MAPLEWOOD TOWNSHIP

LOCAL BICYCLE AND PEDESTRIAN PLANNING ASSISTANCE

August 2018

Cover Photo Credit: NV5, Inc.

Disclaimer
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Acknowledgments

The project team would like to recognize and express appreciation to the numerous individuals who contributed information, attended a meeting or workshop, sent in a comment, or otherwise participated in the development of the Maplewood Township Local Technical Assistance Project.

Special thanks to the Steering Committee for their time and on-going commitment to making Maplewood Township a safe and enjoyable place for walking and bicycling.

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The Office of Bicycle and Pedestrian Programs, New Jersey Department of Transportation & the Township of Maplewood.

with

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EXECUTIVE SUMMARY

The Township of Maplewood applied for and received Local Planning Assistance through the New Jersey Department of Transportation (NJDOT) Office of Bicycle and Pedestrian Programs (OBPP) Local Technical Assistance Program.

Focus Areas

Four areas of concern were identified by the Township - Burnett Avenue, Prospect Street, Ridgewood Road & Wyoming Avenue. In addition, the project team reviewed intersection design for two intersections on Valley Street.

Project Objectives

- Address traffic speeds
- Improve safety and accessibility
- Reduce crashes
- Evaluate lighting levels
- Examine traffic calming policies

Project Outcomes

- Existing conditions, opportunities, and constraints
- Lighting assessment
- Intersection design review
- Planning level concepts

Methodology

The project team addressed each corridor individually, selecting specific studies, assessments, and treatments to focus on the needs and characteristics of each segment. NV5 conducted lighting assessments for Prospect Street, Wyoming Avenue and Ridgewood Road. Speed and traffic counts were performed for Burnett Avenue.

A Steering Committee comprised of representatives from NJDOT, Maplewood Township and other local stakeholders was actively involved throughout the study. Public workshops were help to gather input for the plan, and team members participated in local events to engage the public and gather feedback for the recommendations.

Recommendations

Planning level concepts for each corridor and specific intersections were developed for Burnett Avenue and Prospect Street as requested by the Township. An implementation matrix with construction cost estimates, responsibilities and timelines was developed for all the concepts.

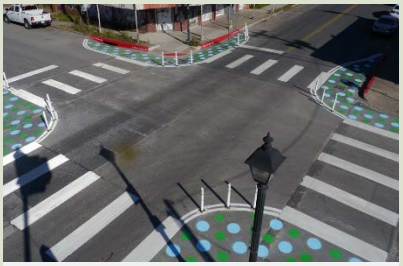
Typical recommendations

The majority of the recommendations in this report are low-cost, easy-to-install measures involving mostly pavement markings and signage such as crosswalk visibility enhancements, curb extensions/ daylighting intersections and partial closures. Final design of these and other measures such as installing sidewalks and curb ramps and traffic signal upgrades will require additional time and investment. Improving lighting conditions at intersections can be expensive but is an important aspect of improving pedestrian and motorist safety. Typical recommendations include:

- **Narrowing travel lanes** and striping the parking lane or a wider shoulder can help improve safety, lower vehicle speeds, and reduce effective crossing distances.
- **Sidewalks** should be a minimum of 5' wide in residential areas and the Township should focus on completing the sidewalk network. All sidewalks should adhere to ADA requirements and guidelines and ADA compliant curb ramps should be provided at all crosswalks.
- **Crosswalk visibility enhancements** help drivers detect pedestrians and reinforce the pedestrians' right-of-way on the road. These improvements have been shown to lead to a reduction in pedestrian-vehicle crashes[1]. Crosswalk visibility enhancements typically include high-visibility markings, curb extensions or "daylighting", advance signage, parking restrictions near the crosswalk and improved lighting. Crosswalks should be marked with thermoplastic paint, which is durable and contains retro-reflective properties that enhances visibility in dark conditions.
- **Curb extensions or "Daylighting"** can help improve visibility at intersections as they eliminate options for illegal parking within 25 feet of crosswalks and they shorten the effective crossing distance for pedestrians. Curb extensions can be engineered or built but that is costly, impacts drainage and is time-consuming to install. A simple low-cost approach can be to use paint the pavement with a tan textured epoxy and install flexible bollards to "daylight" the intersection.
- **Partial closures** may reduce traffic volumes by restricting vehicle access and reducing turning conflicts. They can be designed to allow emergency vehicle access. They can be installed as temporary / "quick-build" with flexible bollards, signs and paint.
- **Realign the intersection** to reduce or eliminate sharp skew angles can help by addressing limited visibility and sight distance at intersections. By realigning the intersection to be more perpendicular, may help reduce crashes and reduce the number of conflicts. This measure can also be installed quickly with paint and flexible bollards paired with signage.
- **Clearing the intersection sight triangles** of overgrown foliage or other objects such as signs, utilities, fences or parking can improve the visibility of the intersection and may reduce crashes. This may require coordination with property owners and enforcing the Township policy. Local Parent-Teacher Association (PTA) and school students can volunteer to help homeowners clear shrubbery or other obstructions.

Narrow travel lanes
Credit: FHWA

High-visibility crosswalk
Credit: NV5



Daylighting Intersection
Credit: City of Austin

Temporary Street Closure
Credit: Raisethehammer.org

[1] Crosswalk Visibility Enhancements Safe Transportation for Every Pedestrian Tech Sheet, FHWA

Location	PROSPECT STREET Recommendations	Approximate Construction Costs[2]
Prospect Street: South of Springfield Avenue	• Move parking restrictions signs to 25 feet from crossswalk and reinforce with striping • Stripe parking lane to visually narrow the roadway • Enforce sight triangles for all intersections • Add 25 mph pavement markings • Improve lighting at all intersections considered dim as per the lighting assessment	$20,000 to $30,000
Prospect Street: North of Springfield Avenue	• Narrow travel lanes to 10' & stripe parking • Daylight all intersections to improve visibility • Enforce sight triangles for all intersections • Add 25 mph pavement markings • Improve lighting at all intersections considered dim as per the lighting assessment	$100,000 to $150,000
Sommer Avenue	• High friction surface course in the travel lane along the curved portion of the roadway to reduce crashes by increasing friction and to increase awareness of the curve • Review traffic volumes on Prospect to consider installing speed humps and warning signs on the approach to the curve	$20,000 to $35,000
Harvard Avenue	• Daylight intersection to improve visibility • Reinforce the "no parking within 100' of the intersection" by placing traffic cones during school hours	$4,500 to $7,000
Tuscan Road	• Increase width of crosswalk at the church to prevent cars from parking too close to the crosswalk • Evaluate split-phase signal for the Tuscan Road intersection to reduce right and left turning conflicts • Evaluate lead pedestrian interval for the Tuscan Road intersection to enhance visibility of pedestrians and reinforce their right-of-way over turning vehicles	$750 to $1,000 (plus cost of traffic signal upgrades)

[2] **The costs listed are estimated construction costs only and do not include costs associated with developing final design and engineering plans.**

Location	BURNETT AVENUE Recommendations	Approximate Construction Costs[2]
South of Lombardy Place	• Install high-visibility crosswalks • Narrow travel lanes (10') & stripe parking • Narrow travel lanes (10'), stripe 4' median & parking lane • Complete sidewalk network • Enforce sight triangles for all intersections • Add gateway element • Add 25 mph pavement markings	$80,000 to $120,000
North of Lombardy Place	• Install high-visibility crosswalks • Narrow travel lanes to 10' & stripe a 2' shoulder on each side, consider removing the yellow centerline • Enforce sight triangles for all intersections • Add 25 mph pavement markings	$20,000 to $30,000
Rutgers Street	• Daylighting to improve visibility • Install high-visibility crosswalks • Complete sidewalk network • Option A: Consider an all-way stop sign (short-term) and a traffic light (if warranted for long-term) • Option B: Install a mini-roundabout (fully traversable for large vehicles)	$7,500 to $11,000 (Plus $1,500 - $2,000 stop sign, $250,000 - $300,000 traffic light)(Mini-Roundabout – $35,000 - $53,000)
Wellesley Street	• Install high-visibility crosswalks • Install missing curb ramp near intersection	$3,500 to $6,000
Lexington Avenue & Tuscan Street	• Full closure of Lexington Avenue with temporary or permanent barriers to limit conflicts due to inadequate visibility. • Complete sidewalk network with curb ramps in front of senior center and connect to DeHart Park. • High-visibility crosswalks paired with an advance stop bar and stop for pedestrians signs.	$15,000 to $175,000
Franklin Avenue & Vermont Street	• Realign intersections to reduce the skew angle by narrowing the approach at both intersections. Prohibit left turns to Burnett Avenue from Vermont Street. • Alternate option is to install partial closures at Franklin Avenue and Vermont Street to prevent turns onto Burnett Avenue. • Install high-visibility crosswalks • Add a "smart" radar sign	$10,000 to $17,000
Springfield Avenue and Tuscan Road	• In-street stop for pedestrians sign • Add a gateway element • Add 25 mph pavement markings	$5,000 to $10,000

I. Introduction

Study Overview

The Township of Maplewood applied for and received Local Planning Assistance through the New Jersey Department of Transportation (NJDOT) Office of Bicycle and Pedestrian Programs (OBPP) Local Technical Assistance Program to study four areas of concern identified by the Township.

The project prioritized four corridors in Maplewood Township. The project team addressed each corridor individually, selecting specific studies, assessments, and treatments to focus on the needs and characteristics of each segment. The four areas of concern are listed below:

Figure 1 Study Focus Areas

Prospect Street — **FOCUS:** Improving Safety & Traffic Calming

- A lighting assessment was performed, along with the development of corridor-wide recommendations and three site-specific intersection concepts

Burnett Avenue — **FOCUS:** Improving Pedestrian Safety & Traffic Calming

- Speed and traffic counts were performed. Five site-specific concepts were developed

Wyoming Ave & Ridgewood Road — **FOCUS**: Quantifying Roadway Lighting Levels at Intersections

- A lighting assessment was performed

Valley Street Intersections Baker Street & Tuscan Street — **FOCUS:** Review of Intersection Design

To determine existing conditions, the project team reviewed reports, studies, and mapping (see ***Appendix A***), conducted filed investigations, and performed speed and volume traffic counts and analysis along Burnett Avenue.

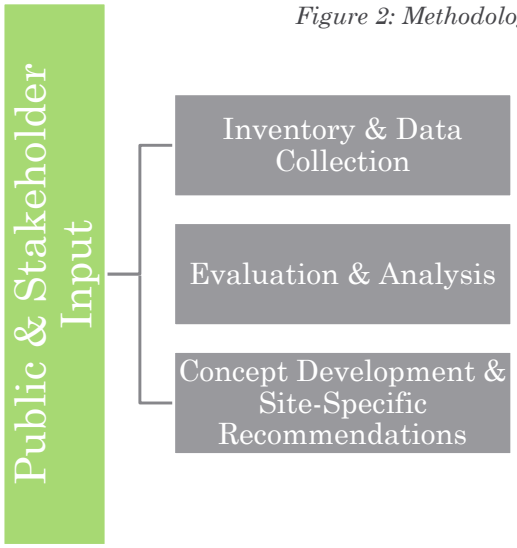
Report organization

This report is organized into the following chapters:

- **Chapter 1 – Introduction** provides an overview of the project and the areas of focus as requested by the Township, explains the overall methodology for the project and describes the public participation process and steering committee involvement
- **Chapter 2 – Focus Areas & Recommendations** describes the focus area existing conditions and analysis as well as recommendations and an implementation matrix for each focus area
- **Chapter 3 – Traffic Calming Policy Review** reviews the current Traffic Calming Policy and recommends revisions to the policy
- **Chapter 4 – Implementation & Funding** discusses the implementation process and a list of potential funding sources
- **Appendices** include document review (Appendix A), meeting materials and summaries (Appendix B), lighting assessment for Ridgewood Road, Wyoming Avenue and Prospect Street (Appendix C), traffic data for Burnett Avenue (Appendix D), sight triangle diagrams for Burnett Avenue (Appendix E), annotated PDF of Valley Street improvements (Appendix F), traffic calming policy case studies (Appendix G) and further details on funding programs and sources (Appendix H).

Methodology

Figure 2: Methodology



The methodology for the Plan involved an evaluation of the four corridors in the Township. In order to determine existing conditions, the project team reviewed reports, studies, and mapping. Field investigations were conducted on Prospect Street, Burnett Avenue, Wyoming Avenue and Ridgewood Road, and intersections of Valley Street with Baker Street and Tuscan Street. Speed and volume traffic counts and analysis were performed during field investigations on Burnett Avenue. Lighting assessments were conducted during field investigations on Prospect Street, Ridgewood Road, and Wyoming Avenue. The existing conditions analysis identified issues and opportunities related to pedestrian safety. The project team worked with Maplewood Township and a project Steering Committee to develop design recommendations for the focus areas.

The project team reviewed and recommended revisions to the Township's Traffic Calming Policy. Throughout the planning process, public participation and input guided the project's objectives and the development of concepts and recommendations. Community engagement through stakeholder and public outreach events included a press release provided to the Township for distribution and posting on the municipal website, two Steering Committee meetings, and two public workshops.

Community Outreach

Steering Committee

A Steering Committee was established as an important resource for project development. The committee comprised of Township representatives (including public works, police, parks and recreation), schools, businesses, and residents representing community stakeholders. The Steering Committee provided insight regarding potential issues, challenges, and improvement concepts.

Steering Committee Kick-Off Meeting

The Steering Committee Kick-Off Meeting was held in November 2017. The purpose of the kick-off meeting was to introduce NJDOT's Local Technical Assistant (LTA) Program; review the project scope, schedule and objectives; and begin identifying potential issues and challenges. A map of Prospect Street and Burnett Avenue study area was used by the attendees to identify and detail areas of concern.

Steering Committee Concept Review Meeting

Following the completion of the two Public Workshops and draft concept development, the Steering Committee reconvened May 2018 to review the Plan's progress. The review meeting provided an opportunity for the Steering Committee to confirm consensus on the recommendations and provide insight on feedback from the Public Workshops about improving the area's bicycle and pedestrian friendliness. A mapping exercise was conducted during the meeting. Committee members provided detailed information on areas of concern through discussion and making use of a map of Maplewood Township.

Public Workshops

Two Public workshops were held during the project. They were informal in nature with stations/exhibits where various aspects of the project, such as background, existing conditions, opportunities and constraints, and recommended improve were

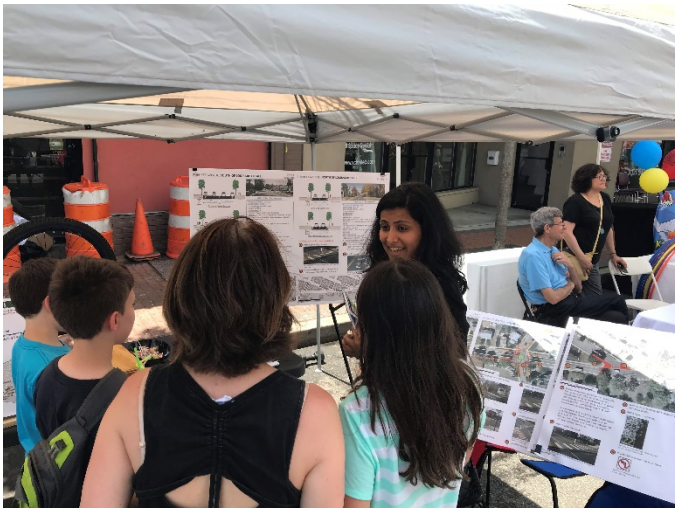
presented. These workshops provided an opportunity for the public to comment and provide feedback to the project team.

Public Workshop #1

The first Public Workshop was held in March 2018 at the Dehart Community Center. The purpose of the meeting was to inform the public about the study and seek their input on ideas and concerns. Attendees received an overview of the project and a presentation of key findings from data collection and field analysis. After an overview of Complete Streets concepts[3] and engineering countermeasures to improve pedestrian safety and calm traffic, attendees completed a mapping exercise. Large maps of Prospect Street and Burnett Avenue were placed on tables for attendees to mark-up and provide commentary on. **(Appendix B)**

Public Workshop #2

The final Public Workshop, held in May 2018 at the MayFest street fair, solicited feedback from a wider range of people. The purpose of the workshop was to inform the public about the recommended improvements on Burnett Avenue and Prospect Street and seek their feedback. Display boards of the recommended improvements on Prospect Street and Burnett Avenue were available for the attendees to mark-up/vote. Attendees were encouraged to participate in an educational Q&A exercise where participants could answer questions about pedestrian safety in Maplewood in order to win a prize. Attendees also provided any commentary on the proposed recommendations by filling out a comments sheet. **(Appendix B)**



[3] Complete Streets are streets for everyone. They are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Complete Streets make it easy to cross the street, walk to shops, and bicycle to work. They allow buses to run on time and make it safe for people to walk to and from train stations. (Smart Growth America)

II. Focus Areas & Recommendations

Overview

The focus areas for this project were four corridors –Burnett Avenue, Prospect Street, Ridgewood Road and Wyoming Avenue. NV5 also reviewed the design of two intersections on Valley Street. This section includes an overview of existing conditions and analysis and recommendations for each of the focus areas. The scope of this project included specific tasks for each location (see Figure 3: Overview Map):

1. Improve Pedestrian Safety and Traffic Calming for Burnett Avenue and Prospect Street
2. Lighting Assessment for Wyoming Avenue, Ridgewood Road and Prospect Street
3. Intersection design review for Valley Street

Evaluation and Analysis

The analysis of each focus areas involved background research, field visits and data collection and analysis. This helped create an understanding of the existing conditions and identify issues and opportunities for each focus area. Based on the evaluation and analysis of existing conditions and based on input from the Steering Committee and the community, the team developed recommendations to improve pedestrian safety and traffic calming.

