

AGENDA
REGULAR MEETING OF THE BIRMINGHAM PLANNING BOARD
THURSDAY APRIL 7th, 2022

151 MARTIN ST., CITY COMMISSION ROOM 205, BIRMINGHAM MI*

*******6:00 pm*******

The highly transmissible COVID-19 Delta variant is spreading throughout the nation at an alarming rate. As a result, the CDC is recommending that vaccinated and unvaccinated personnel wear a facemask indoors while in public if you live or work in a substantial or high transmission area. Oakland County is currently classified as a substantial transmission area. The City has reinstated mask requirements for all employees while indoors. The mask requirement also applies to all board and commission members as well as the public attending public meetings.

- A. Roll Call
- B. Introductions & Chairpersons Comments
 - 1. New board member introductions**
 - i. Michael St. Germain**
 - ii. Mark J. Doolittle (Alternate)**
- C. Review of the Agenda
- D. Approval of Minutes, Meeting of **March 3rd, 2021**
- E. Unfinished Business
- F. New Business
 - 1. Set Hearing of Necessity: Westwood Rd Improvements, Raynale to Oak**
 - 2. Multi-Modal Transportation Plan – Overview**
 - 3. Crosswalk Markings and Location Standards**
- G. Meeting Open to the Public for items not on the Agenda
- H. Miscellaneous Communications
 - 1. Multi-Modal Transportation Day**
- I. Next Meeting – **May 5th, 2022**
- J. Adjournment

Please note that board meetings will be conducted in person once again. Members of the public can attend in person at Birmingham City Hall or may attend virtually at <https://us06web.zoom.us/j/88295194746> or dial: **929 205 6099 US Toll-free, Meeting ID: 824 7795 4435**

DRAFT

City Of Birmingham Multi-Modal Transportation Board Thursday, March 3, 2022

151 Martin Street, City Commission Room 205, Birmingham, MI

Minutes of the regular meeting of the City of Birmingham Multi-Modal Transportation Board held Thursday, March 3, 2022. Chair Doug White convened the meeting at 6:00 p.m.

A. Rollcall

Present: Chair Doug White; Board Members David Hocker, Tom Peard, Victoria Policicchio, Joe Zane; Alternate Board Member Amanda Fishburn

Absent: Board Member Anthony Long

Administration:

Brooks Cowan, Senior Planner
Scott Grewe, Operations Commander
Jim Surhigh, Consulting City Engineer
Scott Zielinski, Assistant City Engineer

F&V: Julie Kroll

MKSK: Brad Strader

B. Approval of MMTB Minutes of February 3, 2022

Motion by Mr. Hocker

Seconded by Mr. Zane to approve the MMTB Minutes of February 3, 2022 as submitted.

Motion carried, 7-0.

VOICE VOTE

Yeas: Zane, Peard, Hocker, White, Long, Policicchio, Fishburn

Nays: None

C. Introductions & Chair Comments

D. Review of the Agenda

E. Unfinished Business

None.

F. New Business

1. Best Practices in Transportation: Traffic Calming and Speed Tables

Mr. Strader and OC Grewe presented the item.

In reply to Ms. Policicchio, there was a brief discussion of which fines and fees derived from traffic violations become City revenue.

Ms. Policicchio asked Staff to look into using the fines and fees from traffic violations, which become City revenue after cost sharing with the 48th District Court is deducted, for safety and traffic calming programs.

SP Cowan said he would clarify with FD Gerber how those revenues are allocated once the City receives them.

Chair White thanked Staff.

2. Redding Rd. / Woodward Ave Intersection Redesign

CCE Surhigh introduced the item.

Mr. Strader and CCE Surhigh presented the item.

After discussion, the Board expressed a general preference for alternative two as proposed by MKSK.

3. Woodward Road Diet

SP Cowan presented the item.

After Board discussion, SP Cowan summarized the Board's preferences as:

- Prioritizing pedestrian safety, first and foremost;
- Staying up-to-date on how transit lane discussions evolve between SMART, RTA, MDOT, and other stakeholders; and,
- Staying up-to-date on the broader recommended changes for Woodward so multi-modal enhancements such as safer bus stops, larger divider islands, and bike lanes can be considered appropriately at a later date within Woodward's evolving context.

The Board confirmed.

G. Meeting Open to the Public for Items not on the Agenda

H. Miscellaneous Communications

SP Cowan informed the Board that the Birmingham Shopping District (BSD) is investigating putting together a discounted bus pass program in order to attract employees and reduce the parking costs of BSD businesses.

SP Cowan said he was also in discussion with the Assistant City Manager about putting together a visit to Ferndale to discuss Ferndale's efforts towards implementation of a Woodward road diet, its multi-modal improvements including bike lanes, and its last-mile infrastructure. He asked the

Board whether they would be interested in joining.

The Board expressed enthusiasm for the proposal.

SP Cowan said he would aim to organize something during warmer weather.

I. Adjournment

No further business being evident, the Board adjourned at 7:39 p.m.

Brooks Cowan, Senior Planner

A handwritten signature in black ink, appearing to read 'Laura Eichenhorn', with a long horizontal line extending to the right.

Laura Eichenhorn
City Transcriptionist

DATE: April 1st, 2022

TO: Multi-Modal Transportation Board

FROM: James J. Surhigh, Consulting City Engineer
Brooks Cowan, City Planner
Commander Scott Grewe, Police Department

SUBJECT: Set Public Hearing for Westwood Dr. Improvement from Raynale to Oak St, Raynale St. Improvement from N Glenhurst to west City Limits, and Oak St. Improvement from N Glenhurst to west City Limits

INTRODUCTION:

As part of the City's annual Capital Improvement Plan and budget for 2022, an "unassigned" unimproved street improvement project has been planned for. The Engineering Department selected a group of streets for this project that include Westwood, between Raynale & Oak, Raynale, between N. Glenhurst and the west City limits, and Oak, between N. Glenhurst & the west City Limits. This selection is the first done under the City's new policy for initiating unimproved street improvement projects. The project is presented for discussion with respect to multi-modal issues early in the engineering design process. The existing width of these streets does not meet the City's street width policy, so this project is also presented for discussion of, and recommendation for, the street widths to be constructed. In accordance with the street width policy, the MMTB is asked to hold a public hearing for the street width change, and a suggested motion is presented for adoption to set a date for that.

