

# Washington Elementary School

Sault Ste Marie Area Public Schools

Sault Ste Marie, MI



## Safe Routes to School

**MICHIGAN STATE**  
UNIVERSITY

Final Report— 2018



# Table of Contents

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■	Preface.....	2
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## I. Introduction

■	Local Planning Team.....	4
■	SRTS Planning Process.....	5

## II. Community Input

■	Walking Audit Summary.....	7
■	Surveys.....	10
■	Meeting One Summary .....	11
■	Meeting Two Summary .....	12

## III. Action Plan

■	Education.....	14
■	Encouragement .....	16
■	Enforcement .....	18
■	Equity.....	19
■	Engineering .....	20
■	Design Recommendations.....	21

## IV. Appendix

■	A: Meeting One Tallied Feedback.....	34
■	B: Action Plan Summary.....	35
■	C: Infrastructure Improvements.....	39

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# Preface

This report was prepared by Michigan State University as part of a technical assistance agreement with the local Safe Routes to School (SRTS) committee for Washington Elementary School. Its purpose is to assist the local committee with developing a SRTS action plan and identify eligible projects for funding from the Michigan Department of Transportation (MDOT). Funding for this project was supported by a grant from MDOT in cooperation with the Michigan Fitness Foundation.

SRTS was created by Section 1404 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which was signed into law in August 2005. As a result, states have dedicated dollars to help with infrastructure improvements and non-infrastructure activities to encourage and enable students to safely roll, walk, and bicycle to school. Infrastructure grants cover built environment improvements such as sidewalks, crosswalks, bump-outs, etc. Non-infrastructure grants are for programming that encourages walking and biking to school.

MDOT manages Michigan's SRTS program with programmatic support from the Michigan Fitness Foundation. The purpose of Safe Routes to School programs are to:

- ◇ Enable and encourage children, including those with disabilities, to walk, bike, and roll to school;
- ◇ Make walking, biking and rolling to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and
- ◇ Facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.

For more information about Michigan's SRTS program, go to [saferoutesmichigan.org](https://saferoutesmichigan.org).





# Introduction



# Local Planning Team

## Michigan State University Planning Team

The Michigan State University (MSU) College of Engineering and School of Planning, Design and Construction (SPDC), in cooperation with MSU Extension, along with the Michigan Fitness Foundation and the Michigan Department of Transportation (MDOT) are responsible in assisting interested schools with developing a Safe Routes to School action plan that includes design alternatives. The College of Engineering team is led by Tim Gates, with research assistants Alex Mullen, Jacob Swanson, and Han Zheng. The SPDC team is led by Wayne Beyea with research assistants Steven Stapleton, Brandon Chaney and Doug Powers.

## Local Planning Team

Tim Talentino—City Commissioner

Timothy D. Hall, ED.D.—Superintendent

Diane Chevillot—Washington Elementary School Principal

Edward Chevillot—Lincoln Elementary School Principal

Jessica Rondeau—Sault Area Middle School Principal

Linda Basista—City Engineer

Special thanks to Jessica Rondeau for coordinating the local SRTS effort



# SRTS Planning Process

The SRTS planning process at Washington Elementary School was initiated with a community input meeting, which gave parents, teachers and administrators an opportunity to voice their thoughts and concerns about the current conditions of walking and biking routes near the school and throughout the neighborhood. Additional input was generated through a walking and biking audit, which assessed infrastructure and environmental issues that students may encounter on their way to school. Observations made during the audit helped to target specific areas that need immediate attention.

A series of recommendations were drafted with the intention of implementing the future vision for the school voiced at the initial community input meeting. In addition to these planning recommendations, design images and engineering drawings were created to visualize physical improvements to sidewalks and streets. These recommendations and design concepts were presented at a second community input meeting. Following the second community meeting, the team drafted a final comprehensive report, presented at a third and final meeting.

This process resulted in the creation of a finalized action plan which demonstrates the necessary requirements to seek grants for priority infrastructure improvements and to help implement programmatic recommendations.

Safe Routes to School uses guiding principles when developing a framework to increase safe walking, biking, and rolling practices as well as student health and fitness. All SRTS programmatic and infrastructural recommendations made by the MSU team are based on the following five “E’s:”

**EDUCATION** – Providing students and the community with the skills to walk and bicycle safely, educating them about benefits of walking and bicycling, and teaching them about the broad range of transportation choices.

**ENCOURAGEMENT** – Generating enthusiasm and increased walking and bicycling for students through events, activities, and programs.

**ENFORCEMENT** – Deterring unsafe traffic behaviors and encouraging safe habits by people walking, bicycling, and driving in school neighborhoods and along school routes.

**EQUITY** – Ensuring that Safe Routes to School initiatives are benefiting all demographic groups, with particular attention to ensuring safe, healthy, and fair outcomes for low-income students, students of color, students of all genders, students with disabilities, and others.

**ENGINEERING** – Creating physical improvements to streets and neighborhoods that make walking and bicycling safer, more comfortable, and more convenient.

(<https://www.saferoutespartnership.org>)



## Community Input

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Walking audit participants were divided into four groups that followed designated priority routes and were tasked with recording issues they found while walking. The participants were also asked to capture the points of interest with photos illustrating the concerns. Following the walking audit, the groups reconvened in the library to discuss the most notable and serious issues encountered on their walk. Many of the comments revolved around lack of crosswalk safety, poor sidewalk maintenance, and sidewalk connectivity. The following pages chronicle some of the pictures and comments made by walking audit participants.

The map displays the service area for Sault Area Middle School, divided into four color-coded routes. Route 1 (yellow) covers the western portion of the area, starting near the Stone Child Status and heading east. Route 2 (red) covers the southern portion, starting near the Sault Area Middle School and heading north. Route 3 (green) covers the central portion, starting near the Sault Area Middle School and heading east. Route 4 (purple) covers the northern portion, starting near the Sault Area Middle School and heading east. The map also shows major roads, landmarks, and the SRTS School location.

**Legend:**

- ★ SRTS School
- Route 1
- Route 2
- Route 3
- Route 4



# Walking Audit Observations

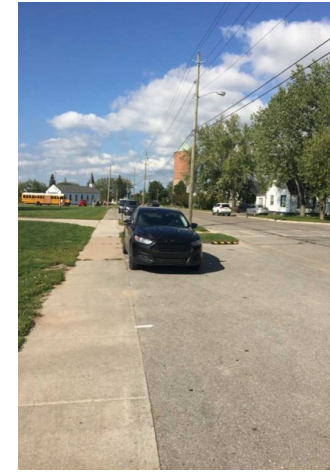
## Walking Route #1:



Concern: No crosswalk  
(Ryan)



Concern: Low hanging  
branches (Ryan)



Concern: No separation  
between pedestrians and  
motorists (Easterday)

## Walking Route #2:



Concern: Low hanging  
branches (Seymour)



Concern: Sidewalk too  
narrow (Minneapolis)



Concern: Sidewalk leads to a  
narrow footpath inaccessible  
to wheelchairs (Marquette)

# Walking Audit Observations

## Walking Route #3:



Concern: Poor sidewalk condition (6th)



Concern: Overgrown foliage (Seymour)



Concern: No crosswalk (Superior)

## Walking Route #4:



Concern: Damaged sidewalk (near 912 Seymour)



Concern: Parked vehicle/walker interference, e.g. truck hitch hazard (near 1009 Johnston)



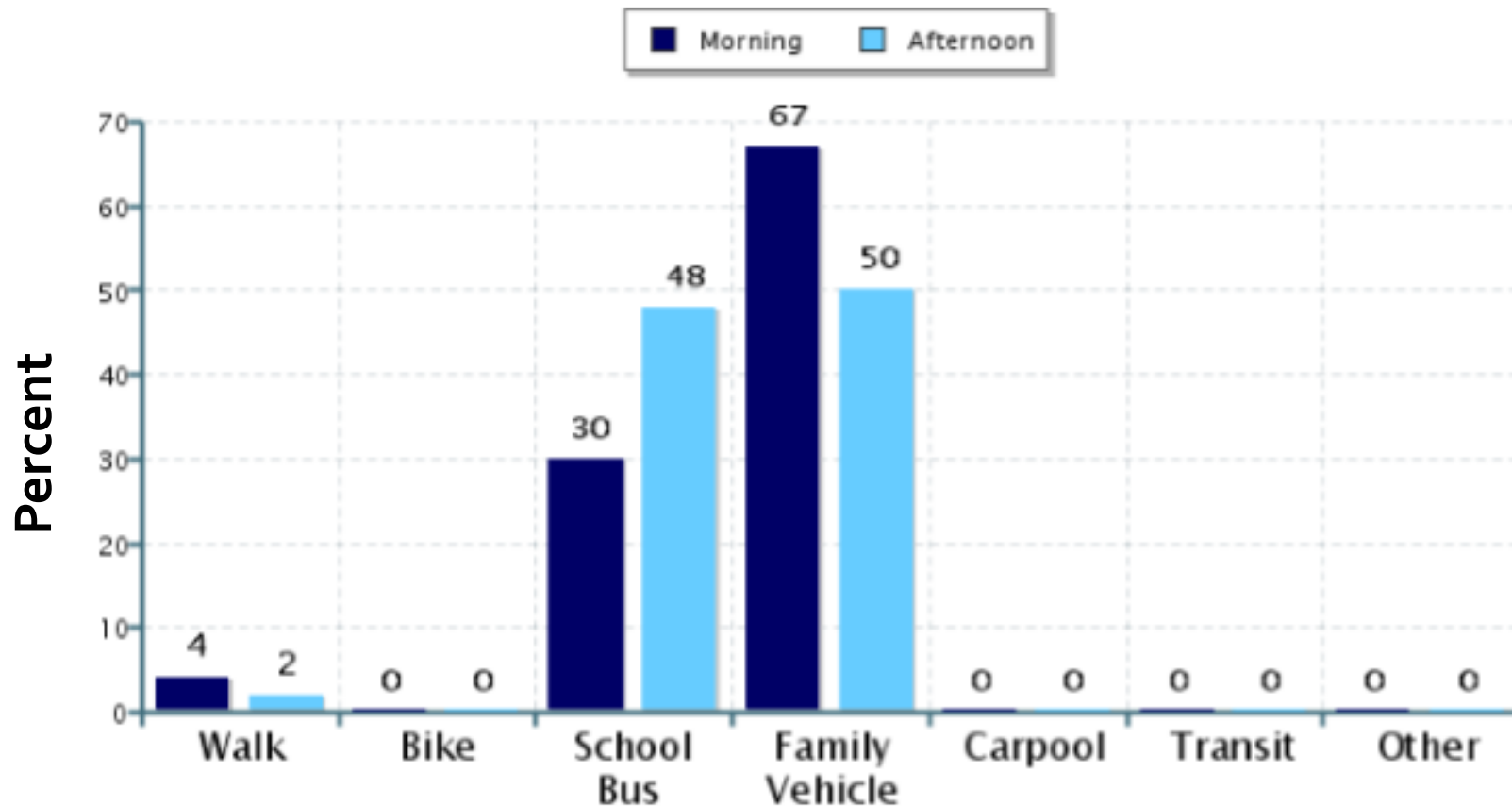
Concern: Abandoned building (Easterday)



# Washington Elementary School Survey

Homeroom teachers were asked to keep tallies of how their students traveled to and from school each day. Results show that most students use a form of motorized transportation—usually a family vehicle—to arrive and depart from school. Riding the school bus was found to be more frequent in the afternoon than in the morning. However, most students both arrive to and return from school in a family vehicle.

Morning and Afternoon Travel Mode Comparison



# Meeting One Summary

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At Meeting One on February 22, 2018, attendees were able to write and voice their thoughts about the current state of walking, biking, and rolling to school opportunities for students at Washington Elementary School. Participants were asked three questions for small group discussion: 1) What is working well?; 2) What is not working well?; and 3) What are some improvements you would like to see? The results of this discussion are summarized below.

