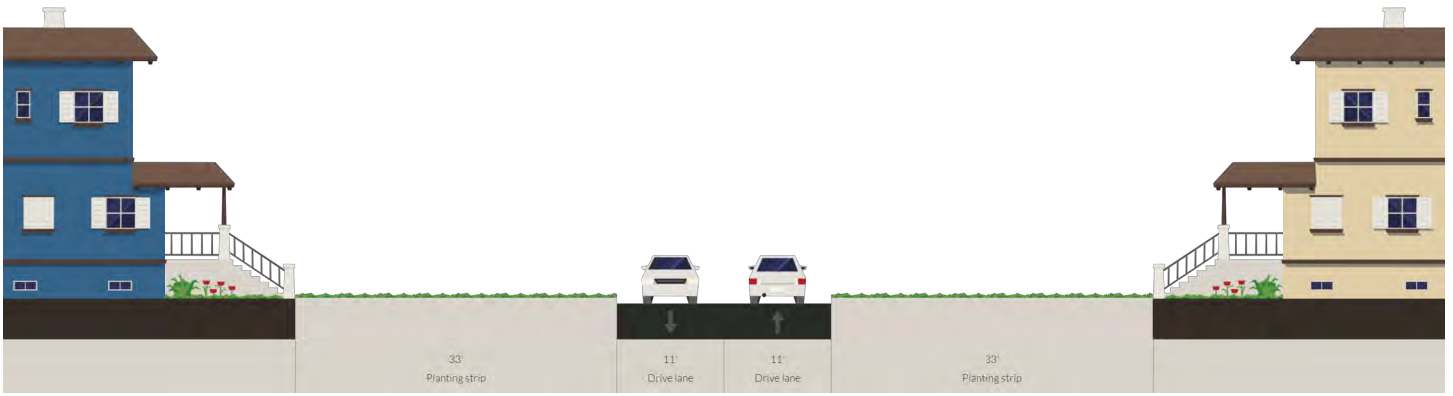


Market Street, Remix. Complete Street

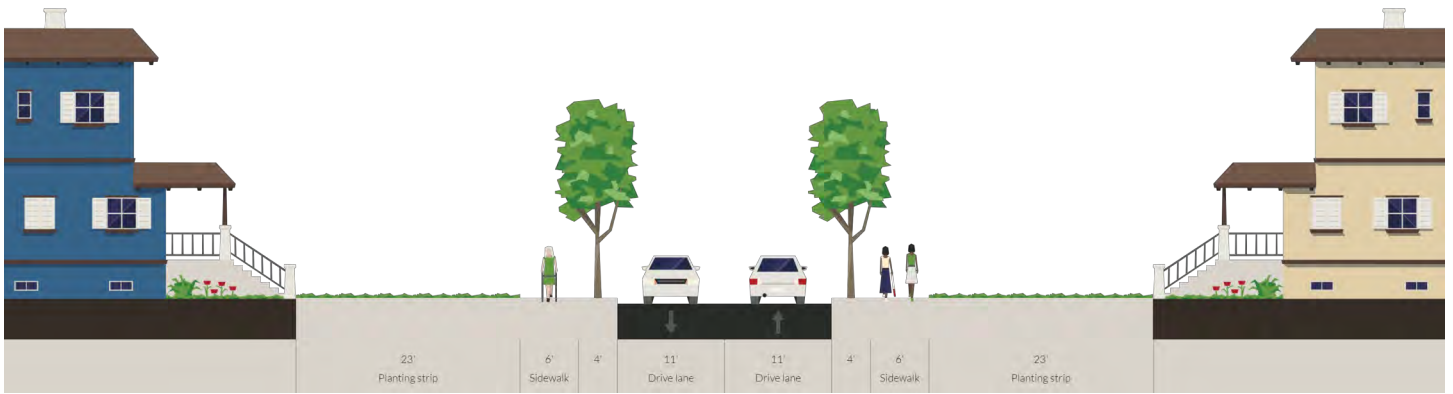


Market Street Remix Complete Street with Bus Rapid Transit