BACKGROUND:

The Engineering Department selected a group of streets to fill the "unassigned" unimproved street project in the 2022 budget and capital improvement plan, and is the first project being proposed under the recently adopted City policy allowing the City to initiate a street improvement project without waiting for a citizen-led petition effort. This project includes Westwood Dr, between Raynale St & Oak St, Raynale St, between N. Glenhurst Dr & the west City limits, and Oak St, between N. Glenhurst Dr & the west City Limits. The rationale for selecting these streets for this project were presented at the 2022 Long Range Planning Meeting held on January 22, 2022. A copy of the Engineering Department memo presented at the meeting is attached for reference.

The proposed project will include complete reconstruction of the streets within the limits as described. The cost for the street pavement improvements will be subject to a special assessment to the adjoining property owners that benefit from the street improvement project. The special assessment process is a long-standing City policy when unimproved streets are improved. Special assessments for drive approaches, and for water/sewer laterals not meeting current City standards are typical for these type of projects. Other infrastructure

improvements that are proposed to be completed, but not subject to the special assess, include the following components:

- Replace the existing 6" water main (originally installed in 1929) with a new 8" water main meeting current City sizing requirements. The existing 8" water main on Oak (1916 & 1927) will also be replaced with a new 8" water main. A new 8" water main will be installed on Raynale to connect the mains on Westwood and N Glenhurst to improve circulation and reliability. New valves and fire hydrants will be replaced in the project area.
- New storm sewers will be installed to extend the storm sewer system constructed in previous years on Raynale & Oak. These storm sewers will reduce the amount of storm-related flow in the City combined sewer system, which will reduce the risk of basement flooding due to extreme rain events and also reduce long term costs to the City for treatment of storm flows in the sewer system.
- Repair and rehabilitation work for the existing combined sewers will be completed, if needed, and especially if excavation is required, in conjunction with the proposed project.
- Sidewalk improvements will be completed as needed, especially at intersection crosswalks, to meet current ADA requirements.

We are in the preliminary design phase for the project, and are presenting it to the MMTB for discussion with respect to multi-modal issues, as is the standard practice for public projects. The City's multi-modal transportation consultant, MKSK, will review how the project relates to the City's Multi-Modal Plan and recommended practices.

The existing width of these streets do not meet the City's street width policy that was adopted in July of 2018, which is attached to this report for reference. MKSK will review the street width conditions for the proposed project, along with the established criteria for allowing deviations from the standard. The table below summarizes the existing and recommended widths (face-of-curb to face-of-curb) for consideration.

Street	From	To	Existing Width	Prop Width	Criteria for Deviation
Westwood	Raynale	Oak	31	26	None
Raynale	N Glenhurst	West City limit	31	31	4c
Oak	N Glenhurst	West City limit	36	36/31	4c

In accordance with the street width policy, the MMTB is asked to hold a public hearing for the street width change, where property owners that are directly impacted, as well as the public at large, has an opportunity to express their positions regarding the proposed street width changes. After the public hearing, a report will be presented to the City Commission summarizing the communications, recommendations, and opinions collected during the preliminary design phase, and provide direction to Staff for finalizing design of the project.

COMMUNICATION:

The City has sent a project announcement letter to the residents directly in the proposed project area. In advance of the proposed public hearing, signs will be posted along the affected streets. The City Clerk's office will notify the public as required by City Ordinance.

ATTACHMENTS

- Upcoming Capital Projects for 2022
- Residential Street Width Standards (2018)
- Westwood Drive Street Design Options (MKSK)

SUGGESTED BOARD ACTION:

Make a motion adopting a resolution to set a Public Hearing date of May 5th, 2022 to consider recommendations for the change in street width for Westwood Dr, between Raynale St and Oak St at the regularly scheduled Multi-Modal Transportation Board meeting.



(Westwood Dr Attachment)

MEMORANDUM

Engineering Dept.

DATE: January 13, 2022

TO: Thomas Markus, City Manager

FROM: Scott D. Zielinski, Assistant City Engineer
James J. Surhigh, Consultant City Engineer

SUBJECT: Upcoming Capital Projects for 2022

2022 is looking to be a very busy year for construction in Birmingham. There are some projects from 2021 that are scheduled to be finished this spring as soon as weather conditions allow, followed by this years' planned capital projects. Note that all projects are subject to City Commission approval and budget constraints.

Carry-over Work from 2021

➤ 2021 Asphalt Resurfacing Project

The Asphalt Resurfacing Project from the 21/22 season that started in 2021 will finish this spring. The project includes multiple street sections that will receive pavement resurfacing to extend the pavement life cycle. The contractor for this project is Pamar Enterprises, with AI's Asphalt as their paving subcontractor. The streets with planned work include:

- Watkins, W. Brown to W. Frank & Hanna to Wallace – mill and resurface pavement.
- Stanley, Hanna to Wallace & W. Lincoln to 14 Mile – mill and resurface pavement, with extension of the curb island at W. Lincoln to reduce the length of the crosswalk.
- Latham, Northlawn to 14 Mile – mill and resurface pavement, with new curbs at the intersections with Norfolk, Worthington, Southlawn and Wakefield constructed along new alignments with reduced radii to help with traffic calming in the neighborhood.
- Fairway, from Pleasant to 600 ft east of Pleasant – replace aging water main, patch trenches and excavations, and mill and resurface remainder of pavement.
- Pavement repairs at Parking Lot #5 (behind North Old Woodward Parking Structure)

➤ 2021/22 Concrete Sidewalk Program

The 21/22 Sidewalk repairs project is focused this year on Residential Area 4 and Downtown Area 1B of the City's Sidewalk Repair Program. Area 4 extends in general from Pierce Street to Southfield Rd, and Maple Rd to 14 Mile Road. Area 1B of the downtown generally extends from Old Woodward to Woodward, from Maple Road to Ravine. The contractor for this project is J.B. Contracting. Work on sidewalk ramp upgrades for ADA compliance was completed in the fall of 2021, and remaining work will be completed in the spring of 2022.

➤ Sewer Rehabilitation Program

This project includes sewer rehabilitation services to clean and inspect certain sewer segments throughout the City. Work items for rehabilitating minor sewer issues that may be found, such as removal of roots, grinding mineral deposits, grouting leaking joints, and limited internal patching of holes and open joints. Part of this contract includes televising sewers and sewer laterals on S. Old Woodward, in advance of the upcoming construction, to help confirm which existing sewer service lines are inactive. The total length of sewers included in this part of the project are 47,200 feet. The contractor for this project is DVM Utilities, who plan to start the work in mid-January, with completion anticipated by June 2022.