---

## Working Well

- ◇ Crossing guard
- ◇ Bus loops
- ◇ Bike rack at school
- ◇ Walk to School Day
- ◇ Many sidewalks
- ◇ Designated pick-up/drop-off areas
- ◇ City sidewalk snow plowing
- ◇ Safe community

## Not Working Well

- ◇ Motorists not respecting road or parking rules
- ◇ Vehicle traffic
- ◇ Some sidewalks not being plowed, including drop-off locations
- ◇ Biking up hill
- ◇ Not enough crossing guards
- ◇ Connectivity/unsafe sidewalks
- ◇ Students not having proper winter clothes

## Recommendations

- ◇ Better connectivity and improved safety
- ◇ Availability of winter clothing, bikes and helmets
- ◇ More crossing guards
- ◇ Lighted paths
- ◇ Educate parents about drop-off and pick-up expectations
- ◇ More bike racks
- ◇ Plow sidewalks
- ◇ Educate students about walking paths and bicycle safety

# Meeting Two Summary

On September 13, 2018, a second community input meeting was held with a smaller core group of Sault Ste Marie community members to review the preliminary program and design recommendations presented by the MSU team.

The participants noted that particular attention should be given to the challenge of the adjacent hill, how difficult drop-off can be at the middle school, as well as crosswalk safety concerns. Furthermore, the meeting provided an opportunity for participants to learn about projects the city is implementing that align with proposed recommendations.

These comments and concerns are reflected in the action plan recommendations which follow.







## Action Plan

This action plan will provide Washington Elementary School with the framework necessary to facilitate its Safe Routes to School program. It lists the programmatic and engineering recommendations based on community input meetings and walking audit observations developed by MSU SPDC and the College of Engineering team with SRTS committee input. These recommendations include suggestions for the Five E's: **Education, Encouragement, Enforcement, Equity, and Engineering** with supported design imaging.

# Education

Education strategies focus on increasing the awareness of students, parents and drivers in the school's neighborhood about Safe Routes to School efforts and goals. Education strategies contour closely with encouragement and enforcement efforts. In this section, there are recommendations and strategies for parent, student and community education at Washington Elementary School based on community concerns and opportunities.



Photo: communities.usc.edu/

## Strategy #1: Publicize SRTS Through Local Media

**Concern:** Lack of community awareness of pedestrian routes near school.

**Solution:** Utilize local media outlets and social media to disseminate maps and other SRTS announcements to the public. Increased awareness could discourage reckless driving in key neighborhoods.

**Quick Steps:** Distribute visuals among school and community members. Contact local newspapers and TV stations to publicize SRTS efforts. Continue efforts with student organizations to make signs and create projects that communicate better driving habits.

**Tip:** Additional tools or suggested curriculum are available on the Safe Routes to School website to help educate students on safe transit to and from school. The Make Trax curriculum is a series of eight lessons aligned by grade level with support materials for this purpose ([http://saferoutesmichigan.org/wp-content/uploads/2016/10/7505-12a\\_Youth-Pledge.pdf](http://saferoutesmichigan.org/wp-content/uploads/2016/10/7505-12a_Youth-Pledge.pdf))

# Education



Photo: pixshark.com

## Strategy #2: Improve Communication Between Parents and the School

**Concern:** The school is not always aware of the parents' safety concerns regarding non-motorized transit.

**Solution:** Formalize SRTS committees at each school and district wide.

**Quick Steps:** Encourage parents to bring their concerns to the PTA and SRTS team. The team can notify the school or city of problems so they can be handled accordingly.

## Strategy #3: Student Assembly

**Concern:** Students may not be aware of the rules of the road.

**Solution:** Host an assembly.

**Quick Steps:** Engage the students to provide them with practical applications and safety tips regarding travel to and from school. Assess how many students benefited from the assembly by determining if their travel habits are safer than they were before. Parents, as well as faculty members, can report any unsafe activity so the effectiveness can be further evaluated to determine whether or not additional assemblies would be beneficial.



Photo: mattwilhelm.com



# Encouragement

Encouragement strategies are intended to build enthusiasm, excitement and support for Safe Routes to School efforts. Often, encouragement strategies involve organizing events and activities for children and parents. These encouragement strategies dovetail the education strategies.

## Strategy #4: Remote Drop-Off Sites

**Concern:** Students may not be able to walk or bike to school because of the long distance from home.

**Solution:** Start working with parents and the community to promote remote drop-off sites.

**Quick Steps:** Position bike racks in close proximity to designated locations. Students can bike or walk to school from there. Raise awareness of the drop-off and pick-up options for parents driving their children by email or take-home flyer.



Photo: [carriagehouseplanswallpaper.blogspot.com/2013/01/bike-rack.html](http://carriagehouseplanswallpaper.blogspot.com/2013/01/bike-rack.html)



Photo: [ourladyofhopeschool](http://ourladyofhopeschool)

## Strategy #5: Carpool Match Program

**Concern:** Traffic congestion causing safety concerns.

**Solution:** Coordinate driving schedules for parents who have students that live in close proximity to each other.

**Quick Steps:** Designate drivers to transport students based on location. Determine who will drive on designated days. This reduces the amount of cars picking up and dropping off students.

# Encouragement



Photo: [Portlandoregon.gov](http://Portlandoregon.gov)

## Strategy #6: Expand Walking School Bus

**Concern:** Finding volunteers to host a walking school bus can be difficult.

**Solution:** Coordinate with parents who have older children.

**Quick Steps:** Determine where the gaps are based on the amount of volunteers present for events. Identify an event coordinator. Encourage fifth graders to lead these events when there are not enough adult volunteers. Work out the logistical details and suitable times for the event during the year.

**Tip:** Studies have shown that walking to school can positively impact academic achievement, student morning energy levels and attention, truancy, absenteeism and can improve schools and their communities through social bonding and community building. ([walkbiketoschool.org](http://walkbiketoschool.org)).



# Enforcement

Enforcement strategies are aimed at identifying and discouraging unsafe driver, pedestrian and cyclist behaviors along routes to school. Successful implementation of enforcement strategies will result in safer and more conscious sharing of roadways by all. Official routes to school should be designated so that efforts will be focused in priority areas. Enforcement strategies may often require the assistance of local or state police in the areas that Washington Elementary School has prioritized. To this end, it is best for the school to continue their strong connection with the local police.



Photo: Saferoutestoschoolnj.org

## Strategy #7: Expanded Crossing Guard System

**Concern:** Crossing guards are limited by location and hours of operation.

**Solution:** Expand the crossing guard system.

**Quick Steps:** Determine the interest of potential crossing guards in the community. Assign crossing guards to priority points along routes that are not currently stationed. Track student pedestrian volume and participation.

## Strategy #8: Progressive Ticketing

**Concern:** Drivers are violating traffic laws along the students routes to and from school.

**Solution:** Initiate a progressive ticketing program.

**Quick Steps:** Establish community awareness of the issue. Announce the action that will be taken and the reason why through fliers, signs and newspapers. Official warnings from officers can also serve as a reminder. After the warning time has expired, law enforcement can start issuing tickets.



Photo: dailymail.co.uk

**Tip:** When conducting speed enforcement in neighborhoods, 75-80% of the ticketed drivers live within 1 mile of the enforcement site. Police officers can contact up to 20 times as many individuals when they are not writing citations. ([http://guide.saferoutesinfo.org/enforcement/progressive\\_ticketing.cfm](http://guide.saferoutesinfo.org/enforcement/progressive_ticketing.cfm))

# Equity

Equity strategies are about making a conscious effort to understand and address the diverse needs of students. This is done by supporting safe, active and healthy opportunities in communities of all cultural backgrounds. These strategies should work to remove barriers that are often experienced by students with disabilities, low income challenges and other issues faced by a variety of demographic groups when walking or biking.

## Strategy #9: SRTS for All Campaign

**Concern:** Children with disabilities may feel discouraged to walk, bike or roll to school.

**Solution:** Launch a media campaign to show the inclusivity of SRTS to encourage all students to participate.

**Quick Steps:** Reach out to local media stations and newspapers. Create videos, pictures and media showing students of all backgrounds, including different physical and mental disabilities, participating in SRTS activities.



Photo: [www.nchpad.org](http://www.nchpad.org)

# Engineering

Engineering includes any updates to infrastructure or design adjustments for physical improvements. These engineering recommendations are the result of collaborative efforts of the walking audit, community meetings, and analysis by the local SRTS Committee and Michigan State University. Proposed engineering improvements are included in the appendix.



## Summary of Engineering Improvements

1. ADA-compliant sidewalk ramps
2. Added crosswalk markings
3. New, connected sidewalks
4. In-street and roadside pedestrian crossing signs
5. Added stop signs



# Design Recommendations

The before and after images that follow highlight the engineering recommendations prepared as a result of community input. These images show a realistic perspective of what the engineering designs would look like if they were implemented.

Before



After



Location: Ryan and Emmett, in street looking East



Location: School crossing at Parnell and Ryan, looking East



Location: Ryan and 4th Ave looking East



# Design Recommendations

Before



After



Location: Ryan and 5th Ave, looking East

Location: John St and Marquette Ave, SW  
corner looking East

Location: Marquette and Ashmun, NW  
corner looking South



# Design Recommendations

Before



After



Location: Footpath to North East of Middle School, looking North

Location: Marquette and Augusta, looking East

Location: Middle School Entry Drive, looking North across Marquette



# Design Recommendations

Before



After



Location: Middle School Drive (SW Corner),  
looking North across Marquette

Location: Marquette and Augusta, looking East



# Design Recommendations

Before



After



Location: Marquette and Seymour, SW corner looking East

Location: Seymour and E 11th, looking North

Location: Augusta and 8th, looking South



# Design Recommendations

Before



After



Location: Kimball and 7th, NE corner  
looking South

Location: Swinton and 7th, looking North

Location: Superior and 7th, SW corner  
looking North



# Design Recommendations

Before



After



Location: John and 6th, looking North

Location: Minneapolis and 6th, SW corner  
looking North

Location: Young and 4th, looking North



# Design Recommendations

Before



After



Location: Superior and 6th, looking West



Location: Swinton and 6th, looking North



Location: Seymour and Newton, SW corner  
looking East



# Design Recommendations

Before



After



Location: Swinton and Adams, SE corner looking North



Location: John and 4th, SE corner looking North



Location: Young and Newton, looking North



# Design Recommendations

Before



After



Location: Superior and 4th, SW corner  
looking North

Location: Court and Adams looking  
Southwest

Location: John and Easterday Ave, SE  
corner looking West



# Design Recommendations

Before



After



Location: Easterday and Johnston, SE corner looking North



Location: Minneapolis and Easterday, SE corner looking West



Location: Lizzie and Adams, NE corner looking South



# Design Recommendations

Before



After



Location: Seymour and Adams, SW corner looking North





# Appendix

## Appendix A: Meeting One Tallied Feedback

What is Working Well?	Responses	What is Not Working Well	Responses	Recommended Improvements	Responses
Crossing Guard	7	Motorists not respecting the rules of the road, or parking	4	More sidewalks and safer sidewalks through improvements	6
Bus loops	5	Vehicle traffic	3	Availability of winter clothing/bikes/	3
Some kids do walk/bike to school in good weather	3	Sidewalks not plowed	3	More crossing guards	3
Bike rack at school	1	Pick up/drop off in snow congestion	3	Lighted path to campus	2
Walk to school day annually	1	No sidewalks and unsafe sidewalks	3	Improved crossing signals with count down screen	2
Sidewalks in place in many areas	1	Biking up hill	2	Educate parents on drop off and pick up expectations	2
Designated bus pick up/drop off areas	1	More crossing guards	2	More bike racks	1
Many students walk to school even in winter	1	Intersection of Marquette and Minneapolis	1	Plow sidewalks	1
City sidewalk snow plowing	1	Access to sidewalks, walking and riding paths to school	1	Improve drop off locations	1
Safe Community	1	Community/parent education/communication	1	Better lighting at designated drop-off locations	1
		Students lack appropriate winter clothing	1	Reverse vehicle traffic to ease congestion	1
		Not all push button crossings working efficiently	1	Education on walking paths	1
		Parent drop off	1	Education on bike safety	1
				Security for parking lots	1