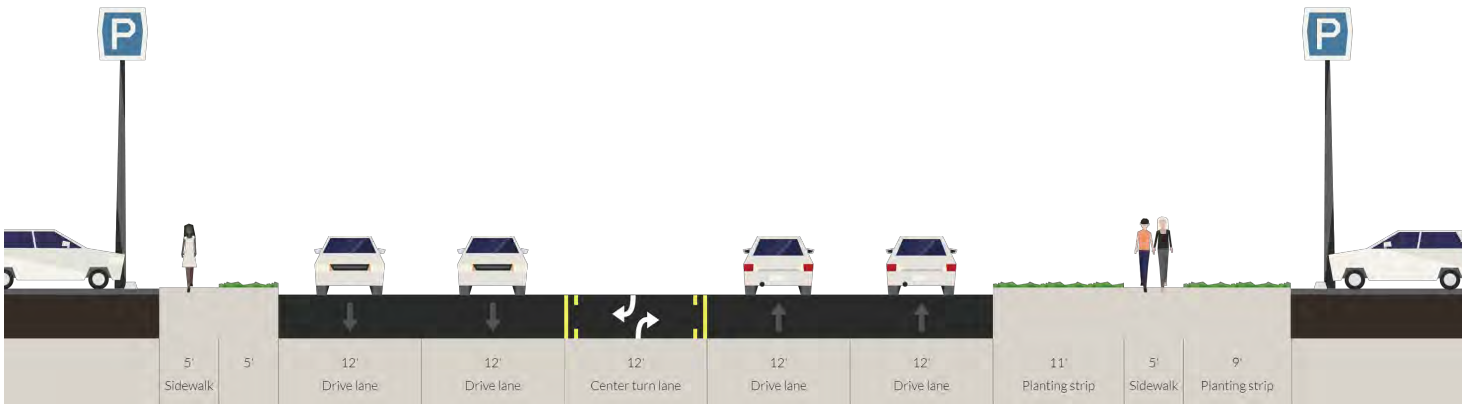
Made with Streetmix



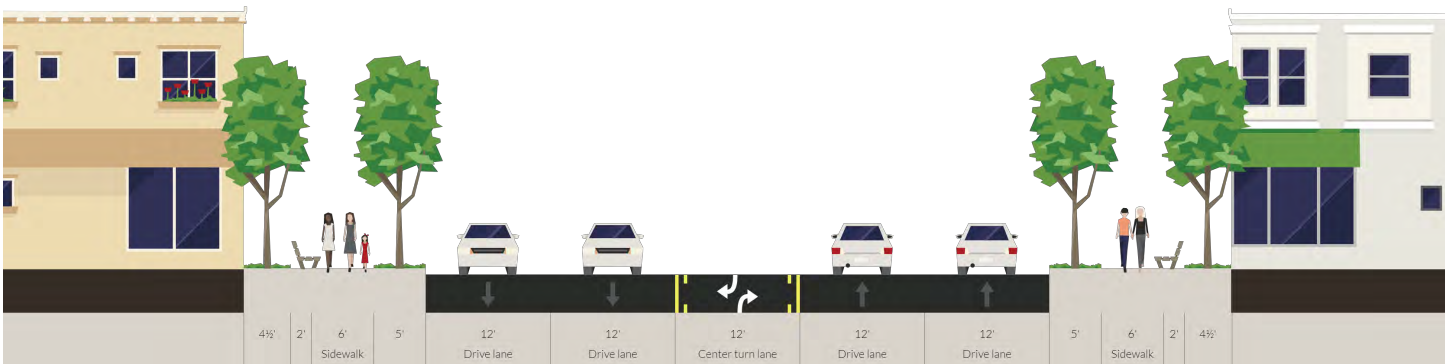
Mill Creek Blvd., Current.



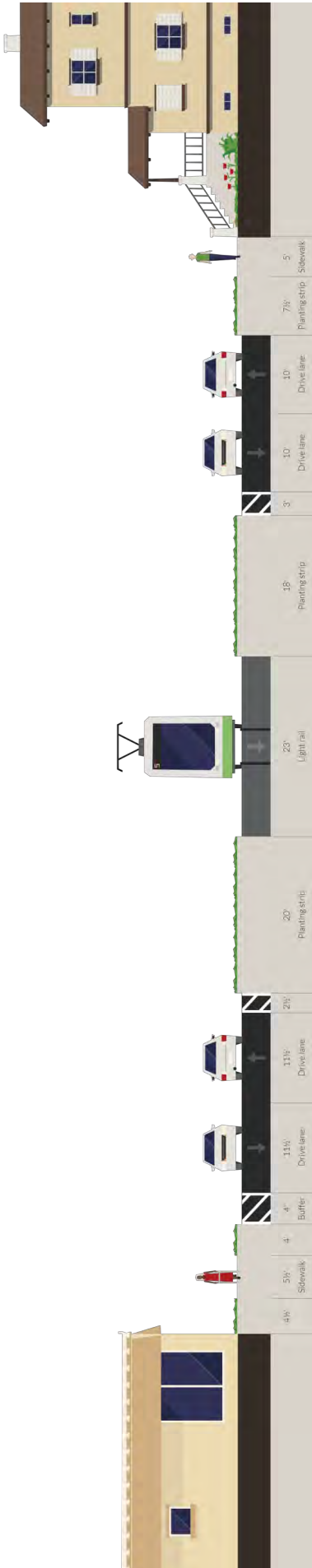
Mill Creek Blvd., Remix.