Planned Projects for the 2022 Construction Season

➤ Edgewood Ave (Lincoln to Southlawn)

Design work has started for replacing the water main and improving the sewer system, along with replacement of the pavement. This project will start in the spring, with completion early in the summer.

➤ Redding Rd (Lakepark to Woodward)

Design work has started for replacing the water main and improving the sewer system, along with replacement of the pavement. Also included in the project are structural repairs to the bridge, construction of new storm sewer outfalls, and stabilization of the streambanks in the vicinity of the bridge. New sidewalk is being planned, along with a necessary retaining wall, to close the existing gap between Lakepark and the bridge. This project will likely start later in the summer, with completion in the fall.

➤ Cranbrook Non-Motorized Shared Use Path (TAP Grant)

Design work has started for constructing a new 10-ft wide shared use path along Cranbrook, from 14 Mile to Midvale, and new sidewalk along the north side of 14 Mile, from Cranbrook to the western City limits, and on the south side of Lincoln, from Cranbrook to Golfview. This project will likely start later in the summer, with completion in the fall.

➤ Parking Lot #5 Slope Repair

Design is underway for slope stability and erosion control measures to stabilize the slope along the northern edge of lot #5. Excessive rain events that overwhelm the storm sewer catch basins has resulted in deterioration of the slope that extends down to the Rouge River from the north end of the parking lot. This work will have to be coordinated with the planned asphalt pavement repairs in the parking lot.

➤ Water Tower Maintenance & Coating

Necessary repairs and maintenance work will be performed on both water towers, including replacing the coatings (paint) on the exterior and interior of the tanks. Design will start this winter, and the contract will be bid early spring. The goal is to complete repairs on one of the water towers before July/August (peak water demand months), and the other would be completed in the fall.

➤ S. Old Woodward Ave. Phase 3 Reconstruction Project

Final plans are currently being prepared in accordance with the approved conceptual design for completion of the downtown reconstruction effort started in 2018. Improvements will include new concrete pavement, construction of storm sewers and infiltration/storage system to reduce peak storm water runoff from the area, updates to the water system, new sidewalks and streetscape elements, new crosswalks and improvements for pedestrian safety, trees, landscaping and irrigation, street lighting, and new electric system for holiday tree lighting and potential future electric vehicle charging. The following tentative milestones for implementing the project are as follows:

- 2/14 - Advertise plans for bids
- Week of 2/21 - Hold public information meeting
- 3/7 - Hold pre-bid meeting with prospective bidders
- 3/14 – Public Hearings of Necessity for SAD's (streetscape and sewer/water lateral replacements)
- 3/21 - Open bids
- 4/11 - Recommendation for Award of construction contract to City Commission
- 4/11 – Public Hearing Confirming Role for SAD's (streetscape and sewer/water lateral replacements)
- 5/2 – Issue Notice to Proceed (presuming insurance/bonds/contract in order and permits approved)
- 5/31 – Start construction (dependent on material lead time, contractor's schedule)
- 9/30 – Substantial completion, roadway open to traffic
- 10/28 – Final completion

➤ 2022/23 Concrete Sidewalk Program

The 22/23 sidewalk repairs program will focus on Residential Area 5 and Downtown Area 1C. Area 5 extends in general from Southfield Rd to the western City limits, and Maple Rd to the southern City limits 14 Mile Road. Area 1C of the downtown generally extends from Woodward to Pierce, from Maple Road to Daines. Construction on this work would likely begin in late summer. Other concrete sidewalk work being planned includes:

- Concrete slabs for granite bench locations along W. Maple Rd.
- Sidewalk gap closure on the north side of Oak St., between Lakeview & Greenwood (in front of Greenwood Cemetery)
- Reconstructing sidewalk on Ann St., from Lincoln to Landon, to correct sidewalk cross-slope issues.

➤ 2022 Asphalt Resurfacing Project

This program will continue in the fall with multiple streets that will receive pavement resurfacing and preventative maintenance measures to extend the pavement life cycle. These streets will be determined based on analysis of the pavement condition evaluation (PASER ratings) from this past year.

➤ Unimproved Streets

With the City Commission's approval of the policy modifications related to initiation of street improvement projects, the Engineering Department is planning to initiate design of a street improvement project to be constructed in 2022 on the following unimproved streets:

- Westwood Drive, Raynale St. to Oak St.
- Oak St., N. Glenhurst Dr. to western City Limits
- Raynale St., N. Glenhurst Dr. to western City Limits

This project will include replacement of undersized water mains, extension of storm sewers previously constructed on Raynale and Oak to alleviate the risk of basement flooding due to sewer backups in the immediate area and reduce storm water that enters the combined sewer system, and repair/rehabilitation of the existing combined sewers that will continue to provide sanitary service. The preliminary estimated cost for this project is approximately \$1,830,000, and is accounted for in the current budget between the "unassigned unimproved street" project for FY21/22, and re-allocating the Oak St. project that is currently planned for FY23/24. Some of the benefits for selecting this project at this time include:

- Providing for continued extension of the storm sewers in this neighborhood as described in the 2011 Backyard Sewer & Water Master Plan, and allowing for further extension in FY23/24 on Westwood, N. Glenhurst, Lyonhurst and Brookwood north of Raynale. Once this storm sewer extension is complete, proposed modifications to the regulator on the Bloomfield Village Drain (Oakland County Water Resources Commissioner) at Raynale can be considered that would provide relief to the combined sewer system south of this area.
- Replacement of water mains will create an improved "loop" that help with available fire flows on surrounding streets (a number of fire hydrants in this area that may not be able to produce even 500 gpm under existing conditions).
- This first project will be a test of the newly modified policy allowing the City to initiate a street improvement project, and then special assess the costs associated with the street paving to the adjoining property owners in accordance with the current policy. Success of this process will allow the City to better plan future infrastructure improvements that continue to improve the quality of life of its residents.

In 2022, a cape-sealing program will also be put out for bids to address the most severely deteriorated street surfaces, mostly in the southeast part of the City. Streets selected for this treatment are based on recent pavement condition evaluation efforts (PASER ratings).



Upcoming Capital Projects

Work Scheduled for 2022 & Future Plans

Engineering Dept.