## Appendix B: Action Plan Summary

### Education

Recommendation	Quick Steps	Person(s) Responsible	Timeframe for Completion	Rank
Publicize SRTS Through Local Media	<ol style="list-style-type: none"> <li>1. Distribute visuals among school and community members</li> <li>2. Contact local newspapers and TV station to publicize SRTS efforts.</li> <li>3. Continue efforts with student organizations to make signs and create projects that communicate better driving habits.</li> </ol>			
Improve Communication Between Parents and the School	<ol style="list-style-type: none"> <li>1. Host meetings to improve communication .</li> <li>2. Notify parents of meetings these meetings related to SRTS.</li> <li>3. Make information discussed available through the schools website.</li> </ol>			
Student Assembly	<ol style="list-style-type: none"> <li>1. Educate students about the importance of wearing a helmet while riding a bike.</li> <li>2. Educate students on health and social benefits of rolling, walking, or biking with friends.</li> <li>3. Discuss right-of-ways and potential hazards. Explain the role of crossing guards and law enforcement. Involve students in presentation process.</li> </ol>			

## Appendix B: Action Plan Summary

### Encouragement

Recommendation	Quick Steps	Person(s) Responsible	Timeframe for Completion	Rank
Remote Drop-Off Sites	<ol style="list-style-type: none"> <li>1. Track the number of students and cars taking advantage of multiple drop-off sites.</li> <li>2. Incorporate remote drop-off sites into expanded events for students to take advantage of.</li> <li>3. Raise awareness of the expanded drop-off and pick-up options for parents driving their children by email or take home flyer.</li> </ol>			
Carpool Match Program	<ol style="list-style-type: none"> <li>1. Introduce the idea to parents and student body.</li> <li>2. Designate drivers to transport students based on location.</li> <li>3. Organize volunteer rotation schedules.</li> </ol>			
Expanded Walking School Bus	<ol style="list-style-type: none"> <li>1. Determine where the gaps are based on the amount of volunteers present for hosting events.</li> <li>2. Identify an event coordinator.</li> <li>3. Encourage fifth graders to lead these events when there is not enough adult volunteers.</li> <li>4. Work out the logistical details and suitable times for the event during the year.</li> </ol>			



## Appendix B: Action Plan Summary

### Enforcement

Recommendation	Quick Steps	Person(s) Responsible	Timeframe for Completion	Rank
Expanded Crossing Guard System	<ol style="list-style-type: none"><li>1. Determine interest of potential crossing guards in the community.</li><li>2. Assign crossing guards to priority points along routes that are not currently stationed.</li><li>3. Track student pedestrian volume and participation.</li></ol>			
Progressive Ticketing	<ol style="list-style-type: none"><li>1. Notify the public of the warning period through mail, flyers, or social media.</li><li>2. Coordinate with the police department to begin the process.</li><li>3. After the warning time has expired, start issuing tickets.</li></ol>			

## Appendix B: Action Plan Summary

### Equity

Recommendation	Quick Steps	Person(s) Responsible	Timeframe for Completion	Rank
SRTS for All Campaign	<ol style="list-style-type: none"><li>1. Reach out to local media stations and newspapers.</li><li>2. Create videos, pictures, and media showing students of all backgrounds, including different physical and mental disabilities, partaking in SRTS activities.</li></ol>			



# Appendix C: Infrastructure Improvements

## **SAFE ROUTES TO SCHOOL INFRASTRUCTURE NEEDS WASHINGTON ELEMENTARY SCHOOL SAULT STE MARIE, MI CONCEPT DRAWINGS**

### INDEX OF SHEETS

1. MAP OF INTERSECTION DETAIL LOCATIONS
2. PRIORITY ROUTES TO AND FROM SCHOOL
3. STUDENT ADDRESSES
4. WASHINGTON ELEMENTARY, EAST OF RYAN AVE.
5. WASHINGTON ELEMENTARY, SOUTH OF W 4TH AVE.
6. MARQUETTE AVE AND ASHMUN AVE.
7. SAULT AREA MIDDLE SCHOOL - ALTERNATIVE 1
8. SAULT AREA MIDDLE SCHOOL - ALTERNATIVE 2
9. MARQUETTE AVE, EAST OF SAULT AREA MIDDLE SCHOOL
10. MINNEAPOLIS ST, FROM 7TH AVE TO 10TH AVE
11. SUPERIOR ST, FROM 7TH AVE TO 10TH AVE
12. MINNEAPOLIS ST, FROM 4TH AVE TO 7TH AVE
13. SUPERIOR ST, FROM 4TH AVE TO 7TH AVE
14. JOHNSTON ST, FROM ADAMS AVE TO 4TH AVE
15. AUGUSTA ST, FROM ADAMS AVE TO 4TH AVE
16. MINNEAPOLIS ST, FROM ADAMS AVE TO 4TH AVE
17. YOUNG ST, FROM EASTERDAY AVE TO NEWTON AVE
18. JOHNSTON ST, FROM EASTERDAY AVE TO NEWTON AVE
19. SEYMOUR ST, FROM EASTERDAY AVE TO NEWTON AVE
20. TRAIL CONNECTION FROM FORNICOLA TRAILER PARK TO MIDDLE SCHOOL

PREPARED BY:

**MICHIGAN STATE**  
**UNIVERSITY**

Date:  
May 15, 2019

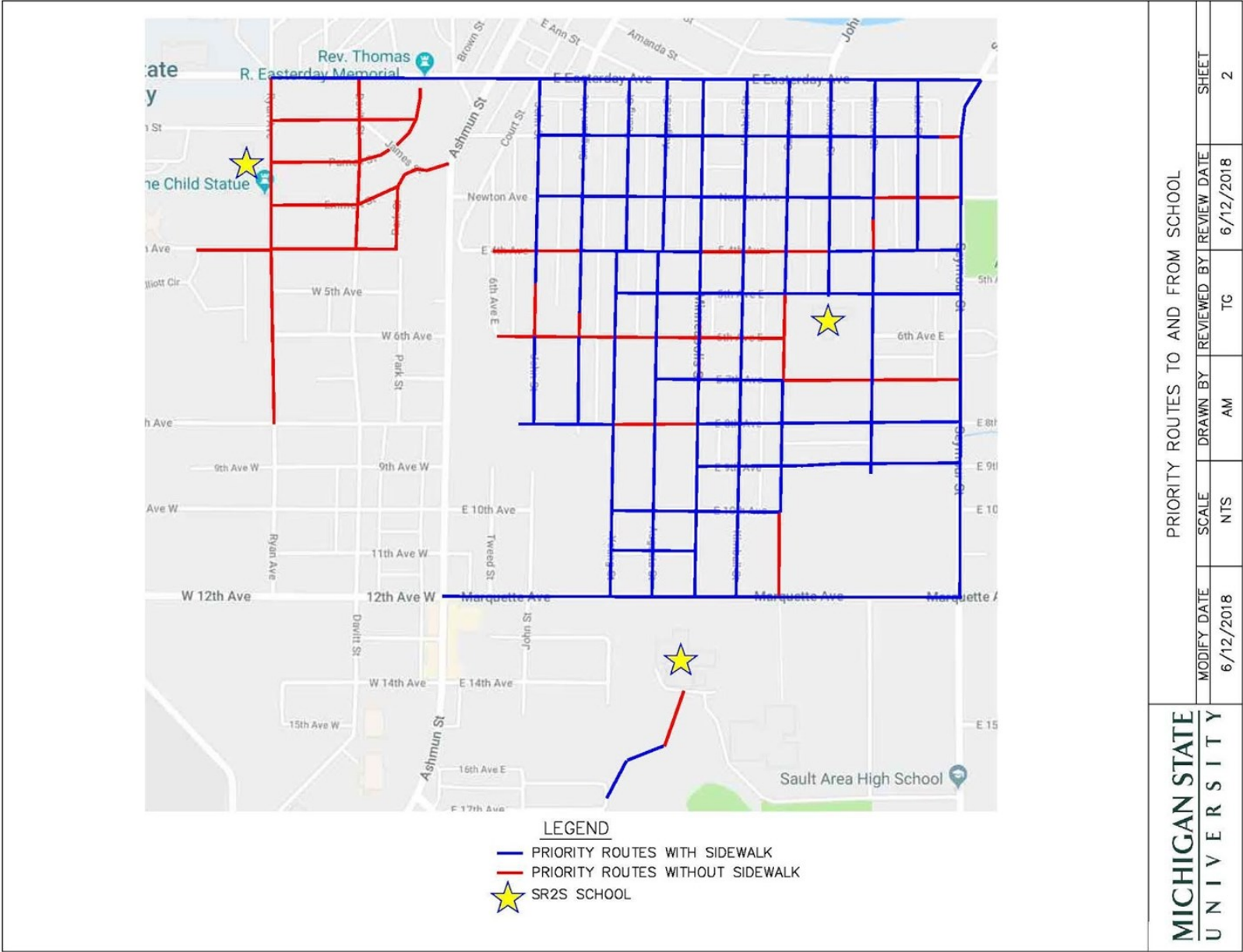
NOTE: Non-fundable improvement may not be included.