Recommendations

The recommendations are categorized into five categories:

1. Engineering
2. Lighting
3. Enforcement
4. Evaluation & Planning
5. Education

It is important to note that the engineering recommendations are at the planning-level and intended to guide future improvements. Prior to advancing the engineering recommendations, further data collection and analysis may be required to fully assess their impact. Many of the recommendations can be employed as short-term projects to test their effect and efficiency.

The recommendations in the implementation matrices that follow have been organized into recommendations for each focus corridor and related intersections. While the focus of this study were the roadways identified earlier, there are education and enforcement recommendations that can be implemented at the township-level to complement the engineering recommendations. The township-wide recommendations are identified at end of this chapter as part of the Education & Evaluation recommendations.

The study recommendations were developed based on guidance in the state-of-the practice guides including the New Jersey Department of Transportation *Complete*

Streets Design Guide, the Institute of Transportation Engineers (ITE) *Unsignalized Intersection Improvement Guide*, National Association of City Transportation Officials (NACTO) *Urban Street Design Guide*, and the Manual on Uniform Traffic Control Devices (MUTCD). It is recommended that these guides be utilized while implementing the study recommendations.

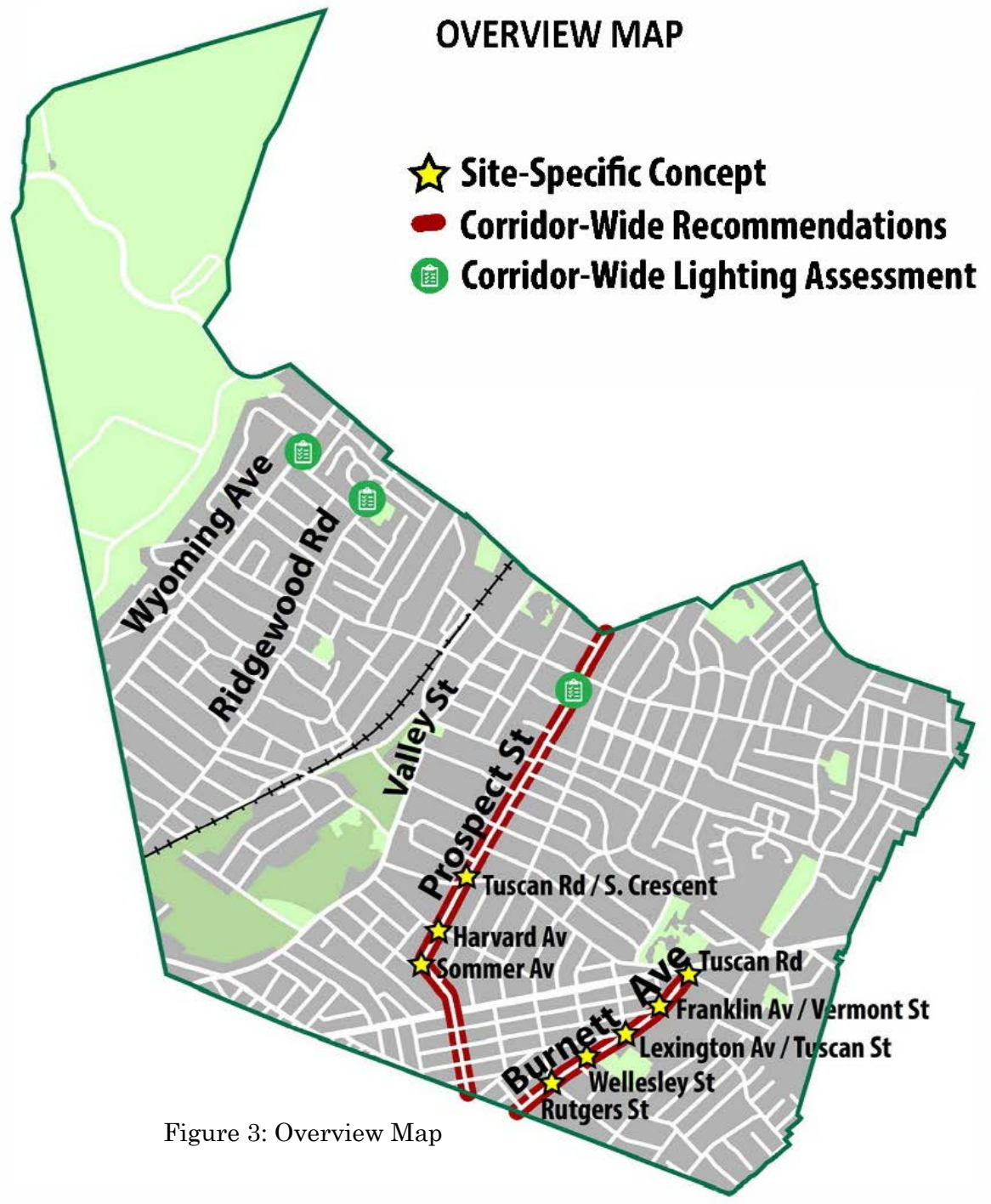


Figure 3: Overview Map

Typical Recommendations

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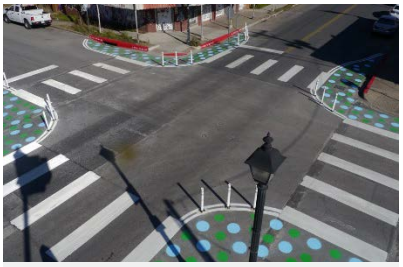
Narrow travel lanes
Credit: FHWA

High-visibility crosswalk
Credit: NV5



Daylighting Intersection
Credit: City of Austin

Temporary Street Closure
Credit: Raisethehammer.org

[4] Crosswalk Visibility Enhancements Safe Transportation for Every Pedestrian Tech Sheet, FHWA

Prospect Street

Existing Conditions

Prospect Street is a 1.4 mile, two lane, undivided road that runs north-south through residential neighborhoods and connects with the Township of Union (south) and the Village of South Orange (north). It is a heavily traveled street seven days a week and is used by a large number of pedestrians going to and from the train station, schools, and religious institutions. Tuscan Elementary School and Columbia High School are located off Prospect Street. School related traffic congestion exists in the morning and afternoon at the Harvard Avenue and Parker Avenue intersections. Residents have complained about the traffic speed and lack of pedestrian safety on the roadway.

Roadway Characteristics

The posted speed limit of Prospect Street is 25 mph. Traffic speed data collected by the Township in December 2016 found that the 85th percentile at the northern end of Prospect Street was 31mph and the average speed was 26mph. There are 21 intersections; 17 unsignalized, one with a flashing light (Harvard Avenue), and three with signals (Springfield Avenue, Tuscan Road, and Parker Street). Fourteen of the 21 intersections are "T" intersections. Prospect Street has two cross sections. The following graphics illustrate typical conditions south of Springfield Avenue and north of Springfield Avenue including aerial and streetview photos.

Figure 4: Prospect Street Map

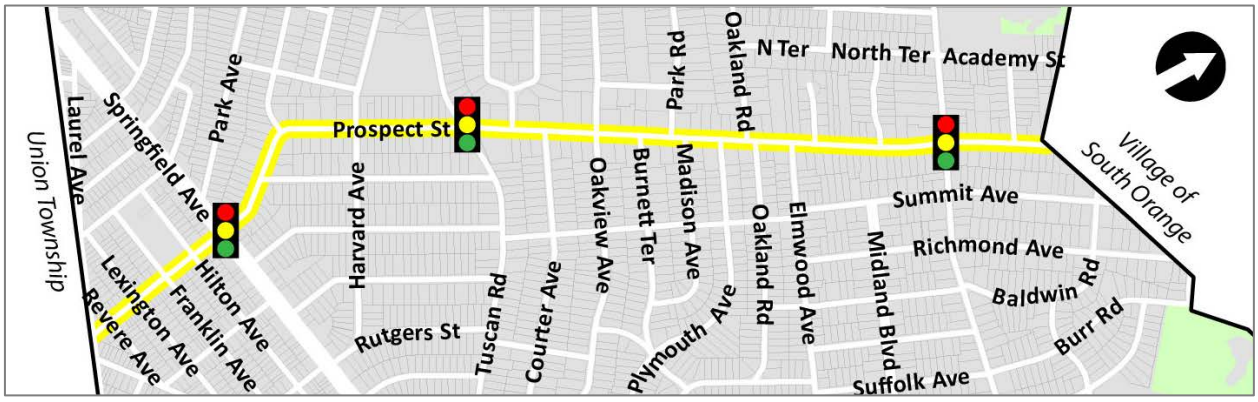
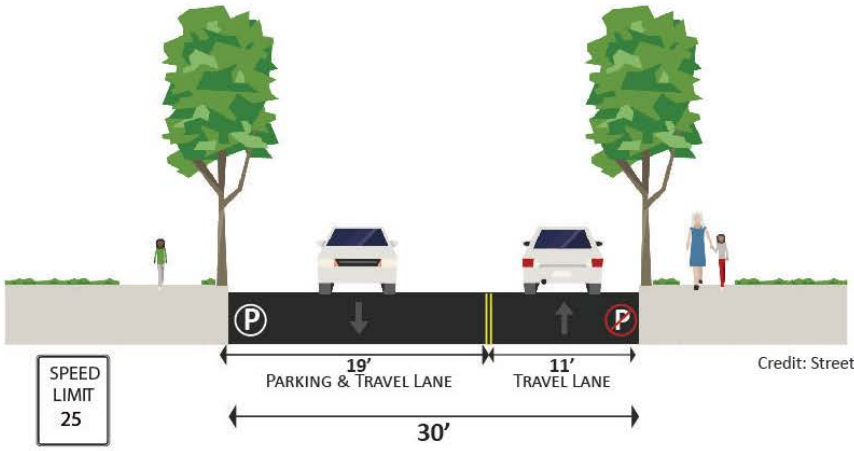


Figure 5: Roadway Characteristics: Prospect Street (South of Springfield Avenue)

PROSPECT STREET (SOUTH OF SPRINGFIELD AVE)

STREET VIEW (NORTHBOUND)

Credit: Google Maps



Credit: Streetmix

EXISTING CROSS SECTION

ROADWAY CHARACTERISTICS

JURISDICTION: MUNICIPAL
CLASSIFICATION: URBAN COLLECTOR
LENGTH: 0.2 MILE
INTERSECTIONS: 5
SIGNALIZED: 1
PARKING: PERMITTED ON ONE SIDE
SIDEWALKS: 4 FEET, BOTH SIDES
CROSSWALKS: HIGH VISIBILITY AT ALL LEGS OF EVERY INTERSECTION

NOTES:
Recommended as a Bike Route in the 2010 Maplewood Bikeway Network Plan.

Current traffic calming measures installed include speed humps, a raised intersection, and a Pedestrian Activated Flashing Light.

Credit: NearMap

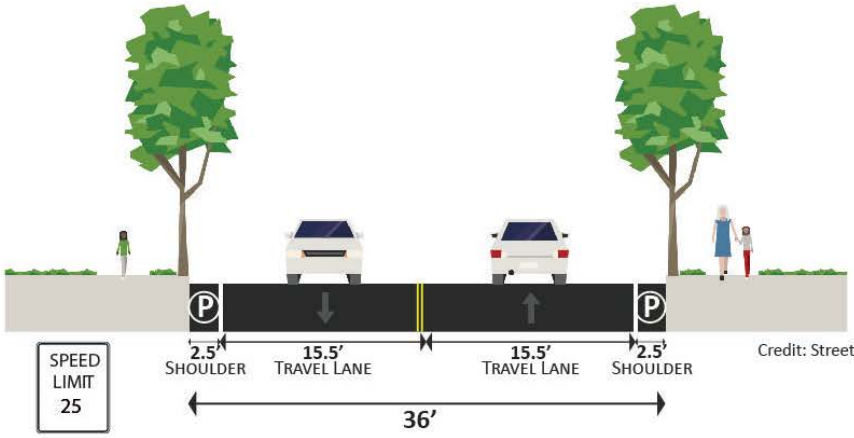
AERIAL

Figure 6: Roadway Characteristics: Prospect Street (North of Springfield Avenue)

PROSPECT STREET (NORTH OF SPRINGFIELD AVE)

STREET VIEW (NORTHBOUND)

Credit: Google Maps



Credit: Streetmix

EXISTING CROSS SECTION

ROADWAY CHARACTERISTICS

JURISDICTION: MUNICIPAL
CLASSIFICATION: URBAN MAJOR COLLECTOR
LENGTH: 1.2 MILE
INTERSECTIONS: 19
(3 SIGNALIZED, 1 FLASHING LIGHT, 14 T INTERSECTIONS, 1 THROUGH STREET (OAKVIEW AVENUE)
PARKING: PERMITTED BOTH SIDES
SIDEWALKS: 4 FEET ON BOTH SIDES
CROSSWALKS: HIGH VISIBILITY, ONE LEG AT THE T INTERSERCTIONS IS MARKED, ALL LEGS MARKED AT 4 LEG INTERSECTIONS

NOTES:
Signed as a Bike Route.

AERIAL

Credit: NearMap

Current Traffic Calming Measures

South of Springfield Avenue

- Two temporary **speed humps** have been placed mid-block between Franklin and Lexington Avenues and between Lexington and Revere Avenues. The speed bumps have been successful at slowing traffic and reducing crashes. The Township plans to make them permanent.
- A **raised intersection** at Hilton Avenue.
- A **Pedestrian Activated Flashing light** at Franklin Avenue.

North of Springfield Avenue

- **In-street Pedestrian Crossing signs** are installed at eight unsignalized crosswalks.
- **Lane Narrowing** – edge lines were painted approximately 30 inches from the curb line.
- A **15mph limit** was instituted at the curve at the Sommer Avenue intersection.

Field Investigation

A field investigation was conducted on Thursday, December 7, 2017. The weather was clear, sunny, and about 40 degrees. The following general observations were noted:

1. The sidewalk network along Prospect Street is complete and all crosswalks have high visibility striping.
2. The crosswalks across Prospect Street south of Springfield Avenue are enhanced with Pedestrian Warning signs (W11-2).
3. Most of the crosswalks north of Springfield Avenue are enhanced with the In-Street Pedestrian Crossing sign (R1-6a). Only Harvard Avenue and the crosswalk south of South Crescent have Pedestrian Warning signs (W11-2).

Example of a Pedestrian Warning sign (W11-2) on Prospect Street

Example of an In-Street Pedestrian Crossing sign (R1-6a) on Prospect Street

General issues

1. Drivers parking too close to intersections and crosswalks.
2. Drivers ignoring pedestrians waiting to cross at unsignalized crosswalks.
3. Vegetation obstructing sight triangles at intersections.
4. Speeding north of Springfield Avenue.

A summary of existing conditions, issues, and potential opportunities are detailed in the following pages.

Prospect Street- Corridor-Wide

1. Prospect Street South of Springfield Avenue

Existing Conditions:

- On street parking is permitted on the south-bound side of the road
- The parking lane is not striped.

Opportunity:

Prospect Street in South Orange

- Narrow the travel lane by striping the parking lane on one side

2. Prospect Street North of Springfield Avenue

Existing Conditions:

Prospect Street in Maplewood

- 15.5 foot travel lanes and 30 inch shoulders
- Wide travel lanes encourages speeding

Opportunity:

Prospect Street in South Orange

- Narrow the travel lane by striping the parking lane

Prospect Street- Intersections

1. Prospect Street and Franklin Avenue

Existing Conditions:

- No Parking sign is located 10 feet from crosswalk. NJ law restricts parking within 25 feet of crosswalks unless there is a curb extension

Opportunity:

- Move sign to 25 feet from crosswalk and reinforce parking restrictions by painting yellow or white diagonal crosshatch markings.

2. Prospect Street and Revere Avenue

Existing Conditions:

- Vegetation obstructs sight distance

Opportunity:

- Work with property owners to clear obstructions

3. Prospect Street and Sommer Place

Existing Conditions:

- Speed limit is reduced to 15 mph around the curve
- There are signs with chevrons (W1-8) installed at the curve to advise drivers of the change in roadway alignment
- Steering Committee reported motorists continue to speed even with the additional warning signs

Opportunity:

Example of paint speed reduction markings

- Install “Curve Ahead” or “Curve 15 mph” Pavement Markings
- Paint speed reduction markings - transverse stripes spaced at gradually decreasing distances to increase drivers’ perception of speed. Example above.

4. Prospect Street and Harvard Avenue

Existing Conditions:

- Dangerous Intersection signs installed on the approach. Dangerous should not be used on a warning sign. It can create liability concerns because if the location is identified as dangerous, it should be fixed.

Opportunity:

- Replace "dangerous intersection" sign with Intersection Warning sign (W2-1).

5. Prospect Street and Harvard Avenue

Existing Conditions:

- Parking is restricted within 100 feet of the intersection but is often ignored by motorists.
- Intersection is congested during school arrival and dismissal.

Opportunity:

Example of a stylized crosswalk

- Supplement signs by painting restricted parking area.
- Opportunity for placemaking. Work with the school and community to design stylized crosswalks for the intersection.

6. Crosswalk south of South Crescent

Existing Conditions:

- The crosswalk is located 30 feet from the intersection to be aligned with the entrance to the church.
- Motorists were observed parking too close to the crosswalk, obstructing pedestrian visibility.

Opportunity:

- Relocate crosswalk to the intersection; install curb ramps. Crosswalks at intersections are preferred and safer because they are expected by motorists. Further daylight the intersection by painting parking restricted area; painted curb extensions; or installing pylons.

