



Safe Routes to School

A plan to make walking and biking to school a safe, fun activity.

Warren, Minnesota | September 2020

Warren-Alvarado-Oslo Elementary and High School



WARREN-ALVARADO-OSLO

Strengthening our communities through **Excellence in Education**

Acknowledgements

The following key people/entities participated in the Safe Routes to School (SRTS) plan efforts for this Safe Routes to School Plan. Their creativity, energy, and commitment were critical to the success of this effort.

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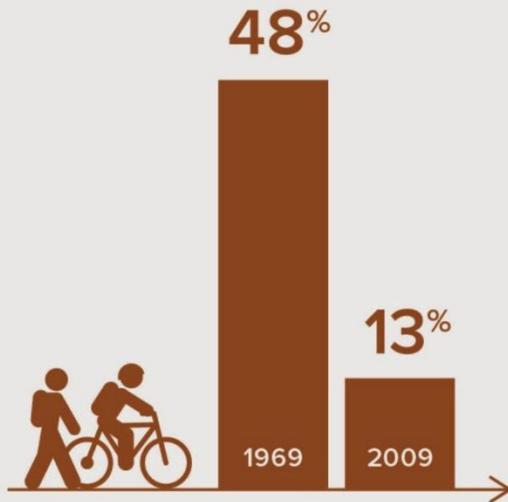
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Sidewalk and ADA enhancements on Highways 1 and 75 on the way to Warren-Alvarado-Oslo Elementary & High School

Introduction + Context

Why Safe Routes to School?



THE PERCENTAGE OF CHILDREN WALKING OR BIKING TO SCHOOL HAS DROPPED PRECIPITOUSLY WITHIN ONE GENERATION



MOST KIDS ARE NOT GETTING ENOUGH PHYSICAL ACTIVITY



ROADS NEAR SCHOOLS ARE CONGESTED, DECREASING SAFETY AND AIR QUALITY FOR CHILDREN

KIDS WHO WALK OR BIKE TO SCHOOL:



Arrive alert and able to focus on school



Get most of the recommended 60 minutes of daily physical activity during the trip to and from school



Are more likely to be a healthy body weight



Demonstrate improved test scores and better school performance*



Are less likely to suffer from depression and anxiety

THE VICIOUS CYCLE OF INCREASED TRAFFIC LEADING TO REDUCED WALKING AND BICYCLING:

Fewer students walking & biking to school

More parents driving children to school

Rising concern about safety of walking & biking

Increased traffic at and around school



*More information, including primary sources, can be found at <http://guide.saferoutesinfo.org>



Introduction to Safe Routes to School

THE SIX E'S

Safe Routes to School programs use a variety of strategies to make it easy, fun and safe for children to walk and bike to school. These strategies are often called the "Six E's".

Equity

Equity is an overarching concept that applies to all of the Es. Equity in SRTS means that the SRTS program is inclusive, celebrates the diversity of students, allocates resources to overcome inequities, and supports a community where walking and biking is safe, comfortable, and convenient for every student.

Education

Programs designed to teach children about traffic safety, bicycle and pedestrian skills, and traffic decision-making.

Encouragement

Programs that make it fun for kids to walk and bike, including incentive programs, regular events or classroom activities.

Engineering

Physical projects that are built to improve walking and bicycling conditions.

Enforcement

Law enforcement strategies aimed at improving driver behavior near schools and ensuring safe roads for all users.

Evaluation

Strategies to help understand program effectiveness, identify improvements, and ensure program sustainability.



Warren High School During the Late 50's / Early 60's. Photo by Tony Hill.

NAVIGATING THIS PLAN

Below is a roadmap for navigating the way through this plan. Use it to find all the information you need for helping students be safer and more active!

Programs

Getting kids to walk and bike to school requires fun and engaging programs for schools and families. Turn to this section for recommended events, activities, and strategies that will get students moving.

Infrastructure

Ensuring the safety of students on their trips to and from school means upgrading the streets. See this section for suggestions to improve the safety, comfort and convenience of walking and biking, including paint, signage, and signals.

How to get involved

The more people involved with a local Safe Routes to School process, the more successful it will be! Use this section to find out how you can be a part of this important initiative.

Appendices

There is more information available than could fit in this plan. For additional resources, turn to this section

The Vision

In the spring/summer of 2019, the city of Warren Public School District was awarded a Minnesota Department of Transportation (MnDOT) Safe Routes to School (SRTS) planning assistance grant. This grant made possible the development of a SRTS Plan that included the Warren-Alvarado-Oslo Elementary and High Schools

This plan was made possible by support from MnDOT and developed in coordination with the city of Warren and the WAO School District #2176. The creation of this plan included meetings, surveys, walk audits and discussions with several affiliated individuals. This plan offers recommendations on how to make it fun, easy and safe for kids to walk and bike to school in Warren.

The vision of the Warren SRTS plan is to create a comprehensive plan to deliver children safely to school from all directions. The plan incorporates program and infrastructure suggestions that utilize the 6 E's model described above. Most recommendations are meant to be on an approximate 5 to 10 year timeline. While not all of these recommendations can be implemented immediately, the strong sense of community and partnership will allow progression of the large and complex strategies listed below.

SMART Goals

This plan will offer recommendations for programs and infrastructure that are consistent with the concept of SMART Goals, which provide a framework for an effective and sustainable SRTS plan. SMART Goals for this plan will be:

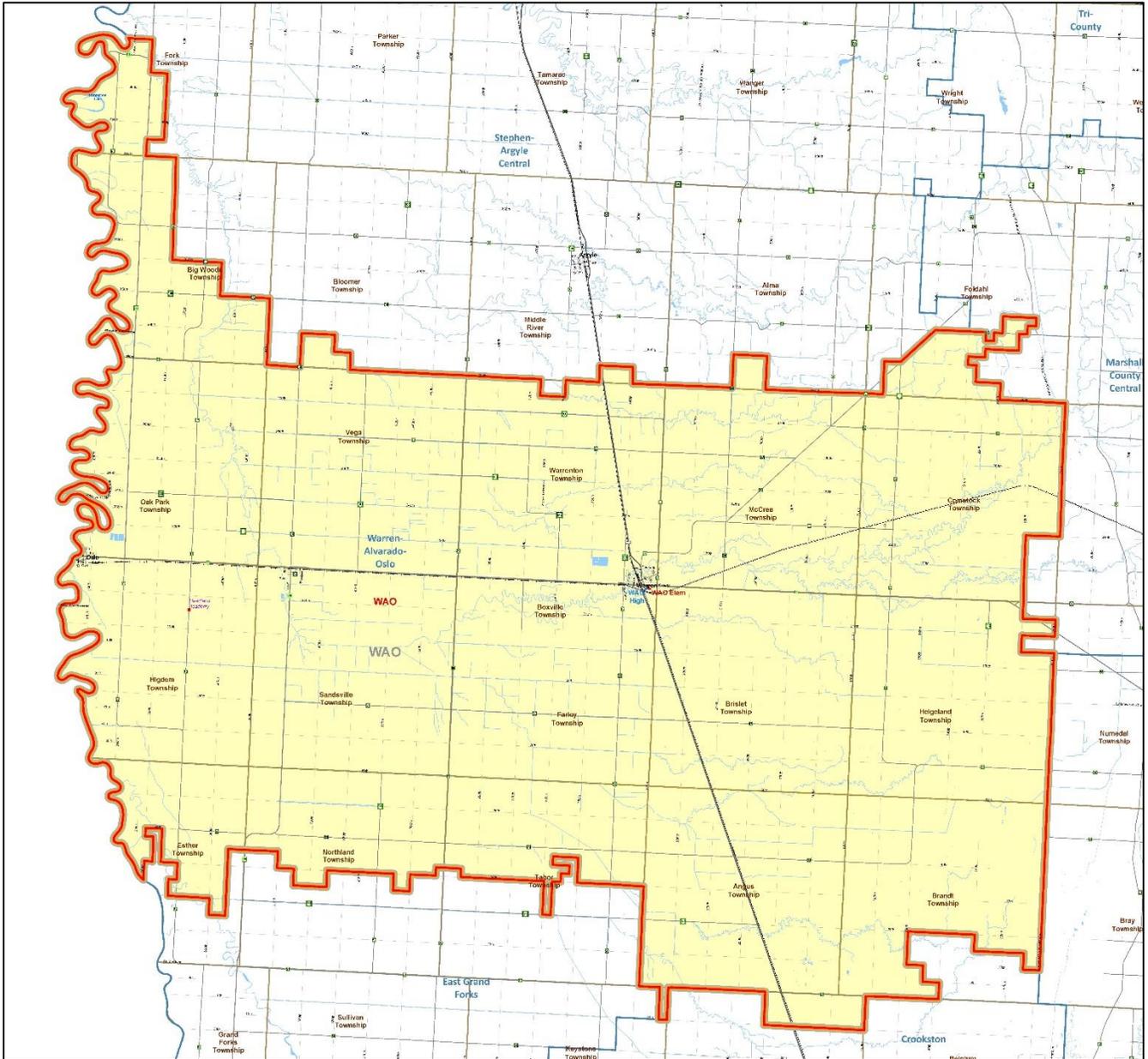
Specific: the recommendations will communicate what needs to be accomplished and by whom.

Measurable: the outcomes from the recommendations will be quantifiable.

Attainable: the recommendations will be ambitious but reasonable.

Relevant: the recommendations will be responsive to the needs of the school and community.

Timely: the recommendations will have a specific timeline.



Warren-Alvarado-Oslo Schools

The Warren-Alvarado-Oslo Schools can be found on East Bridge Avenue in Warren, MN, also known as Highway 1. There are two buildings: one housing the elementary school and one housing the high school. A bus garage is also located on Highway 1, but on the west side of Warren. The approximate school population is 548 in grades K through 12. The school pledges to strengthen our communities through excellence in education. Several successful educational components can be found on the graphic on the next page.

Warren-Alvarado-Oslo Schools is sometimes acronymed to WAO schools. It sits in the east-

central portion of Warren. It is adjacent to both the Marshall County Courthouse as well as the Warren City offices. The school buildings are nearby local businesses that run in a south-east to northwest band above it. A map can be found in Appendix B

The Warren-Alvarado-Oslo School District is very large, and encompasses rural and urban residents in Marshall and Polk Counties. Three cities (Oslo, Alvarado and Warren) along with rural residents send their children to the school: A map of the school district can be found above as well as online through the MN Geospatial Information

Office (Appendix A) Given the size of the school district and the distance from rural homes, it is difficult, if not impossible to give every child the ability to walk or bike to school.

The elementary and high schools are located on Minnesota State Highway 1. This roadway starts at the ND/MN state line and continues east across northern Minnesota until it reaches the North Shore of Lake Superior. According to Wikipedia, Highway 1 is the longest state route in Minnesota at 346 miles in length.

The elementary and high schools are also located nearby to US Highway 75. This is a major north-south route that begins at the Canadian border and ends in Dallas, Texas. This route extends 1,239 miles. The functional classifications of roads that are found in Warren can be viewed in Appendix C. Minor arterial, local and major collector roads can be found within the city.

Traffic is a major concern along Highways 1 and 75 – children often run across the routes to visit a gas station and to get to/from school. There are no traffic slowing devices on the Highway 1 and 75 intersection, aside from a stop sign on Highway 1. The US Highway 75 traffic does not stop. The road is heavily utilized by commercial traffic, with counts on portions of the road near the school averaging between 210 and 425 per day (Appendix D). Average daily traffic on Highway 1 near the school is approximately 2,550 vehicles per day,

growing to 2,750 near the Highway 1/75 intersection. Traffic counts on US Highway 75 can grow to 3,150/day. (Appendix D)

The Burlington Northern Santa Fe Railway (BNSF) divides the city into east/west components, with volumes averaging approximately 4 trains/day at speeds around 35 mph. This particular track is part of a larger network, running east/west through the entire state of Minnesota.

The Northern Plains Railroad divides the city into north/south components, with volumes averaging approximately 2 trains/day at speeds around 25 mph. It is also near both school buildings and the bus garage.

Any potential rail accidents would have a direct effect, as well as potential spilled hazardous material. In addition, some residents on the have their children crossing these tracks to walk and bike to school. A map of Warren railroad volumes, speeds & crossings can be seen in Appendix E

A majority of parents utilize the school bussing service, while others are dropped off by parents going to and coming from work. These are the two main modes for arrival to/departure from school The survey had difficulty getting parents with students not walking/biking to school to fill it out – so results were a bit skewed. Also, most surveys were from families with students in multiple grades. COVID-19 also played a concern – a higher

WAO Schools

#2176

Proudly serving the Warren Alvarado & Oslo Communities

Strengthening our Communities Through *Excellence in Education*

Elementary School:

- ◆ Enrollment is steadily increasing
- ◆ Two classrooms per grade level at K-4
- ◆ Student/Teacher ratio – 19 to 1
- ◆ Classroom Specialist Teachers: Reading Recovery, Leveled Literacy Intervention, Library, Music & Band, Physical Education, Computer and Social Skills
- ◆ Extra curricular activities for students: flag football, wrestling, volleyball, basketball, dance, karate and other Community Education offerings
- ◆ Band/Instrument lessons during school year and summer for grades 4-6
- ◆ Outstanding district support from WAO Education Foundation
- ◆ Technology Integration: iPads, computer lab, interactive white boards, approx. one device per two students
- ◆ Kid's Spot after school program for learning and child care until 6:00 pm
- ◆ Community connections/events: Book Bingo evening and Morning Muffins breakfast events, free summer lunch program for all students made possible by a MN State grant (served approx. 6,000 healthy meals during Summer 2014)

High School:

- ◆ 26 college credits offered to the high school students
- ◆ 98% Graduation Rate
- ◆ Junior High Robotics Program
- ◆ Active Arts Program and High School Musical
- ◆ Band trips to California every four years
- ◆ Approx. 70% of high school students in extra curricular activities
- ◆ American Sign Language (ASL) class
- ◆ Annual Community Service Day
- ◆ "5th Quarter" - Safe Schools Coalition
- ◆ Various Community Education courses and opportunities to share your talents
- ◆ State-of-the-art outdoor athletic complex and track

www.wao.k12.mn.us

number than normal dropped children off in person. But more people in the community are walking and biking outside also. A survey done in a non-pandemic year will see different results.

Most frequently listed concerns included weather, safety of intersections/crossings, distance from school and the amount/speed of traffic along the route. These were the main determinants in letting children walk or bike to and from school.

Attitudes about walking and biking to school vary.