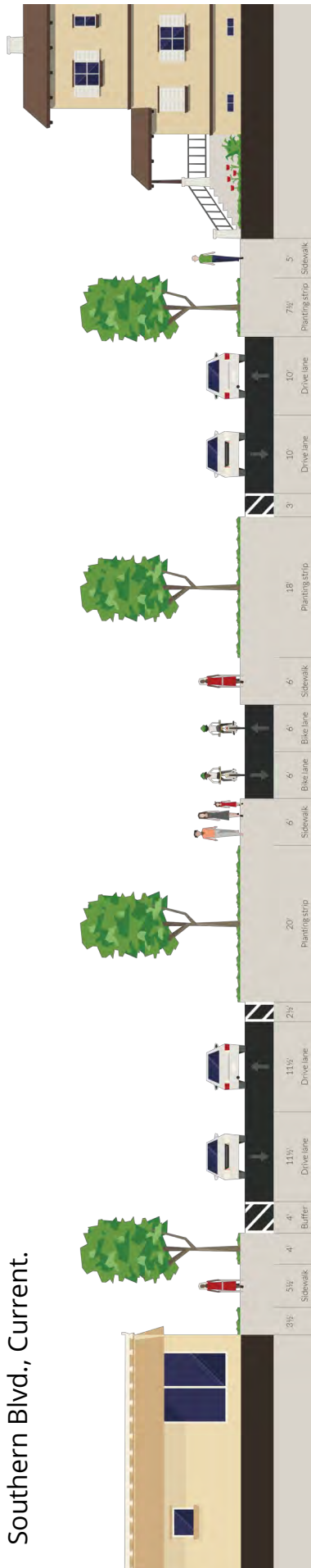
US 224 at Claybourne and Amhurst, Current.



US 224 at Claybourne and Amhurst, Remix.



Southern Blvd., Current.



Southern Blvd., Remix.

A photograph of a residential street. In the foreground, there is a gravel path that runs diagonally from the bottom left towards the middle right. The path is flanked by green grass. In the background, a paved road curves to the right. Beyond the road, there is a green lawn, a utility pole, and a white house with a dark car parked in the driveway. The sky is overcast.

APPENDIX C

**PUBLIC
COMMENTS**

“My neighborhood has a lack of sidewalks and therefore no photo. Both N. Cadillac Drive and S. Cadillac Drive lack sidewalks, and it is dangerous since most vehicle traffic speed on these streets. It is not unusual to see many motorists travel 40 - 50 mph. "Pedal to the metal." Many motorists use this as a way to by-pass heavily congested areas and avoid traffic signals. It is dangerous to walk and ride on these streets. We have many walkers, bikers, and strollers utilizing the area for exercise and to access the Dairy Queen located at the intersection of Market Street and Cadillac Blvd.

During childhood, I did live on a street in Boardman which had sidewalks and it was wonderful. We never worried about being struck by a car. “

It would be such a selling point for new residents and existing ones too if there were a sort of Boardman Greenway, with mileage marked, with benches at regular intervals, shade trees, and sidewalks wide enough for a stroller or two or three people walking their dogs. There could be fitness activities, walking or running groups, and more.

As a nation in which half of us will be sixty or older by 2030, these sorts of investments in the community will have the added benefit of helping us all stay healthy and be independent for longer too. I am soon turning the corner on a new decade and also walk 4-7 miles daily usually. A Fitbitter for over seven years, I'm approaching 10,000 miles of walking.

Anyway, now I'm just dreaming, I know. Easy to dream, more difficult to accomplish the nitty gritty details.

“Who is responsible for fixing sidewalks? Someone told me it is the responsibility of the homeowner.”

“aren't the sidewalks the responsibility of the homeowner? therefore, if i send you a picture of my crumbling sidewalk, i will be responsible now to fix it if it is deemed a nuisance?? “

Thank you. My only sidewalk issue is that there are none anywhere near our new home. It is a shame that Boardman is decidedly pedestrian unfriendly. It was one of the definite appeals of Poland when we were attempting to move there that so much of Poland Village has sidewalks.