7. Prospect Street and Elmwood Avenue

Existing Conditions:

Crosswalk at Elmwood Ave

- 10 crashes (including 2 bicyclist and 2 pedestrian) have occurred at this intersection between 2012-2017.
- There are In-street Pedestrian Crossing signs (R1-6a) installed at the intersection.

Opportunity:

Example of R1-5a with R1-6a

- Consider supplementing the In-Street Pedestrian Crossing sign with either:
- Stop Here for Pedestrian sign (R1-5a) and stop lines in advance of the crosswalk to alert drivers where to stop to let a pedestrian cross or a Pedestrian Crossing sign (W11-2)

Key Findings

The existing conditions analysis identified the following issues and opportunities.

Table 1: Key Findings – Prospect Street

Issue	Observations	Opportunities
• **Intersections and crossings**	• All but one of the 14 crashes involving pedestrians or bicyclists occurred at intersections • Motorists parking too close to intersections • Motorists not stopping for pedestrians at crosswalks	• Daylighting intersection and crosswalks makes pedestrians more visible to motorists and cars more visible to pedestrians. This may be accomplished by painting curb extensions consisting of interim materials including paint, non-skid pavement colorization, and reflective flexible delineators and through enforcing parking restrictions within 25 feet of crosswalks by painting the shoulder.
• **Speeding**	• Motorists were observed traveling over 25 mph • Traffic calming measures south of Springfield Avenue have been successful at slowing traffic and reducing crashes	• Narrow the travel lanes to reduce speed o South of Springfield Avenue narrow the southbound lane by striping an 8 foot parking lane o North of Springfield Avenue stripe an edge line 10 feet from the center line to match the cross section in South Orange

EXAMPLE OF AN INTERSECTION WITH DAYLIGHTING

PROSPECT STREET IN SOUTH ORANGE HAS 10 FOOT TRAVEL LANES AND AN 8 FOOT PARKING LANE

Lighting Assessment

The lighting assessment performed on Prospect Street quantified roadway lighting levels at all intersections along the corridor. The assessment found that the lighting level was adequate at 36% of intersections and that the lighting level was "too dim" at 64% of intersections. The lighting level requirement was based on the NJDOT *Pedestrian Compatible Planning and Design Guidelines,* which recommends 0.5 foot candles at pedestrian crosswalks in residential areas. Most street lighting within the study corridors consists of lighting fixtures installed on utility poles and some lighting from adjacent properties. A detailed summary of the lighting assessment findings can be found in **Appendix C**.

Concepts

The following pages present the planning level concepts for Prospect Street. The first two concepts include the overall corridor-wide recommendations for Prospect Street in two sections - South of Springfield Avenue and North of Springfield Avenue. Site-specific concepts for the following three intersections follow the corridor-wide recommendations:

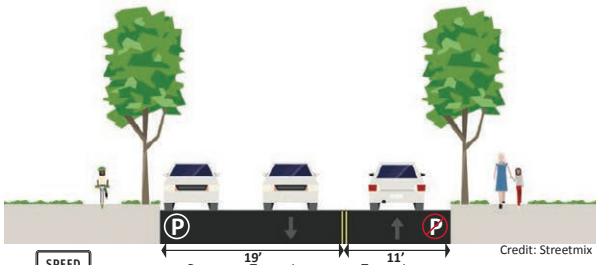
- Prospect Street & Sommer Avenue
- Prospect Street & Harvard Avenue
- Prospect Street & Tuscan Road

Implementation Matrix

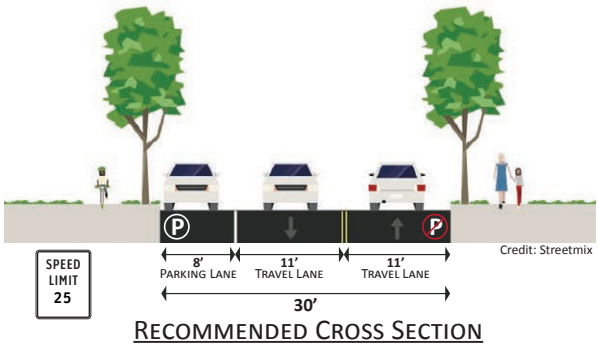
The implementation matrix provides all the engineering and programmatic recommendations for Prospect Street to improve pedestrian safety and install traffic calming measures. Each recommendation includes information on responsibility, timeframe and construction cost. The recommendations are subcategorized into corridor-wide recommendations and site-specific concepts.

PROSPECT STREET: **SOUTH OF SPRINGFIELD AVENUE**

06/16/2018



EXISTING CROSS SECTION



RECOMMENDED CROSS SECTION

Credit: Google Maps

ROADWAY CHARACTERISTICS

JURISDICTION: MUNICIPAL
CLASSIFICATION: URBAN COLLECTOR
LENGTH: 0.2 MILE
INTERSECTIONS: 5
SIGNALIZED: 1
PARKING: PERMITTED ON ONE SIDE
SIDEWALKS: 4 FEET, BOTH SIDES
CROSSWALKS: HIGH VISIBILITY AT ALL LEGS OF EVERY INTERSECTION
NOTES:

- Recommended as a Bike Route in the 2010 Maplewood Bikeway Network Plan.
- Current traffic calming measures installed include speed bumps, a raised intersection, and a Pedestrian Activated Flashing Light. Speed bumps have been successful and there are plans to make them permanent.
- Crosswalks enhanced with Pedestrian Warning signs.
- 1 pedestrian crash at Lexington Avenue; 1 bicyclist crash at Springfield Avenue

CORRIDOR-WIDE RECOMMENDATIONS

1. Move parking restrictions signs to 25 feet from crossswalk and reinforce with striping.
2. Stripe parking lane to visually narrow the roadway.
3. Enforce sight triangles for all intersections as per Maplewood Township Code, *Article IV, Chapter 271, Section § 271-55 Sight triangles*.
4. Add 25 mph pavement markings

25 mph pavement markings
Credit: FHWA

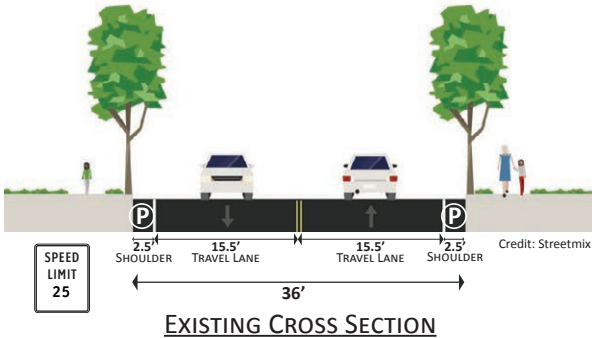
Credit: NearMap

Approximate cost of construction - $20,000 - $30,000*

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

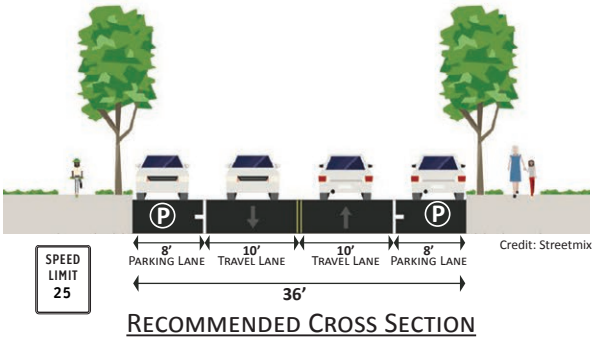
PROSPECT STREET: **NORTH OF SPRINGFIELD AVENUE**

06/16/2018



Credit: Streetmix

EXISTING CROSS SECTION



Credit: Streetmix

RECOMMENDED CROSS SECTION

Credit: Google Maps

STREET VIEW (NORTHBOUND)

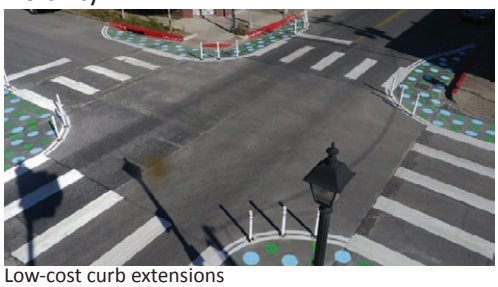
ROADWAY CHARACTERISTICS

JURISDICTION: MUNICIPAL
CLASSIFICATION: URBAN MAJOR COLLECTOR
LENGTH: 1.2 MILE
INTERSECTIONS: 19
(3 SIGNALIZED, 1 FLASHING LIGHT, 14 T INTERSECTIONS, 1 THROUGH STREET (OAKVIEW AVENUE)
PARKING: PERMITTED BOTH SIDES
SIDEWALKS: 4 FEET ON BOTH SIDES
CROSSWALKS: HIGH VISIBILITY, ONE LEG AT THE T INTERSERCTIONS IS MARKED, ALL LEGS MARKED AT 4 LEG INTERSECTIONS
NOTES:

- Signed as a Bike Route.
- Issues include motorists parking too close to intersections and crosswalks; motorists not stopping for pedestrians at crosswalks; speeding
- 12 crashes involving a pedestrian or bicyclist between 2012-2017. There were 4 crashes at Elmwood Avenue.
- 8 crosswalks enhanced with In-Street Pedestrian Crossing signs

CORRIDOR-WIDE RECOMMENDATIONS

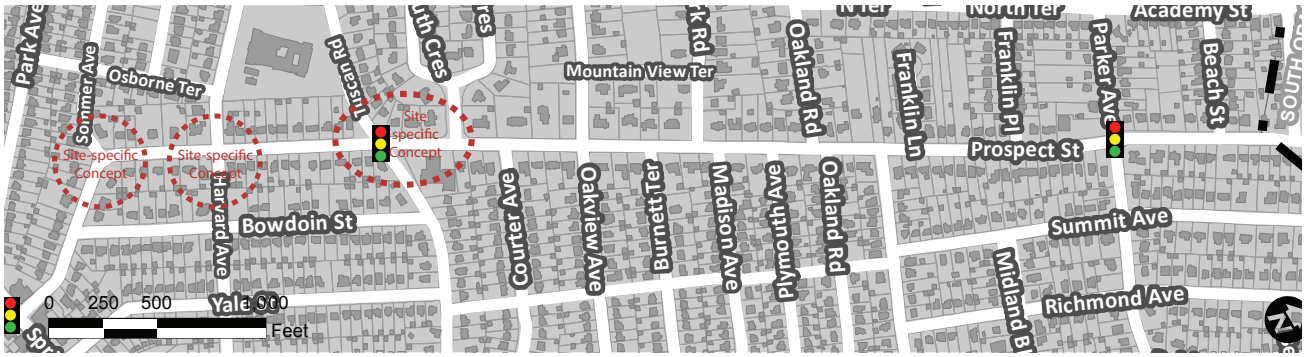
1. Narrow travel lanes to 10' , stripe parking lane
2. Daylighting intersections to improve visibility



Low-cost curb extensions
Credit: City of Austin

3. Enforce sight triangles for all intersections as per Maplewood Township Code, *Article IV, Chapter 271, Section § 271-55 Sight triangles*.
4. Add 25 mph pavement markings

25 mph pavement markings
Credit: FHWA



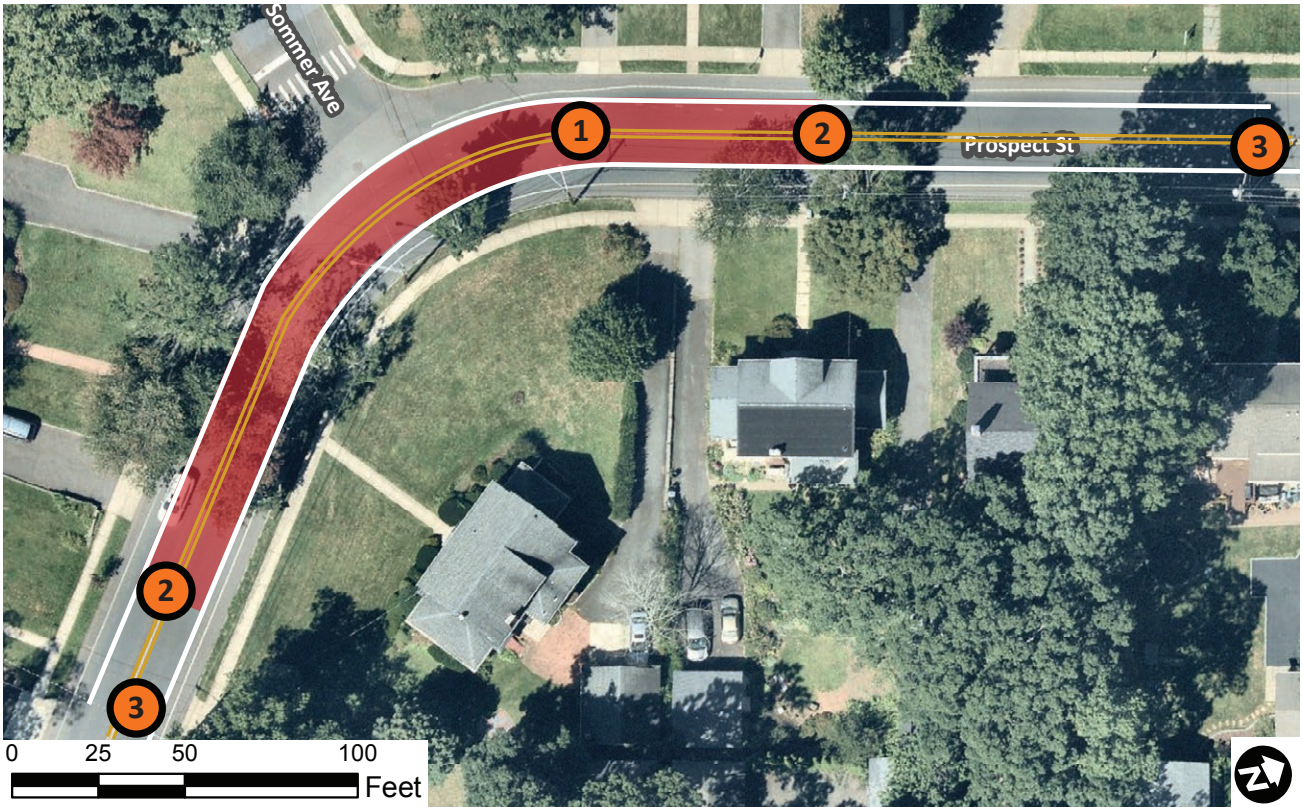
Credit: NearMap

Approximate cost of construction - $100,000 - $150,000*

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

PROSPECT STREET: **SOMMER AVENUE**

06/16/2018



1. High friction surface course in the travel lane along the curved portion of the roadway to reduce crashes by increasing friction and to increase awareness of the curve

Englewood, NJ
Credit: Pavementsurfacecoatings.com

2. Review traffic volumes on Prospect to consider installing speed humps and warning signs on the approach to the curve

Example of speed hump on Prospect St
Credit: NV5

W17-1

Speed hump warning sign W17-1
Credit: MUTCD

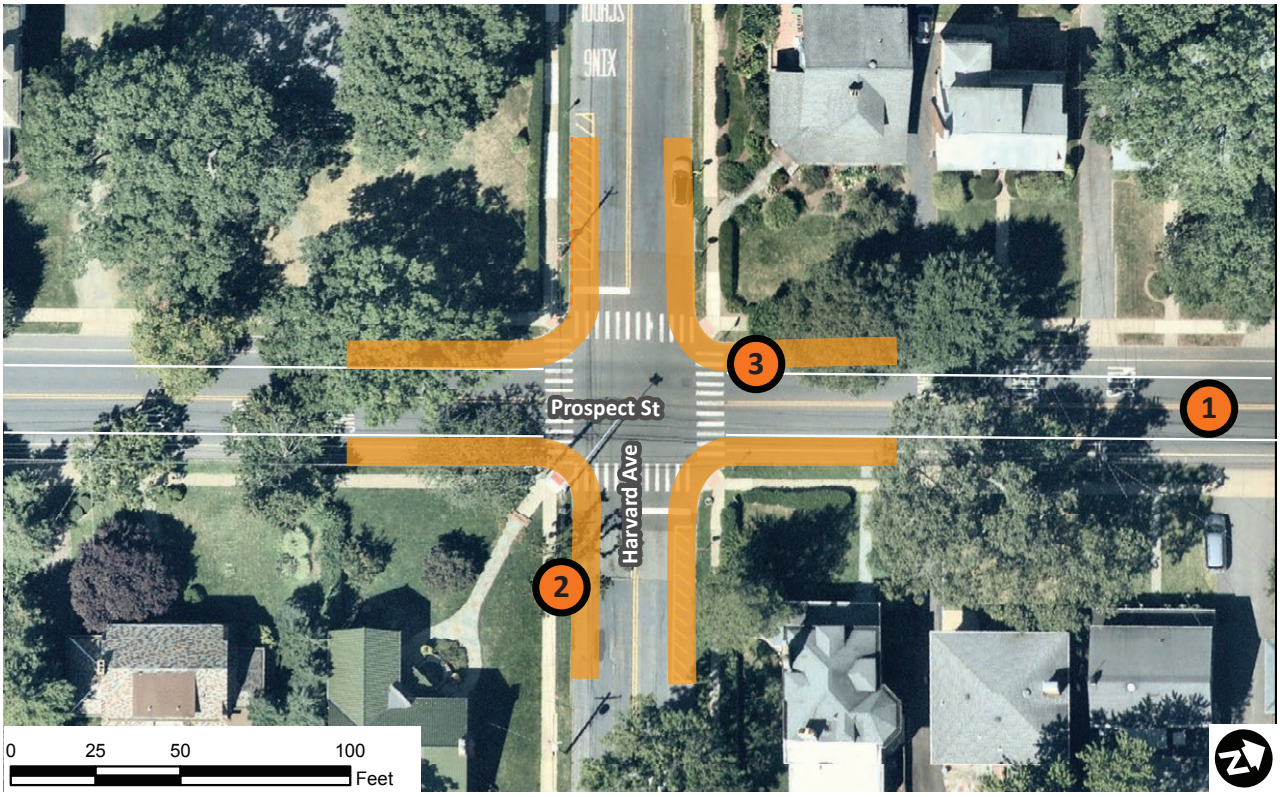
3. Narrow travel lanes to 10’ and stripe parking lane

Approximate cost of construction - $20,000 - $35,000*

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

PROSPECT STREET: **HARVARD AVENUE**

06/16/2018



1. Narrow travel lanes to 10’ and stripe parking lane
2. Daylighting to improve visibility
3. Reinforce the ”no parking within 100’ of the intersection” by placing traffic cones during school hours.