Presented by: Jim Surhigh &
Scott Zielinski

Date: January 22, 2022

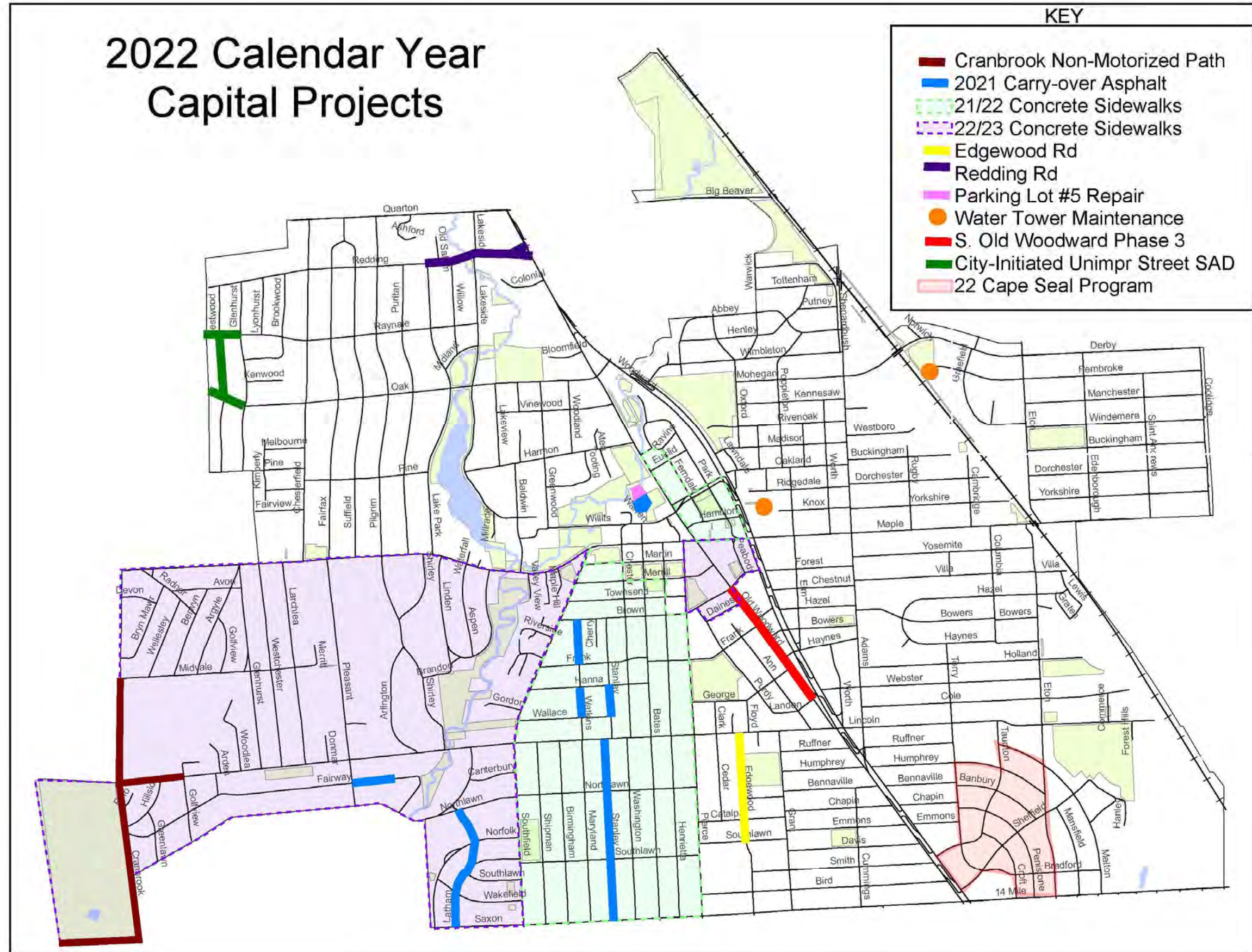


Upcoming Capital Projects

Overview:

- Some projects started in 2021 and will continue in 2022 as soon as weather conditions allow
- New construction projects starting to improve sewers, water system, pedestrian accessibility & safety, and road conditions
 - S. Old Woodward Reconstruction Phase 3, Brown to Landon
 - City-Initiated Unimproved Street Improvement Project
- Continuing sidewalk, pavement, sewer maintenance programs
- Extensive work planned by Consumers Energy in 2022