I moved to 855 Mayfield Drive 44512 in May 2017 from Fredericktown, north of East Liverpool. We had no sidewalks in Fredericktown as it is a 19th century unincorporated village. I was really hoping for them when we moved. Instead, the only sidewalks I can think of near us are the ones found in area shopping plazas along Route 224. There are none in our neighborhood, none along McClurg, South Avenue, Southern Blvd, Market Street, or Western Reserve Road.

So here's to a more pedestrian friendly Boardman!

“Our development (Huntington Woods) doesn’t have sidewalks and along the edge of the streets the pavement is broken up. It makes it difficult to walk with a stroller or ride a bike and most runners run in the middle of the street which presents some safety concerns. The street dept needs to look into repairing our streets, which were made worse by recent flooding.”

“My concerns are a part of the initiative about “issues that affect health and well-being”. I love where I live.

Having pedestrian access (Perhaps installing pedestrian lights at busy intersections might also help.) to cross Rte 224 or South Ave, then walk nearby safely, would be helpful for shoppers as well as for out of town guests at hotels; who prefer to walk to a local restaurant or store.

Posting signs that state : “Pedestrians Have the Right of Way” would be a great reminder to those drivers who do not have common sense courtesy. “

“I Forestlake the sidewalk ends at each intersection. Homes on corners do not have sidewalks.”

COMMENTS ON “CONNECTING BOARDMAN”
BOARDMAN TOWNSHIP’S ACTIVE TRANSPORTATION PLAN
DRAFT VERSION, 2019

Frank Krygowski, PE (retired)

I’ve thoroughly reviewed the draft copy of Boardman Township’s Active Transportation plan. There is much to like in the document, and I heartily agree with its objectives. I’ve penciled extensive notes into the printed copy I was given, which I’m returning. The following is intended to supplement and/or further explain some of my feedback.

Like many American suburbs, Boardman was populated by people seeking low density, who were happy to drive. Car culture caused Boardman to develop into a collection of spaghetti-like cul-de-sacs separated from almost all business and shopping. Accommodating non-motorized transportation is now difficult.

But there is an important and often unrecognized side effect of the car culture. As walking and especially bicycling grew more and more unfamiliar, they were labeled as “dangerous.” Bicyclists in particular are now told they must never ride without special hats, garish clothing and even daytime lights. They are told they need extreme segregation from all automobile traffic to be safe. Lately, they are told that if a car tire ever touches the surface where a bicyclist rides, that area is not safe enough. The result of this fear mongering has been a steady decline in bike riding, especially among children. Now almost no kids bike to school, and the typical bicyclist is upper-middle-aged. These bode ill for active transportation and public health.

None of this fear is justifiable by data! Bicycling is safer per hour than many common activities, like swimming. It is safer per mile traveled than pedestrian travel. Bicyclists comprise fewer than 1% of America’s brain injury fatalities. Bicycling has repeatedly been found to have benefits far greater than its tiny risks; this means on average, bicycling is safer than *not* bicycling. And many of the purported solutions - helmets, bright clothing, segregated bike lanes - have had at best only very questionable benefits.

Echoing the “Danger! Danger!” cries and the claims that protected bike lanes are absolutely necessary will kill the budget and prevent any real increases in bicycling for the foreseeable future. We should focus on publicity that points out the real safety of bicycling, and spend money on facilities only where really necessary.

Sidewalks: I’m strongly in favor of the provision of good quality sidewalks. I agree with prioritizing sidewalks to schools, in addition to prominent crosswalks, enforcement of speed limits, etc. **But** I’d also like to prioritize sidewalks connecting residential areas with shopping areas. South Avenue, especially north of 224, has quite a few walkers, and its entire length should have had sidewalks added when it was widened. 224 should have sidewalks on its north side from I-680 into Poland Village. 224 should have sidewalks on both sides over the Boardman Park hill, as well as connecting the various shopping centers. Indeed, anywhere there are worn tracks in the grass, there should be a sidewalk. Walking is *the* fundamental form of transportation.

Sidewalks for bicycling: In most instances where there is significant motor traffic, sidewalks are more dangerous than riding the street. This has been confirmed by several studies. Problems include drop-offs from bad edges, collisions with poles or other obstacles, crashes into pedestrians, etc. but the main danger is car-bike crashes. Motorists don’t notice bicycles moving faster than pedestrians, and hit them at intersections and driveways. Very young kids may be better on sidewalks, but in general, please don’t think of (or promote) a sidewalk as a bike facility.