Low-cost curb extensions
Credit: City of Austin

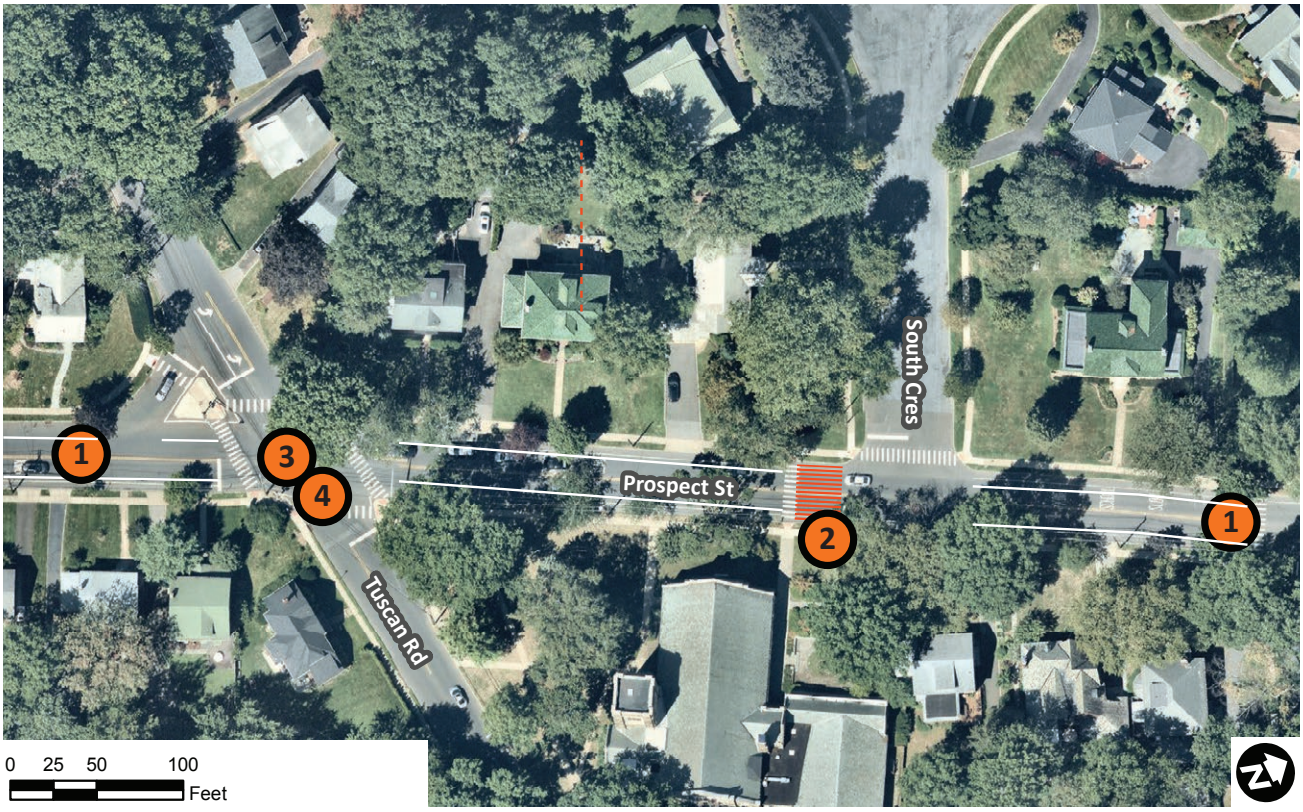
Low-cost daylighting, Hoboken, NJ
Credit: NV5

Approximate cost of construction - $4,500 - $7,000*

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

PROSPECT STREET: **TUSCAN ROAD**

06/16/2018



1. Narrow travel lanes to 10’ and stripe parking lane
2. Increase width of crosswalk at the church to prevent cars from parking too close to the cross-walk.
3. Evaluate split-phase signal for the Tuscan Road intersection to reduce right and left turning conflicts.
4. Evaluate lead pedestrian interval for the Tuscan Road intersection to enhance visibility of pe-destrians and reinforce their right-of-way over turning vehicles.

Approximate cost of construction - $750 - $1,000* not including traffic signal upgrades.

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

IMPLEMENTATION MATRIX

ENGINEERING

No.	Recommendation	Responsibility	Timeframe	Approximate Cost*
PROSPECT STREET: South of Springfield Avenue - CORRIDOR -WIDE (1,200 feet)				
1	Move parking restrictions signs to 25 feet from crosswalk and reinforce with striping (assume 10 signs and paint at each of 6 intersections)	Maplewood	6 months - 1 year	$15,000 - $ 20,000
2	Consider striping the parking lane to visually narrow the roadway.	Maplewood	6 months - 1 year	$3,500 - $5,000
3	Add 25 mph pavement markings (assume 2 locations)	Maplewood	6 months - 1 year	$500 - $1,500
PROSPECT STREET: North of Springfield Avenue - CORRIDOR -WIDE (6,300 feet)				
4	Narrow travel lanes to 10', stripe parking lane	Maplewood	6 months - 1	$40,000 - $65,000
5	Daylight intersections to improve visbility and further reinforce no parking within 25 feet of a crosswalk	Maplewood	6 months - 1 year	$55,000 - $85,000
6	Add 25 mph pavement markings (assume 6 locations)	Maplewood	6 months - 1 year	$1,200 - $1,800
PROSPECT STREET Site-Specific Concepts				
Sommer Avenue				
7	Consider installing a high-friction surface course in the travel lane along the curved portion of the roadway to reduce crashes by increasing friction and to increase awareness of the curve, and visually narrow the road.	Maplewood	1 to 2 years	$18,000 - $27,000
8	Review traffic speed and volume data on Prospect Street to consider installing speed humps and warning signs on the approach to the curved portion of the roadway.	Maplewood	1 to 2 years	$3,000 - $5,000
Harvard Avenue				
9	Daylight intersections to improve visbility and further reinforce no parking within 25 feet of a crosswalk	Maplewood	6 months - 1 year	$4,000 - $6,000
10	Reinforce the "no parking within 25' of the intersection" rule by placing traffic cones during school hours in the short-term until painted or temporary curb extensions are installed.	Maplewood	6 months - 1 year	$500 - $800
Tuscan Road				
11	Consider increasing the width of the crosswalk at South Crescent Avenue to prevent cars from parking too close to the crosswalk and to provide a safe and predictable crossing area.	Maplewood	6 months - 1 year	$750 - $1,000

*Approximate cost for most of the recommendations is based on Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies or final design.

1

IMPLEMENTATION MATRIX

No.	Recommendation	Responsibility	Timeframe	Approximate Cost*
EVALUATION & PLANNING				
Tuscan Road				
12	Evaluate split-phase signal timing for the Tuscan Road intersection to reduce the right and left turning conflicts.	Maplewood	1 to 2 years	Staff time
13	Evaluate lead pedestrian interval for the traffic light to enhance visibility of pedestrians and reinforce their right-of-way over turning vehicles.	Maplewood	1 to 2 years	Staff time
ENFORCEMENT				
Prospect Street - Corridor-Wide Recommendations				
14	Enforce sight triangles for all intersections as per Maplewood Township Code, Article IV, Chapter 271, Section 271-55 Sight Triangles.	Maplewood	6 months - 1 year	Staff time
LIGHTING				
Prospect Street - Corridor-Wide Recommendations				
15	Improve lighting at intersections considered too dim as per the lighting assessment conducted (Appendix C)	Maplewood	1 to 2 years	Coordination time with PSEG

*Approximate cost for most of the recommendations is based on Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies or final design.

2

Burnett Avenue

Existing Conditions

Burnett Avenue runs southwest-northeast from Union Township to Springfield Avenue. Burnett Avenue is a through street (no stop signs) along the 0.6 mile roadway and pavement width varies from more than 40 feet at the southern end of the corridor to 24 feet at the northern end. In addition, multiple skewed intersections result in long crossing distances, difficulty viewing oncoming traffic and pedestrians, and higher speed turning movements by motor vehicles. A park, community center, senior center, and apartment complex are located along the Avenue.

In This Section: Burnett Avenue

The Township and residents have concerns related to speeding, truck traffic, and motorists not stopping for pedestrians at crosswalks.

Figure 12: Bird's Eye View of Burnett Avenue

Source: Bing maps

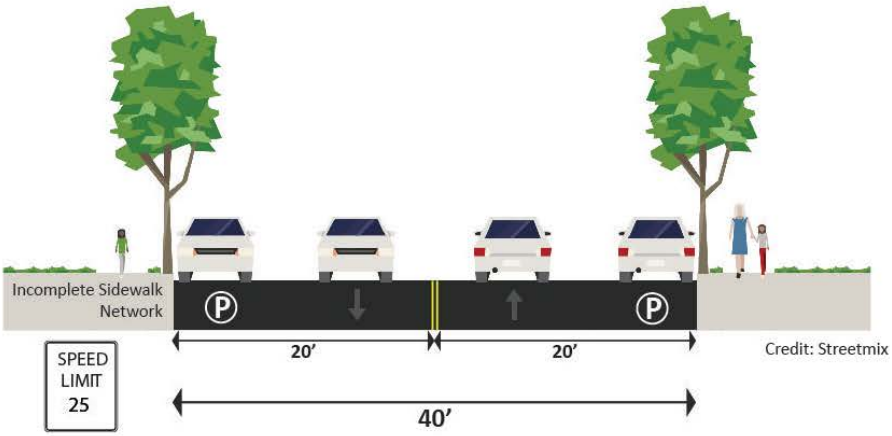
The following graphics illustrate typical conditions including cross sections and characteristics.

Figure 13: Roadway Characteristics: Burnett Avenue (South of Lombardy Place)

BURNETT AVE (SOUTH OF LOMBARDY PLACE)

STREET VIEW (SOUTHBOUND)

Credit: Google Maps



Credit: Streetmix

EXISTING CROSS SECTION

ROADWAY CHARACTERISTICS

JURISDICTION: MUNICIPAL
CLASSIFICATION: MINOR ARTERIAL
LENGTH: 0.2 MILE
INTERSECTIONS: 3
PARKING: PERMITTED SOUTH OF RUTGERS ST
SIDEWALKS: 4' WIDE; INCOMPLETE ON SOUTHSIDE OF THE STREET
CROSSWALKS: ONE STANDARD CROSSWALK ACROSS BURNETT AVENUE AT RUTGERS STREET

NOTES:
Speed limit increases to 40 mph on Burnett Avenue in Union Township.

Credit: NearMap

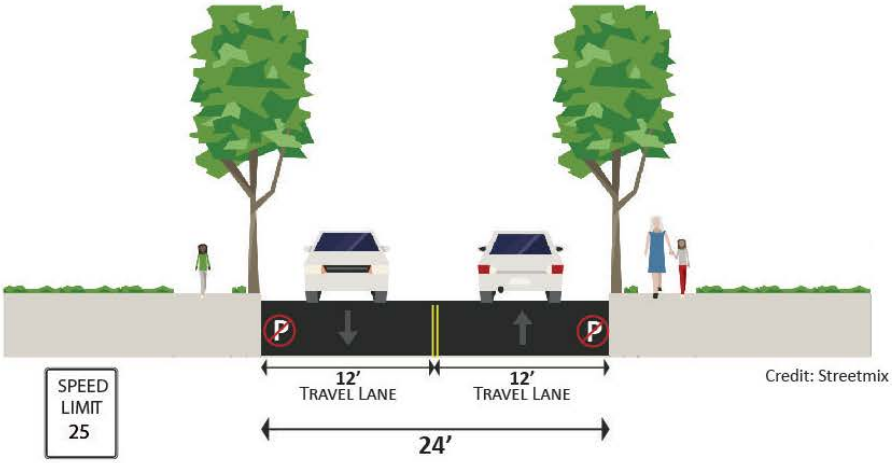
AERIAL

Figure 14: Roadway Characteristics: Burnett Avenue (North of Lombardy Place)

BURNETT AVE (NORTH OF LOMBARDY PLACE)

STREET VIEW (NORTHBOUND)

Credit: Google Maps



Credit: Streetmix

EXISTING CROSS SECTION

ROADWAY CHARACTERISTICS

JURISDICTION: MUNICIPAL
CLASSIFICATION: MINOR ARTERIAL
LENGTH: 0.4 MILE
INTERSECTIONS: 6
SIGNALIZED: 1
PARKING: NOT PERMITTED
SIDEWALKS: 4' WIDE; GAP ALONG DEHART PARK
CROSSWALKS: 1 STANDARD MIDBLOCK CROSSWALK AT DEHART PARK

NOTES:

AERIAL

Credit: NearMap

Traffic Data and Analysis

Automatic Traffic Recorders (ATR's) were placed between Marion Terrace and Rutgers Street (Location 1) and between Tuscan Street and Franklin Avenue (Location 2). The locations were selected mid-block to more accurately document motor vehicle speeds (See Figure 15)

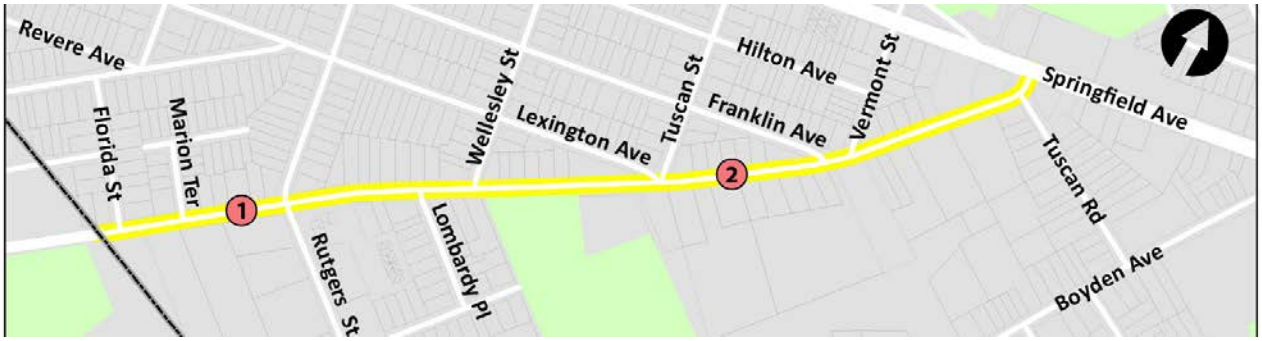


Figure 15: Location of ATR Equipment

The table below summarizes traffic conditions on Burnett Avenue. It includes the 85th percentile speed at each of the two locations. The 85th percentile speed is that speed at which 85 percent of the traffic is traveling at or below. It is often used to help establish speed limits and can indicate if speeding is an issue. Both locations have an 85th percentile speed that exceeds the posted speed limit. Between Rutgers Street and Marion Terrace the difference exceeds 15 mph. Motorists traveling over the posted speed limit creates an unsafe condition for all users. In addition, over 1,800 motorists were driving over 50 mph, twice the speed limit south of Rutgers Street.

Table 3: Traffic Data Summary - Burnett Avenue

	Location 1[5]	Location 2
Dates collected	12/08 to 12/13/2017 (6 days)	12/08 to 12/15/2017 (8 days)
AADT	7,395	4,404
85th Percentile	41 mph	33 mph
Mean Speed (average)	32 mph	24 mph
Percent of Vehicles > 25 mph	79.2%	55.0%
Number of Vehicles Traveling Twice the Speed Limit	1,825	83
51-60 mph	1,469	65
Over 60 mph	356	18

See Appendix D – Burnett Avenue Traffic Data for details.

[5] Does not include counts from 4:00-5:00pm on 12/11/17

Vehicle Class

The number and types of vehicles traveling on Burnett Avenue was also counted. Truck volumes are higher south of Rutgers Street (18%) than north of Tuscan Street (6%). There are industrial uses located along Rutgers Street that most likely contribute to the larger share of truck traffic.

Table 4: Vehicle Class Summary - Burnett Avenue

Location	1: Between Rutgers St. & Marion Terr.		2: Between Tuscan St. & Franklin Ave.	
	#	%	#	%
Bikes	249	0.5%	113	0.3%
Cars	19,800	39.5%	21,575	56.5%
2 Axle Long (pick-ups & vans)	17,592	35.1%	7,731	20.2%
Buses	822	1.6%	247	0.6%
2 Axle 6 Tire (single unit trucks)	8,701	17.4%	1,719	4.5%
3 Axle Single	165	0.3%	92	0.2%
5 Axle Double	126	0.3%	61	0.2%
>6 Axle	31	0.1%	38	0.1%
Not classified	2,637	5.3%	6,604	17.3%
	50,123	100.0%	38,180	100.0%

Crash Data Summary

Pedestrian and Bicycle Crashes

Between 2012-2017, there has been one reported crash involving a pedestrian and one reported crash involving a bicyclist on Burnett Avenue.