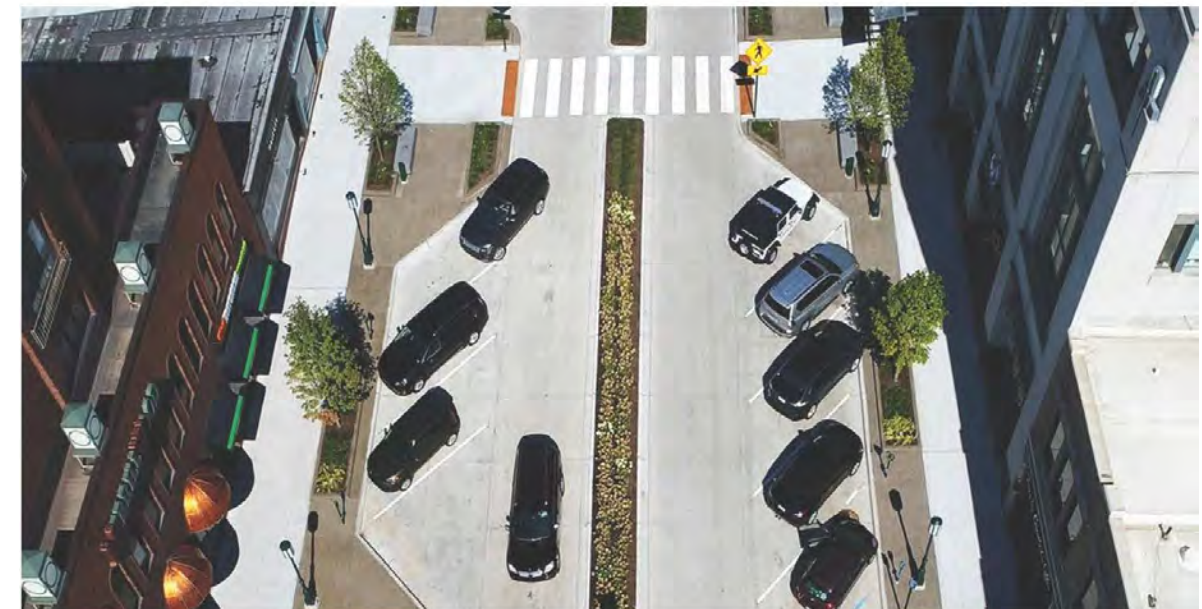
2022 Calendar Year Capital Projects



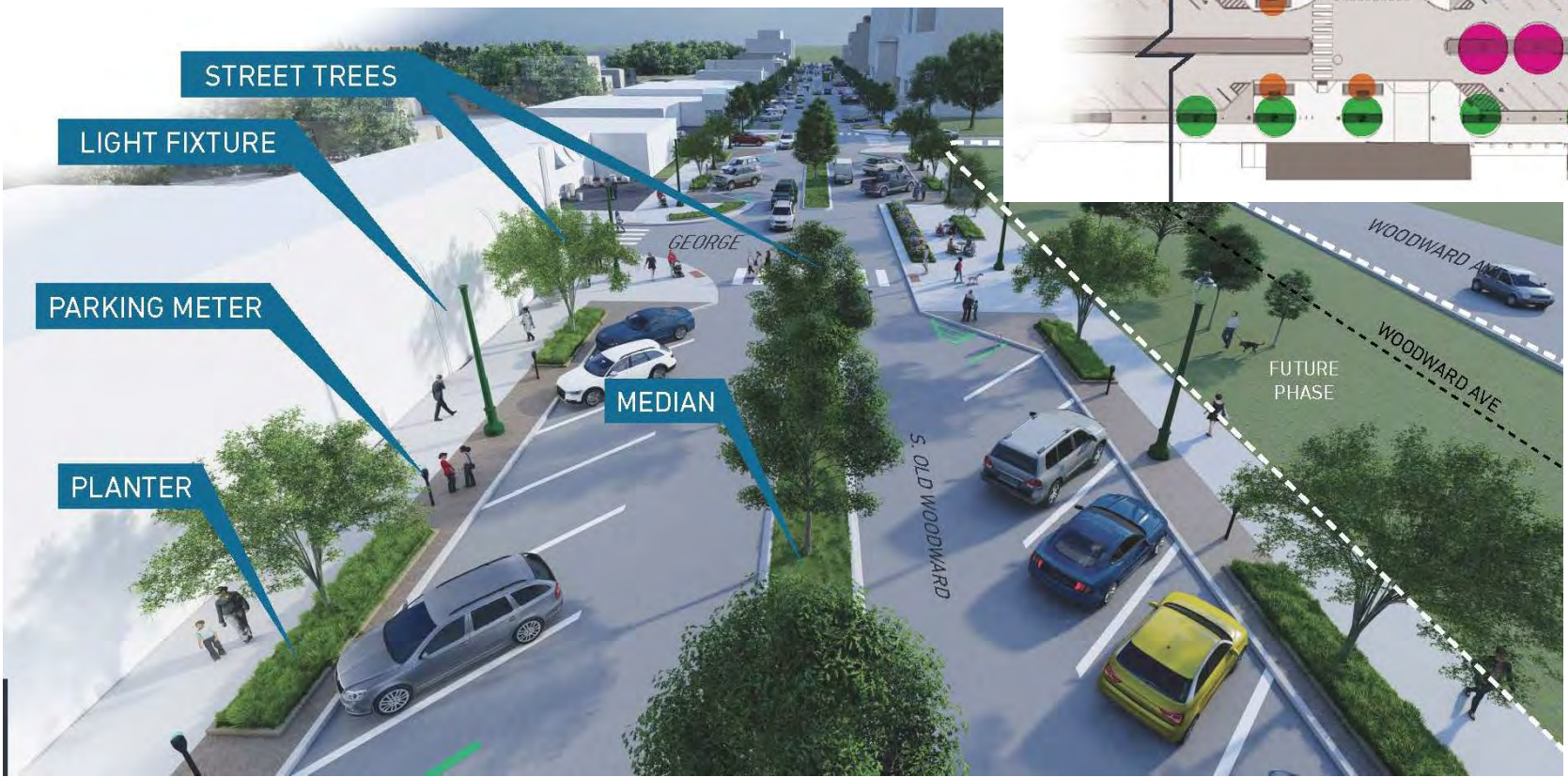
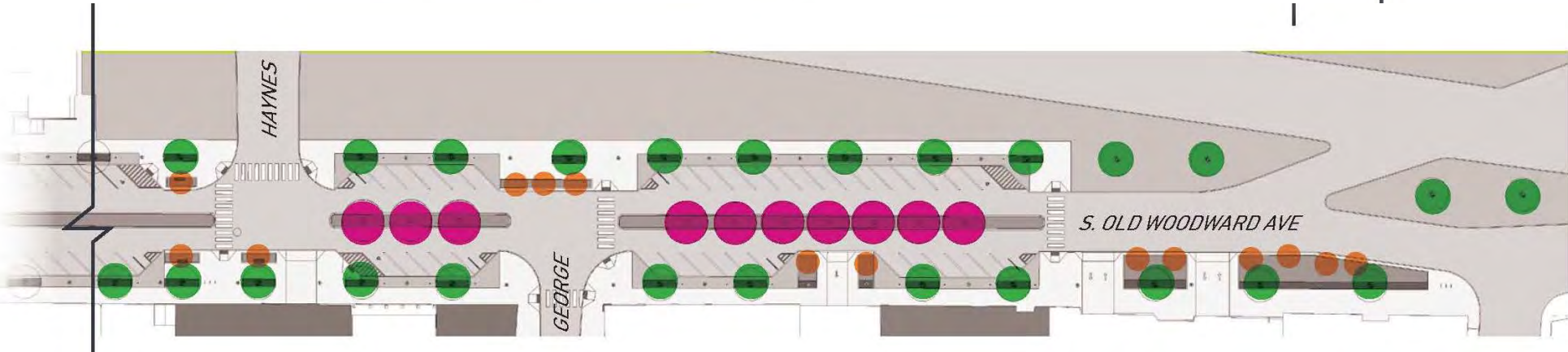
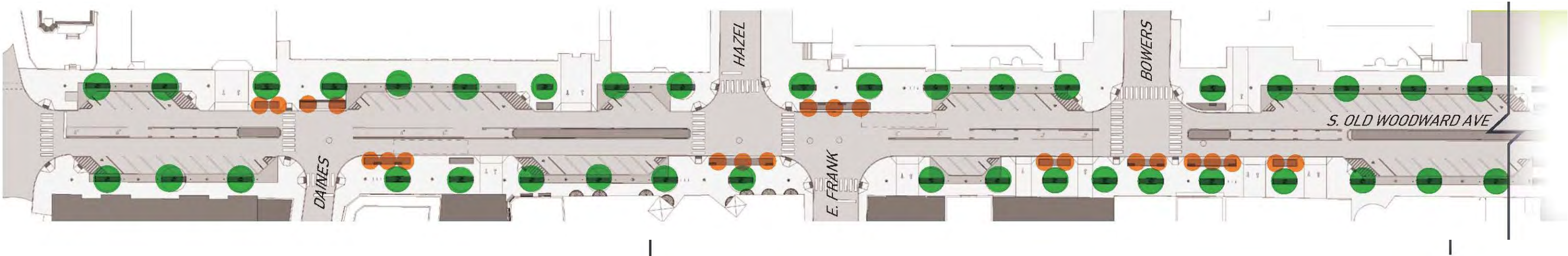
S. Old Woodward Phase 3