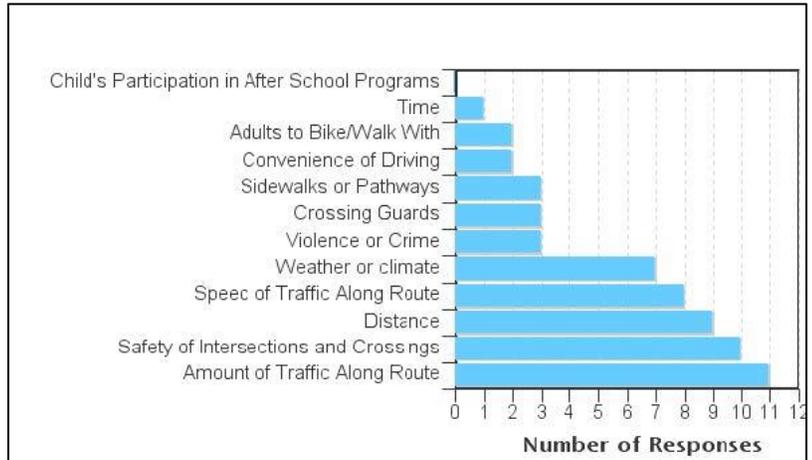
- The majority of surveyed parents see walking and biking to school as a healthy or very healthy activity. (There were no unhealthy comments received).
- Most surveyed parents are neutral in their views of walking and biking to school as a fun activity for their children. About a quarter of surveyed parents thought the activity was fun. (there were no boring/very boring comments received).
- The vast majority of those surveyed thought their child’s school neither encourages nor discourages their children from walking or biking to school. (There were no discouraging comments received).

General comments mentioned COVID and the alternations to the school pick-up and drop-off schedule – both at the school and for family scheduling. A local construction project has caused

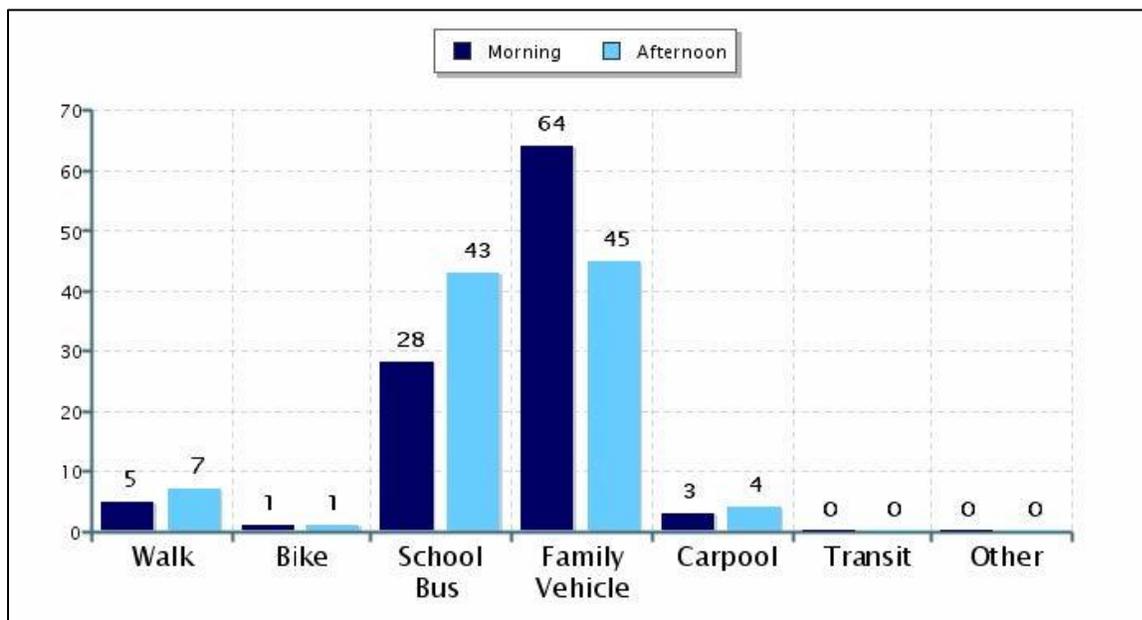
temporary concerns and the Highway 1/75 intersection was a noted concern.

Student surveys for 3rd through 5th grades were done over a period of two days during sunny weather. The highest modes of transportation were the school bus and family vehicles.

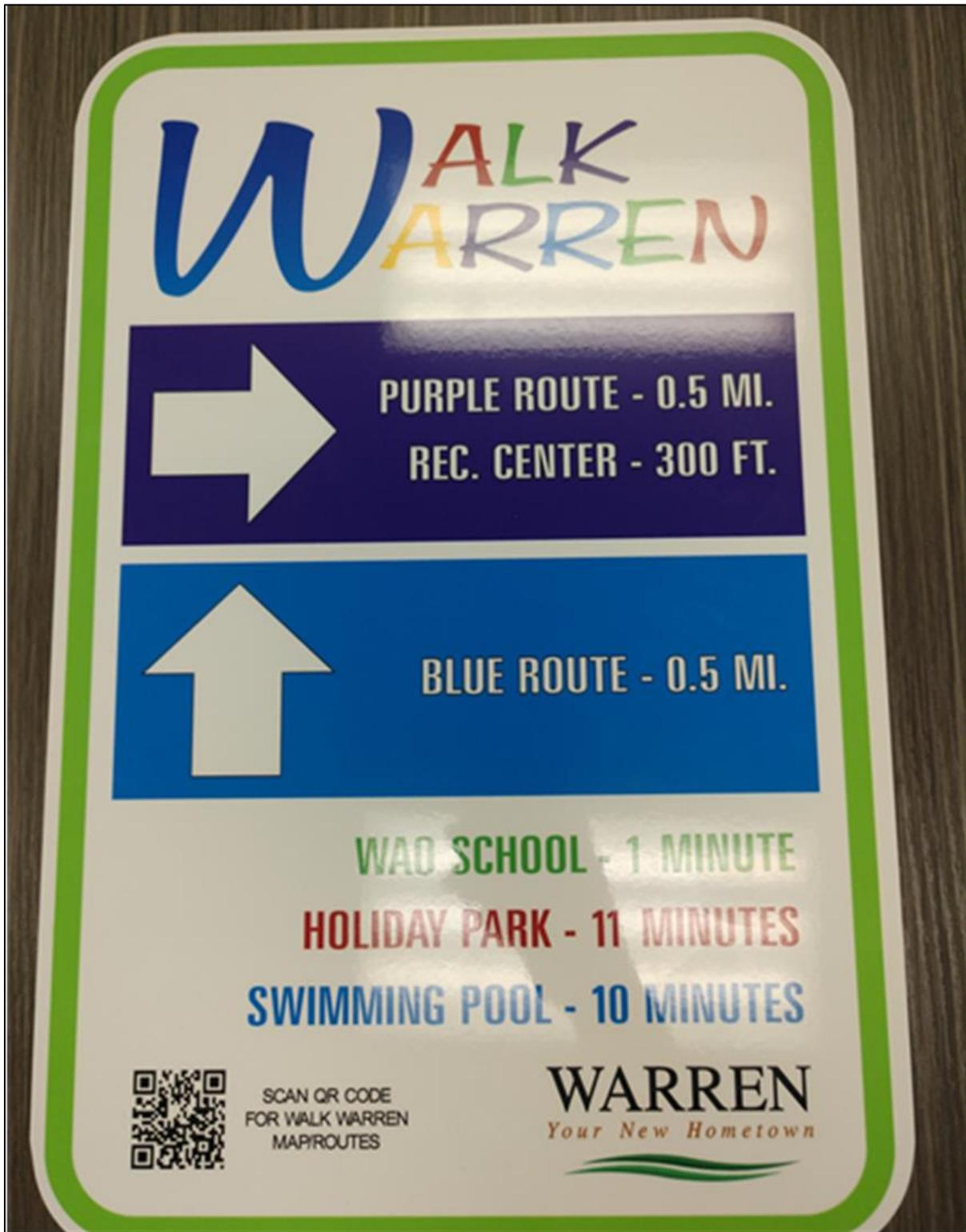
For additional information on collected survey results for the parent and student tallies, please see Appendix G at the end of this plan.



Issues Reported To Affect The Decision To Not Allow A Child To Walk or Bike To/From School



Morning & Afternoon Travel Mode Comparisons



A Sign For The Upcoming "Walk Warren" Initiative. These Will Be Posted Around The City On Trails.

Programs

Introduction to Programs

The Safe Routes to School movement acknowledges that infrastructure changes are a necessary but insufficient condition for shifting school travel behavior. Programs are a necessary component of any successful SRTS plan.

While engineering improvements such as sidewalks, crosswalks, and bikeways are important, equally important are education programs to give children and families basic safety skills, encouragement programs to highlight walking and bicycling to school as fun and normal, enforcement against unsafe and illegal motorist behavior, and evaluation of the impact of investments and non-infrastructure efforts. Often, programs that help to get more kids walking and biking lead to increased public support for infrastructure projects - they can be an important first step towards building out the physical elements that make walking and biking safer and more comfortable. And relative to certain infrastructure projects, most programs are very low cost



Website Photo Showing The WAO Physical Education Class Learning About Bicycle Safety



A bus safely unloading students in the designated area on the east side of the Warren Elementary School.

Existing Programs

The city of Warren has been actively working alongside the Warren-Alvarado-Oslo School District towards the creation of an environment that promotes activity, a healthy lifestyle and walking/biking to school.

City or District led:

- Sidewalk assessment project
- Research on funding, projects and partners (Walkability Workshop Goal)
- Sidewalk and pedestrian planning (Walkability Workshop In-Process Goal)
- Warren Walkability Workshop – A workshop held in October that provided deep insight into what needs to be done to make Warren more pedestrian friendly.
- Local Capital Improvement and Other Plans
- Incorporation of School into City and Public Health Efforts.
- Updated ADA infrastructure, sidewalks and road surface upgrades on Highway 1 and 75.
- Engagement of local groups towards safe walking (Walkability Workshop Goal)

School led:

- Safety Initiatives with the Marshall County Sheriff's Department
- Regular parent communication
- Organized student drop-off/arrival system
- Student crossing guard on Highway 1
- School education and safety curriculum
- Walking field trips

- Local partnerships with the city of Warren and Marshall County Public Health
- Utilizing local bike fleet in Walk! Bike! Fun! Training in physical education classes.
- Adult monitoring during arrival and dismissal
- Scheduled and planned student dismissal
- Utilization of a new city built recreational center nearby the school for activities.

Program Recommendations

The following programs were identified as priority programs during the Safe Routes to School Planning Process. These programs meet the needs and interest of the school, as well as have a positive benefit upon the city of Warren.

Each recommended program shows the “E” it falls under, plus suggested lead, support, and priority.

Recommended Programs List:

- Bus Drop and Walk and/or Park and Walk
- Continue Incorporating WAO School into the Walk Warren Initiative
- Parent education on school-based initiatives
- Walk or bike to school map
- Organize/implement a walking school bus
- Getting staff signed up as a Walk-Bike-Fun Ambassador
- Increase Walkability of Warren
- Enforcing parent pick-up/drop-off policies
- Identify Gaps in Winter Maintenance

TABLE 1. RECOMMENDED PROGRAMS LIST

PROGRAM	WHICH “E”?	PROGRAM LEADER	PROGRAM SUPPORT	PRIORITY
Bus Drop and Walk/Park and Walk	Encouragement	School staff	District, parents	Short term (1-2 years)
Continue Incorporating WAO School into the Walk Warren Initiative	Engineering & Equity	City of Warren	District	Short term (1-2 years)
Parent education on school-based initiatives	Education	School Staff, District	Parents	Short term (1-2 years)
Walk or bike to school map	Equity	School Staff, City of Warren	NWRDC	Short term (1-2 years)
Organize/implement a walking school bus	Encouragement	School Staff	District, Parents, Marshall County SHIP	Medium term (2-4 years)
Getting staff signed up as a Walk! Bike! Fun! Ambassador and implement curriculum	Education	School Staff and/or Affiliated Community Member	District, City of Warren	Medium term (2-4 years)
Increase walkability of Warren Through Support of Identified Walkability Goals	Education	City of Warren	Community members, businesses and organizations	Long term (4+ years)
Enforcing parent pick-up/drop-off policies	Enforcement	School Staff	District, Parents	Ongoing
Identify gaps in Winter maintenance	Equity	City of Warren, School Staff	Residents, District	Ongoing
Continue incorporating and increasing ADA compliant routes	Equity	City of Warren, School Staff, Marshall County	Residents	Ongoing
Continue SRTS Local Incorporation	Encouragement	School Staff, City of Warren	Residents, District, Parents	Immediately

Notes

*Engineering and Evaluation E’s are incorporated into the infrastructure strategies listed later.

Ongoing Evaluation

There are two great tools to evaluate all the SRTS work in your community:

- Parent Surveys: Recommended to be done once every 2-3 years. A hard copy survey or link to the survey can be sent to parents which asks their perceptions of walking and biking to school.
- Student Travel Tally: Recommended to be done fall and spring of every year. These in-class tallies ask students how they travel to and from school.
- More information on both the parent survey and the student travel tally can be found at <http://guide.saferoutesinfo.org/evaluation/>

The image shows a Facebook post from Warren Alvarado Oslo Elementary. On the left is a navigation menu with options: Home, Reviews, Photos, Videos, Posts, Events, About, Community, and a 'Create a Page' button. The profile picture is a horse with 'WAO Elementary' text. The post text reads: 'pick up your children in the back of the elementary. This should be resolved by tomorrow. Thanks so much for your flexibility.' Below this is a comment section with 'Like', 'Comment', and 'Share' buttons. The main post text says: 'WAO Elementary Families, We are always looking to improve safety and accessibility to our families and students. We have partnered with The NW Regional Development Commission in Warren to create opportunities for better route access to our building. Please take a minute or two to complete the following survey. It will give us information that will guide our development plans and help us to know how we can best serve your family and your needs when you are coming to and from school each day. <https://www.surveymonkey.com/r/TRWQY2W>' Below the text is a large green banner for a SurveyMonkey survey titled 'Safe Routes To School Survey'. The banner features the SurveyMonkey logo and a laptop displaying a survey interface with a bar chart.

Using Facebook To Safely Survey Parents During The COVID-19 Pandemic



PROGRAM DESCRIPTIONS

Bus Drop and Walk / Park and Walk

This program is designed to give those who ride the bus or commute with a parent a chance to get physical exercise before school. School administration should choose a location a quarter to half mile away from school where drop off from buses and parent vehicles can occur on a single day. Not all students are able to walk or bike the whole distance to school; they may live too far away or their route may include hazardous traffic situations. This program allows students who are unable to walk or bike to school a chance to participate in Safe Routes to School programs.

Incorporating WAO School into the Walk Warren Initiative

The Walk Warren Initiative is a long-range planning process to incorporate pedestrian and biking trails into the city of Warren. This will increase health of local residents, promote outdoor activity and improve local safety when walking or biking. Local signage can be seen as a photo in this plan. Benches and routes have been identified that connect points in the community – including the Warren-Alvarado-Oslo Elementary and High Schools. Infrastructure and trail upgrades may be needed in the future.