# Appendix C: Infrastructure Improvements

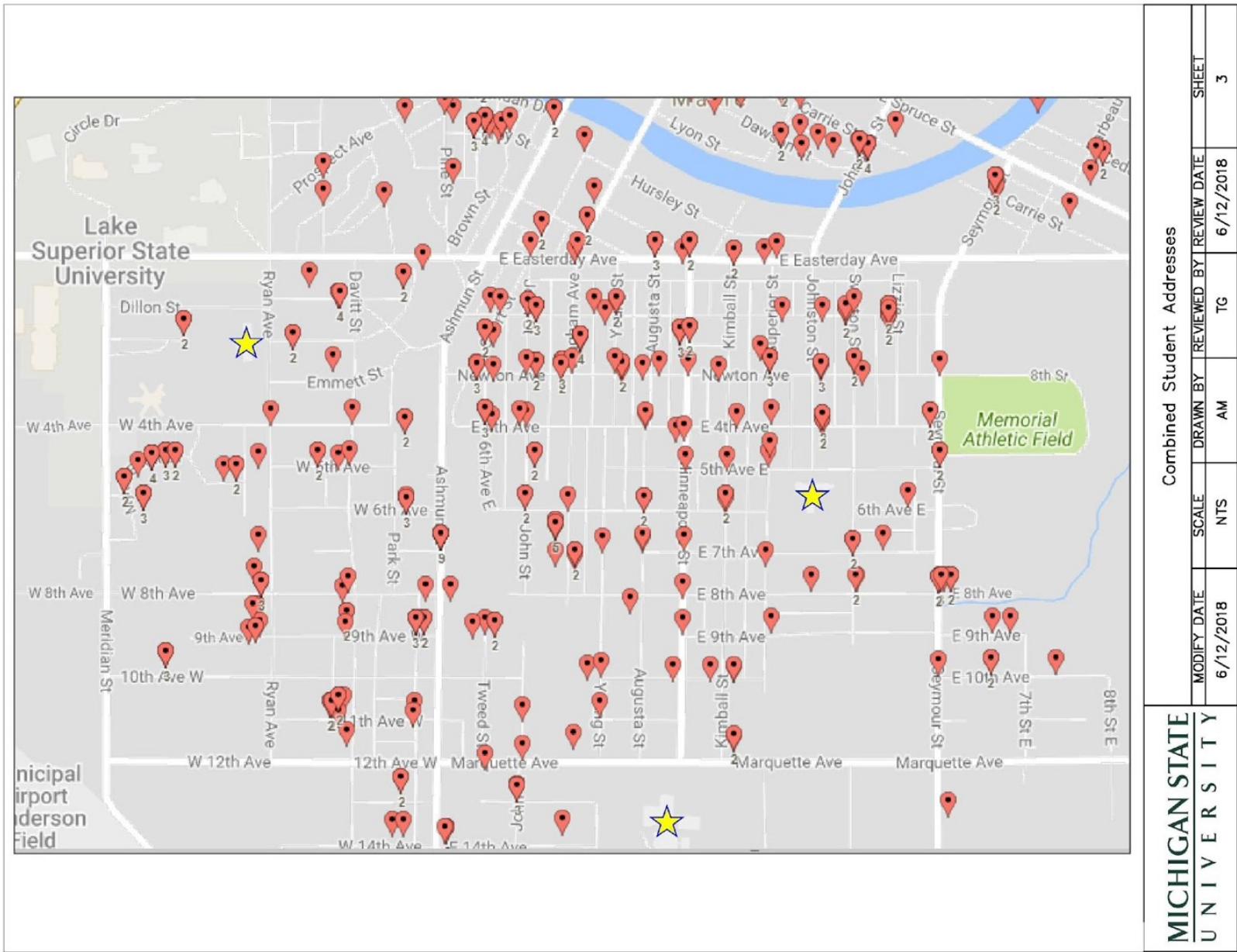




# Appendix C: Infrastructure Improvements

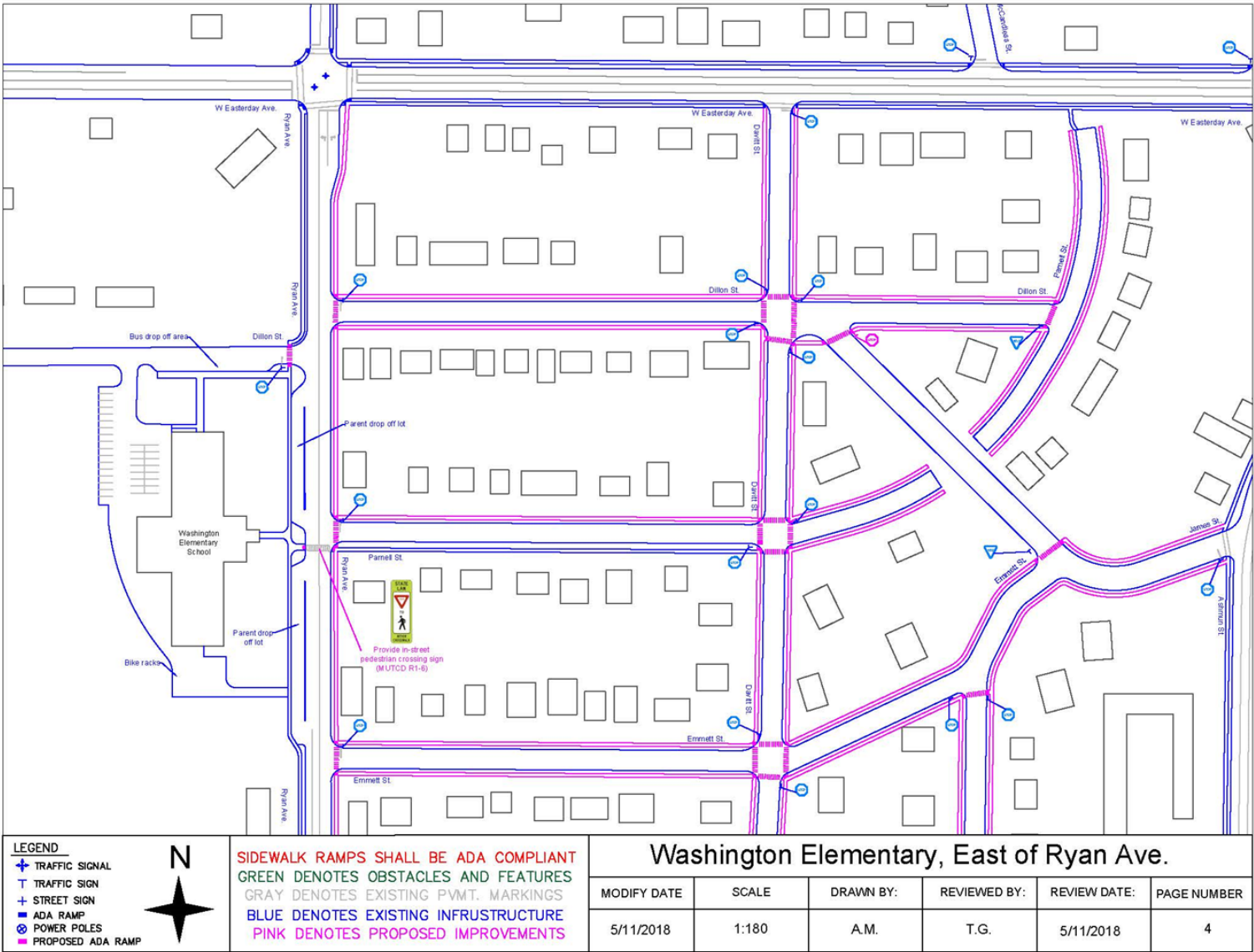


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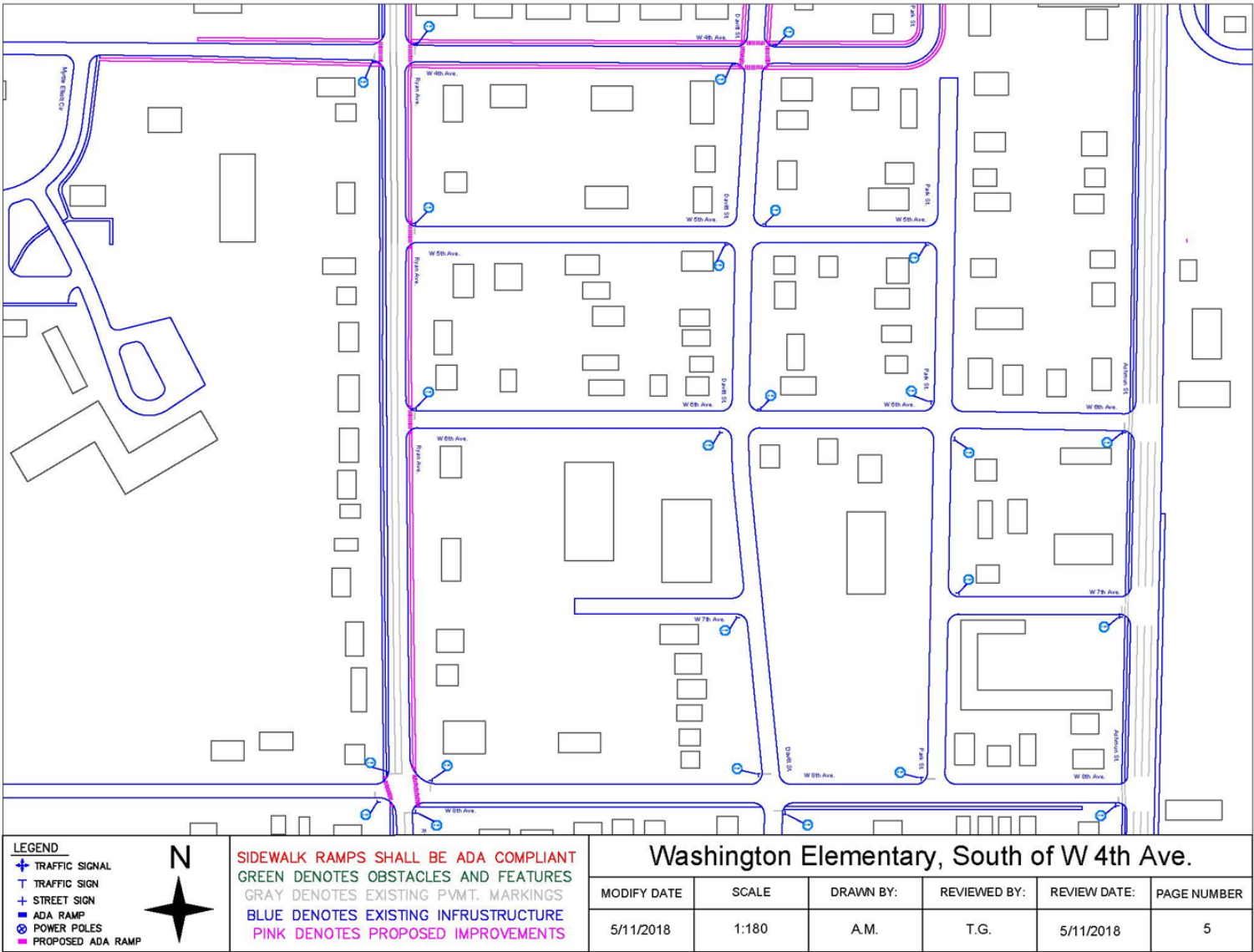




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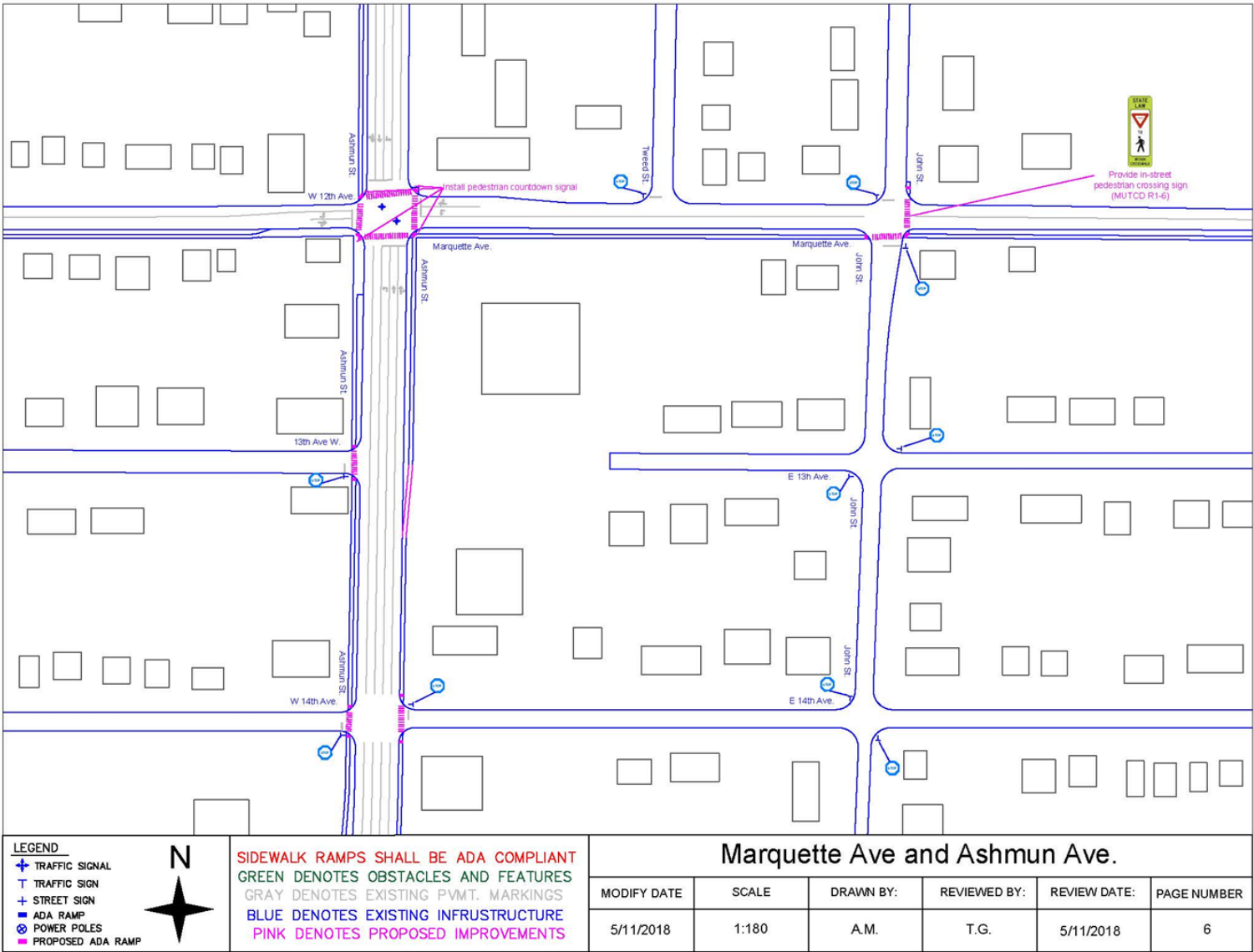