Scope/Features:

- New Concrete Pavement with “bump-outs” and median islands
- New sidewalks & streetscape elements (planters, benches, lighting, trees & landscaping)
- Enhanced cross-walk design to improve pedestrian safety
- New storm sewer with underground storage/infiltration feature



S. Old Woodward Phase 3



S. Old Woodward Phase 3

Tentative Milestone Dates:

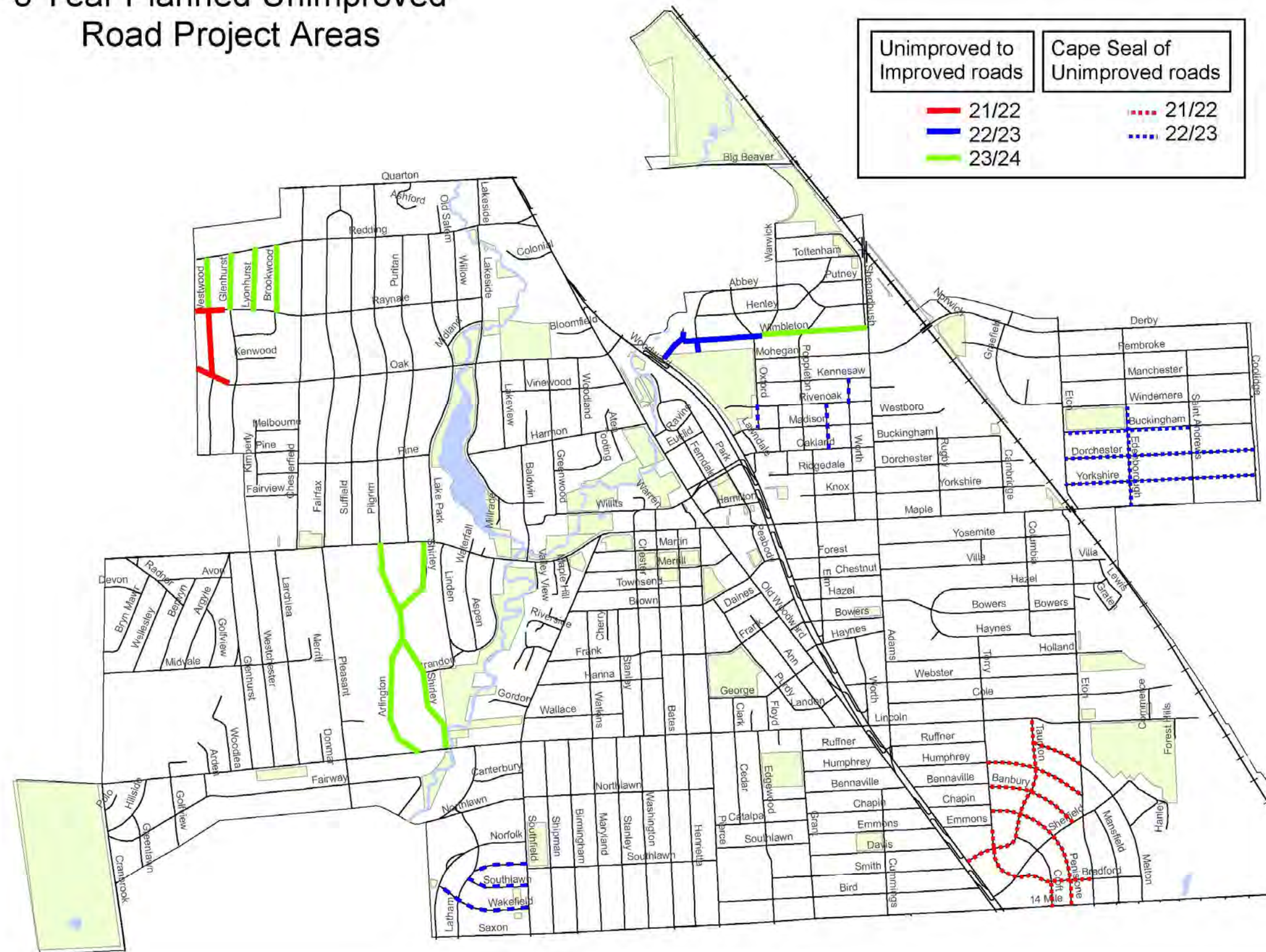
- 2/14 Advertise Plans
- 2/21 Public Informational Meeting (date TBD)
- 3/14 P.H. of Necessity for SAD's
(Streetscape, Sewer/Water Laterals)
- 3/21 Open Bids, Evaluate Results
- 4/11 Recommendation for Award
- 4/11 P.H. Confirming Roll for SAD's
- 5/2 Issue Notice to Proceed to Contractor
- 5/31 Start Construction
- 9/30 Substantial Completion Date
(road open to traffic, some remaining work)
- 10/28 Final Completion Date



Unimproved Streets

- 2022: Westwood (Raynale to Oak), and Oak and Raynale (N. Glenhurst to City limits)
 - City-Initiated Project – will be sending “Expression of Interest” survey to residents soon and proceeding with project design
 - New water main will improve flow & pressure conditions in area
 - Extend storm relief sewers that were constructed on Oak & Raynale
- 2022: Cape-Seal Program – severely deteriorated streets in neighborhood south of Lincoln, east of Woodward
- Projects planned in current 3-year budget/CIP on Arlington, Shirley, Westwood, N. Glenhurst, Lyonhurst & Brookwood
- 2023 City-Initiated Project & Cape-Seal Program

3 Year Planned Unimproved Road Project Areas





MEMORANDUM

Engineering Dept.
Planning Department
Police Dept.