Parent Education on School-Based Initiatives

Since parents often determine if children can walk or bike to school, integrating information sharing school/community events, policies and plans can provide a great way to enhance walking and biking for transportation in a community. In addition to support, this also provides the school and the community with additional resources and tools. Having information available publicly, online, through newsletters and at hosted events is a great way to raise awareness about local initiatives.

Walk/Bike To School Map

Route maps of a community can be created that detail important infrastructure for those walking and biking to school, such as: crosswalks, stoplights, signals, paths and signage. While elimination of safety risks can never completely occur, a well-defined route will maximize safety for students. Routes should try and limit exposure to high-speeding traffic, use the fewest/safest crosswalks and provide a base for safe usage of local transportation infrastructure. In some cases, additional information may be needed through walk/bike audits or other assessment methods.

Walking School Bus / Bicycle Train

A walking school bus is a group of children walking to school with one or more adults. Methods can vary from two families taking turns walking their children to school to a group of chosen volunteers that move along a structured routes with scheduled meeting times. A bicycle train employs the same concept, but utilizes adults supervising children riding their bikes to school. This strategy addresses safety issues that may prevent parents from letting students walk/bike to school independently, as well as guard against traffic concerns

Getting Staff Signed Up as a Walk! Bike! Fun! Ambassador & Implement Curriculum

A training program and educational resource specifically for community members, parents, and volunteers who want to lead and help out with walking and biking initiatives for youth in their town. This training can give participants a general overview of walking and biking activities, or specific activities like: walking school bus, bus stop and walk/remote drop offs, bike trains, bike rodeos and biking/walking mapping. A bike rodeo is a clinic that teaches children the skills and precautions to ride a bike safely. Many communities and schools are joining in the movement to encourage more walking and biking as part of an active lifestyle. Typical Ambassador's Trainings are about four hours but can be customized to meet your needs.

<http://www.bikemn.org/education/walk-bike-fun/wbf-ambassadors-program>

The Minnesota Walk! Bike! Fun! Pedestrian and Bicycle Safety Curriculum is a two-part curriculum training class designed specifically for Minnesota's schools and youth education programs. Training classes can be requested to be held locally for teachers and community educators through BikeMN. It is structured to meet Minnesota education standards and is an important part of the Minnesota Department of Transportation's Safe Routes to School Program. Walk! Bike! Fun! helps children ages 5 to 13 learn traffic rules and regulations, the potential hazards to traveling, and handling skills needed to bike and walk effectively, appropriately and safely through their community. For more info: <https://www.bikemn.org/education/walk-bike-fun>

Increase Walkability of Warren Through Support of Identified Walkability Goals

A local walkability workshop with participation by local residents, agencies and businesses identified several goals to make Warren, Minnesota more walker friendly. In support of these goals, safety of kids walking and riding to school will also be accomplished. Goals are identified below:

Within 1 Year
Understand Funding for Sidewalk Repair
Research MnDOT Projects & influence
Sidewalk Plan & Pedestrian Plan
Identify Good Routes Now
Research funding for low cost encouragement
Community Walk/Bike Event
Research Walk Friendly Award
Research Age Friendly Community
Engage other groups in this conversation

Identify Gaps in Winter Maintenance
Evaluation Plan for Ped counts/data
Evaluation of who is walking, where, when

Year 1-3
Influence Hwy 1 & 75 project
Wayfinding - signage and maps
Small maps to hand out
Implement beautification
Encourage walking events to businesses
Educate people on driving/stopping for walkers
Culture change around walking
In person community engagement around walking
Become a walk friendly community
Become an Age Friendly community
Promotion of walking on good routes & hiking

Year 3-5+
Grants for sidewalk repair
Slow down traffic on Hwy 1 & 75
Cultural change around stopping for pedestrians

*Note: the current COVID-19 Pandemic has affected yearly goals, as safety for all is imperative.

Enforcing Parent Pick-Up/Drop-Off Policies

The enforcement of parent pick-up and drop-off policies is an important step in traffic management. The Warren-Alvarado-Oslo School District has created a system to help eliminate vehicular bottlenecks created by students arriving/leaving school, walking, biking and getting picked up by parents. While increasing safety, this method also aids in the removal of local congestion and provides a scheduled approach to dismissal.

Identify Gaps In Winter Maintenance

A snow removal campaign identifies potential partners with the express purpose of recognizing neighbors who remove snow from sidewalks and driveways. This campaign is based on positive messages, thanking people for shoveling through the use of media such as: yard signs, postcards and flyers. This can be combined with district and city efforts to keep walkways and streets clear for kids walking to school.

Continue Incorporating & Increasing ADA Compliant Routes

A large construction project completed in late fall of 2020 updated ADA compliant sidewalk routes in Warren that connect with the WAO School. This trend should continue for planned construction updates as well as looking for grant dollars to address areas of concern. WAO schools and the city of Warren want everyone to be safe and have an opportunity to utilize local trails and walkways.

Continue SRTS Local Incorporation

Several organized, dedicated and active groups exist and work together to enhance opportunities for residents, visitors, businesses and organizations within the city. The Warren-Alvarado-Oslo School District is an active partner within the community and is incorporated with local groups. This ensures active support, participation, innovation and engagement for members and their associated actions/events.



ADA and sidewalk improvements on Highway 1 on the way to Warren-Alvarado-Oslo Elementary & High Schools

Infrastructure

Introduction to Infrastructure

In addition to program recommendations, changes to the streetscape are essential to making walking and biking to school safer and more comfortable.

Meetings and a walk audit generated several recommendations about how to address key identified barriers for students that want to walk or bike to school. Some of these recommendations will also lead to increased health and wellness benefits for the residents of Warren and will promote a general environment that encourages walking and biking for everyone.

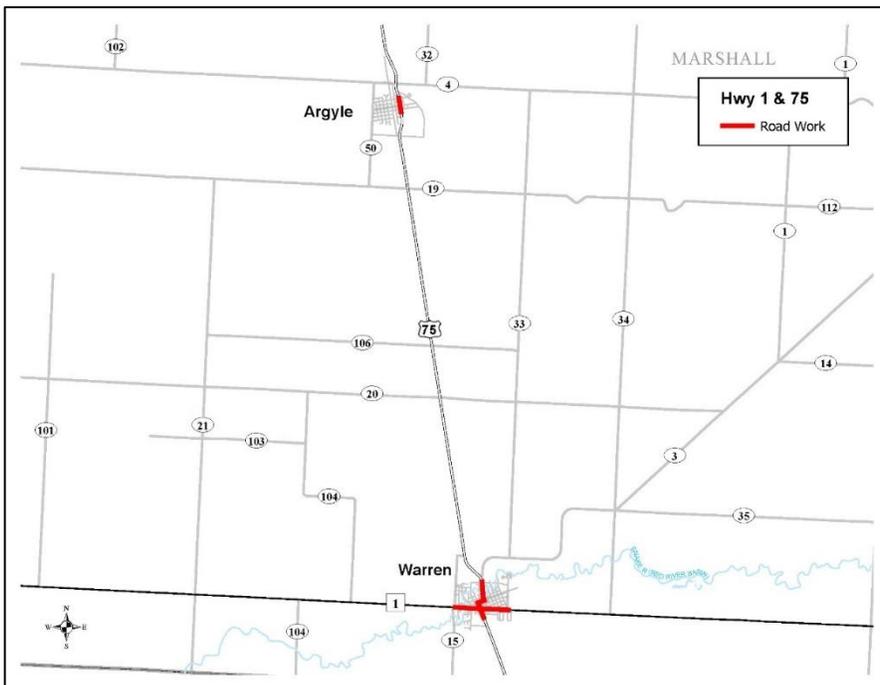
This plan does not represent a comprehensive list of every project that could improve conditions for walking and biking within the city of Warren, but rather addresses the key points and highest priority infrastructure improvements to improve walking and biking to Warren-Alvarado-Oslo School. Recommendations can range from infrastructure changes to infrastructure studies and alterations.

Funding is a major component to the following infrastructure suggestions. It should be noted that funding can be limited, and some strategies must be planned years in advance. Also, the costs for some of the recommended infrastructure changes may not yet be known due to required engineering studies and feasibility confirmation.

EXISTING INFRASTRUCTURE

Highway 1 & 75 Resurface and Pedestrian Improvement Project: In July – October 2020, Warren started an approximately 3.11 million resurfacing project that will positively affect pedestrian and biking travel to school and throughout the city. A safer and longer lasting road will be coupled with improved pedestrian accessibility. Highway 1 borders the Warren – Alvarado – Oslo School. Improvements include:

- Grade and resurfacing of Highways 1 and 75
- Improvement of Highway Lighting
- Sidewalk Improvements
- Pedestrian Ramp and Accessibility Improvements
- Curb and Gutter Drainage Improvements
- Storm Sewer Improvements



Source: <http://www.dot.state.mn.us/d2/projects/>

TABLE 2. INFRASTRUCTURE RECOMMENDATION LIST

#	LOCATION	PROBLEM/ISSUE	POTENTIAL SOLUTION/RECOMMENDATION	ANTICIPATED OUTCOME	LEAD	PRIORITY
A	East side of Elementary	Cars park and drop off children in an area reserved for bus drop-offs. Children also cross the road to get into school. Vehicles will turn around at the end of this street nearby a playground or on private driveways, as the local street is not completely paved. Parking along this route also occurs, causing further restrictions.	<p>Increased education and enforcement on pick-up and drop off locations</p> <p>Create an alternative drop-off route utilizing nearby streets to the east of the school. This may require paving a portion that is currently not maintained.</p> <p>Involve homeowners on a roundtable discussion involving child safety on the east side of the elementary. Identified solutions may not be possible without support.</p> <p>Perform a study with MnDOT and the city of Warren to gauge alternatives for action. Create a plan with identified projects noted.</p> <p>A system utilizing assignment of multiple doors (in response to COVID) decreased issues noted on the east side of the elementary school, as well as decreased congestion in the drop-off loop. Utilize lessons learned in 2020 to alter future student drop-off and pickup locations. Update local school arrival/dismissal plans for 2021 based on newly found best practices.</p> <p>Potentially relocate a portion of staff parking so that a parking lot between the elementary and high schools could be utilized as a safe student- drop-off location. This would be dependent on school approval.</p> <p>Look into the installation of bus arms on the east and west sides of a road south of the school that only opens for a school bus. This road is already closed to through traffic</p>	<p>Increased safety of children getting to school.</p>	City of Warren, WAO Schools	High Priority
B	Highways 1 and 75	<p>Traffic speeds can cause difficulty for children walking or biking to school along Highways 1 and 75. Calming measures needed. US Highway 75 currently has the right-of-way and does not stop.</p> <p>Difficulty for pedestrians crossing at the intersections of Highways 1 and 75, especially coinciding with school arrival and dismissal periods. Heavy truck traffic can also be seen. Kids often have to wait for a break in traffic to cross the intersection on their way to and from school.</p>	<p>A combination of signage, hawk signals, speed monitoring signs and/or rapid flash beacons in front of the elementary and high schools along Highway 1 as well as at the intersection of Highways 1 and 75, alerting vehicles to pedestrian and bike traffic.</p> <p>Perform a traffic study with MnDOT and the city of Warren to gauge alternatives for action. Create a plan with identified projects noted. Slow the current flow of traffic and assist in pedestrian crossing</p> <p>Artful crossings (such as a ponies crossing) that would utilize art to calm traffic and beautify local routes – increasing route usage.</p> <p>Enhance opportunities and infrastructure for students to cross the street one block north of the Highway 1/75 intersection (Fletcher St.). This method may involve long-term planning such as mapping preferred routes and infrastructure roadway upgrades.</p>	<p>Increased awareness of pedestrian and bike traffic, especially during school arrival and dismissal periods.</p> <p>Calmed traffic and increased safety.</p>	City of Warren, WAO Schools	High Priority

#	LOCATION	PROBLEM/ISSUE	POTENTIAL SOLUTION/RECOMMENDATION	ANTICIPATED OUTCOME	LEAD	PRIORITY
C	All local routes	Increase local walkability of Warren	Education on Driving / Stopping for Walkers Support Identified Walkability Goals Look for grants and other opportunities for Warren residents, government and businesses to work together to increase walkability and keep pedestrians and bicyclists safe.	Well-utilized and safe pedestrian and biking system within Warren	City of Warren, Walkability Participants, Residents, Businesses	High Priority
D	Northwest Portion of Warren	Lack of sidewalks in that particular portion of town. Children have to utilize roadways to walk to school. Additional sidewalks are damaged and need repair. Although multiple avenues in Warren have sidewalks, many streets do not.	Grants for Sidewalk construction/repair Evaluation planning for pedestrian counts / data, as well as who is walking where/when. Updated sidewalk assessment with maps and road conditions.	Reduction of students walking on busy roadways or on the berms to get to/from school.	City of Warren	High Priority
E	Warren	Lack of pedestrian and bike trails in Warren	Shared pedestrian and bike path project planned on South McKinley St. in 2022. Complete Walk Warren Initiative – identification and signage of local walking/biking routes with signage. (Project rollout affected due to COVID-19 Outbreak) Map and promote pedestrian and bike trails throughout the city of Warren, coordinating with traveled routes that children take to school. This would require the construction of trails throughout the city. Identified routes can be seen in the map on the page below.	Healthier and more active community Safer routes to school for walking and biking.	McKinley St. Project listed in the Minnesota State Transportation Improvement Program (STIP). \$247,850. City of Warren	High Priority
F	West side of High School	Sidewalk and curb issues. Sidewalks are usable but will degrade with time. Portions are not wide enough.	Replace sidewalk and curbs	Well-utilized and safe pedestrian and biking system within Warren	WAO School, City of Warren	Medium Priority
G	North side of Elementary	Bike rack needs replacement	Update bike rack – possibly relocating it to another area Long-Term - Incorporate pre-school play area in current bike rack area, removing the threat of smaller children crossing a well-utilized road.	Updated bike rack in a new location	WAO School	Medium Priority
H	Railroad tracks and crossings through city limits (Appendix E)	Crossing the railroad tracks can pose a danger to vehicles, bikes and pedestrians. Students sometimes cross a gravel lot across the train tracks on the way to and from school instead of using sidewalks. Railroad traffic amounts and speeds are increasing from the past.	City of Warren will continue to monitor state of railroad tracks and crossings within city limits, working with BNSF to upgrade when necessary to provide safe crossings and healthy train speed.	Safer rail crossings for pedestrian, bike and vehicular traffic. Lessened chance of a derailment from local railcars.	City of Warren, BNSF, Northern Plains Railroad	High Priority
I	Bus garage is located on Highway 1 and only has one shared entrance/exit.	Busses going into and out of the garage go through both lanes of traffic on Highway 1. Traffic needs to stop in order for bus access to the building.	Install flashing signals on either side of the bus garage on Highway 1. Long-term – look into relocation opportunities for the garage or the ability to upgrade the structure to incorporate a drive-through (doors on both walls).	Bus traffic will not impede traffic as it enters and exits the garage.	WAO School District, City of Warren	Medium Priority



A vehicle dropping off kids in the bus-only zone.