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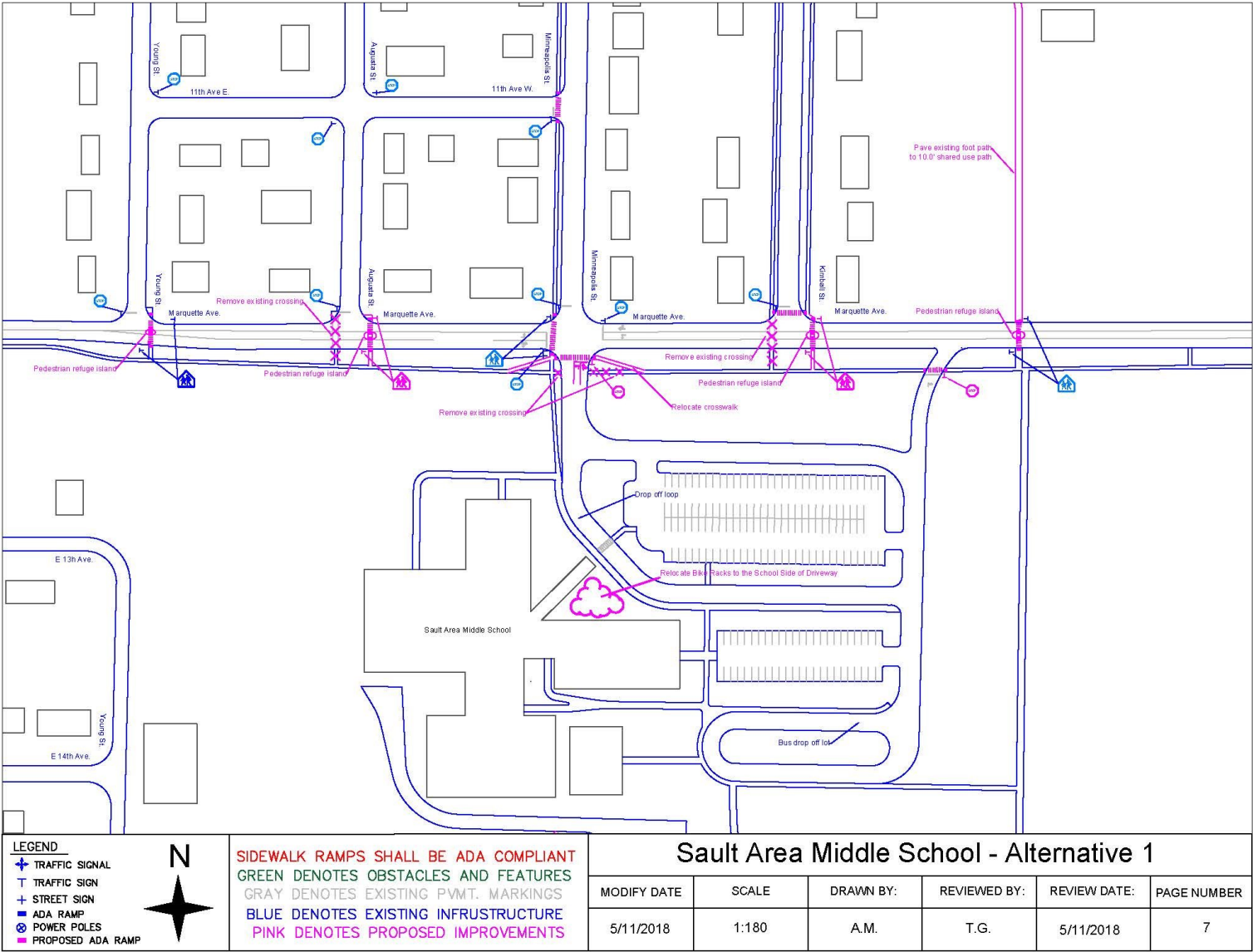




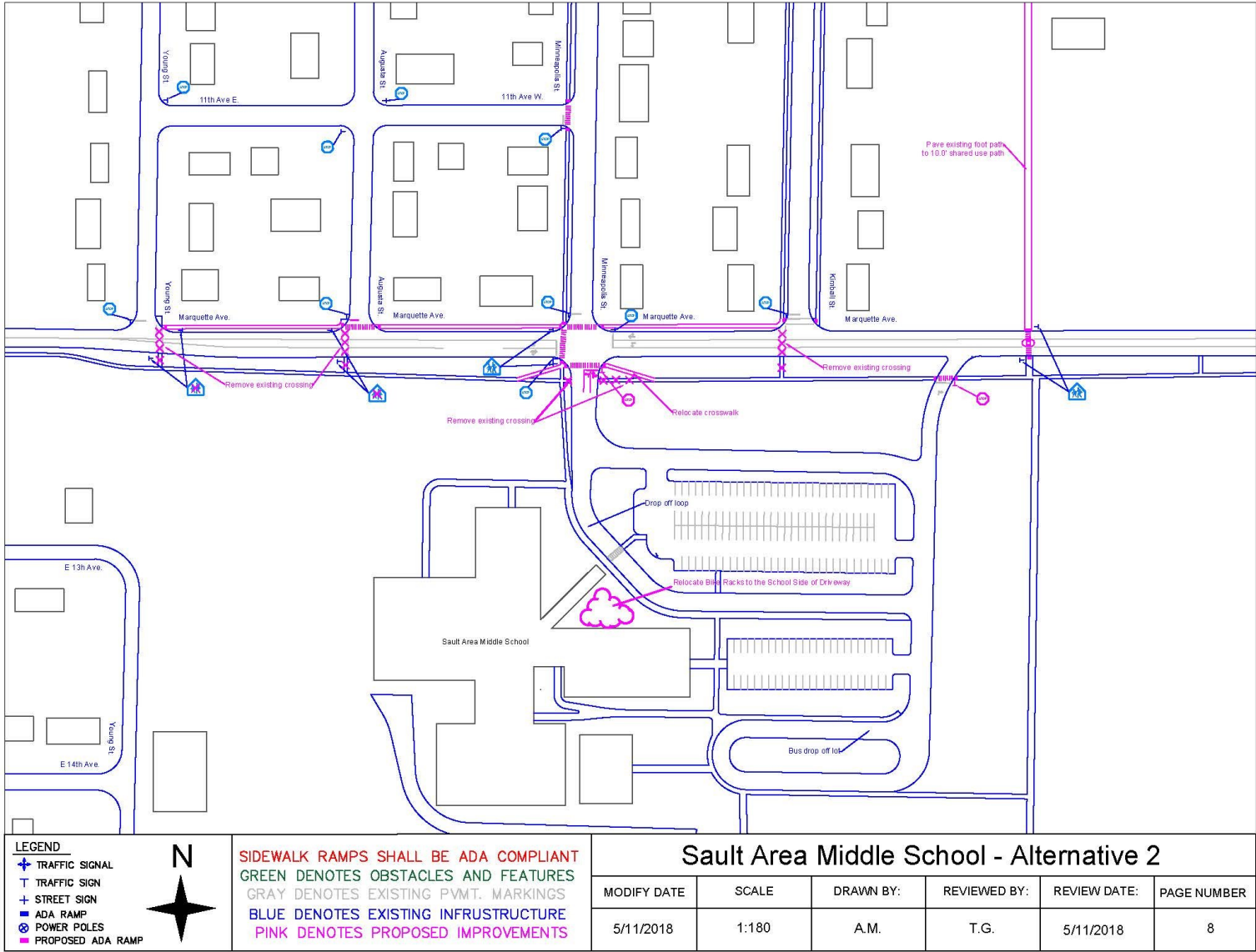
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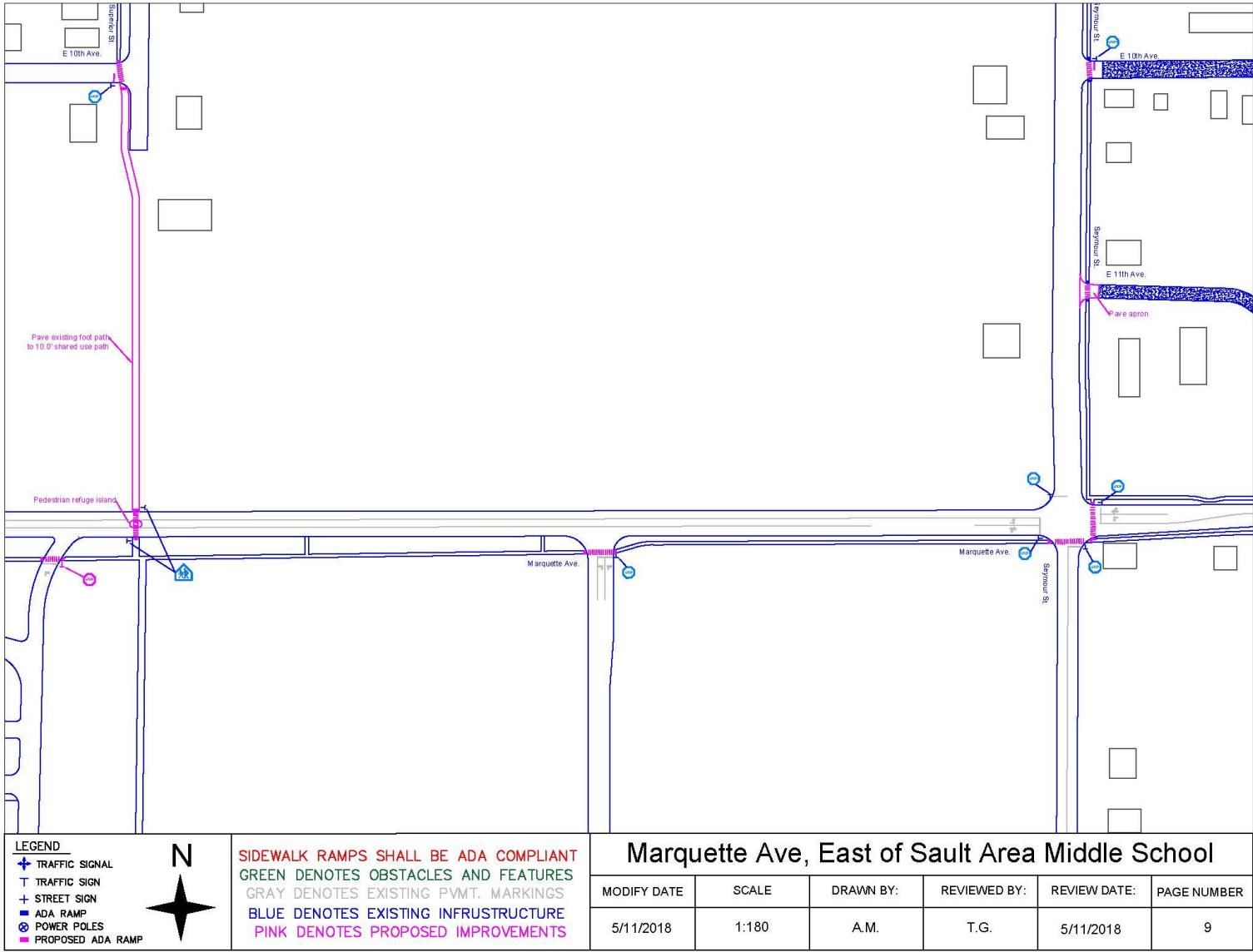