Table 5: Pedestrian and Bicyclist Involved Crash Details

	Pedestrian Crash (11/17/13)	Bicyclist Crash (4/27/17)
Cross Street	Tuscan Street	Rutgers Street
Injury	Incapacitated	Complaint of Pain
Road Condition	Wet (rain)	Dry (clear)
Light Condition	Dark (street lights off)	Daylight

All Crashes

There were 80 crashes on this 0.6-mile corridor in the same time (2012-2017). Almost 80% of the crashes (62) occurred at or near an intersection. The intersection of Rutgers Street and Burnett Avenue had the highest number of crashes at 38.

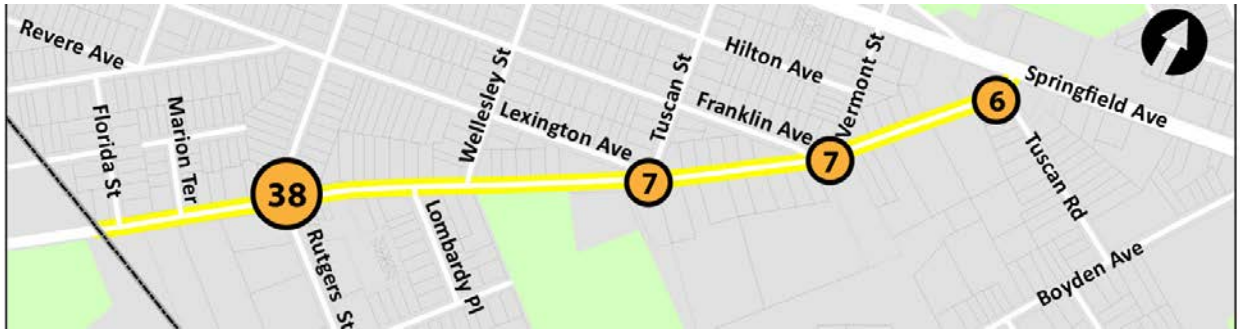


Figure 16: High Crash Intersections on Burnett Avenue (2012-2016)

Key findings include:

- Right Angle crashes are the most common and represent 38% of the crashes followed by struck parked vehicle (18%), fixed object (11%), and same direction – rear end (11%).
- 80% of crashes occurred in the daylight.
- The road was wet, icy, or snowy in a quarter (26%) of the crashes.
- Only one of the crashes (the pedestrian crash) resulted in an incapacitating injury. Most (84%) resulted in property damage only.
- Friday had the most crashes, Monday the least.

Sight Triangles

The driver of a vehicle approaching or departing from an intersection should have an unobstructed view of the intersection and sufficient lengths along the intersecting roadway to permit the driver to anticipate and avoid potential crashes. Sight triangles are the areas along an intersection's approach legs and across the included corners. These areas should be clear of obstructions that might block a driver's view of conflicting vehicles or pedestrians. Obstructions within sight triangles could be buildings, vehicles, hedges, trees, bushes, walls, fences, etc.

Intersection sight distance is based on the design speed of the major road, the vehicle classification, and the assumption that the roads intersect at 90 degrees. The table below shows intersection sight distance for a passenger car in a residential area.

Table 6: Intersection Sight Distance – Stop Control on Minor Road/Two-Lane Roadway

Design Speed	Left-Turn (passenger car)	Right-Turn or Straight (passenger car)
25	280 feet	240
30	335 feet	290
35	390 feet	335
40	445 feet	385

SOURCE: NJDOT ROADWAY DESIGN MANUAL/ 2011 AASHTO GREEN BOOK

For the diagrams below, a design speed of 30 MPH for Burnett Ave (based on a 25 MPH posted limit), a passenger car (residential area), and the recommended offset of 18ft from the edge of the travel way for the side street is assumed. Due to the unique street layout (highly skewed intersections), the sight distance needed to be calculated manually based off of vehicle location with respect to the stop signs.

Sight Triangle Findings

The following table list the required sight distance for the minor streets for left and right turns. If the sight triangles are not clear of obstructions, mitigation measures include remove/ modify the obstruction, reduce speeds, and install traffic control devices (if warranted by the MUTCD).

Table 7: Sight-Distance Summary

Intersection: Burnett Avenue and	Calculated Sight Distance: Left-Turn	Calculated Sight Distance: Right-Turn or Straight	Obstructions	Mitigation?	Opportunity?
Rutgers Street	375 feet	355 feet	No	No	
Lexington Avenue	465 feet	530 feet	Yes – buildings, hedge, trees	May be required.	Convert Lexington Avenue to a dead-end with a cul-de-sac adjacent to Tuscan Street.
Tuscan Street	390 feet	410 feet	Yes – buildings, hedge, trees	May be required.	Closing the Lexington Avenue leg of the intersection would provide an opportunity to relocate the stop bar and stop sign on Tuscan Street closer to Burnett Avenue to bring the intersection angle closer to perpendicular.
Franklin Avenue	465 feet	430 feet	Yes – buildings, fence, hedge, trees	May be required.	Partial Closure - convert Franklin Avenue to a one way street toward Tuscan Street, while keeping it two-way for most of the block.
Vermont Street	365 feet	345 feet	Yes – buildings, fence, hedge, trees	May be required.	Restrict left turns from Vermont Street onto Burnett Avenue.

See ***Appendix E – Burnett Avenue Sight Triangle Diagrams*** for results of the sight distance analysis. The shaded yellow areas are the triangles that should be clear of obstructions to provide the proper sight distance and are based on the object along the center of the travel lane as per NJDOT and AASHTO. The diagrams also show in blue hatch the sight triangles per *Township Ordinance § 271-55. Sight triangles*.

Field Investigation

A field investigation was conducted on Thursday, December 7, 2017. The weather was clear, sunny, and about 40 degrees.

General issues identified include:

- Sidewalk gaps
- Minimal or no landscaped buffer separating the sidewalk and the road
- Obsolete and out-of-date signs
- Varying roadway width
- Drivers failing to stop for pedestrians
- Limited sight distance at skewed intersections
- Obstructions in sight triangles
- No stop control from Laurel Avenue in Union Township to Springfield Avenue

The following pages highlight some of the key issues and identify potential opportunities to address the issues.

Burnett Avenue- Corridors

1. Burnett Avenue South of Lombardy Place

Existing Conditions:

- Speed limit increases to 40 mph upon entering Union Twp.
- Sign posted inside Maplewood Twp. border

Opportunity:

- Work with Union County to lower speed limit on their section of Burnett Ave. Per NJ 39:4-98 Rates of speed. The speed limit, unless otherwise posted, is 25 mph in school zones, business, or residential districts; 35 mph in certain low density business and residential districts.

Existing Conditions:

- Lions Club and Rotary Club signs posted upon entering Maplewood

Opportunity:

- Install Gateway Treatment/ Welcome to Maplewood Sign

Existing Conditions:

- Reduce Speed sign has been replaced in the MUTCD by the W3-5 or W3-5a warning signs.

Opportunity:

W3-5

W3-5a

- Per the MUTCD, a Reduced Speed Limit Ahead (W3-5 or W3-5a) sign should be used to inform road users of a reduced speed zone where the speed limit is being reduced by more than 10 mph, or where engineering judgment indicates the need for advance notice to comply with the posted speed limit ahead

Existing Conditions:

- Sidewalk gap from the Union border to Rutgers Street along the northbound side of the street; worn path evidence of people walking

Opportunity:

- Complete sidewalk gap

Existing Conditions:

- Speed Limit sign blocks pedestrian crossing sign

Opportunity:

Credit: FHWA

- Modify placement of signs
- Consider supplementing the speed limit sign with a Warning Beacon or speed feedback sign
- Provide 25 MPH pavement markings

Existing Conditions:

- Dangerous should not be used on a warning sign. It can create liability concerns because if the spot is known to be dangerous, it should be fixed.

Opportunity:

W2-1

Credit: MUTCD

- Replace “dangerous intersection” sign with Intersection Warning sign (W2-1)

2. Burnett Avenue North of Lombardy Place

Existing Conditions:

- Standard style mid-block crosswalk to DeHart Park; drivers often do not stop for pedestrians waiting to cross

Opportunity:

Credit: PedBikeSafe

- Stripe high visibility continental style crosswalk
- Consider Stop lines to indicate the point behind which vehicles are required to stop and installing Stop Here for Pedestrians (R1-5b and R1-5c) sign
- Consider flashing pedestrian signs

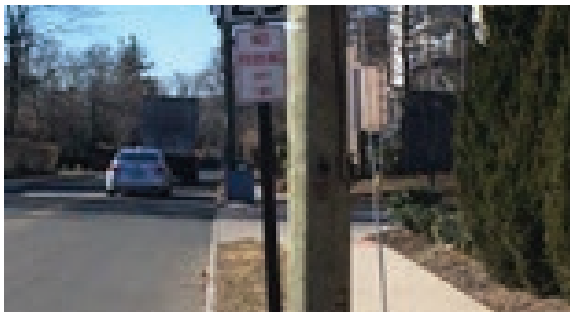
Existing Conditions:

- Missing sidewalk in front of senior center between Maplewood Crossing development and DeHart Park

Opportunity:

- Fill in sidewalk gaps along Township owned property

Existing Conditions:



- Utility pole partly obstructs Speed Limit sign

Opportunity:

Credit: FHWA

- Relocate Speed Limit sign to in front of utility pole
- Add pavement markings to enhance awareness and compliance of speed limit
- Consider Speed Feedback sign

Burnett Avenue- Intersections

1. Burnett Avenue and Rutgers Street

Existing Conditions:

- Standard style crosswalks at Rutgers Street and Burnett Avenue

Opportunity:

Example of a high-visibility continental style crosswalk on Prospect Street

- Enhance crosswalk with high visibility striping pattern

Existing Conditions:

- According to the MUTCD, Road Narrows (W5-1) sign should be used in advance of a transition on two-lane roads where the pavement width is reduced abruptly to a width such that vehicles traveling in opposite directions cannot simultaneously travel through the narrow portion of the roadway without reducing speed warning sign. It can create liability concerns because if the spot is known to be dangerous, it should be fixed.

Opportunity:

- Consider eliminating the sign in favor of edgeline striping to inform motorists of the change in roadway width

Existing Conditions:

Opportunity:

- The Playground sign may have a fluorescent yellow-green background with a black legend and border.

2. Burnett Avenue and Wellesley Street

Existing Conditions:

- Missing curb ramp and unmarked crosswalk across Burnett Avenue at Wellesley Street

Opportunity:

- Install curb ramp and install high visibility crosswalk across Burnett Avenue to DeHart Park

3. Lexington Avenue / Tuscan Street

Existing Conditions:

- Skewed intersection creates long pedestrian crossing (~80 feet) and limited sight distance

Opportunity:

Combination Horizontal Alignment / Intersection Sign warns road users of multiple conditions (W2-1 through W2-8); may be supplemented with an Advisory Speed (W13-1P) plaque

- Install advanced intersection warning sign
- Work with property owners to clear landscaping obstructing the sight triangle
- Eliminate Lexington Ave. approach – see section on Sight Triangles

Existing Conditions:

- Unmarked corsswalk at Tuscan Street to Senior Center and Maplewood Crossing Apartment Complex; midblock crossing is about 200 feet away.

Opportunity:

Credit: PedBikeSafe

- Provide ADA compatible ramps
- Stripe high visibility crosswalk across Burnett Avenue at Tuscan Street; enhance with warning signs

4. Franklin Avenue and Vermont Street

Existing Conditions:

- Skewed intersection creates long pedestrian crossing; house and fence obstructing sight distance; motorists take the turn quickly onto Franklin Avenue from Burnett Avenue

Opportunity:

- Install advanced intersection warning sign on Burnett Avenue (W2-1 through W2-8)
- Convert Franklin Avenue to one-way toward Tuscan for the block between Burnett Avenue and Tuscan Street. See discussion in following section on Sight Triangles.

Existing Conditions:

- Fence and utility pole obstruct sight distance from Vermont Street on the NW corner; NE corner is obstructed by vegetation

Opportunity:

- Restrict left turns onto Burnett Avenue from Vermont Street. See section on Sight Triangles; work with homeowner to cut bushes

5. Tuscan Road

Existing Conditions:

- Yield to Pedestrian sign
- Stop Pedestrian crossing sign is not a standard MUTCD sign

Opportunity:

R1-5b

R1-5c

2009 MUTCD Unsignalized Pedestrian Crosswalk Signs

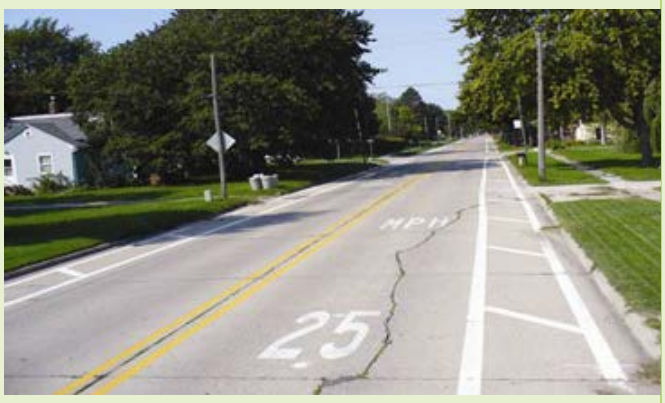
- Replace with Stop Here for Pedestrian sign

Key Findings

The existing conditions analysis identified the following issues and opportunities.

Table 8: Key Findings - Burnett Avenue

Issue	Observations	Opportunities
Speeding	• 85th percentile speed exceeds posted speed limit. Near Rutgers Street it is 41 mph. • Inconsistent roadway width encourages speeding. • Speed limit increases to 40 mph upon entering Union Township.	• Paint an edge line to narrow the travel lane to 10 feet and create a consistent lane width despite varying roadway widths. • Install a gateway treatment at the municipal border with Union Township to mark a change in speed environment.
Sight Distance	• Difficulty viewing oncoming traffic and pedestrians at skewed intersections. • Sight distance obscured by vegetation, fences, and buildings.	• Mitigate sight triangles by clearing obstructions, improving awareness of intersection through signing and striping, and potentially closing or relocating intersection legs.



EXAMPLE OF SHOULDER MARKING USED TO NARROW TRAVEL LANES

EXAMPLE OF A HALF CLOSURE

Concepts

The following pages present the planning level concepts for Burnett Avenue. The concepts for Burnett Avenue are divided into two sections due to varying widths - South of Lombardy Place and North of Lombardy Place. The first concept includes the overall corridor-wide recommendations for Burnett Avenue South of Lombardy Place and two options were developed for the Harvard Avenue intersection. The remaining pages include the overall corridor-wide recommendations for Burnett Avenue North of Lombardy Place and site specific concepts for the following four intersections:

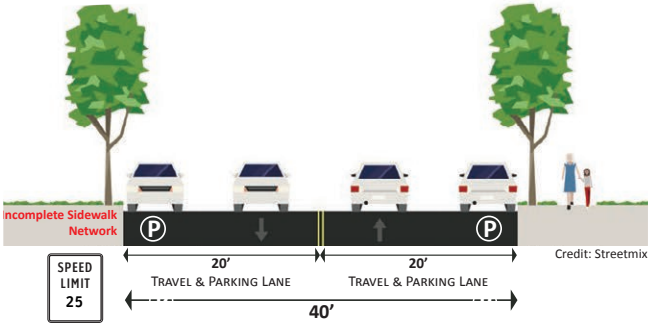
- Burnett Avenue & Wellesley Street
- Burnett Avenue & Tuscan Street/Lexington Avenue
- Burnett Avenue & Franklin Avenue/Vermont Street
- Burnett Avenue & Tuscan Road

Implementation Matrix

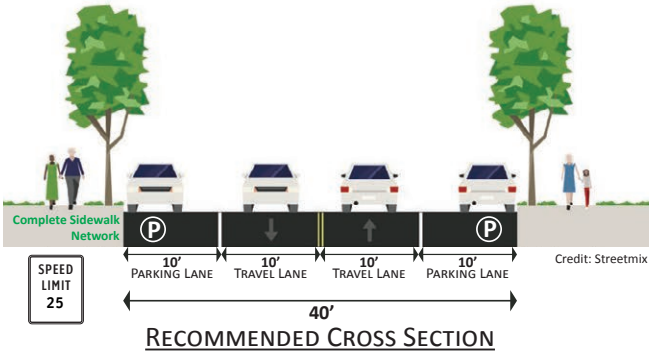
The implementation matrix provides all the engineering and programmatic recommendations for Burnett Avenue to improve pedestrian safety and install traffic calming measures. Each recommendation includes information on responsibility, timeframe and construction cost. The construction costs were largely based on the Safe Routes to School Cost Sheet (last updated in 2017). The recommendations are subcategorized into corridor-wide recommendations and site-specific concepts.