Kids entering school while a car turns around in a homeowner's driveway in front of the bus drop-off location



Kids being escorted to the school bus at the end of the day



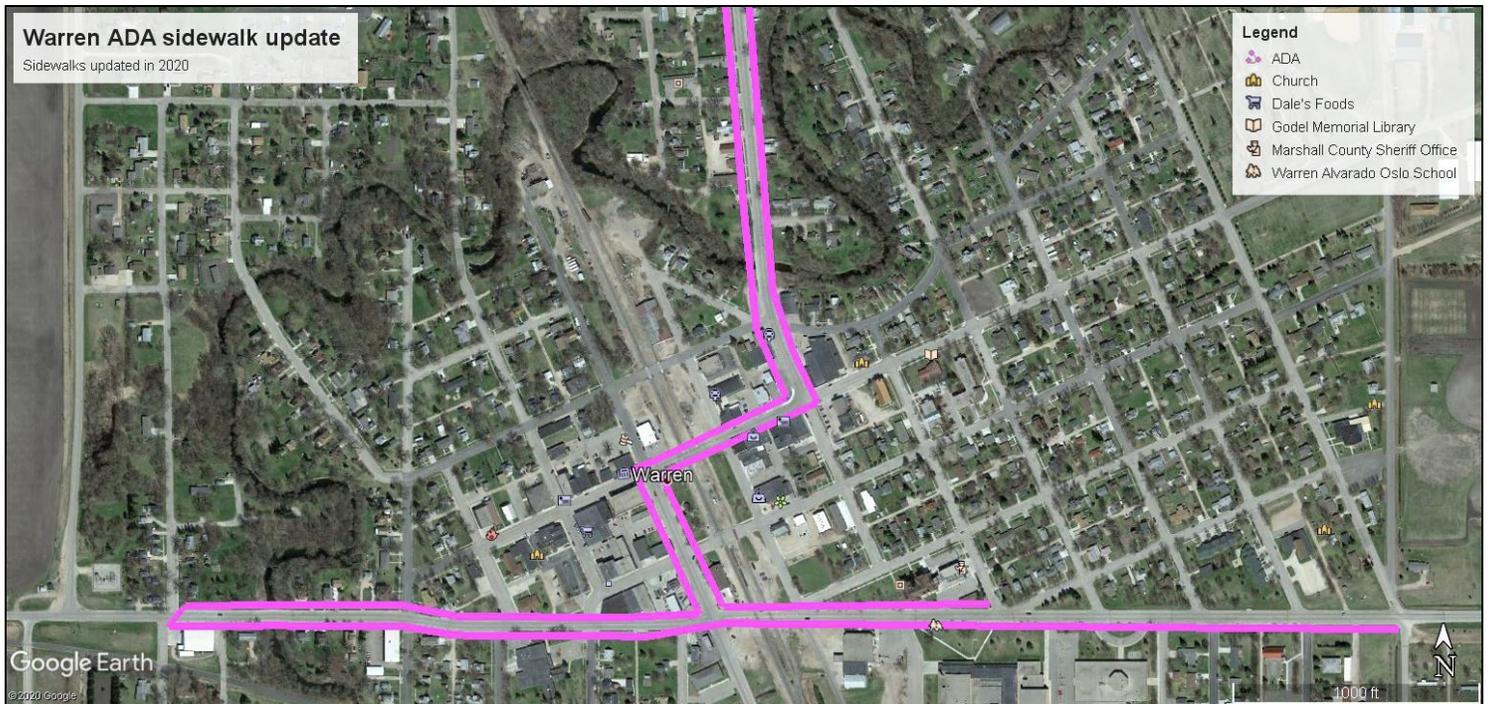
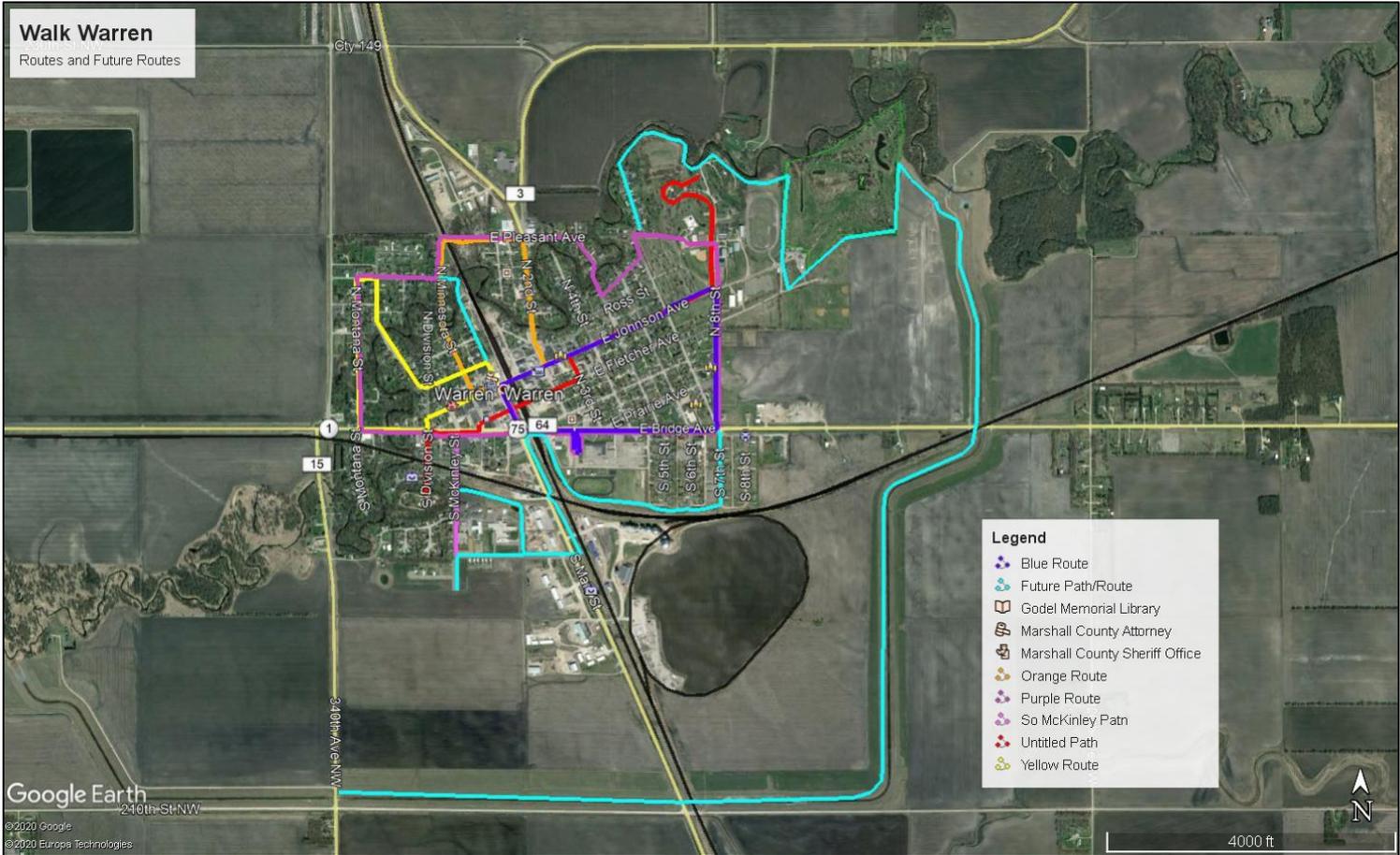
Parking on the street east of the school during dismissal



A vehicle traveling south of the school on a closed street. The unpaved portion of the street can be seen east of the playground.



No parking printed on the street on the east side of the school in the bus drop-off zone



How to Get Involved



Using this Plan

At the heart of every successful Safe Routes to School comprehensive program is a coordinated effort by parent volunteers, school staff, local agency staff, law enforcement and community advocates, such as public health.

This plan provides an overview of Safe Routes to School with specific recommendations for a 6 E's approach to improve the safety and the health and wellness of students. The specific recommendations in this plan are intended to support improvements and programs over the next 5 years. These recommendations include both long- and short-term infrastructure improvements as well as programmatic recommendations.

It should be noted that not all of these projects and programs need to be implemented right away to improve the environment for walking and bicycling to school. The recommended projects and programs listed in this plan should be reviewed as part of the overall and ongoing Safe Routes to School strategy. Some projects will require more time, support, and funding than others. It is important to achieve shorter-term successes while laying the groundwork for progress toward some of the larger and more complex projects

Once approved, it is suggested that meetings occur between the school district, city, local groups and other members listed in the beginning of this plan.

- Integration of the SRTS plan/efforts into school, city, partner and county plans, upgrades, trainings and infrastructure enhancements when possible.
- Periodic discussion with the SRTS planning group about the SRTS plan and its progress, adding new members as needed. Utilize member strengths for continued success.
- Periodic review and update of this plan on a regular basis (annual is suggested)
- Major updates to the plan taking place on a 3-5-year basis
- Keep track of goals/strategies that have been achieved and new strategies that should be added.
- Keep track of local success metrics, such as the number of successful walking/biking events held, local education classes held, etc.
- Continue to partner with MnDOT on future initiatives to keep children safe while walking and biking to school.



Warren-Alvarado-Oslo Gym Class Waiting To Cross the Busy Highway 1/75 Intersection

WHO ARE YOU?

Successful programs are achieved through the coordinated efforts of parent volunteers, school staff, local agency staff, law enforcement and community advocates, such as public health. Each partner has a key role to play in contributing to a plan's success. The following paragraphs highlight the unique contributions of key partners in Safe Routes to School.

I AM A PARENT

Parents can use this report to understand the conditions at their children's school and to become familiar with the ways an SRTS program can work to make walking and bicycling safer. Concerned parents or city residents have a very important role in the Safe Routes to School process. Parent groups, both formal and informal, have the ability and the responsibility to help implement many of the educational and encouragement programs suggested in this plan. Parent groups can also be key to ongoing success by helping to fundraise for smaller projects and programs.

I AM A COMMUNITY MEMBER

Community residents, even if they don't currently have children enrolled in school, can play an important role in supporting implementation of the plan. They can use this report to better understand where there may be opportunities to

participate in programming initiatives and infrastructure improvements. Community members, including seniors or retirees who may have more flexible schedules than parents with school-aged children, may volunteer in established programs or work with school staff or community partners to start new programs recommended in this plan.

I WORK FOR THE SCHOOL DISTRICT

School district staff can use this report to prioritize improvements identified on District property and develop programs that educate and encourage students and parents to seek alternatives to single family commutes to school.

District officials are perhaps the most stable of the stakeholders for a Safe Routes to School program and are in the best position to keep the program active over time. District staff can work with multiple schools, sharing information and bringing efficiencies to programs at each school working on Safe Routes.

I AM A SCHOOL ADMINISTRATOR

School administrators have an important role in implementing the recommendations contained within this SRTS plan. For a plan to succeed, the impetus for change and improvement must be supported by the leadership of the school



Traffic Loop For Dropping Off Kids Safely To School

School administrators can help with making policy and procedural changes to projects that are within school grounds and by distributing informational materials to parents within school publications.

I AM A TEACHER OR OTHER STAFF MEMBER

Other than parents, teachers might interact with students the most. Teachers can include bicycle and pedestrian safety in lesson plans (see Walk! Bike! Fun!). Sharing books in your classroom that promote walking and biking is a good way to get kids interested at an early age. Teachers can also arrange for field trips within walking distance of school and incorporate informal lessons about safety along the way. In general, being positive and encouraging about walking and biking is a great way to start!

I WORK FOR THE CITY OR COUNTY

City and County staff can use this report to identify citywide issues and opportunities related to walking and bicycling and to prioritize infrastructure improvements. City staff can also use this report to support Safe Routes to School funding and support opportunities such as:

- MnDOT Safe Routes to School (SRTS) grants
- Federal Safe Routes to School (SRTS) grants
- Statewide Health Improvement Program (SHIP)

For all infrastructure recommendations, a traffic study and more detailed engineering may be necessary to evaluate project feasibility, and

additional public outreach should be conducted before final design and construction. For recommendations within the public right-of-way, the responsible agency will determine how (and if) to incorporate suggestions into local improvement plans and prioritize funding to best meet the needs of each school community.

WORK FOR THE SHERIFF'S DEPARTMENT

Sheriff's department staff can use this report to understand issues related to walking and bicycling to school and to plan for and prioritize enforcement activities that may make it easier and safer for students to walk and bike to school. The Sheriff's Department will be instrumental to the success of the enforcement programs and policies recommended in this plan. The Sheriff's Department will also have a key role in working with school administrations in providing officers and assistance to some of the proposed education and encouragement programs.

I WORK IN PUBLIC HEALTH

Public health staff can use this report to identify specific opportunities to collaborate with schools and local governments to support safety improvements and encourage healthy behaviors in school children and their families.

Appendices

The following appendices provide additional supplemental information that was imperative toward the creation of this plan and the aforementioned SRTS strategies for Warren.