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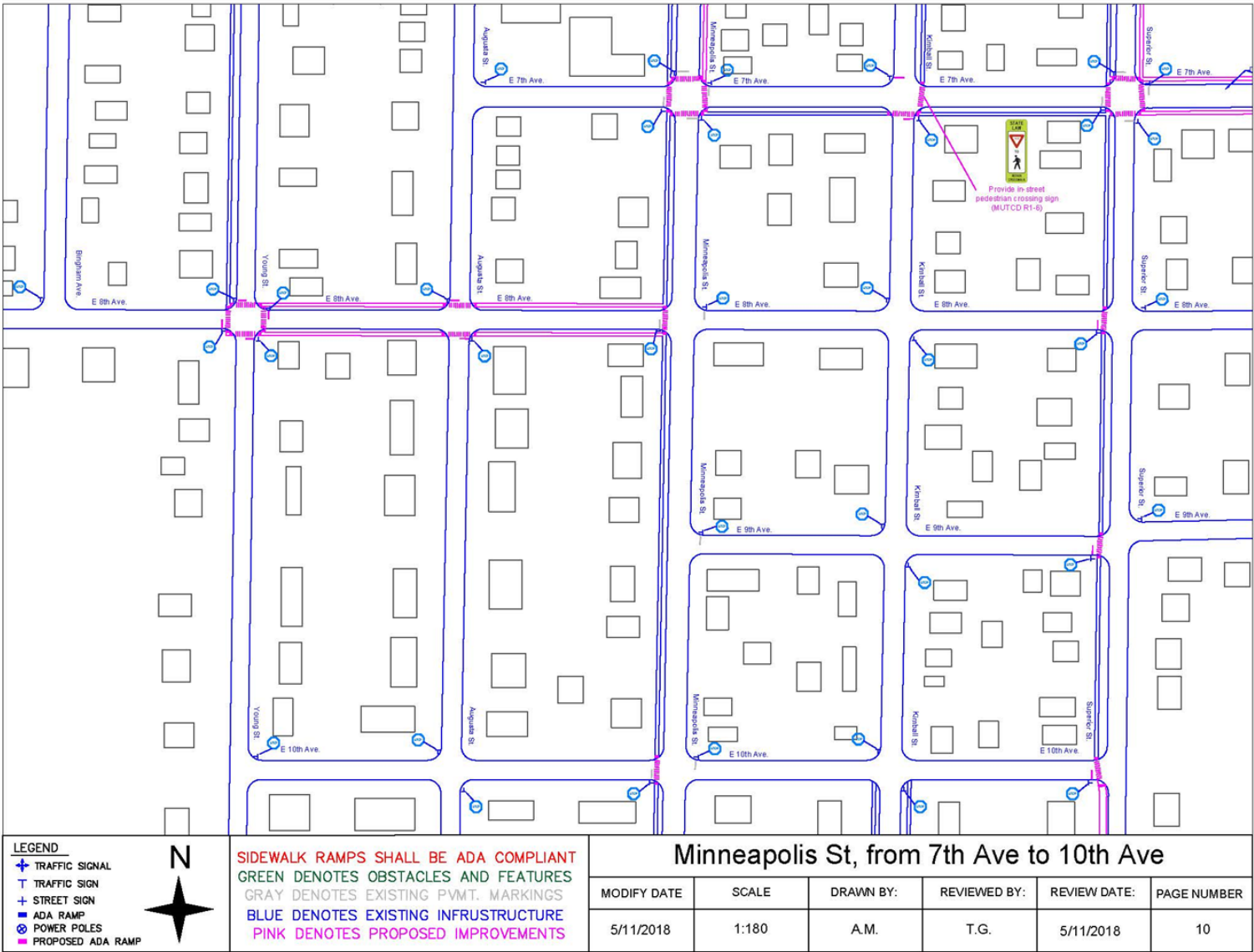




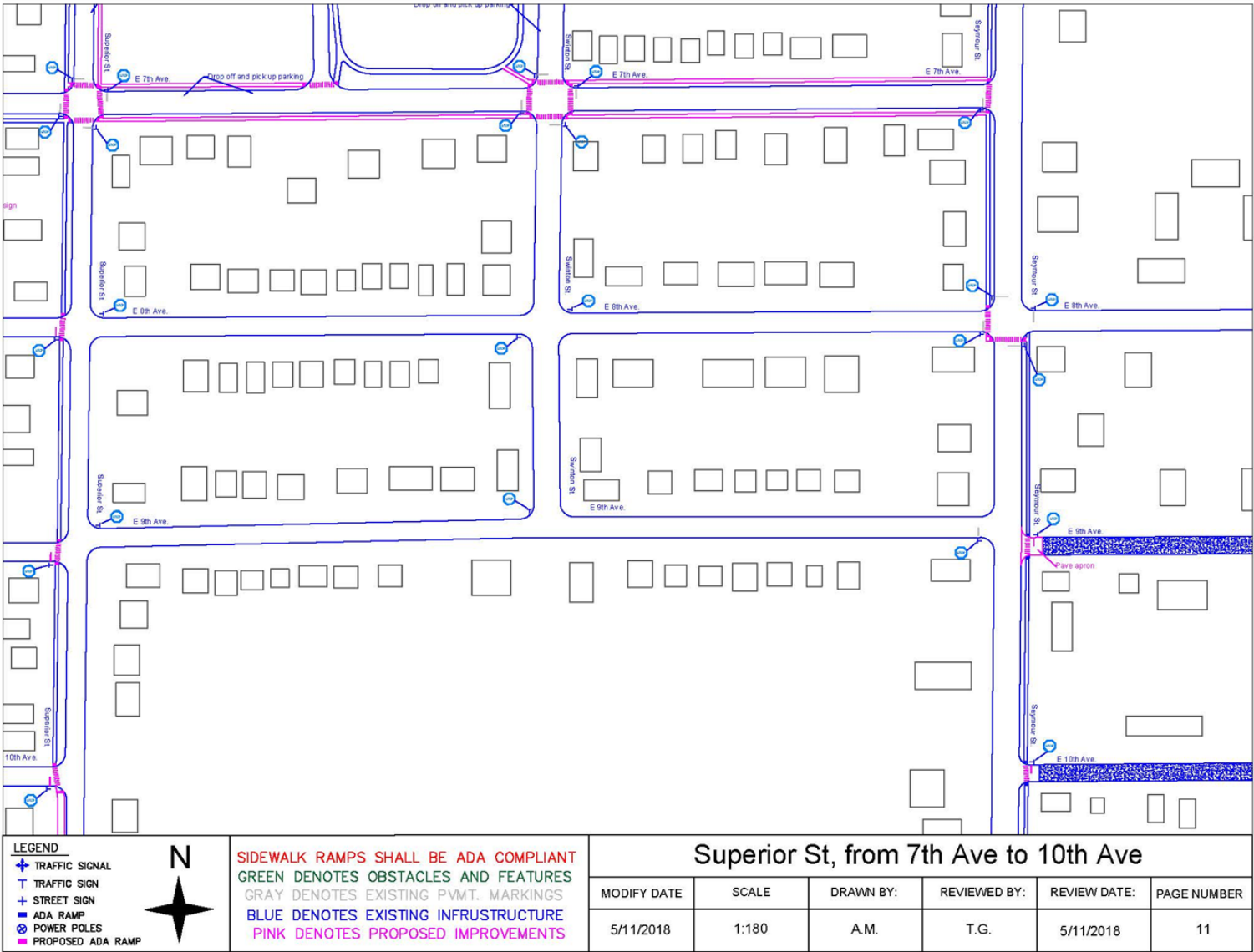
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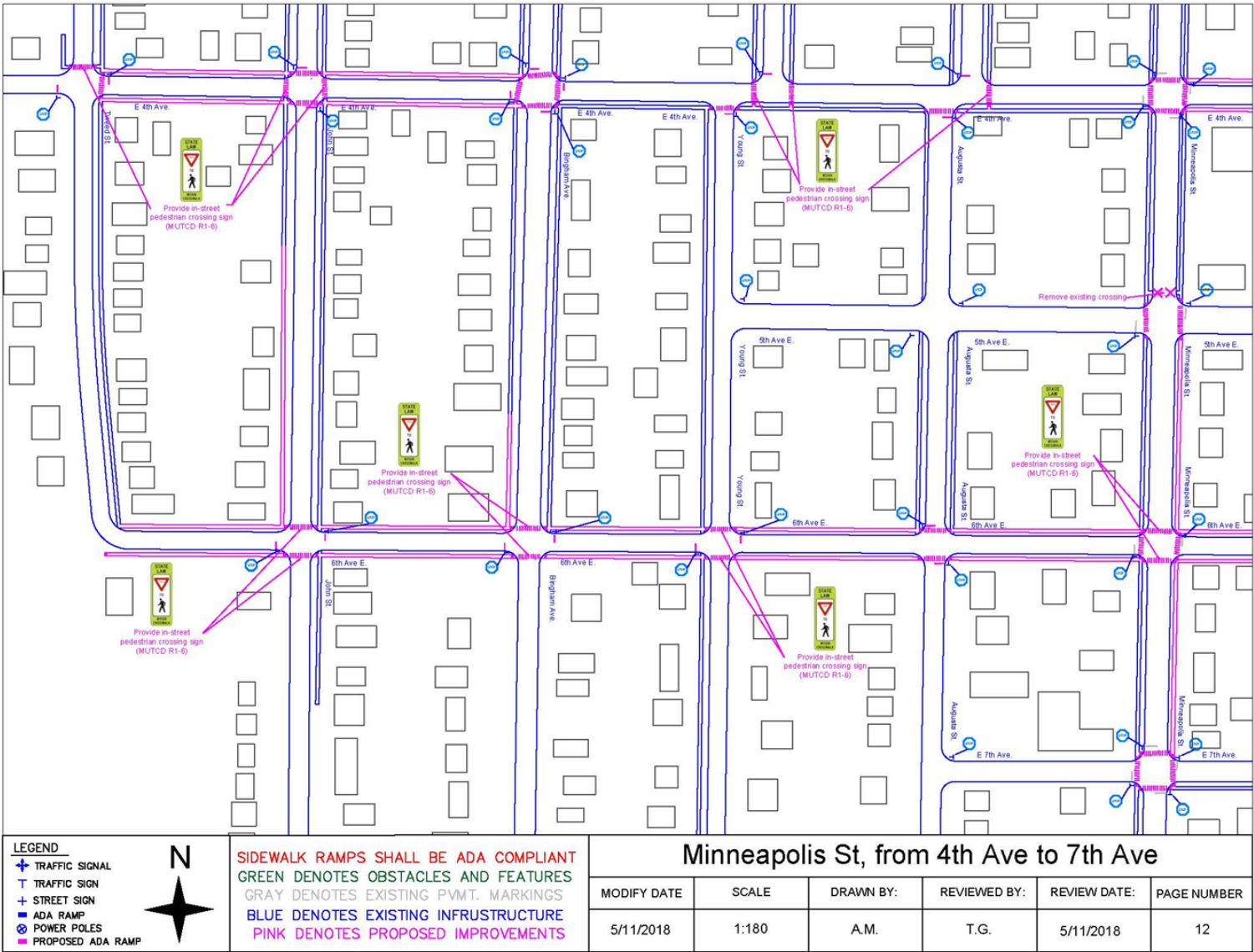