BURNETT AVENUE: **SOUTH OF LOMBARDY PLACE**

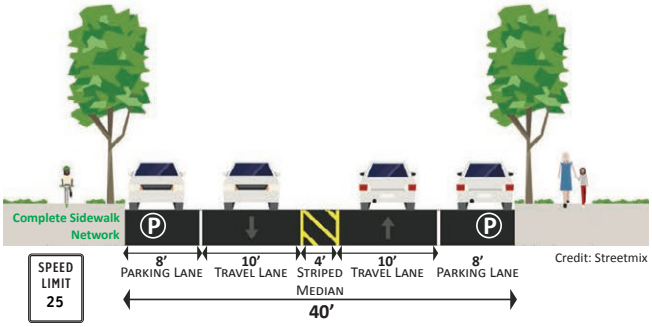
06/16/2018



EXISTING CROSS SECTION



RECOMMENDED CROSS SECTION
OPTION A



RECOMMENDED CROSS SECTION
OPTION B

STREET VIEW (SOUTHBOUND)

Credit: Google Maps

ROADWAY CHARACTERISTICS

JURISDICTION: MUNICIPAL
CLASSIFICATION: MINOR ARTERIAL
LENGTH: 0.2 MILE
INTERSECTIONS: 3
PARKING: PERMITTED SOUTH OF RUTGERS ST
SIDEWALKS: 4' WIDE; INCOMPLETE ON SOUTHSIDE OF THE STREET
CROSSWALKS: ONE STANDARD CROSSWALK ACROSS BURNETT AVENUE AT RUTGERS STREET
NOTES:

- Speed limit increases to 40 mph on Burnett Avenue in Union Township.
- AADT ABOUT 7,400
- 85TH PERCENTILE SPEED = 41MPH
- 54% VEHICLES CLASSIFIED AS TRUCKS OR VANS
- 1 BICYCLIST CRASH AT RUTGERS STREET
- 38 MOTOR VEHICLE CRASHES AT RUTGERS ST (2012-2017)

CORRIDOR-WIDE RECOMMENDATIONS

1. Install high-visibility crosswalks
2. Option A: Narrow travel lanes to 10' & stripe parking
   Option B: Narrow travel lanes to 10', stripe 4' center median & parking lane
3. Complete sidewalk network
4. Enforce sight triangles for all intersections as per Maplewood Township Code, *Article IV, Chapter 271, Section § 271-55 Sight triangles*
5. Add gateway element
6. Add 25 mph pavement markings

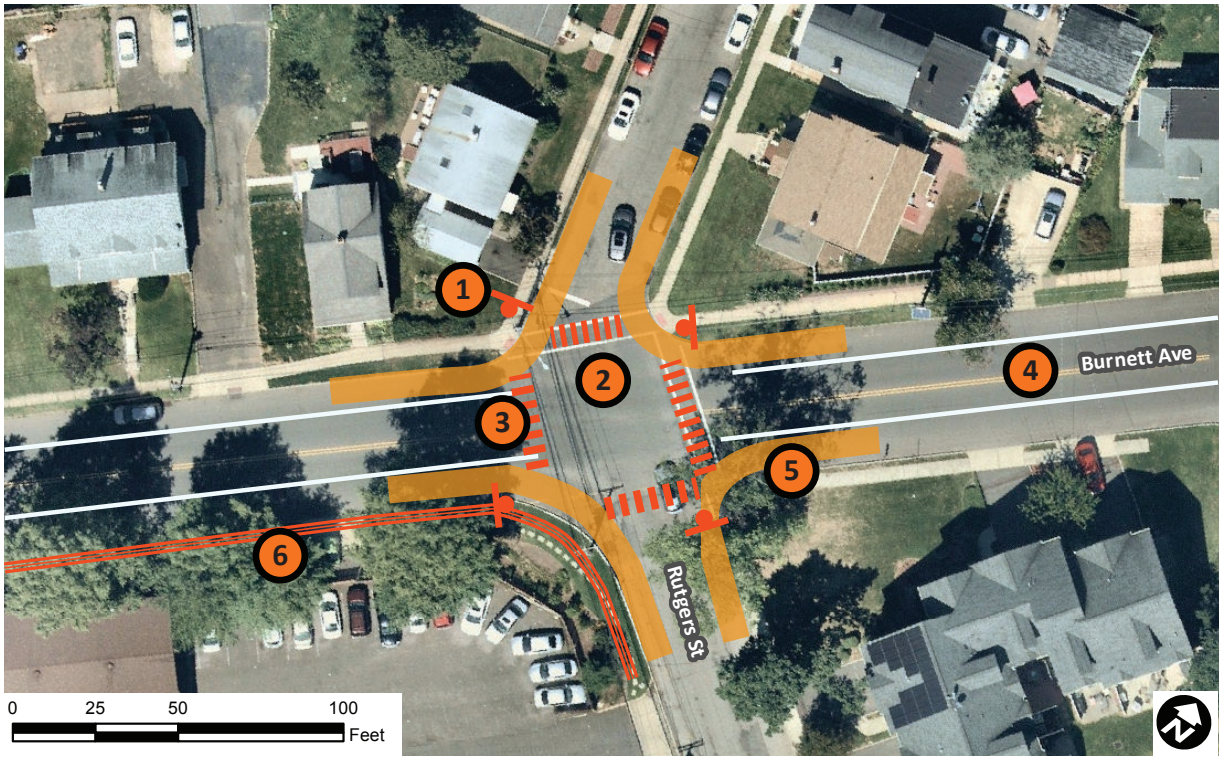
Credit: NearMap

Approximate cost of construction - $80,000 - $120,000*

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

BURNETT AVENUE: **RUTGERS STREET - Option A**

06/16/2018



1. Short-Term: All-way Stop Sign

R1-1

R1-3P

MUTCD Sign: ALL WAY paired with STOP sign

2. Long-Term: Traffic light (check warrants)

3. Install high-visibility crosswalks

Example of high-visbility crosswalk striping on Prospect St
Credit: NV5

4. Narrow travel lanes to 10' & stripe parking

5. Daylighting to improve visibility

Low-cost curb extensions
Credit: City of Austin

Low-cost daylighting, Hoboken, NJ
Credit: NV5

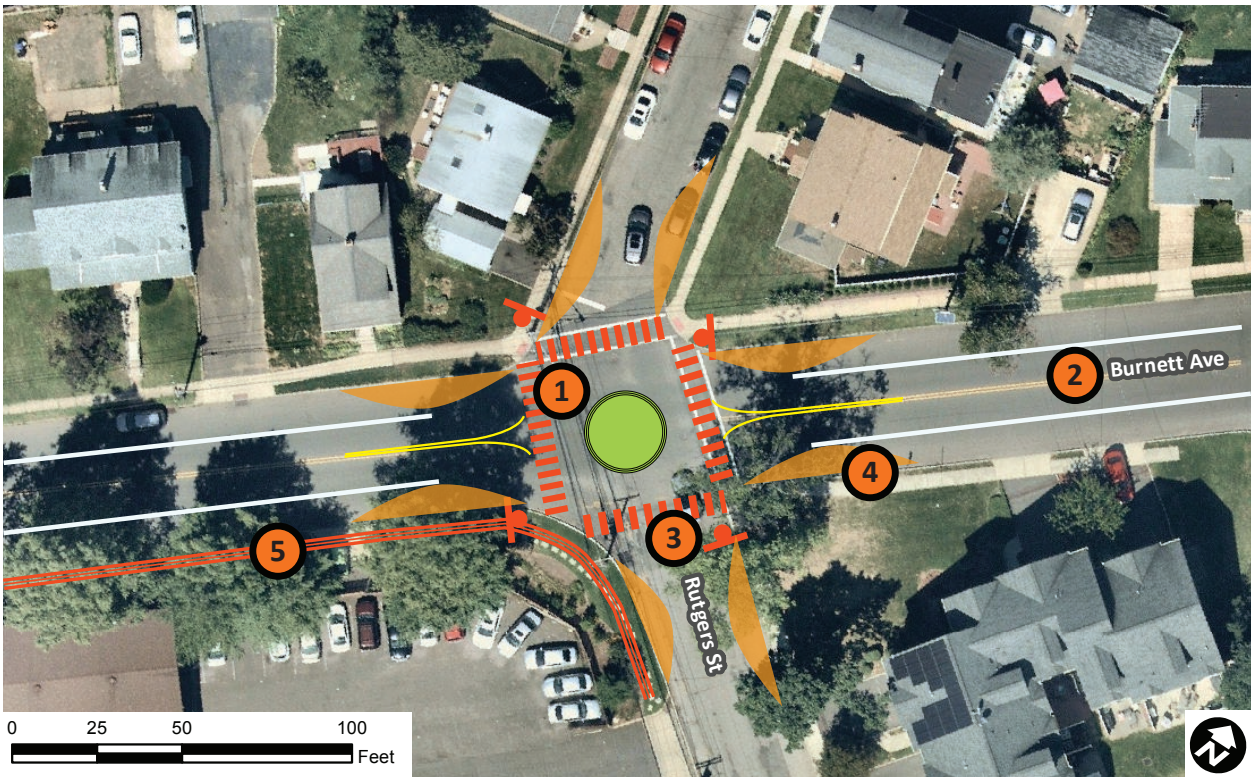
6. Complete sidewalk network

Approximate cost of construction - $7,500 - $11,000* (Plus $1,500 - $2,000 stop sign or $250,000 - $300,000 traffic light)

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

BURNETT AVENUE: **RUTGERS STREET - Option B**

06/16/2018



1 Mini roundabout (fully traversable for large vehicles)

Mini-Roundabout in Baltimore, MD
Credit: NACTO

Example of mountable/traversable mini roundabout
Credit: Ian Lockwood

2 Narrow travel lanes to 10' & stripe parking

3 Install high-visibility crosswalks

Example of high-visbility crosswalk striping on Prospect St
Credit: NV5

4 Daylighting to improve visibility

Temporary roundabout with striped curb extensions
Credit: Snellville.org

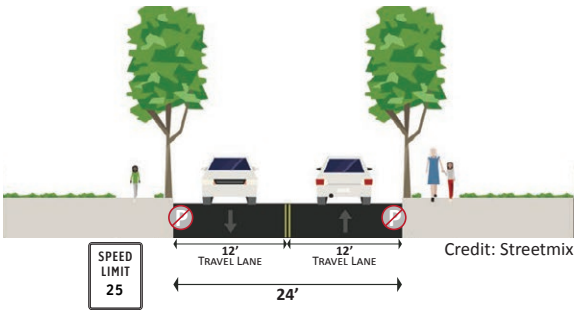
5 Complete sidewalk network

Approximate cost of construction - $7,500 - $11,000* **(plus Mini- Round-about – $35,000 - $53,000)**

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

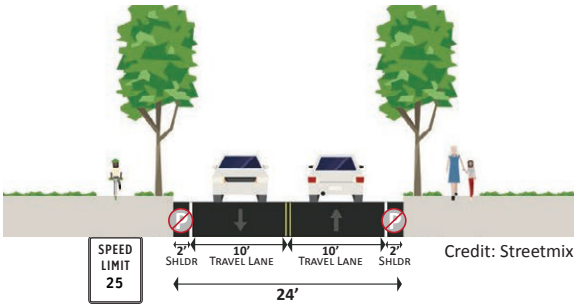
BURNETT AVENUE: **NORTH OF LOMBARDY PLACE**

06/16/2018



Credit: Streetmix

EXISTING CROSS SECTION



Credit: Streetmix

RECOMMENDED CROSS SECTION

STREET VIEW (SOUTHBOUND)

Credit: Google Maps

ROADWAY CHARACTERISTICS

JURISDICTION: MUNICIPAL
CLASSIFICATION: MINOR ARTERIAL
LENGTH: 0.4 MILE
INTERSECTIONS: 6
SIGNALIZED: 1
PARKING: NOT PERMITTED
SIDEWALKS: 4' WIDE; GAP ALONG DEHART PARK
CROSSWALKS: 1 STANDARD MIDBLOCK CROSSWALK AT DEHART PARK
NOTES:

- DIFFICULTY VIEWING ONCOMING TRAFFIC AND PEDESTRIANS AT SKEWED INTERSECTIONS
- SIGHT DISTANCE OBSCURED BY VEGETATION, FENCES, AND BUILDINGS.
- AADT ABOUT 4,400
- 85TH PERCENTILE SPEED = 33MPH
- 26% VEHICLES CLASSIFIED AS TRUCKS
- 1 INCAPACITATING PEDESTRIAN CRASH AT TUSCAN STREET

CORRIDOR-WIDE RECOMMENDATIONS

1. Install high-visibility crosswalks

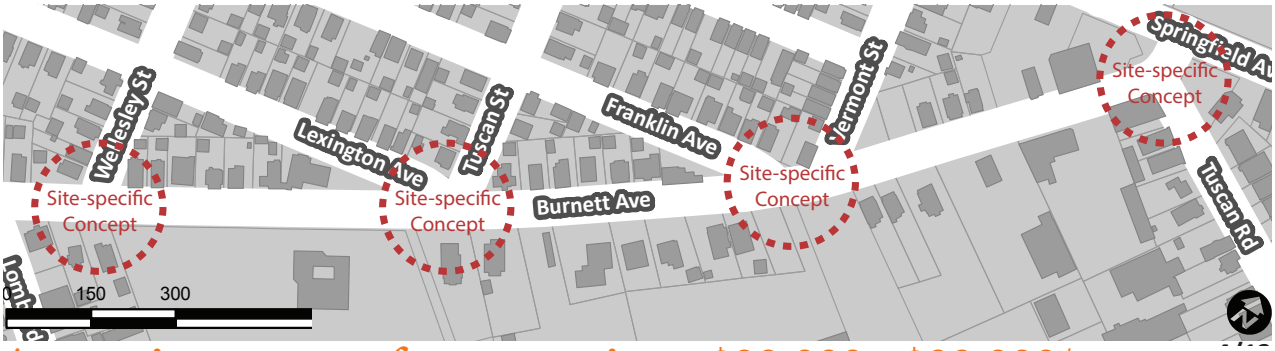
Example of high-visbility crosswalk striping on Prospect St
Credit: NV5

2. Narrow travel lanes to 10' & stripe parking, consider removing the yellow centerline.

3. Enforce sight triangles for all intersections as per Maplewood Township Code, *Article IV, Chapter 271, Section § 271-55 Sight triangles*