Appendix A: Warren-Alvarado-Oslo School District Map

Appendix B: Map of Warren, MN

Appendix C: Warren Road Functional Classifications Map

Appendix D: Heavy Commercial and Average Daily Traffic Counts Map

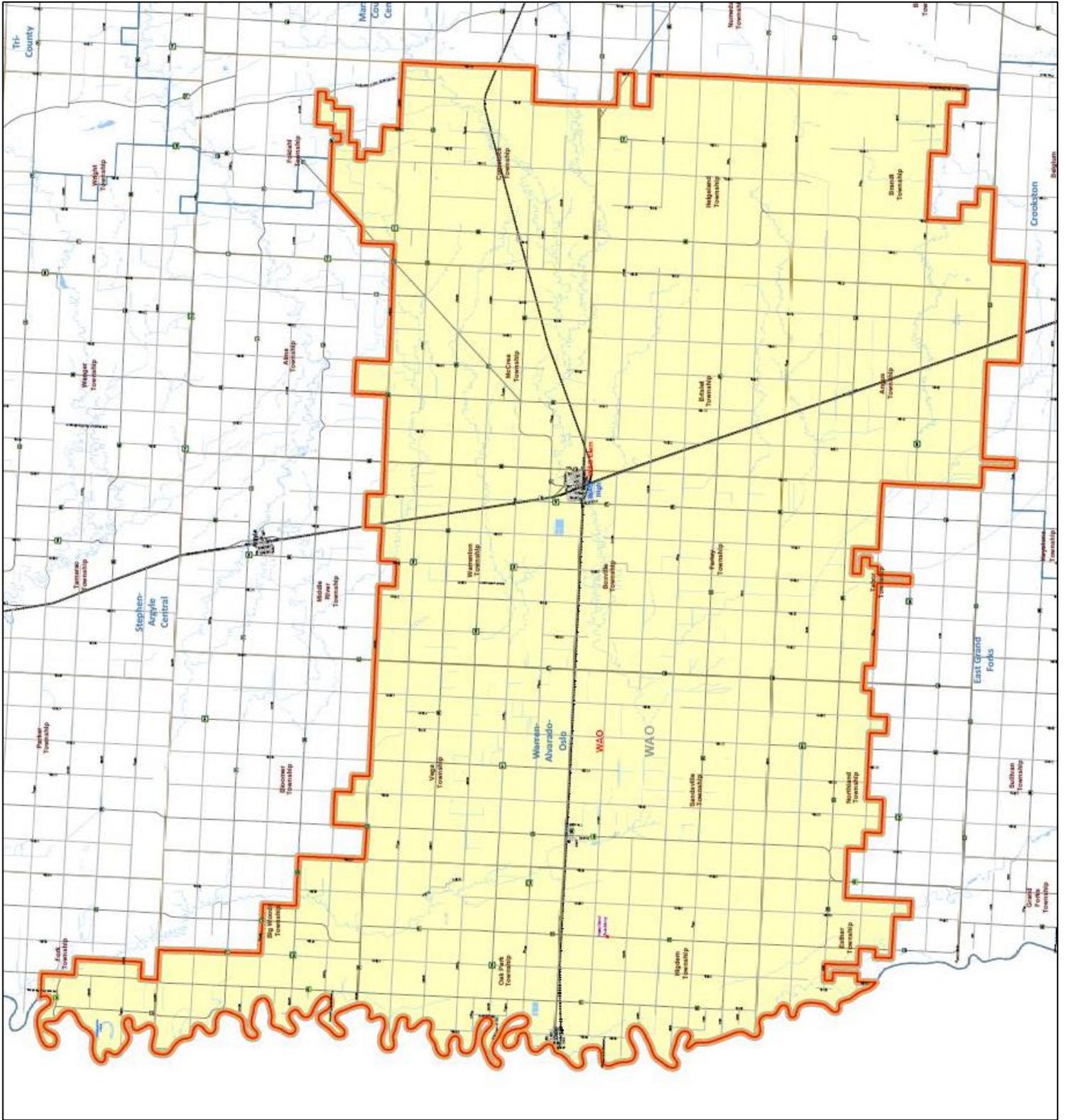
Appendix E: Warren Railroad Infrastructure Map

Appendix F: Infrastructure Best Practice Information

Appendix G: Warren Parent/Student Survey Results

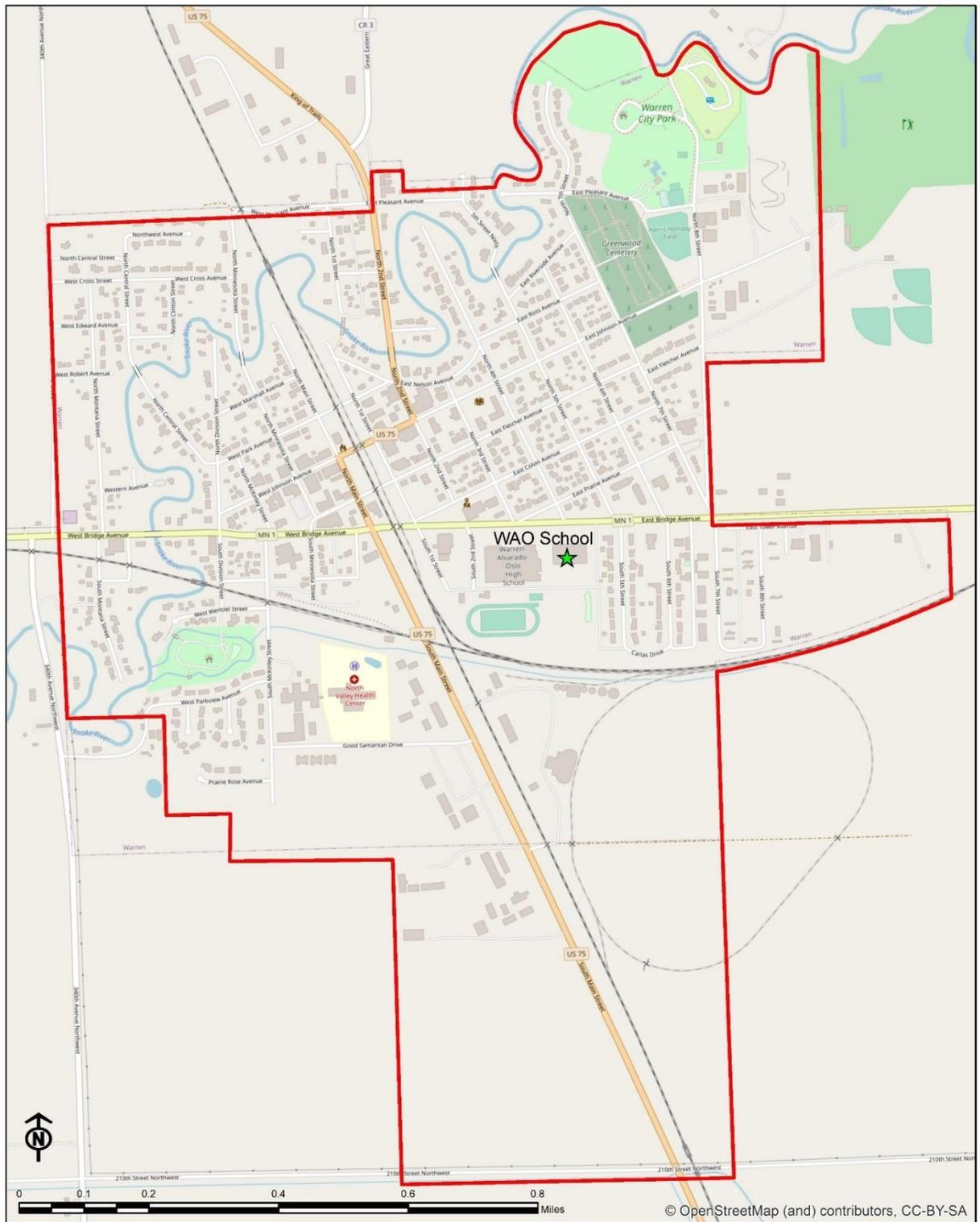
Appendix H: Executive Summary

Appendix A: Warren-Alvarado-Oslo School District Map

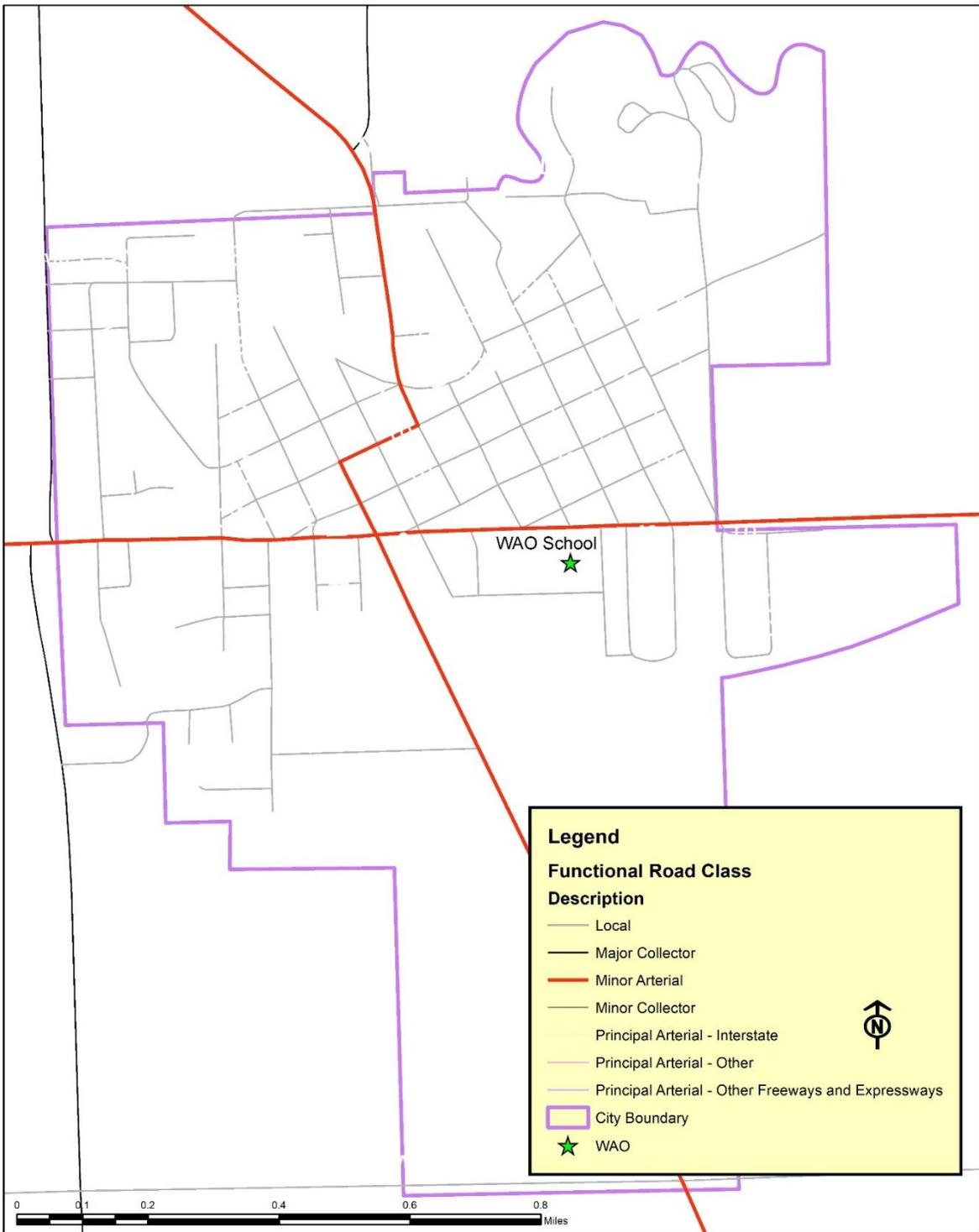


Source: <https://www.mngeo.state.mn.us/maps/SchoolDistricts/>

City of Warren School Location

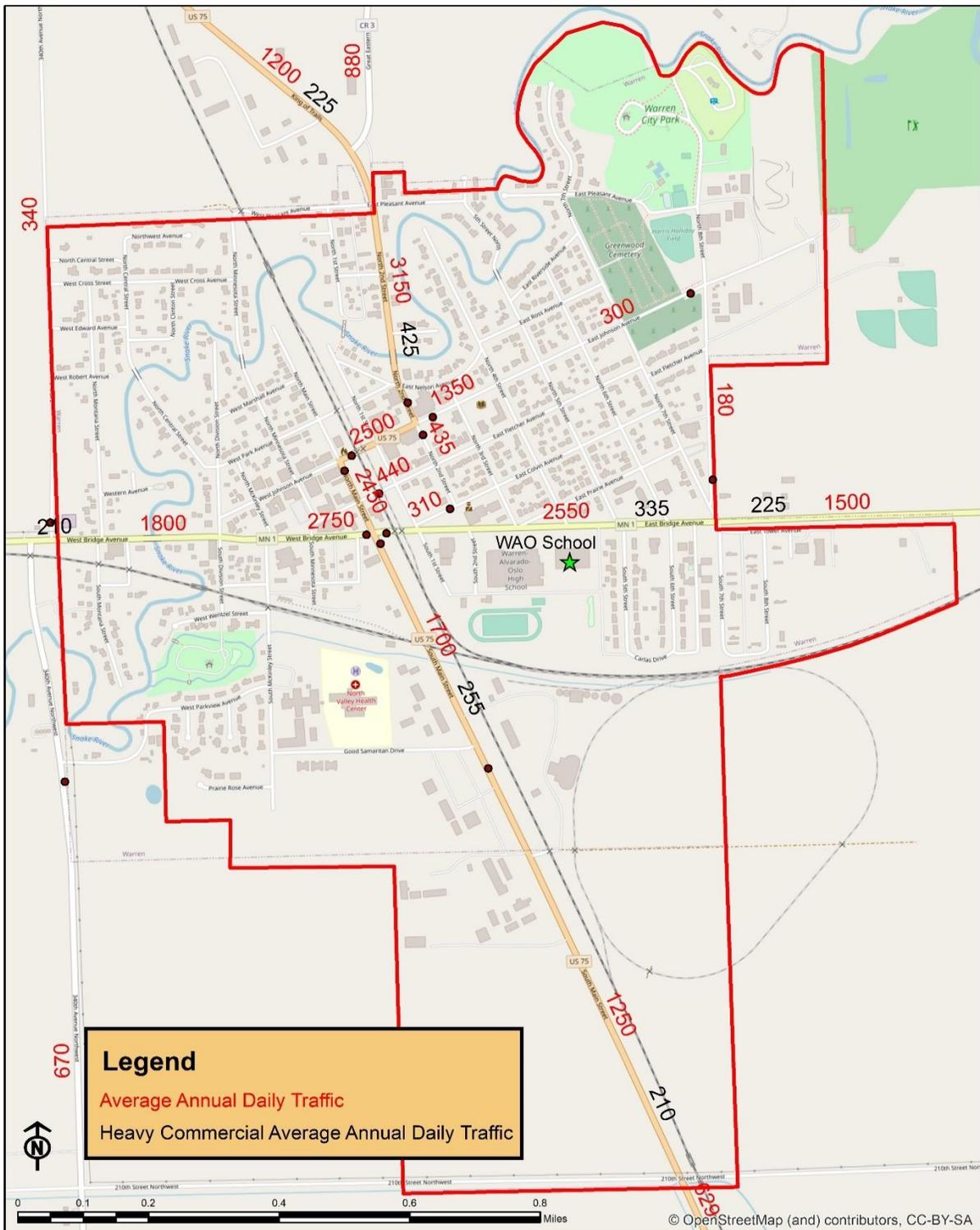


City of Warren Functional Road Class



Appendix D: Heavy Commercial and Average Daily Traffic Counts Map

City of Warren Heavy Commercial & Annual Average Daily Traffic Counts



City of Warren Railroad Infrastructure



Sidewalks (1 of 2)

PEDESTRIAN SAFETY STRATEGIES



Source: www.pebbleimages.org / Dan Burden

Walking along the roadway is a pedestrian crash risk (that is, the probability of a pedestrian being struck is higher if a sidewalk is not present.) Research has found an 88 percent reduction in “walking along the roadway” pedestrian crashes with the installation of sidewalk and/or walkways on both sides of the road (McMahon, et. al.).