DATE: July 13, 2018

TO: Joseph A. Valentine, City Manager

FROM: Jana Ecker, Planning Director
Scott Grewe, Police Dept.
Paul O'Meara, City Engineer

SUBJECT: Residential Street Width Standards

On January 22, 2018, the City Commission considered future street widths for Bennaville, Chapin and Humphrey. Several residents appeared on behalf of Bennaville Ave., and additional residents appeared on behalf of the one block of Chapin Ave. After much discussion, the City Commission endorsed the recommendations of the Multi-Modal Transportation Board ("MMTB") with regards to the future street width. However, during the discussion, the Commission expressed confusion as to what the City's policy is for determining the width of a new street. As a result, the MMTB was asked to study the issue in further detail, and send information and policy direction back to the Commission.

In March 2018, the MMTB began their discussion by identifying goals for residential road width standards, and reviewed the national standards and best practices from professional organizations and peer cities. The board agreed that standards should be created, but that there may be factors to permit some modifications if certain criteria are met.

On May 3, 2018, the MMTB passed a unanimous motion to recommend approval of Residential Street Width Standards to the City Commission.

On June 4, 2018, the City Commission reviewed the proposed Residential Street Width Standards recommended by the MMTB. After much discussion, the City Commission directed the standards back to the MMTB for further refinement in the following areas:

- Expand on the introduction and policy goals section to clarify purpose of standards;
- Identify clearly the professional organizations on which the standards are based;
- Change language in (2) from mandatory (shall) to optional (may); and
- Emphasize the role of public involvement by adding language to (4).

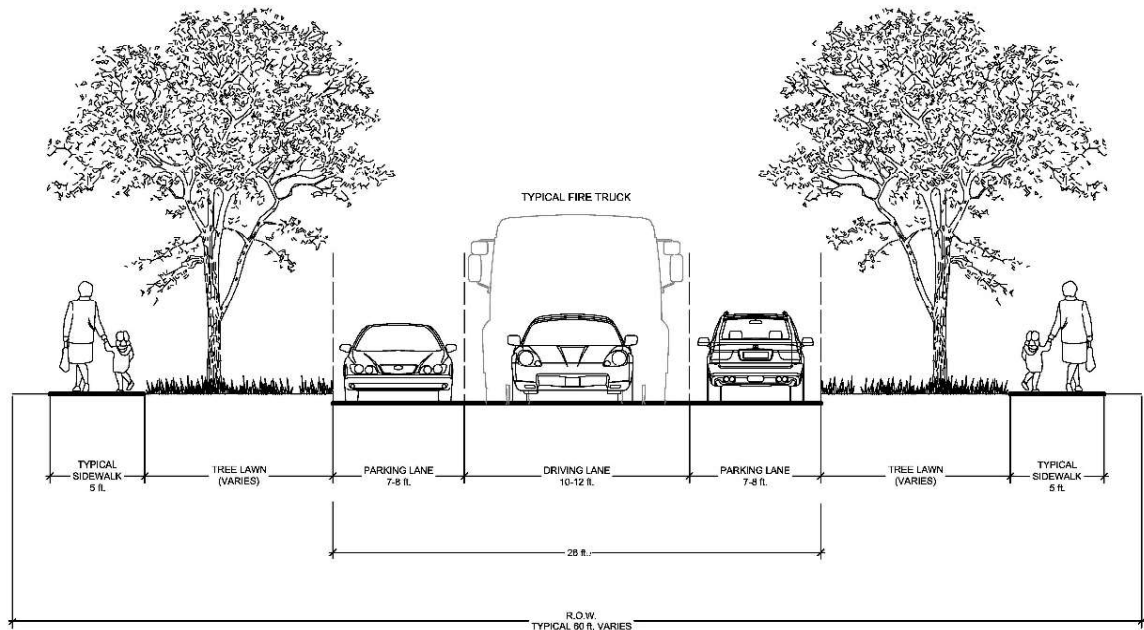
Accordingly, City staff made the changes requested by the City Commission to the Residential Street Width Standards and took the issue back to the MMTB on July 12, 2018. Board members recommended minor revisions, and then voted unanimously to recommend approval of the revised standards to the City Commission.

Please find attached all research considered by the MMTB, draft standards and all staff reports and minutes from the MMTB discussions for your review.

Suggested Action:

To approve the Residential Street Width Standards as recommended by the Multi-Modal Transportation Board on May 3, 2018, and as further refined and recommended on July 12, 2018.

POLICY STATEMENT:
BIRMINGHAM RESIDENTIAL STREET DESIGN STANDARDS



INTRODUCTION: The City Commission asked the Multi-Modal Transportation Board (MMTB) to establish a City policy for determining the width of a new street. Accordingly, the MMTB identified goals for residential road width standards, and reviewed the national standards and best practices from professional organizations and peer cities. The board created standards and allowed for modifications if certain criteria are met.

INTENT: The purpose of these standards is to provide consistent street widths throughout the city but with flexibility for very specific situations. The goals for identifying a standard road width for residential roads include the following:

- Functionality;
- Consistency **with adjacent streets;**
- Accident reduction **and public safety;**
- **Adhering to Complete Streets principles;**
 - **Enhancing walkability;**
- **Character of community;**
 - **Block length;**
 - **Size of lots;**
 - **Building setback and lengths;**
- Traffic calming;
- Expediency in planning and engineering;

- Infrastructure costs; and/or
- Storm water runoff management.

The following standards are based on residential street design recommendations published by **American Association of State Highway and Transportation Officials** (AASHTO), the Institute of Transportation Engineers (ITE), the Urban Land Institute (ULI), the Congress for New Urbanism, **National Association of City Transportation Officials** (NACTO), and those used by peer cities. Using those standards as a base, these standards are also based on emergency response access, winter weather, the existing street widths in the city, and the characteristics of different neighborhoods in the City. These widths typically allow for parking along both sides of the street with room for a vehicle to pass in one direction. When there is opposing traffic (vehicles going both ways) one of the motorists will need to yield to the other. This is commonly classified as a "Yield" or "Courtesy" Street.

STREET DESIGN STANDARDS (see also attached flow chart):

1. NEW AND EXISTING, UNIMPROVED RESIDENTIAL STREETS THAT ARE BEING IMPROVED

When streets are improved or newly constructed, the standards below shall be ~~strictly~~ **generally be** applied. **Exceptions may be considered when factors, such as those described in Section 4, are evident.**

- Standard Streets:** 26 ft. in width from curb to curb.
- If the right-of-way is less than 50 ft., the street width shall be a minimum of 20 ft. with parking allowed on one side only (generally the side without fire hydrants).