4. Add 25 mph pavement markings

25 mph pavement markings
Credit: FHWA

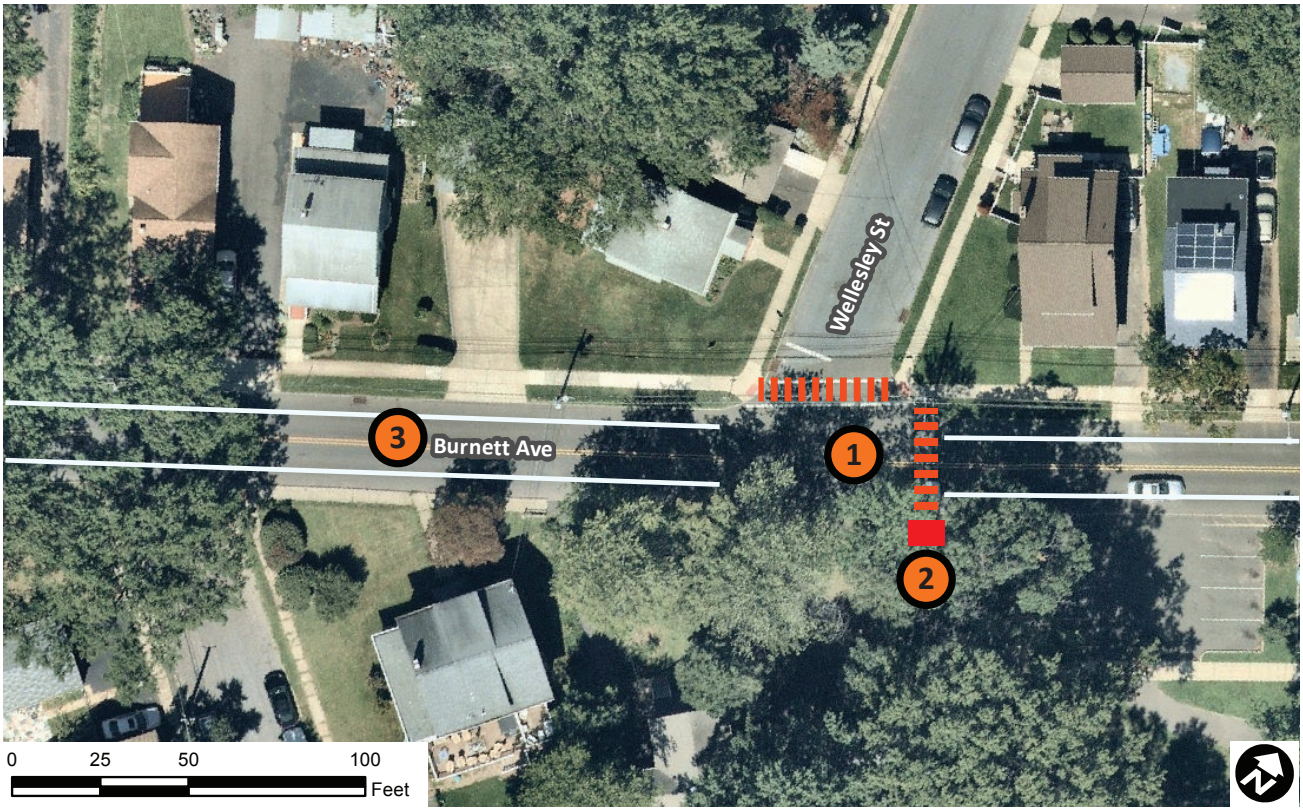


Approximate cost of construction - $20,000 - $30,000*

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

BURNETT AVENUE: **WELLESLEY STREET**

06/16/2018



1 Install high-visibility crosswalks

Example of high-visbility crosswalk striping on Prospect St
Credit: NV5

2 Install curb ramp

Missing curb ramp on Burnett Avenue
Credit: Google Maps

3 Narrow travel lanes to 10’ & stripe 2’ shoulder on each side

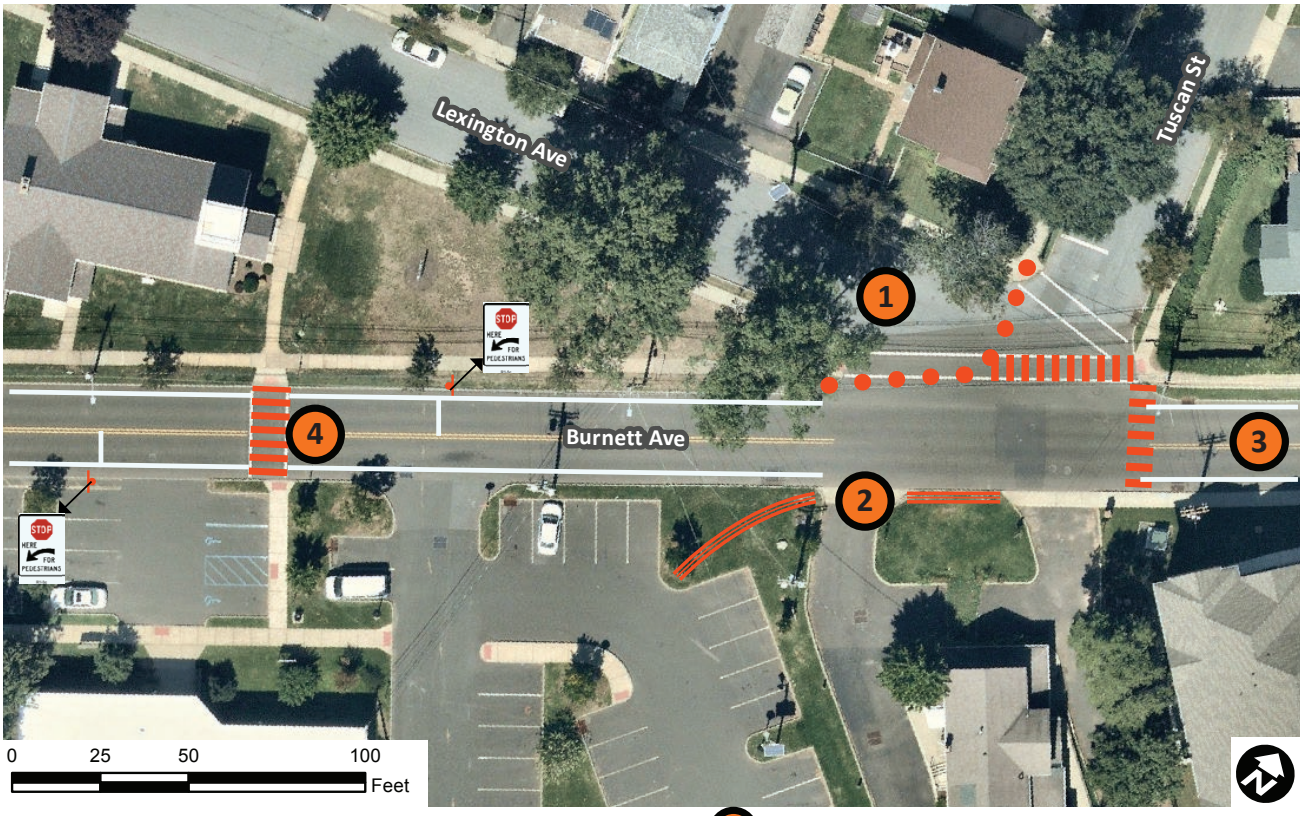
Shoulders can be enhanced with markings
Credit: FHWA

Approximate cost of construction - $3,500 - $6,000*

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

BURNETT AVENUE: **LEXINGTON AVENUE & TUSCAN STREET**

06/16/2018



1. Full closure of Lexington Avenue with temporary or permanent barriers to limit conflicts due to inadequate vibility.

Example of permanent street closure in Stockton, CA
Credit: Stockton.gov

Example of temporary street closure.
Credit: RaiseTheHammer.org

2. Complete sidewalk network with curb ramps in front of senior center and connect to DeHart Park.

3. Narrow travel lanes to 10' & stripe 2' shoulder on each side

4. High-visibility crosswalks paired with an advance stop bar and stop for pedestrians signs.

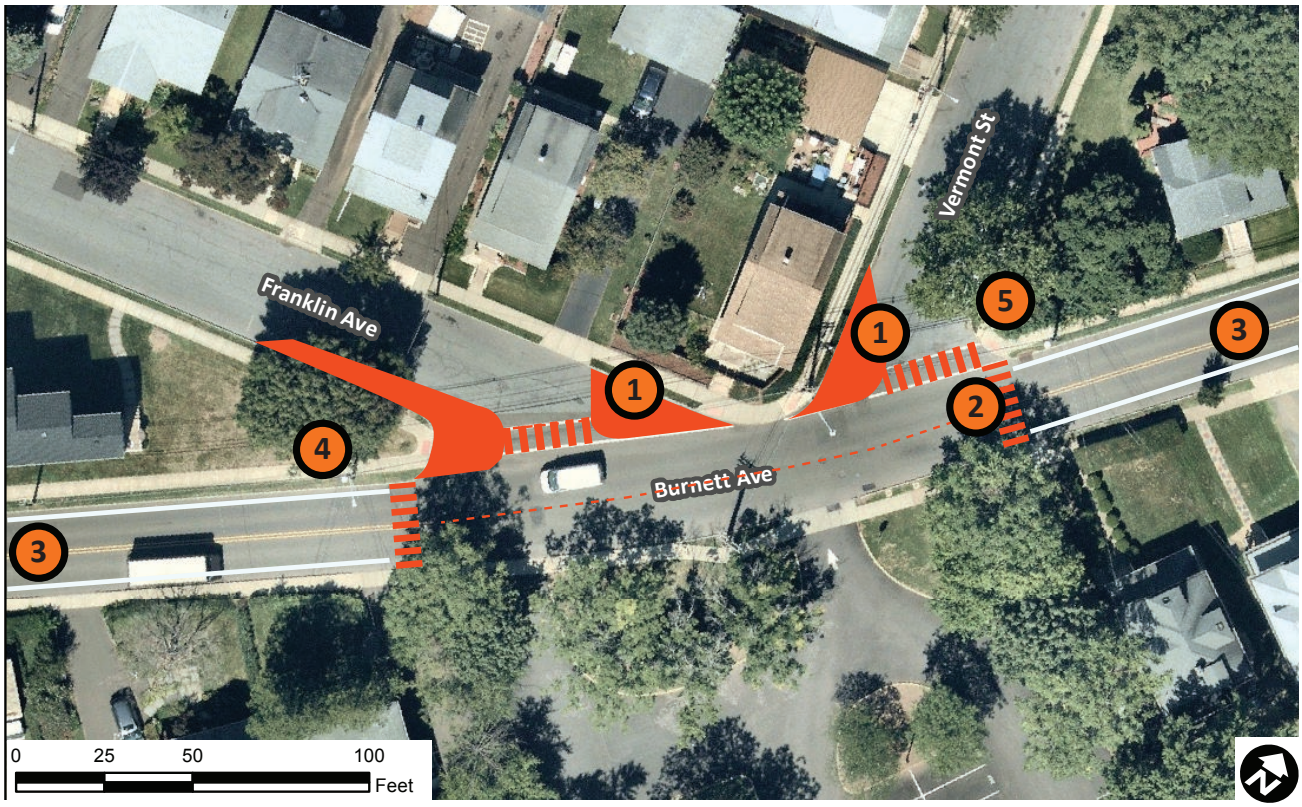
Example of advanced stop bar & stop for pedestrians sign.
Credit: PedBikeSafe.org

Approximate cost of construction - $15,000 - $175,000*

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

BURNETT AVENUE: **FRANKLIN AVENUE & VERMONT STREET**

06/16/2018



1. Realign intersections to reduce the skew angle. Narrow the approach at both intersections (Franklin Avenue & Vermont Street) to improve sight distance and to calm traffic by slowing turning vehicles. Prohibit left turns to Burnett Avenue from Vermont Street.

   An alternate option to address sight triangle issues is to install partial closures at Franklin Avenue and Vermont Street to prevent turns onto Burnett Avenue. Both streets could remain two-way 50' northwest of the intersection.

2. High-visibility crosswalks

Example of high-visbility crosswalk striping on Prospect St
Credit: NV5

3. Narrow travel lanes to 10' & stripe 2' shoulder on each side.

4. Add a "smart" radar sign

Example of smart radar sign, Betterton, MD
Credit: Richard Drdul, Flickr

5. Prohibit left turn from Vermont Street

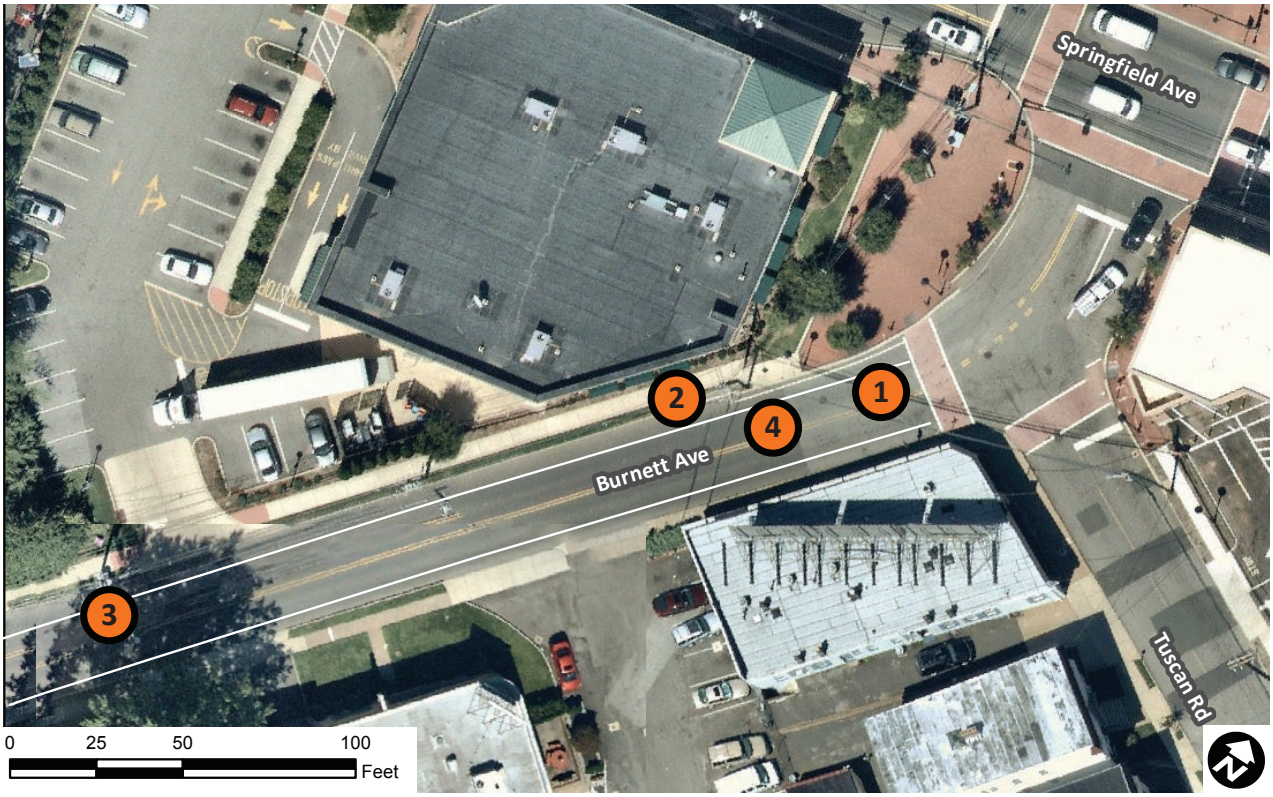
Left Turn Prohibited, R3-2 Sign
Credit: MUTCD

Approximate cost of construction - $10,000 - $17,000*

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

BURNETT AVENUE: **SPRINGFIELD AVENUE & TUSCAN ROAD**

06/16/2018



1. In-street stop for pedestrian sign

Example of in-street stop for pedestrians sign, Glen Ridge, NJ
Credit: NV5

2. Add a gateway element

Example of small neighborhood sign, Westcott, Syracuse, NY
Credit: Echo Makes

3. Narrow travel lanes to 10' & stripe 2' shoulder on each side

4. Add 25 mph pavement markings

25 mph pavement markings
Credit: FHWA

Approximate cost of construction - $5,000 - $10,000*

*This estimate is for construction costs only and is based on the Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies and final design.)

IMPLEMENTATION MATRIX

ENGINEERING

No.	Recommendation	Responsibility	Timeframe	Approximate Cost*
BURNETT AVENUE: South of Lombardy Place - CORRIDOR -WIDE (1,100 feet)				
1	Enhance/stripe all crosswalks with high visibility "continental" striping (assume 7 locations)	Maplewood	1 to 2 years	$9,000 - $13,000
2	Narrow travel lanes to 10' and stripe parking. Option A: stripe a 10' parking lane on each side and 10' travel lane. Option B: stripe a painted center median and stripe 8' parking lanes on each side.	Maplewood	6 months - 1 year	Option A: $3,500 - $5,000 Option B: $6,000 - $9,000
3	Complete the sidewalk network on the south side township border and Lombardy Place.	Maplewood	1 to 2 years	$60,000 - $90,000
4	Add a gateway element to visually indicate a different environment when entering Maplewood.	Maplewood	1 to 2 years	$5,000 - $7,500
5	Add 25 mph pavement markings (assume 4 locations)	Maplewood	6 months - 1 year	$400 - $600
BURNETT AVENUE: North of Lombardy Place - CORRIDOR -WIDE (2,200 feet)				
6	Enhance/stripe all crosswalks with high visibility "continental" striping.	Maplewood	1 to 2 years	$7,000 - $10,000
7	Narrow travel lanes to 10' and stripe a 2' shoulder.	Maplewood	6 months - 1 year	$7,500 - $12,000
8	Add a gateway element to visually indicate a different environment when entering a residential area from Springfield Avenue.	Maplewood	1 to 2 years	$5,000 - $7,500
9	Add 25 mph pavement markings (assume 2 locations)	Maplewood	6 months - 1 year	$400 - $600
BURNETT AVENUE Site-Specific Concepts				
Rutgers Street				
10a	Install all-way stop signs in the short-term and consider adding a new traffic light if warranted.	Maplewood	1 to 2 years	All-way stop - $1,500 - $2,000 Traffic Light - $250,000 - $300,000
10b	Consider installing a mini-roundabout to slow vehicular speeds. Ensure that the roundabout is traversable by large vehicles and is well-lit at night.	Maplewood	1 to 2 years	$35,000 - $52,500
11	Enhance/stripe all crosswalks with high visibility "continental" striping	Maplewood	1 to 2 years	$3,000 - $4,500

*Approximate cost for most of the recommendations is based on Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies or final design.

IMPLEMENTATION MATRIX

No.	Recommendation	Responsibility	Timeframe	Approximate Cost*
12	Daylight intersections to improve visbility and further reinforce no parking within 25 feet of a crosswalk	Maplewood	6 months - 1 year	$4,000 - $6,000
Wellesley Street				
13	Enhance/stripe all crosswalks with high visibility "continental" striping	Maplewood	1 to 2 years	$2,000 - $3,500
14	Install missing curb ramp on the south side of Burnett Avenue	Maplewood	1 to 2 years	$1,500 - $2,500
Lexington Avenue / Tuscan Street				
15	Consider a full closure of Lexington Avenue with temporary/permeable barriers to limit conflicts due to inadequate visibility. The permeable closure will allow emergency vehicles to enter the roadway if needed.	Maplewood	1 to 2 years	$500 - $150,000
16	Complete the sidewalk network with curb ramps in front of the senior center and connect to DeHart park.	Maplewood	1 to 2 years	$10,000 - $15,000
17	Install high visibility crosswalks paired with an advance stop bar and stop for pedestrians sign for the mid-block crosswalk across Burnett Avenue to DeHart park.	Maplewood	6 months - 1 year	$5,000 - $7,500
Franklin Avenue / Vermont Street				
18	Consider realigning the intersections to reduce the skew angle. The sight triangle study revealed limited visibiltiy due to the skew angle and other obstructions. Narrow the approach at both intersections (Franklin Avenue & Vermont Street) to improve sight distance and to calm traffic by slowing turning vehicles. Prohibit left turns to Burnett Avenue from Vermont Street.	Maplewood	1 to 2 years	$4,000 - $6,000
19	Enhance/stripe all crosswalks with high visibility "continental" striping.	Maplewood	1 to 2 years	$3,000 - $4,500
20	Add a "smart" radar sign to alert drivers of current travel speeds.	Maplewood	6 months - 1 year	$3,000-$6,500
Springfield Avenue / Tuscan Road				
21	Add a in-street stop for pedestrian signs.	Maplewood	6 months - 1 year	$200 - $300
22	Add a gateway element to indicate an entry to a residential neighborhood from the busy commercial corridor - Springfield Avenue.	Maplewood	1 to 2 years	$5,000 - $7,500

*Approximate cost for most of the recommendations is based on Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies or final design.