TYPICAL CHARACTERISTICS OF CANDIDATE LOCATIONS

The effort of planning for a network of sidewalks should include an audit of the current sidewalk system. The audit should document the accessibility of transit stops/service, schools, public buildings, and parks, etc., to pedestrians and should include consideration of sidewalk design issues, including obstructions (e.g., fire hydrants, signposts, etc.) and compliance with Americans with Disabilities Act (ADA) Standards for Accessible Design (see PROWAG guidelines).

DESCRIPTION AND DEFINITION

A sidewalk is a path for pedestrian travel placed along the side of a roadway, usually separated from roadway traffic lanes by curb and gutter and sometimes by a planting strip or buffer zone.

SAFETY CHARACTERISTICS

The safety benefits of sidewalks come from the ability to provide pedestrians with their own travel space that is separated from the traffic on a roadway (FHWA-RD-01-101).

PROVEN, TRIED, OR EXPERIMENTAL

Sidewalks are a PROVEN safety strategy. Sidewalks on both sides of a street have been found to significantly reduce occurrences of “walking along the roadway” compared to locations where no sidewalks or walkways exist.

For safety reasons, sidewalks should be implemented on all urban arterials and collectors, whenever possible. For urban streets without sidewalks or walkways, priorities should be established for adding new sidewalks. For example, higher priorities should be given for sidewalk installation on roads that connect pedestrian origins and destinations (for instance, connecting neighborhoods with schools and shopping areas) and for roads with higher speeds and volumes with priority at locations without shoulders.

TYPICAL COSTS

Typical costs for implementation of sidewalks vary depending on the location, amount of available right-of-way, and materials used, but are generally in the range of \$4 to \$5 per square foot for a concrete sidewalk, excluding costs for purchasing additional right-of-way. The cost for adding standard curbs and gutters is approximately \$20 to \$35 per linear foot, although the costs will vary



Sidewalks (2 of 2)

PEDESTRIAN SAFETY STRATEGIES

depending on the length of sidewalk, the type of base material, and whether curb ramps are needed. Asphalt curbs and walkways are less costly, but require more maintenance, when compared to concrete sidewalks.

DESIGN FEATURES

Items to consider when reviewing existing sidewalk or planning for the design of new sidewalks include the following:

- **Curb ramps**—To meet ADA requirements, curb ramps at crosswalks along a sidewalk must be installed during reconstruction of roadways. Ideally, when curb ramps are installed, a ramp should be provided for each crosswalk, instead of a single ramp at the corner. Curb ramps on each side of a crosswalk not only provide better orientation for pedestrians who are visually impaired, but also assist pedestrians who use wheelchairs with direct connection to crossing the roadway instead of directing them toward the center of the intersection. Tactile warnings on curb ramps are also important. The ADA Standards for Accessible Design require that a strip of truncated dome-type tactile warning be placed on the base of the crosswalk.

- **Sidewalk widths**—The Federal Highway Administration (FHWA) and the Institute of Transportation Engineers (ITE) recommend a minimum sidewalk width of 5 feet, which allows two people to walk comfortably side-by-side or two people to pass each other in the opposite direction. Wider sidewalks will be needed in urban areas which carry substantial volumes of pedestrians.

SOURCES

American Association of State Highway and Transportation Officials (AASHTO). 2004. *Guide for the Planning, Design, and Operation of Pedestrian Facilities*. July.
 Federal Highway Administration (FHWA). 2002. *An Analysis of Factors Contributing to "Walking Along Roadway" Crashes: Research Study and Guidelines for Sidewalks and Walkways*. FHWA-RD-01-101. February.
 McMahon, Patrick J.; Charles V. Zegeer; Chandler Duncan, Richard L. Knoblauch, J. Richard Stewart, Asad J. Khattak.
 Federal Highway Administration (FHWA). 2005. *Pedestrian Countermeasure Policy Best Practice Report*. FHWA-SA-11-017. September.
 US Department of Justice. 2010. *Standards for Accessible Design*. Federal Register, September 15.
 Minnesota Department of Transportation. 2007. *MnDOT Bikeway Facility Design Manual*. March.

- **Continuity**—Sidewalks should be continuous, installed on both sides of the roadway, and relatively free of obstacles that could cause a tripping hazard or impede travel by children, senior citizens, and people with visual or mobility impairments.

- **Cross slope**—The cross slope of sidewalks should be less than 2 percent. Cross slopes greater than 2 percent cause pedestrians in wheelchairs to counteract the force of the cross slope, which, depending on the direction of the slope, may direct the wheelchair towards the roadway.

- **Buffer zone**—A buffer zone of 4 to 6 feet is desirable to separate the sidewalk from the street and to improve the pedestrian's level of comfort. Landscaping strips, parked cars, and bicycle lanes can provide acceptable buffers.

- **Shared Use Paths**—Consideration should be given for the need for a shared use path or trail. These differ from sidewalks in that they designate space on the path, separating bicycles and pedestrians, and are usually not adjacent to local streets. More information can be found in MnDOT's Bikeway Facility Design Manual

BEST PRACTICE

For safety reasons, sidewalks should be considered for implementation on all urban arterials and collectors, especially locations that connect pedestrian origins and destinations (for instance, connecting neighborhoods with schools and shopping areas) and for roads with higher speeds and volumes, with priority for locations without shoulders.



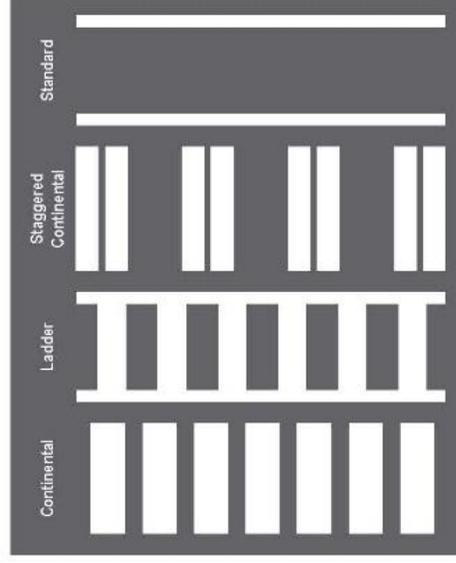
Crosswalks and Crosswalk Enhancements (1 of 6)

PEDESTRIAN SAFETY STRATEGIES

DESCRIPTION AND DEFINITION

A marked crosswalk is a type of pavement marking that indicates to pedestrians the recommended location to cross the roadway and also alerts approaching motorists as to where pedestrians may be crossing the street. In Minnesota, a legal crosswalk does not necessarily have to have a marked crosswalk. State laws (MIN STATUTE 169.011, subd. 20 and STATUTE 169.21, subd. 2) define a legal crosswalk as the extension of the sidewalks across a road, whether it has a marked crosswalk or not. Marked crosswalks are often installed at signalized intersections, at a school zone crossing (whether signalized or not), and at unsignalized locations where engineers determine that there are enough pedestrians to justify a marked crossing. Crosswalks may be marked at midblock crossing locations as well as at intersections (see Pedestrian Hybrid Beacon System).

A variety of crosswalk enhancements may be used at marked crosswalks. For example, high-visibility crosswalks (ladder and continental styles) are much more visible to motorists than parallel-line crosswalks. An illustration of high-visibility crosswalks is provided.



An advance warning sign and signs at the crossing are typically installed where it is determined that signing is needed to supplement the markings to better alert drivers of the crosswalk placement. There are some situations, such as on multi-lane roads (roads with three or more vehicle lanes) where an advance stop or yield line with corresponding sign ("Stop here for pedestrians") may be useful to encourage motorists to stop or yield 20 to 50 feet in advance of the marked crosswalk. Studies have shown that having such advance stop or yield lines on multi-lane roads can reduce the risk of a "multiple-threat" pedestrian crash. (Note: A multiple-threat pedestrian crash sometimes occurs when one vehicle stops for a pedestrian right at the marked crosswalk and blocks the pedestrian's view, or sight distance, of an approaching vehicle in an adjacent lane. The approaching motorist and the crossing pedestrian do not see each other until it is too late to avoid a collision.) Having an advance yield line can improve the sight distance, because the stopping vehicle stops in advance of the crosswalk, and increases the visibility between the pedestrian and the approaching vehicle. The advance yield line allows more time and distance for a collision to be avoided.

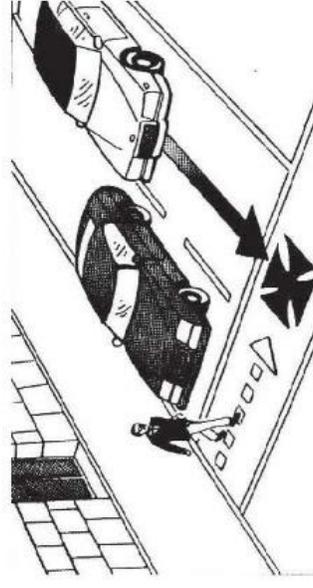


Illustration of a Multiple-threat Pedestrian Crash

Crosswalks and Crosswalk Enhancements (3 of 6)

PEDESTRIAN SAFETY STRATEGIES

PROVEN, TRIED, OR EXPERIMENTAL

The addition of marked crosswalks alone, without other more substantial roadway treatments, has not been found to reduce pedestrian crash rates, and may present an increased crash risk on multi-lane roads with vehicle volumes above 12,000 vehicles per day (unless other safety enhancements—such as traffic and pedestrian signals or raised medians—are also installed). Therefore, when providing pedestrian crossings, it is important to also consider crosswalk enhancements.

TYPICAL CHARACTERISTICS OF CANDIDATE LOCATIONS

Crosswalks with vehicle stop lines should be considered at all signalized intersections where an engineering study finds that pedestrians would benefit. Crosswalks clearly indicate to motor vehicle drivers where they should stop; the crosswalks then delineate a path for pedestrians.

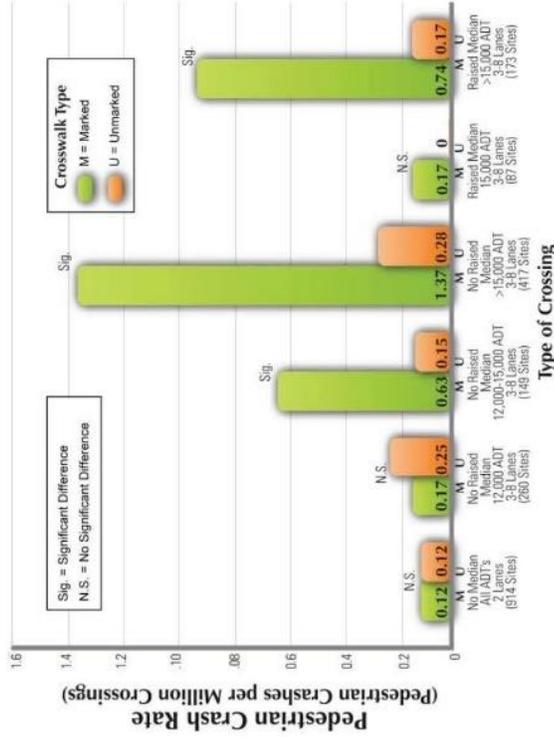
Marked crosswalks at uncontrolled intersections without related enhancements are unlikely to increase pedestrian safety. Marked crosswalks have been found to be as safe as unmarked crosswalks on two-lane roads and multi-lane roads that have average daily traffic (ADT) rates below 12,000 vehicles per day. However, on the multi-lane roads (three or more vehicle lanes) with higher volumes (above 12,000 ADT), other crosswalk enhancements should be considered.

MnDOT's Crosswalk Installation Decision flowchart, published in the *Guidance for Installation of Pedestrian Crosswalks on Minnesota State Highways*, can be used to determine the appropriate application of crosswalks at a given location.

TYPICAL COSTS

The following are typical approximate costs for installing crosswalk facilities:

- Standard (parallel-line) crosswalk: \$100 to \$200 each
- Ladder crosswalk: \$300
- High-visibility crosswalk: \$600 to \$5,000
- Patterned, stamped, or stained concrete crossings can cost up to \$3,000
- Typical signing and markings for a parallel-line crosswalk costs approximately \$2,000
- Maintenance of the markings must also be considered.



Source: Charles V. Zeger, et al., *Safety Effects Of Marked Vs. Unmarked Crosswalks At Uncontrolled Locations: Executive Summary And Recommended Guidelines, 1996-2001*, http://www.walkinginfo.org/pdf/cvz/crosswalk_023302.pdf



Pedestrian Hybrid Beacon System (1 of 3)

PEDESTRIAN SAFETY STRATEGIES



A 69 percent reduction in vehicle pedestrian crashes was found in a Federal Highway Administration (FHWA) study, and it was also found to be associated with a statistically significant 29 percent decrease in all crashes. It should be noted that like any warning traffic control device, the pedestrian hybrid beacon system may not work as effectively if it is used at too many locations with low pedestrian activity, or if it is not warranted.

DESCRIPTION AND DEFINITION

A pedestrian hybrid beacon system, also known as a high-intensity activated crosswalk (HAWK), is a beacon installed at mid-block crosswalks. It consists of both a vehicle beacon with two side-by-side red lenses and a single yellow lens below the red, and also typical pedestrian signal heads with a WALK signal. The beacon remains dark until the pushbutton is activated by a pedestrian and the beacon flashes a sequence of amber warning beacons followed by a red STOP beacon, a message that tells motorists to stop for pedestrians at the crosswalk.

SAFETY CHARACTERISTICS

The purpose of the pedestrian hybrid beacon system is to provide gaps in roadway traffic at a crosswalk that allow pedestrians to cross safely. The crosswalk treatment is a tried safety strategy with up to 97 percent vehicle compliance of stopping at the crosswalk during the steady red beacon phase.

Drivers	... will see this	... will do this	Pedestrians	... will see this	... will do this
		Proceed with Caution			Push the Button to Cross
		Slow Down (Pedestrian has push button)			Wait
		Prepare to Stop			Continue to Wait
		STOP! (Pedestrian in Crosswalk)			Start Crossing
		STOP! Proceed with Caution if Clear			Continue Crossing (Countdown Signal)
		Proceed if Clear			Push the Button to Cross

Pedestrian hybrid beacon phases
Source: Michele Weisbart

PROVEN, TRIED, OR EXPERIMENTAL

Due to the low number of installations and research on the pedestrian hybrid beacon system, it is considered a TRIED strategy, but with promising results, including the 69 percent reduction in vehicle-pedestrian crashes in one study and a 29 percent reduction in total crashes.