# Appendix C: Infrastructure Improvements

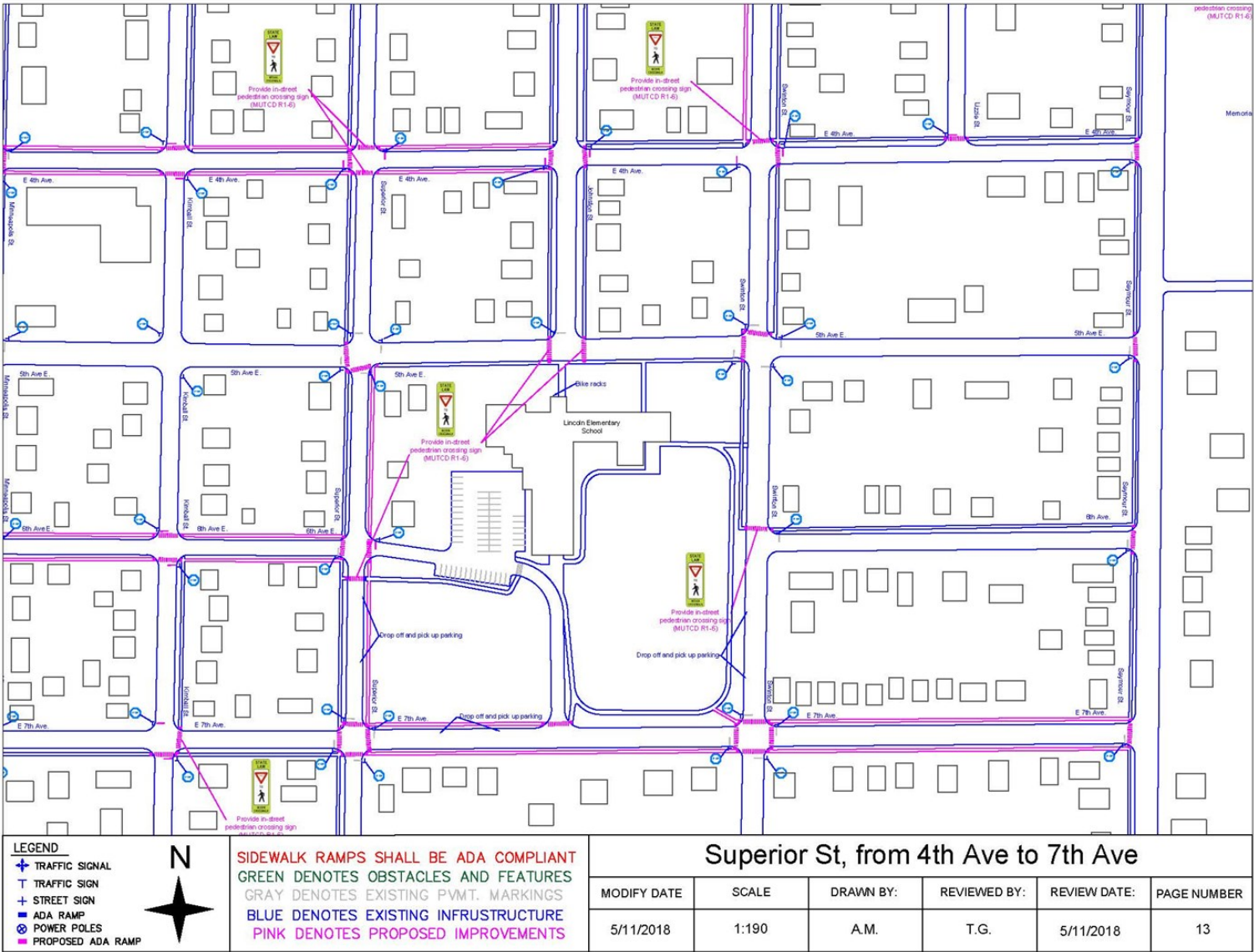




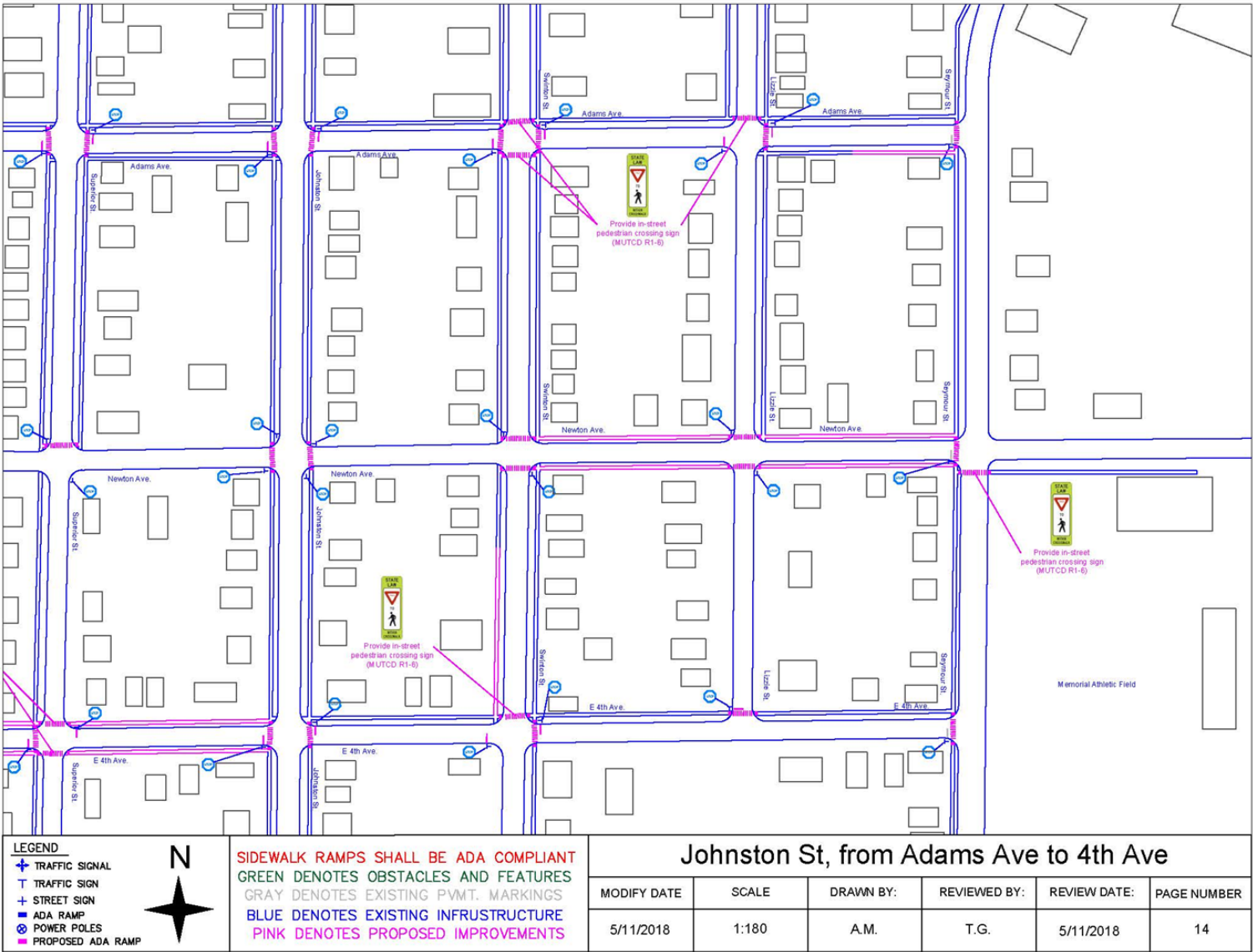
# Appendix C: Infrastructure Improvements



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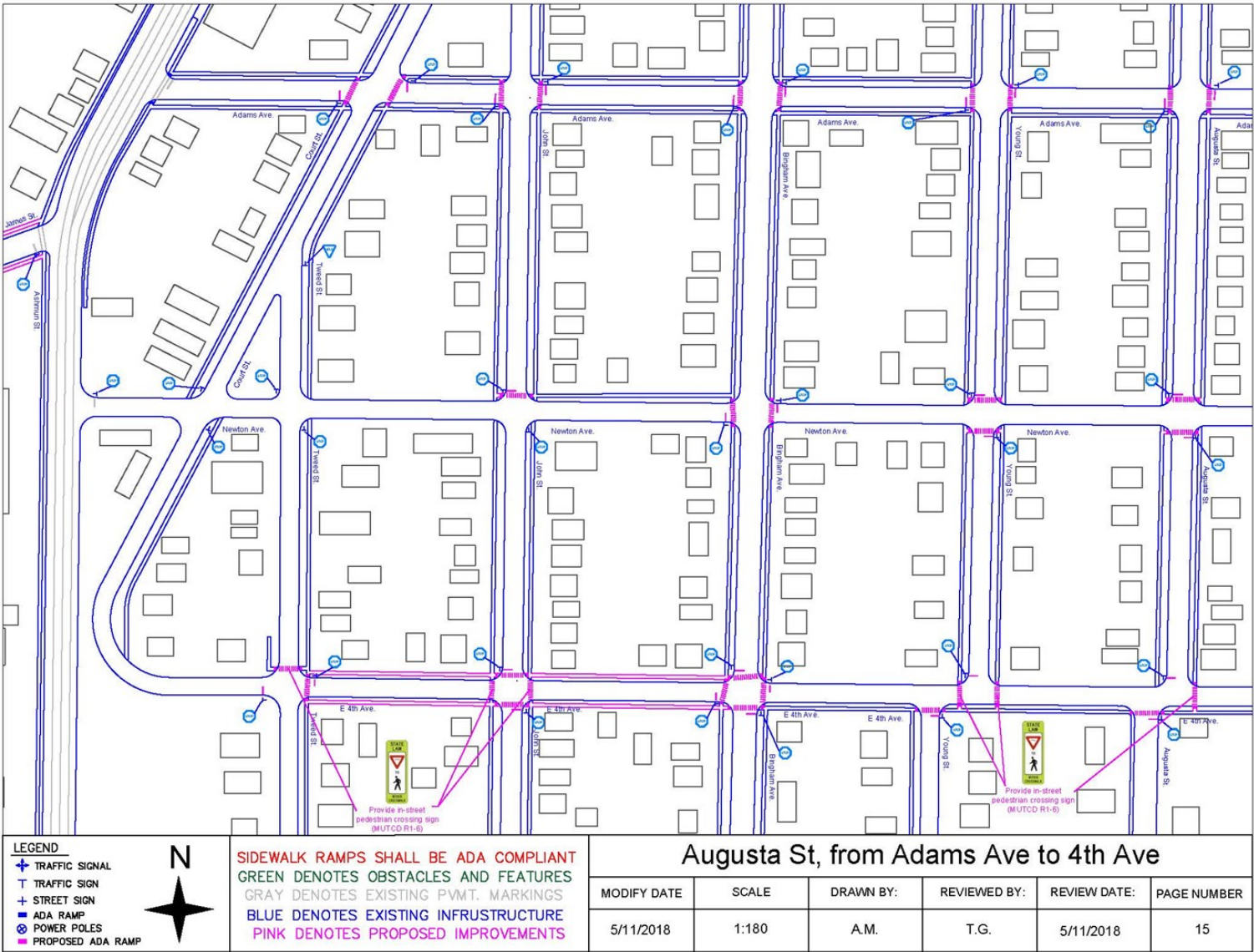