Pedestrian refuge islands: I’d like to see much more emphasis on mid-way crossing refuge islands. The most challenging streets for crossing are easily 60 feet wide. Even if pedestrian green light phases were adequate, there are problems from right-on-red drivers. An island can be very valuable on many roads, and may sometimes alleviate the need for pedestrian crossing lights.

“Protected” bike lanes and other “innovative” solutions: In the last few years, organizations have popped up that demand barrier or parking “protection” for cyclists and other “innovative” ideas, claiming “bike lane stripes are not enough.” They frequently point to the Netherlands as their model. I strongly urge Boardman officials to employ extreme skepticism.

Members of this movement generated two well-known research papers using data from Canadian cities to tout the safety of “protected bicycle lanes,” either behind barriers or behind parked cars. But one paper was shown to have taken most of its data from a “protected” lane on a long bridge, where no intersection conflicts were present. The other compared “protected” lanes vs. normal traffic on supposedly equivalent streets, but other reviewers showed the streets in question were very different indeed, biased toward the new lanes.

By contrast, Columbus, Ohio installed a mile of “parking protected” bike lanes on Summit Street (north of OSU) in 2015. The car-bike crashes jumped from an average of 1.5 per year to over 12 per year. Bike traffic increased about 75%, but car-bike crashes increased over 700%, just as skeptics had predicted.

In 2007, Soren Jensen conducted a detailed before-after study of “protected” bike lanes in Copenhagen. Despite accounting for increased bike traffic lured by the supposed safety of the bike lanes, he found that users were at significantly increased risk of crashes.

Similarly, a “parking protected” bike lane was installed in bike-famous Davis, California in the 1960s, and a “barrier protected” bike lane in Columbus in the 1970s. Both were removed within a year because of greatly increased crashes. In essence, these segregated lanes work to reduce the very rare hit-from-behind crashes, but complicate traffic and generate confusion and crashes at intersections.

“Protected” bike lanes may be justified and workable on busy roads and perhaps on other roads where no crossing conflicts exist. But I think implementing one on, say, 224 between South and Southern would be a disaster. Given their cost and danger, the hype must be resisted.

AASHTO vs. NACTO: I strongly recommend following AASHTO guidelines, which are based on data on actual car-bike crashes, plus knowledge of traffic patterns. NACTO is based largely on what works in Netherlands, a flat country with a 100 year bicycling culture and unlimited bike facility budget. NACTO was actually founded and promoted by designers who felt restricted by the engineering aspects of AASHTO. But I feel strongly that ordinary citizens should not be subjected to undisciplined experiments. Traffic design should be conservative, not surprising.

Sharrows: Those pushing fancier bike facilities have demeaned sharrows. (I’ve attached my online review of one rather terrible paper demeaning sharrows.) But data by FHWA and even by the skeptic Ferenchak have found modest benefits, and there are lots of reports of rider satisfaction with them. Practically speaking, there are plenty of streets in America where bike lanes are impractical, and sharrows seem to do a reasonable job of alerting motorists to riders. I would not discount them.

Alternate routes: *East-West access is difficult for Boardman bicyclists.* I’ve attached a map highlighting various bicycling routes I’ve used when I wanted to avoid the busiest roads. Perhaps the best example is accessing the Mall via McKay Court, the back edge of the Shops at Boardman Park’s lots, and Boardman Park itself. Another is accessing Mill Creek Park via Afton and Erskine, passing through Forest Lawn Cemetery. I know these can’t be declared “official” routes due to property issues, but perhaps routes like this could be developed and provided with way-finding signs. Might there be enough right-of-way along Drake Run to connect South Avenue to Southern Blvd. with a separate bike/ped trail?

(The Shops at Boardman Park actually have, or had, “No Bicycling” signs. While I’ve never seen a hint of enforcement, that is terribly counterproductive. Instead, shops should have bike racks!)

My Qualifications: I’ve been involved with bicycling and bike safety for many decades. I’ve been Safety Chairman of the local Out-Spokin’ Wheelmen bicycle club since approximately 1990 (having also served as President, Vice President, Ride Captain etc.) and I’ve been a board member of the Ohio Bicycle Federation for perhaps 15 years. I was nationally certified as a cycling instructor by the League of American Bicyclists in the early 1990s, and I’ve taken at least three different cycling classes myself and taught many more.

I have a large library of books and research papers on bicycling. I’ve written many articles on cycling and bike safety, and contributed to two well respected books on bicycling.

My personal experience includes decades of commuting and utility riding, recreational riding, long-distance touring both here and in about 12 other countries, including one self-guided coast-to-coast bicycle tour with my wife and daughter.

I am a Professor Emeritus of Engineering Technology at YSU.