TYPICAL CHARACTERISTICS OF CANDIDATE LOCATIONS

As stated in Minnesota's 2011 *Manual on Uniform Traffic Control Devices* (MUTCD), pedestrian hybrid beacons should only be used in conjunction with a marked crosswalk and not at an intersection, because they are not intended to assist vehicles on a minor road with entering or crossing a major



Pedestrian Hybrid Beacon System (2 of 3)

PEDESTRIAN SAFETY STRATEGIES

road. However, the limitation of the pedestrian hybrid beacon to be used only at midblock locations is currently under discussion within the industry, and consideration is being given to its use at minor intersections.

The beacon is intended solely to assist pedestrians.

“Standard:

If used, pedestrian hybrid beacons shall be used in conjunction with signs and pavement markings to warn and control traffic at locations where pedestrians enter or cross a street or highway. A pedestrian hybrid beacon shall only be installed at a marked crosswalk.”

—MNMUTCD Chapter 4F

Typically, pedestrian hybrid beacons are used at locations where there are limited gaps in traffic for pedestrians to more safely cross the roadway or where vehicle speeds are too high to allow pedestrians to cross safely. The beacons should be used at locations with high volumes of pedestrian traffic, such as near transit stops or schools.

As with any new safety strategy, public outreach is needed to provide information on how the beacon operates and what drivers and pedestrians should do when encountering it.

TYPICAL COSTS

The costs for a typical beacon system can range from approximately \$50,000 to \$120,000, depending on site conditions and what equipment is already installed. Operating costs are approximately \$4,000 per year. A pedestrian hybrid beacon was installed in St. Cloud, Minnesota, in 2009 at a cost of about \$80,000, which included the costs of two mast arms, push button stations, a signal controller, and signs and markings.

DESIGN FEATURES

The pedestrian hybrid beacon system includes both vehicular beacons for roadway traffic and pedestrian signals (WALK and DON'T WALK). The vehicular beacons are suspended above the roadway with two round red lenses side-by-side, above a single yellow lens. There must be at least two beacons facing each vehicular approach to the crossing. A stop line should also be installed for each approach to the crosswalk.

When a pedestrian at the crosswalk presses the pedestrian push buttons, the vehicular beacon changes from a blank-out display to a flashing amber phase, then displays steady yellow, and finally steady red over a period of several seconds. While the vehicular beacon is red, the pedestrian signals changes from the DON'T WALK or hand display to the WALK indication (the WALK message or the walking-person with a countdown timer). During the pedestrian crossing phase the two vehicle beacons will alternate on and off, or wig-wag, red. The pedestrian signal will then display a flashing DON'T WALK (flashing hand). Then, the beacon facing motorists goes dark and the pedestrian signal remains in steady DON'T WALK (steady hand) display until the signal is activated by another pedestrian.

In addition to being used at crosswalks, pedestrian hybrid beacons may also be applied to crossing on multi-use trails, where beacons can be activated by pedestrians or bicyclists.



Rectangular Rapid Flashing Beacon (1 of 2)

PEDESTRIAN SAFETY STRATEGIES

These high compliance rates are similar to a full traffic signal and a pedestrian hybrid beacon system, both of which stop traffic with steady red signal indications. This study also found that drivers were yielding or slowing down further in advance of the crosswalk with RRFB than with standard round yellow flashing beacons.

PROVEN, TRIED, OR EXPERIMENTAL

Due to the low number of installations and research on the RRFBs, they are considered a TRIED strategy, but with promising results including an increase from 16 percent yielding compliance for a standard yellow overhead beacon to 78 percent yielding compliance with the installation of a RRFB (Report FHWA-HRT-10-043).

DESCRIPTION AND DEFINITION

A rectangular rapid flashing beacon (RRFB) has two rapidly and alternatively flashing rectangular yellow indications attached to supplement the pedestrian warning sign (W11-2) or school crossing sign (S1-1) at a crosswalk. The beacon, when activated manually by a pedestrian or passively by a pedestrian detection system, uses an irregular flash pattern similar to emergency flashers on police vehicles, an alternating “wig-wag” flashing sequence (left light on, then right light on) with a pulsing light source.

SAFETY CHARACTERISTICS

The city of St. Petersburg, Florida completed experimentation with RRFB’s at 18 pedestrian crosswalks across uncontrolled approaches including before and after data. The results showed high rates of motorist “yield to pedestrians” compliance, between 80 and 100 percent. These rates are in comparison to far lower rates (in the 15 to 20 percent range) for standard beacons. These high rates of yielding were even sustained two years after the installation of the RRFBs.



TYPICAL CHARACTERISTICS OF CANDIDATE LOCATIONS

The purpose of the RRFB is to increase driver awareness of crosswalks that are not across approaches controlled by YIELD signs, STOP signs, or traffic control signals. They can be used on crosswalks across the approach to and/or egress from a roundabout.

As with any new safety strategy implementation, effort should be made to perform outreach to the public to provide information on how the beacon operates and what drivers and pedestrians should do when encountering it.

TYPICAL COSTS

Costs for the installation of two units (one on either side of the street) range from \$10,000 to \$15,000. This cost includes all the signs and lights plus the solar panels for powering the unit. The costs vary depending on the type of activation, either manually by the pedestrian or passive detection.



Appendix G: Warren Parent/Student Survey Results

Parent Survey Aggregate Summary

Program Name: Warren-Alvarado-Oslo School District #2176

Date range: Fall 2020 (July - December 2020)

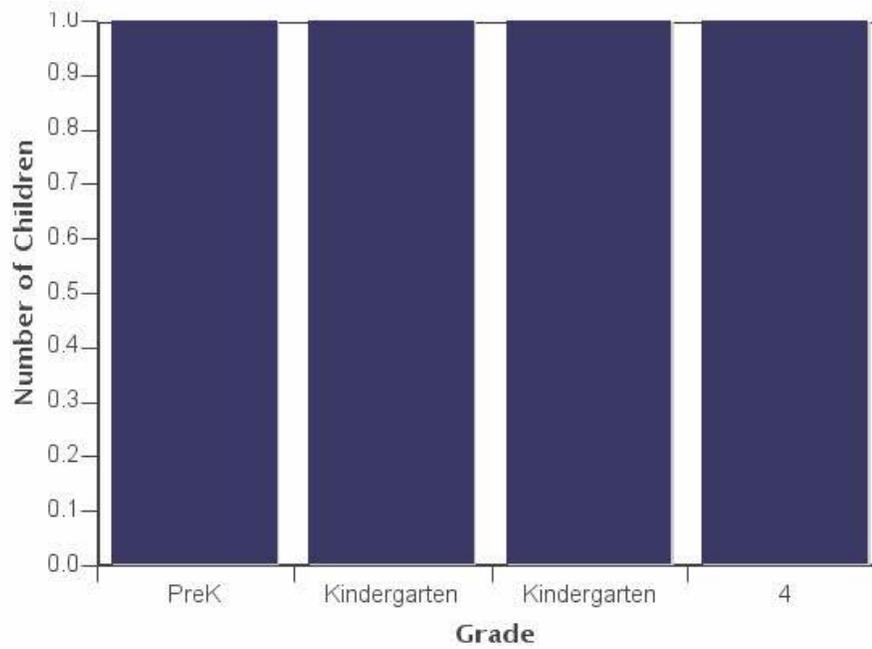
Date Report Generated: 09/28/2020

School Name(s):	Month & Year Collected & (Set ID)	School Enrollment:	Enrollment in Grades Targeted by SRTS Program:	Number of Questionnaires Distributed:	Number of Questionnaires Included in Report:
Warren Elementary School	September 2020 (19604)			0	25
			Total:	0	25

This report contains information from parents about their children's trip to and from school. The report also reflects parents' perceptions regarding whether walking and bicycling to school is appropriate for their child. The data used in this report were collected using the Survey about Walking and Biking to School for Parents form from the National Center for Safe Routes to School.

**Because less than 30 questionnaires are included in this report, each graph and table display counts rather than percentage information.

Grade levels of children represented in survey

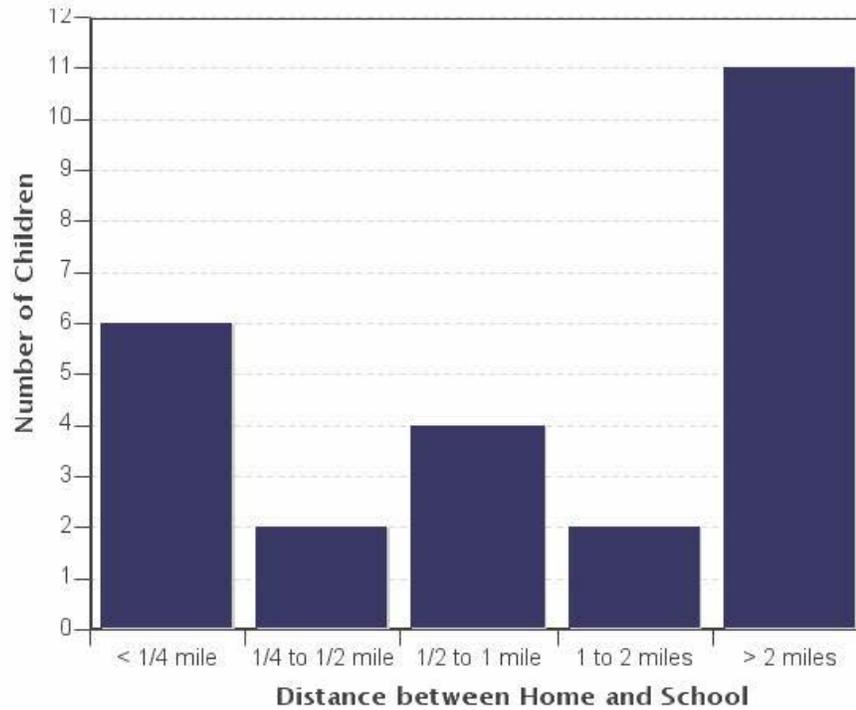


Grade levels of children represented in survey

Grade in School	Responses per grade
	Number
PreK	1
Kindergarten	1
1	1
4	1

No response: 0
 Numbers rather than percents are displayed because the number of respondents for this question was less than 30.

Parent estimate of distance from child's home to school



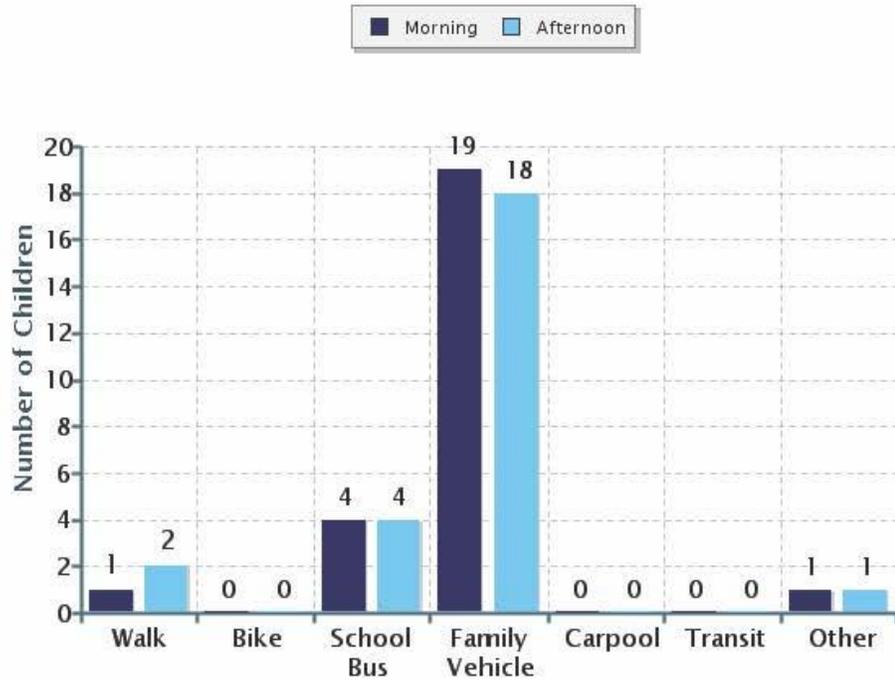
Parent Survey Aggregate Summary

Distance between home and school	Number of children
Less than 1/4 mile	6
1/4 mile up to 1/2 mile	2
1/2 mile up to 1 mile	4
1 mile up to 2 miles	2
More than 2 miles	11

Don't know or No response: 0

Numbers rather than percents are displayed because the number of respondents for this question was less than 30.

Typical mode of arrival at and departure from school



Typical mode of arrival at and departure from school

Time of Trip	Number of Trips	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Morning	25	1	0	4	19	0	0	1
Afternoon	25	2	0	4	18	0	0	1

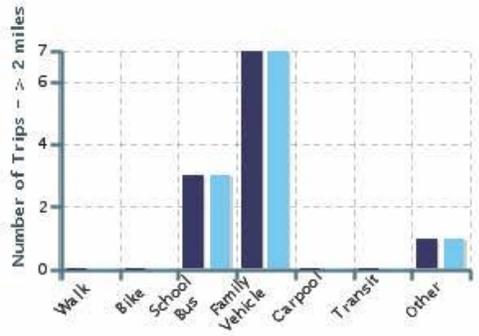
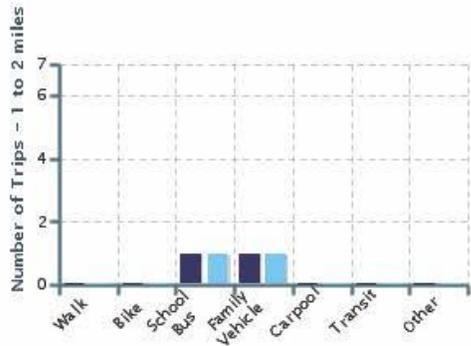
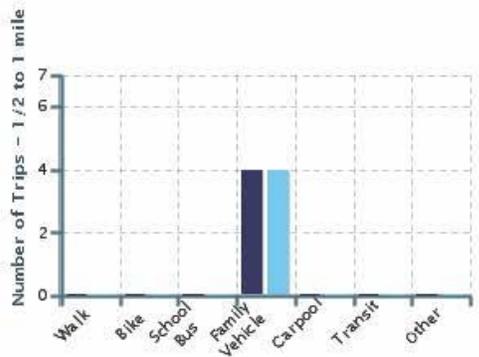
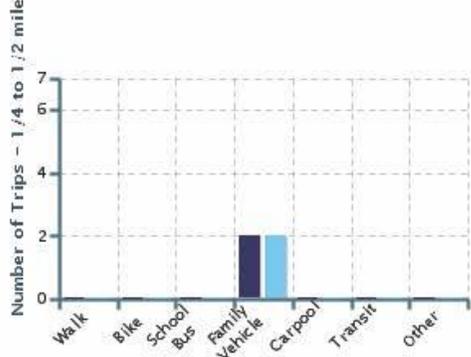
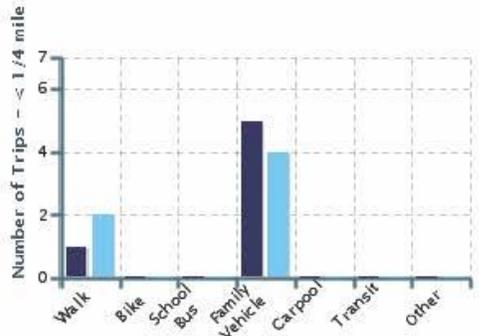
No Response Morning: 0

No Response Afternoon: 0

Numbers rather than percents are displayed because the number of respondents for this question was less than 30.