IMPLEMENTATION MATRIX

No.	Recommendation	Responsibility	Timeframe	Approximate Cost*
23	Add 25 mph pavement markings to alert drivers of a slower speed environment while entering Burnett Avenue. The posted speed limit on Springfield Avenue is 35 m.p.h.	Maplewood	6 months - 1 year	$400 - $600
ENFORCEMENT				
Burnett Avenue - Corridor-Wide Recommendations				
24	Enforce sight triangles for all intersections as per Maplewood Township Code, Article IV, Chapter 271, Section 271-55 Sight Triangles.	Maplewood	6 months - 1 year	Staff time
LIGHTING				
Burnett Avenue - Corridor-Wide Recommendations				
25	Improve lighting at intersections considered too dim as per the lighting assessment conducted (Appendix C)	Maplewood	1 to 2 years	Coordination time with PSEG

*Approximate cost for most of the recommendations is based on Safe Routes to School Cost Sheet (updated 2017) and does not include the cost for engineering studies or final design.

Wyoming Avenue & Ridgewood Road

Existing Conditions

Wyoming Avenue

Wyoming Avenue is a 1 mile urban minor arterial roadway that run north-south connecting to Millburn Township to the south and Orange Township to the north. It is a two lane, undivided county roadway with a posted speed limit of 35 m.p.h. There are no signalized intersections on Wyoming Avenue in Maplewood. The overall roadway characteristics are summarized in Figure 25.

Ridgewood Road

Ridgewood Road is classified as an urban major collector roadway that runs north-south connecting to Millburn Township to the south and South Orange Township to the north. It is a two-lane, undivided, municipal road that has a posted speed limit of 25 m.p.h. There is one signalized intersection at Ridgewood Terrace/Baker Street. The overall roadway characteristics are summarized in Figure 26.

Lighting Assessment

The lighting assessment performed Wyoming Avenue and Ridgewood Road quantified roadway lighting levels at all intersections along the corridor. The study showed that that the lighting level was adequate at 32% of intersections and that the lighting level was "too dim" at 68% of intersections for both Wyoming Avenue and Ridgewood Road. The lighting level requirement was based on the NJDOT *Pedestrian Compatible Planning and Design Guidelines,* which recommends 0.5 foot candles at pedestrian crosswalks in residential areas. Most street lighting within the study corridors consists of lighting fixtures installed on utility poles and some lighting from adjacent properties. A detailed summary of the lighting assessment findings can be found in **Appendix C**.

Valley Street Improvements Review

NV5 conducted a review of two intersection redesigns on Valley Street. The two intersections reviewed were:

- Valley Street & Baker Street
- Valley Street & Tuscan Road

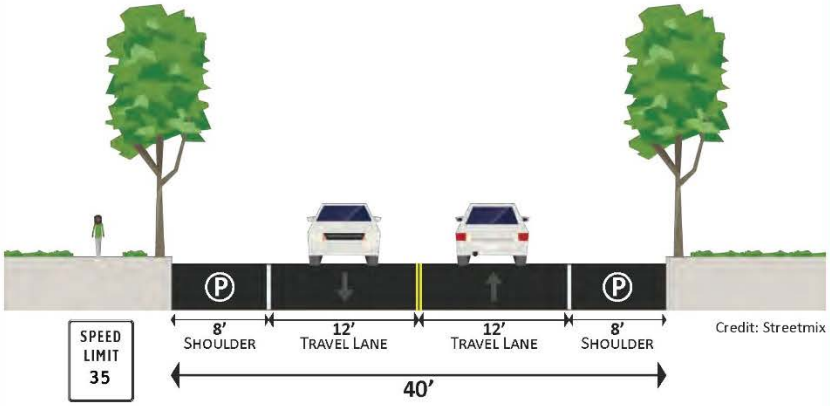
On December 7, 2017 NV5 staff conducted a field visit throughout the study area including the intersections of Valley Street & Baker Street and Valley Street & Tuscan Road. While this office is in general agreement with the proposed improvements, we noted some operational and ADA related issued which should be reviewed by the Township as the project proceeds through design and construction. In general, the location and height of the pedestrian push buttons should be reviewed to make sure they are within the MUTCD requirement of between three feet and four feet high (See Appendix F).

Figure 25: Roadway Characteristics: Wyoming Avenue

WYOMING AVENUE (COUNTY ROUTE 577)

STREET VIEW (SOUTHBOUND)

Credit: Google Maps



Credit: Streetmix

EXISTING CROSS SECTION

ROADWAY CHARACTERISTICS

JURISDICTION: COUNTY
CLASSIFICATION: URBAN MINOR ARTERIAL
LENGTH: 1 MILE
INTERSECTIONS: 17
SIGNALIZED: 0
PARKING: PERMITTED
SIDEWALKS: ONE SIDE (ALTERNATES)
CROSSWALKS:

NOTES:
Recommended Bike Route in the 2010 Maplewood Bikeway Network Plan.

Credit: NearMap

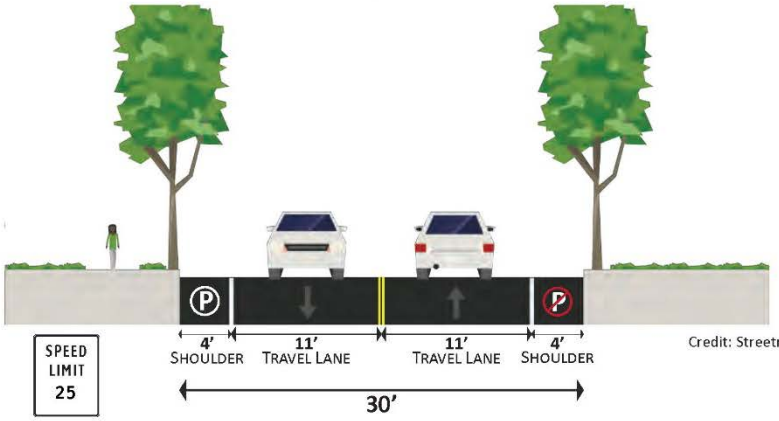
AERIAL

Figure 26: Roadway Characteristics - Ridgewood Road

RIDGEWOOD ROAD

STREET VIEW (SOUTHBOUND)

Credit: Google Maps



Credit: Streetmix

EXISTING CROSS SECTION

ROADWAY CHARACTERISTICS

JURISDICTION: MUNICIPAL
CLASSIFICATION: URBAN MAJOR COLLECTOR
LENGTH: 1.25 MILE
INTERSECTIONS: 32
SIGNALIZED: 1
PARKING: PERMITTED (VARIES)
SIDEWALKS:
CROSSWALKS:

NOTES:
Recommended as a Bike Route in the 2010 Maplewood Bikeway Network Plan.

AERIAL

Credit: NearMap

Education & Evaluation Recommendations

This study also identified some education and evaluation measures at the Township level to complement and support the engineering recommendations identified for the focus areas. Education efforts can help all users understand their rights and responsibilities on the road.

Street Smart NJ

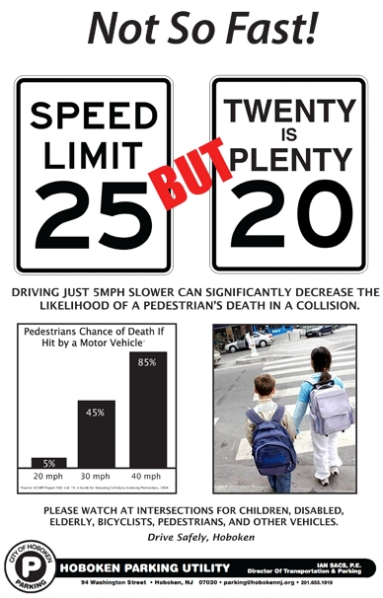
The Street Smart NJ campaign educates both motorists and pedestrians about the pedestrian and motorists laws in an effort to reduce pedestrian and bicyclist crashes and fatalities. It is a public education campaign coordinated by the North Jersey Transportation Planning Authority with support from the Federal Highway Administration.

Source: https://bestreetsmartnj.org/

The Township should consider implementing the Street Smart NJ pedestrian safety campaign. As part of the campaign, the Township can host events, hand out information and educate the public with social media. The Police Department can step up enforcement during the campaign and ensure motorists and pedestrians are following the laws. Materials from the campaign are available on the campaign website (https://bestreetsmartnj.org/) and may be reproduced and used without permission. Logos and local sponsorship information may be added to all artwork.

Community-Oriented Traffic Calming

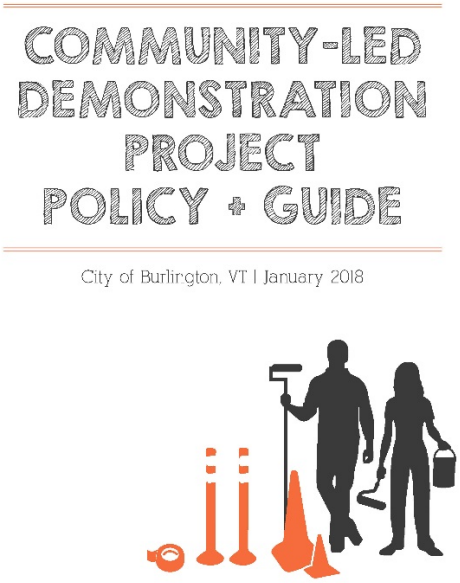
The Township should implement a community-oriented traffic calming campaign to inform drivers that they are traveling on neighborhood streets and to remind them to slow down. An example of a community oriented program is the "20 is Plenty" campaign. This encourages driver to consider driving no faster than 20 mph on roads with higher speed limits. At 20 mph the risk of pedestrian fatality drops to just 5% compared to 45% at 30 mph. Residents can place yard signs designed to create awareness and education regarding improving road safety.



Source: Hoboken Parking Authority

Tactical Urbanism / Demonstration Projects Program

The Township can create a program to encourage community-led placemaking projects similar to the program created by City of Burlington, VT (https://www.burlingtonvt.gov/DPW/Tactical-Urbanism-and-Demonstration-Projects) and the City of Fayetteville, Arkansas (http://fayetteville-ar.gov/3268/Tactical-Urbanism). This will allow citizens to take ownership of their roadways and neighborhoods and provide a streamlined process to undertake these low-cost, short-term and easy-to-build projects. The program can make it easier to undertake pilot projects, test the improvements before building/installing permanently and engage and empower the public. Recently, the *"Jersey City Pedestrian Enhancement Plan"* was developed and describes several community demonstration projects conducted as part of the study.



https://www.burlingtonvt.gov/DPW/Tactical-Urbanism-and-Demonstration-Projects

http://fayetteville-ar.gov/3268/Tactical-Urbanism

Traffic Circle Demonstration, Michigan Avenue Neighborhood Greenway, Go MANGo

Jersey City Pedestrian Enhancement Plan, www.street-plans.com

These guides provide communities with ideas/project types to make their streets safer, explain the application process and timeline, identify materials that can be used, describe installation and breakdown processes and list permits and metrics to assess the projects.

Table 10: Education & Evaluation Recommendations (Township-Wide)

MAPLEWOOD LOCAL TECHNICAL ASSISSTANCE 8/14/2018

IMPLEMENTATION MATRIX

No.	Recommendation	Responsibility	Timeframe	Approximate Cost*
EVALUATION & PLANNING				
Township-Wide Recommendations				
1	Consider adopting a tactical urbanism program that allows citizens to undertake traffic calming demonstration projects.	Maplewood	1 to 2 years	Staff time
EDUCATION				
Township-Wide Recommendations				
2	Implement the Street Smart NJ pedestrian safety campaign. Materials from the campaign are available on the campaign website and may be reproduced and used without permission, and logos and local sponsorship information may be added to all artwork. http://bestreetsmartnj.org/	Maplewood / TransOptions	Less than 2 years	Staff time
3	Implement a Community Oriented Traffic Calming Campaign to inform drivers that they are traveling on a neighborhood street and need to slow down. Examples include "Keep Kids Alive-Drive 25" yard sign campaign and the "20 is Plenty" campaign.	Maplewood Police Department	Less than 2 years	Staff time

III. Traffic Calming Policy Review

Background

Maplewood Township's Traffic Calming Policy defines procedures to follow when addressing public requests for traffic calming in their neighborhoods and streets. One of the tasks of this report is to review the Township's Traffic Calming Policy (last revised in January 2017) and provide comments based on the policy review and state of the practice traffic calming policies (See Appendix G).

Policy Overview

The Traffic Calming Policy includes an overview of traffic calming guidelines to follow in response to requests for the installation of traffic calming measures on a neighborhood street. The policy was revised in January 2017 to add a requirement to collect signatures from 75% of the property owners along the affected street prior to conducting a speed study, which would be performed by either the Police Department or the Engineering Department. After the speed study is conducted, a point evaluation is performed by Maplewood Township Engineering to see if the traffic conditions meet the criteria to implement traffic calming concepts. If justified, traffic calming measures are proposed and vetted with the public. The traffic calming improvements are then installed and evaluated after six months.

The policy defines the following process:

1. Initiate the study by requesting traffic calming measures (public or Township staff)
2. Determine problems and issues by documenting traffic calming needs (Township staff)
3. Develop a plan by identifying relevant traffic calming strategies based on design criteria (Township staff)
4. Identify priorities by programming traffic calming improvements based on rating criteria (Township staff)
5. Review the process with the community prior to implementation (Township staff)
6. Determine the effect of traffic calming measures by conducting an evaluation after installation (Township staff)

The township policy also includes a general FAQ and a blank petition form (https://www.twp.maplewood.nj.us/engineering/faq/how-can-i-request-traffic-calming-my-street).

Review of Local and National Traffic Calming Policies

NV5 examined local and national state of the practice traffic calming policies and the table below provides an overview of findings. The majority of the traffic calming

policies or traffic management programs follow procedures and processes similar to the Maplewood Township policy.

The following policies were reviewed in further detail (See Appendix G):

1. City of San Jose, CA – Traffic Calming Toolkit
2. City of Des Plaines, IL – Neighborhood Traffic Management Policy
3. Township of Montclair, NJ – Traffic Calming Policy & Procedures
4. City of Hoboken, NJ – Traffic Calming Toolkit
5. Town of Summerville, SC – Traffic Calming Policy Manual

At the state level, NJDOT includes guidance on traffic calming including a Traffic Calming Toolbox and Complete Streets Guide. **Title 39 Motor Vehicles and Traffic Regulations, Section 39:4-8.10,** specifies the rules and regulations regarding construction of speed humps and other traffic calming measures by municipality and county (see Appendix G).

Recommended Revisions to the Maplewood Traffic Calming Policy

While the township's policy does include all the key components of a traffic calming policy, minor revisions to the policy are recommended based on the review of state-of - the practice traffic calming policies.

A. <u>Section 2: Documentation of traffic calming need</u>

The purpose of the rating system in Maplewood's traffic calming policy (Table 1-1 of the traffic calming policy) is two-fold. First, it provides a minimum threshold for consideration (50 points or more) for traffic calming improvements. Second, it allows a comparison of local traffic calming projects competing for available funding.

Recommendation: We recommend that the rating criteria be modified to include the following:

- Bicycle routes
- Missing sidewalks
- Roadway geometry affecting visibility
- Maximum Average Daily Traffic (ADT) volume requirement to be removed or increased to 6,000 ADT, an exclusion can be specified for installing speed bumps on roadways with volume under 3,000 ADT to comply with the state policy
- Crash data should look at data by block instead of location
- Vehicle classification data

The Township can consider moving the rating criteria table and text to "Section 4, *Programming of Traffic Calming Improvements*" as this section describes the prioritization of traffic calming requests.

B. <u>Section 3: Identification and approval of traffic calming strategies</u>

Recommendation: A traffic calming toolkit of strategies can be developed to educate the community and these strategies can be divided into categories that also include education/enforcement strategies.

Similar to the case studies reviewed (See Appendix G) the Maplewood Township policy can utilize the following options to categorize the traffic calming strategies:

- Option 1: Basic and comprehensive strategies
- Option 2: Speed monitoring options, changes to traffic control and physical changes to the streets
- Option 3: Volume control measures, vertical and horizontal speed control measures

C. <u>Section 5: Design of traffic calming projects</u>

Recommendation: The maximum ADT requirement should be removed as all streets can incorporate some level of traffic calming. In addition, while vertical speed control strategies may be difficult on streets that are through-truck routes, these streets can still be considered for other traffic calming measures such as passive traffic calming (streetscape enhancements, pavement markings, colored pavement, striping, on-street parking, gateways, signage), as well as education and enforcement.

IV. Implementation & Funding

The majority of the concepts and recommendations identified in the previous section for Burnett Avenue and Prospect Street can be implemented quickly with low-cost materials. A few of the recommendations may require additional funding and investment and can take up to two years such as improving street lighting, installing sidewalk and gateway elements. The implementation matrix also includes an estimated construction cost for all recommendations. These cost estimates were determined based on the New Jersey's Safe Routes to School Design Treatment typical costs sheet.

Most of the recommendations in this report can be installed as tactical urbanism projects. These can be temporary, low-cost and easy to install and would help the community to understand, test and experience the improvements prior to making longer-term investments. The Township should consider adopting a Tactical Urbanism policy as noted in Chapter VI to empower the community to take ownership of their streets.

In addition to funding the installation of these concepts, the Township must recognize that there are costs associated with maintenance and operation of both short-term and long-term measures. The majority of the recommendations are low maintenance and should only require routine maintenance efforts such as snow clearing, debris removal, and sweeping that are already required on these roads.

To assist with acquiring funding for the recommendations, potential funding sources are listed in Appendix H. Each funding source is listed with links to the appropriate websites. Each website contains additional information related to: how to apply for funding, typical grant amounts, application deadlines, and eligible activities.

Appendices

Appendix A: Document review
Appendix B: Outreach Materials
Appendix C: Lighting Assessment
Appendix D: Traffic data for Burnett Avenue
Appendix E: Sight triangle diagrams for Burnett Avenue
Appendix F: Annotated PDF of Valley Street improvements
Appendix G: Traffic Calming Policy Case-Studies
Appendix H: Funding programs and Sources