# Appendix C: Infrastructure Improvements

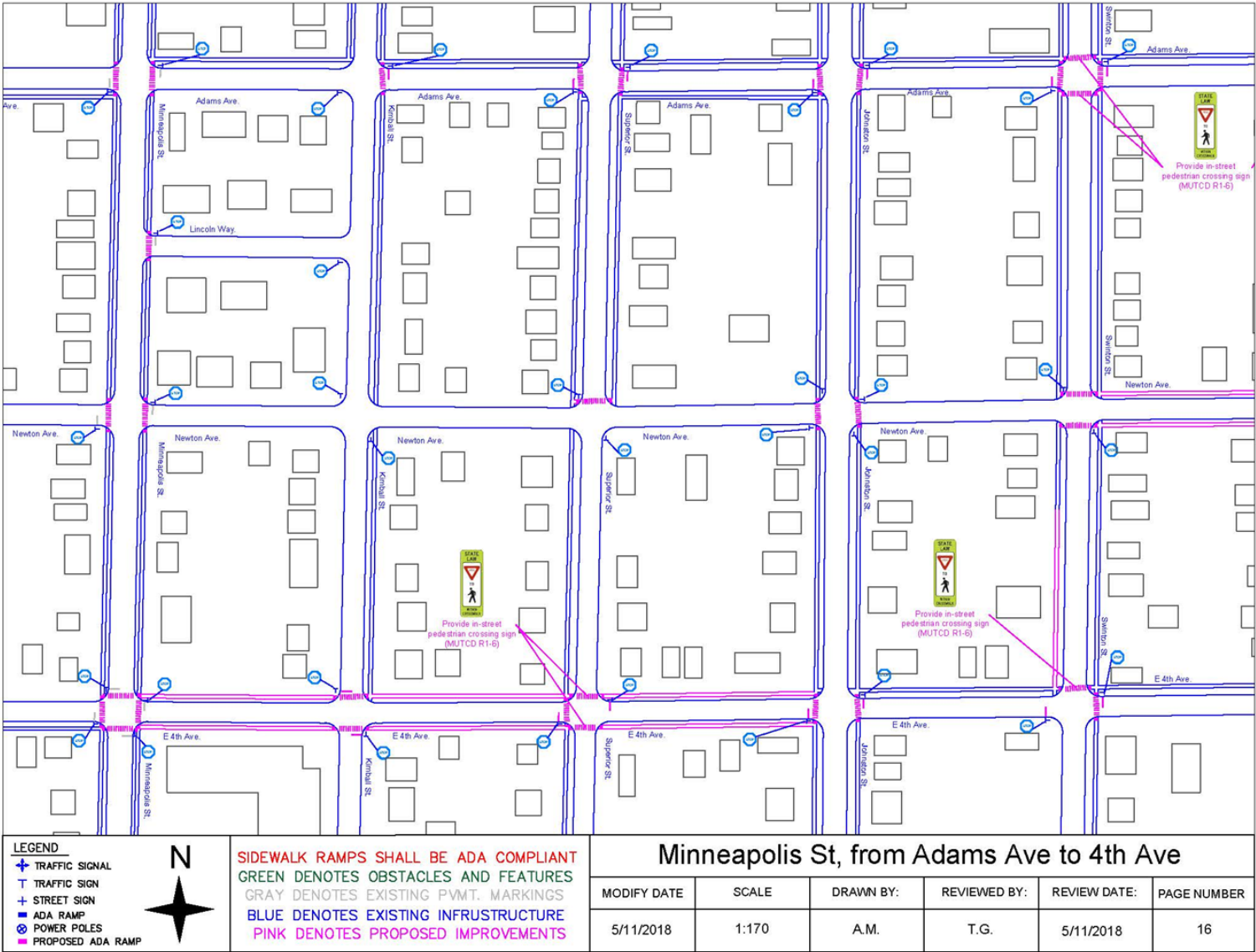




# Appendix C: Infrastructure Improvements



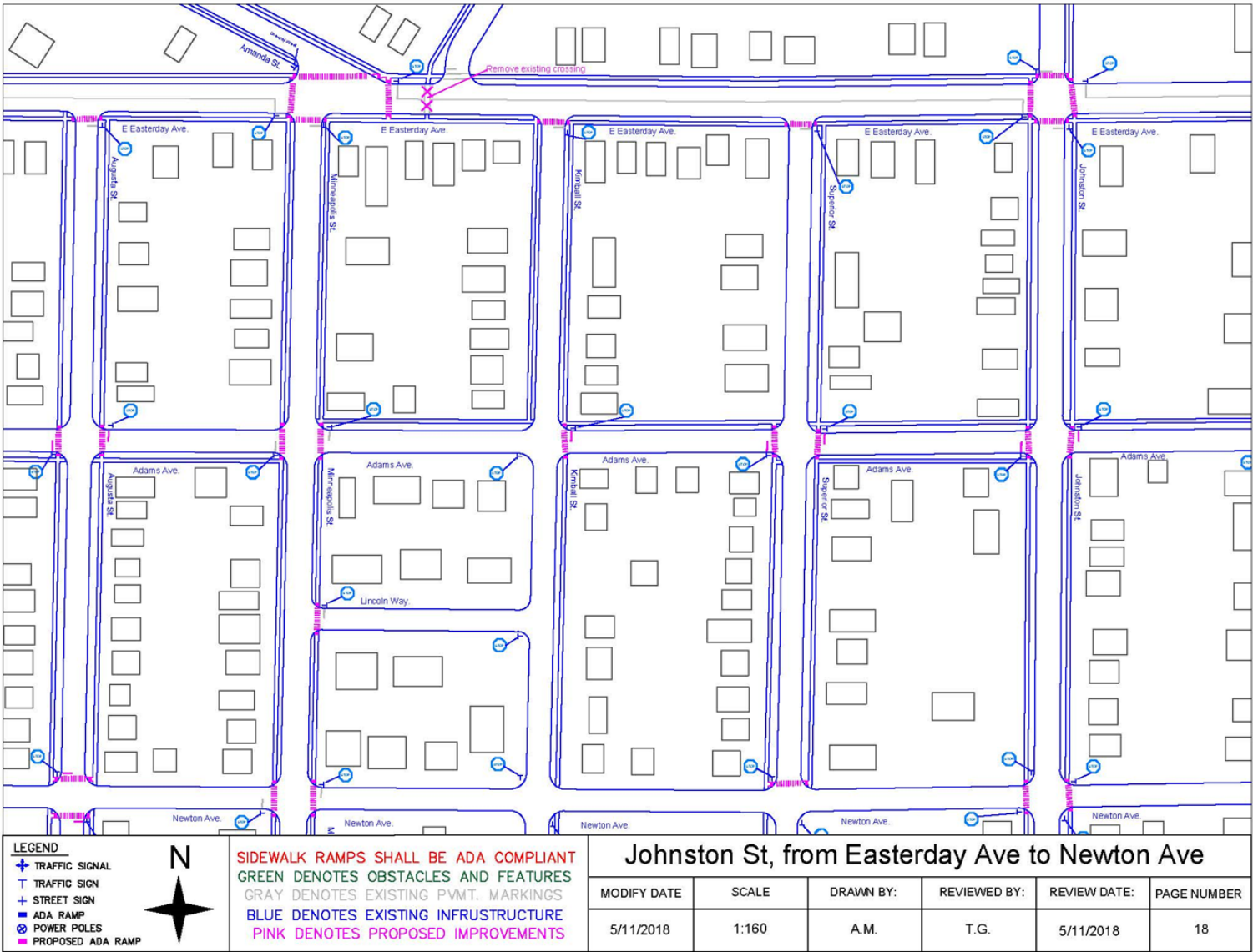
# Appendix C: Infrastructure Improvements



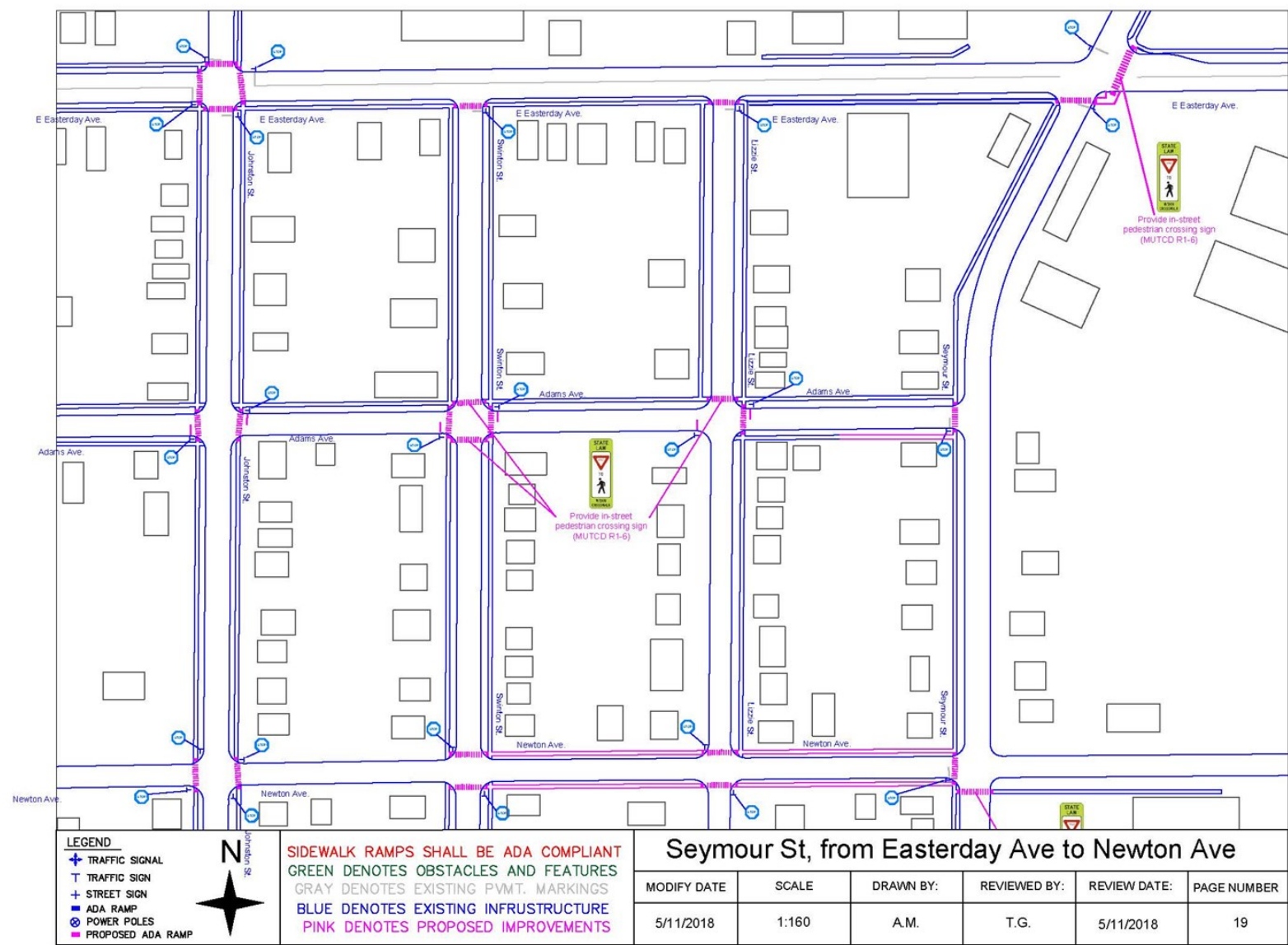




# Appendix C: Infrastructure Improvements



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