Typical mode of school arrival and departure by distance child lives from school

■ Morning ■ Afternoon



• Note: Page 6 was blank and not included

Typical mode of school arrival and departure by distance child lives from school

School Arrival

Distance	Number within Distance	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
1 Less than 1/4 mile	6	1	0	0	5	0	0	0
2 1/4 mile up to 1/2 mile	2	0	0	0	2	0	0	0
3 1/2 mile up to 1 mile	4	0	0	0	4	0	0	0
4 1 mile up to 2 miles	2	0	0	1	1	0	0	0
5 More than 2 miles	11	0	0	3	7	0	0	1

Don't know or No response: 0

Numbers rather than percents are displayed because the number of respondents for this question was less than 30.

School Departure

Distance	Number within Distance	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Less than 1/4 mile	6	2	0	0	4	0	0	0
1/4 mile up to 1/2 mile	2	0	0	0	2	0	0	0
1/2 mile up to 1 mile	4	0	0	0	4	0	0	0
1 mile up to 2 miles	2	0	0	1	1	0	0	0
More than 2 miles	11	0	0	3	7	0	0	1

Don't know or No response: 0

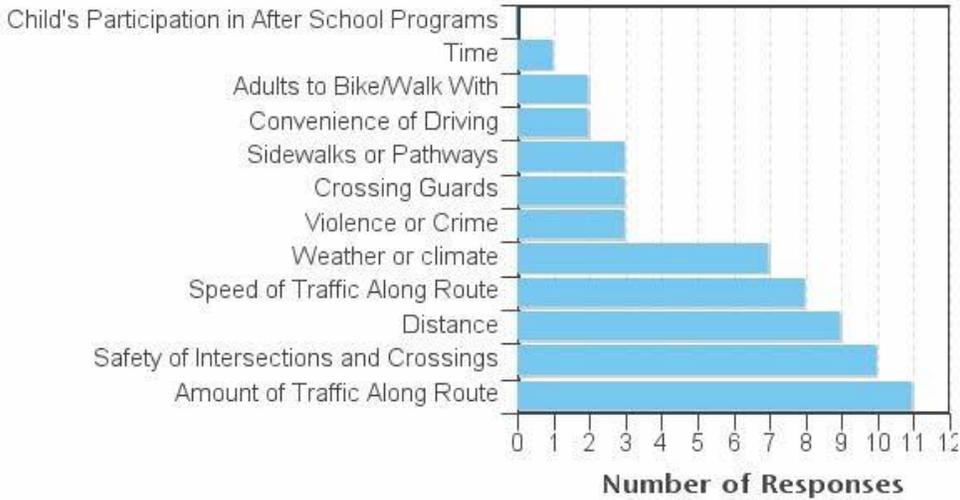
Numbers rather than percents are displayed because the number of respondents for this question was less than 30.

Number of children who have asked for permission to walk or bike to/from school by distance they live from school

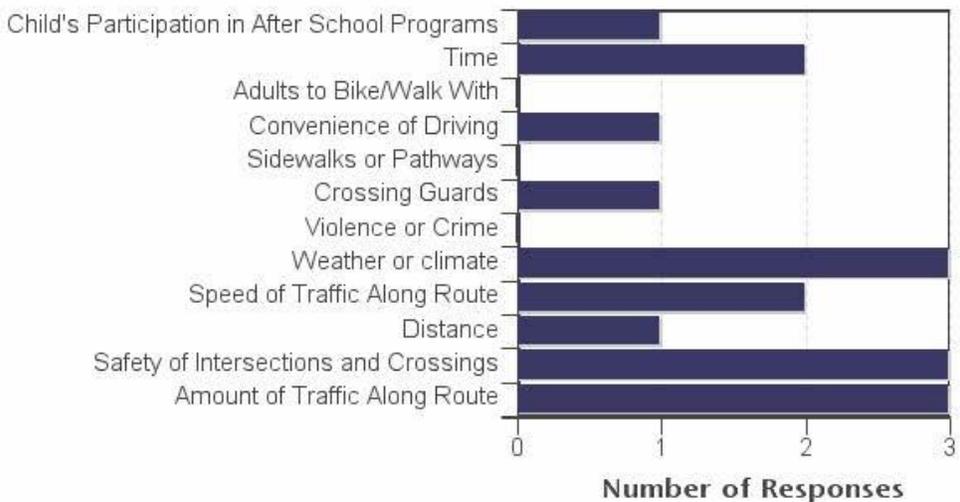
Asked Permission?	Number of Children	Less than 1/4 mile	1/4 mile up to 1/2 mile	1/2 mile up to 1 mile	1 mile up to 2 miles	More than 2 miles
Yes	40	67%	100%	50%	0%	0%
No	85	33%	0%	50%	100%	100%

Don't know or No response: 0
 Numbers rather than percents are displayed because the number of respondents for this question was less than 30.

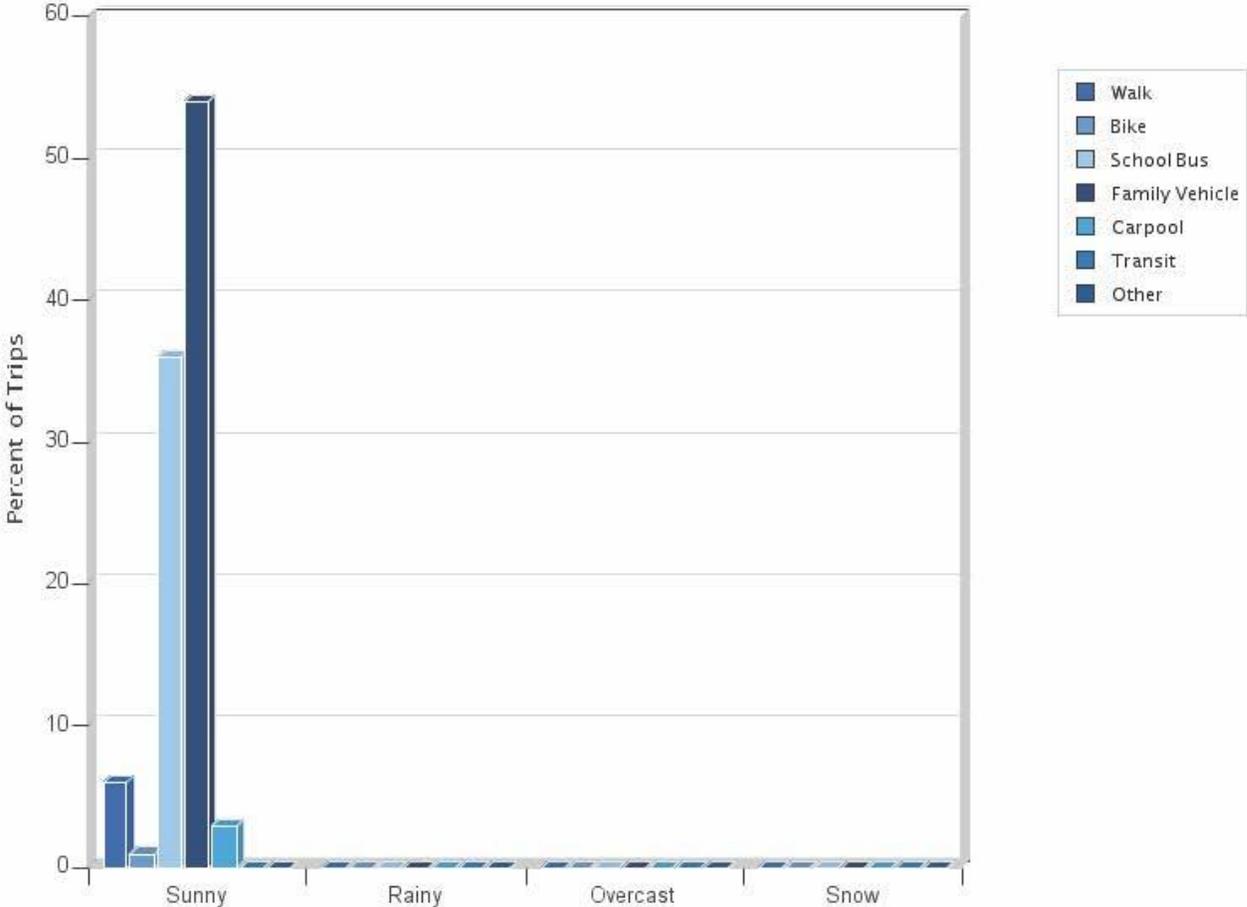
Issues reported to affect the decision to not allow a child to walk or bike to/from school by parents of children who do not walk or bike to/from school



Issues reported to affect the decision to allow a child to walk or bike to/from school by parents of children who already walk or bike to/from school



Travel Mode by Weather Conditions



Travel Mode by Weather Condition

Weather Condition	Number of Trips	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Sunny	303	6%	1%	36%	54%	3%	0%	0%
Rainy	0	0%	0%	0%	0%	0%	0%	0%
Overcast	0	0%	0%	0%	0%	0%	0%	0%
Snow	0	0%	0%	0%	0%	0%	0%	0%

Percentages may not total 100% due to rounding.

SAFE ROUTES to SCHOOL

A plan to make walking and biking to school a safe, fun activity



PROGRAMS EQUITY + EDUCATION + ENCOURAGEMENT + EVALUATION



SIDEWALK ASSESSMENT

What: Assessing local sidewalks for future improvements. Update infrastructure when possible.
Who: City of Warren
How: Staff time
When: Assessment currently occurring



HIGHWAY 1/75 CROSSING

What: Assessment and study for pedestrian & bicycle safety options. Traffic calming infrastructure needed.
Who: City of Warren, Marshall County, MnDOT
How: Traffic study, future project opportunities
When: When possible. Opportunities being looked at.



HIGHWAY 1

What: Signage, hawk lights, speed monitoring signs, rapid flash beacons and/or other traffic calming needed.
Who: School, City of Warren, Marshall County, MnDOT
How: Planning, Funding
When: When Possible - Dependent Upon Funding



WINTER MAINTENANCE

What: Snow removal campaigns and other maintenance to keep routes clear on the way to school.
Who: Residents, City of Warren, WAO School
How: Snow removal campaign, maintenance
When: Annually as necessary



ARRIVAL/DISMISSAL TRAFFIC MGMT

What: Looking at arrival/dismissal traffic around the school to keep kids safe. May include infrastructure.
Who: School, City of Warren
How: Funding, Studies, Infrastructure.
When: Planning currently occurring.

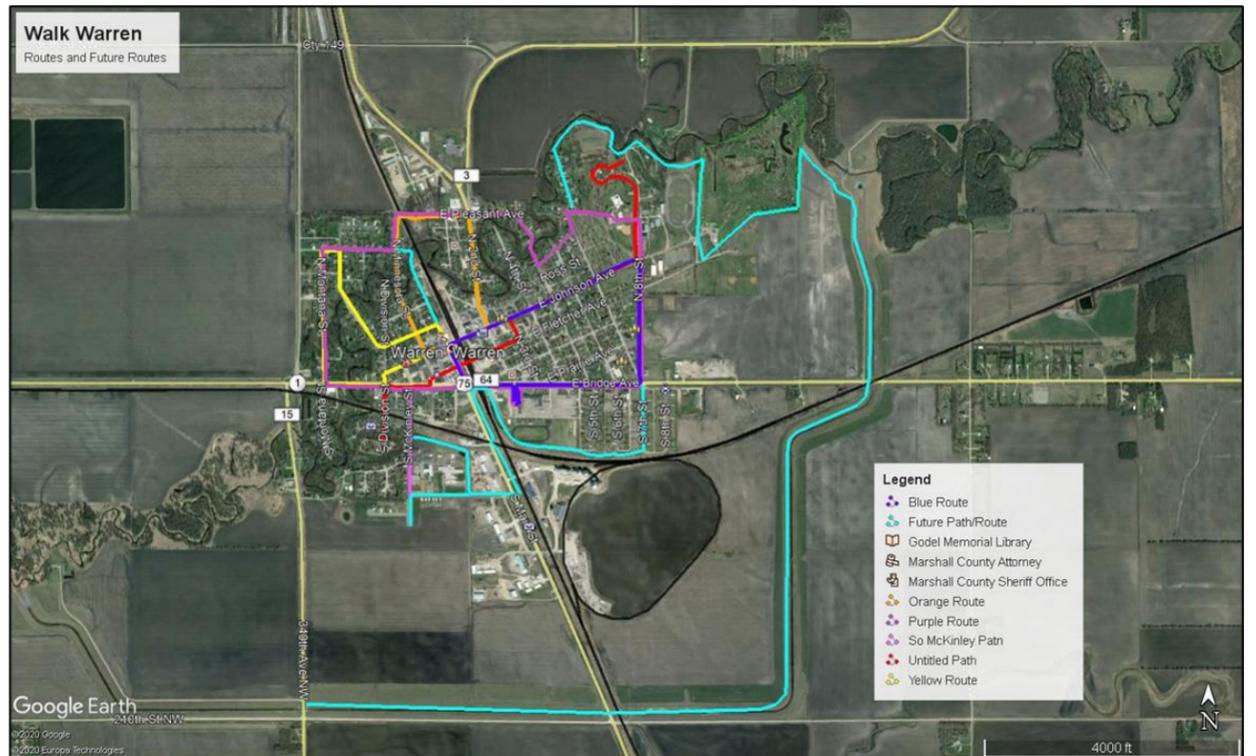


ROUTE & TRAIL ENHANCEMENT

What: Enhancement of and mapping of routes utilized for pedestrians, bicyclists and school kids
Who: City of Warren, WAO School
How: Mapping and Infrastructure Enhancements
When: Funding reliant – long-range planning occurring



INFRASTRUCTURE ROUTES + STREET PROJECTS



GET INVOLVED

Plan your walking or biking route with your student, watch for students and respect school zone speed limits, and show your support by volunteering! Contact your school principal to learn how you can get involved.

Learn more about Safe Routes to School at:
www.dot.state.mn.us/saferoutes/

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