2. EXISTING, IMPROVED RESIDENTIAL STREETS

When previously built streets are reconstructed, this standard shall generally be applied. Exceptions may be considered when factors, such as those described in Section 4, are evident.

Standard Streets: 26 ft. in width from curb to curb.

Existing Street is 28 feet or less in width: If existing street width is 28 ft. or less in width, street ~~shall~~ **may** generally be reconstructed at the existing width **provided there is a reason present under section 4.**

3. PUBLIC NOTICE AND PUBLIC HEARING

Whenever there is a street project where a change in the existing width is being considered, the Multi-Modal Transportation Board shall have a Public Hearing to inform residents of the project and provide an opportunity for comment. The City shall post a sign along the street that announces street project. Design details shall be advertised and posted on the City's website. If residents express a desire for a non-

standard street width at a public meeting or through a public survey of street residents, those preferences shall be considered. However, engineering or safety factors listed in Section 4 must also be present to support a design exception.

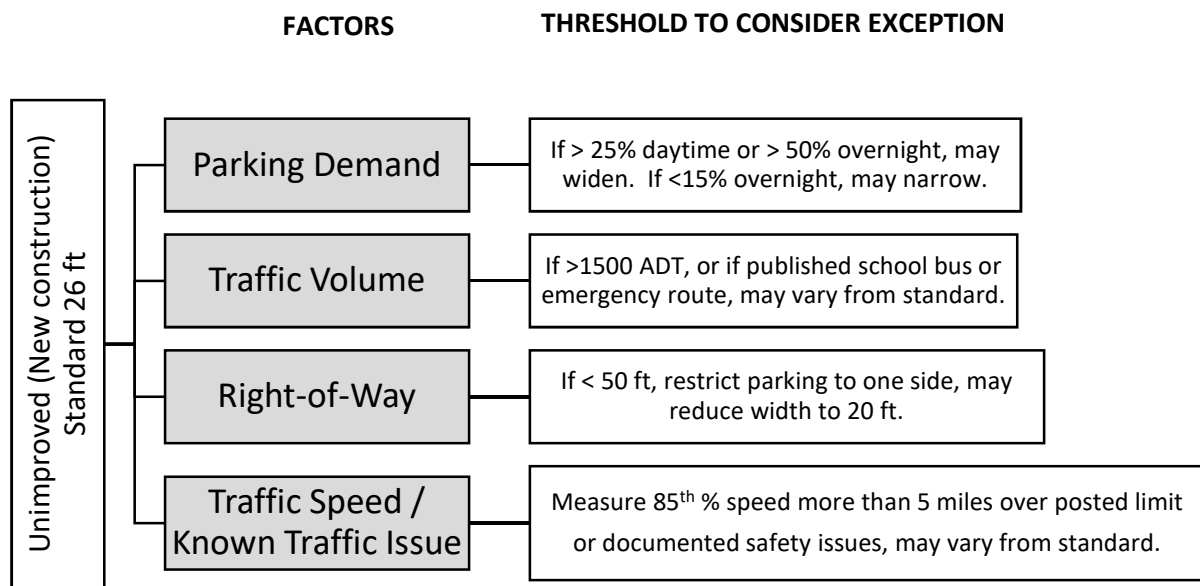
4. EXCEPTIONS AND MODIFICATIONS TO THE WIDTH STANDARDS

Any modification must be consistent with the Intent of these standards and the engineering publications upon which they are based. Street width exceptions may only be approved to a minimum of 20 ft. and a maximum of 30ft. **If residents express a desire for a non-standard street width at a public meeting or through a public survey of street residents, those preferences shall be considered (either wider or narrower)** ~~Modifications to street widths may~~ **only be considered if one or more of the following conditions exist:**

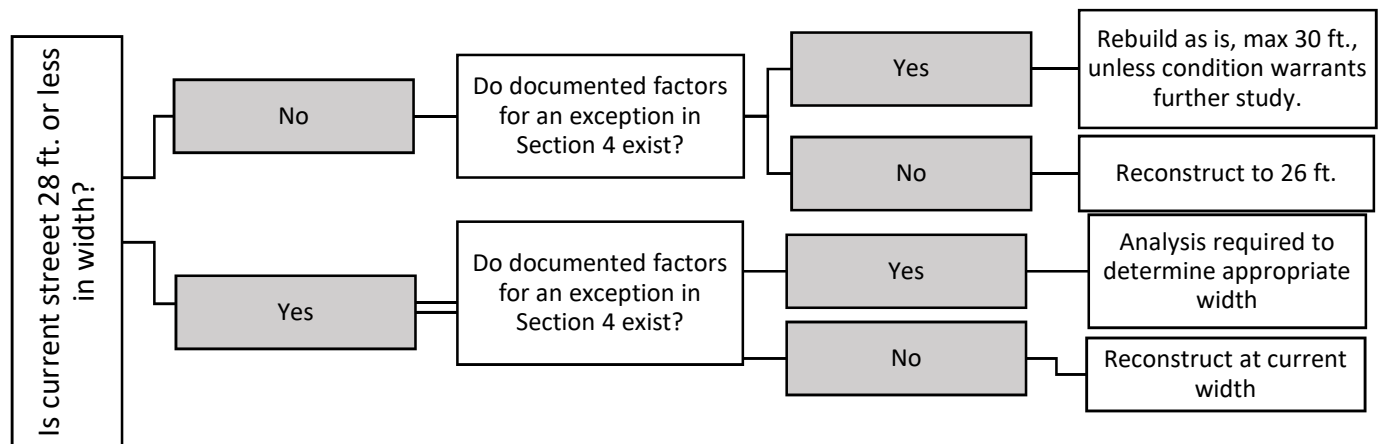
- a. High or low frequency of use of on-street parking. When surveyed on-street parking is utilized 15% or less overnight, the width may be reduced. When parking density is classified as highly utilized, defined as over 25% occupancy throughout the day or more than 50% of the available curb space used overnight, the width may be increased. For calculation of parking, a minimum length of 22 ft. shall be used and not include driveways, spaces adjacent to fire hydrants, or other locations where parking is not allowed.
- b. Daily traffic volumes exceed 1500 vehicles.
- c. The street is a published school bus route used by the Birmingham Public Schools or is a frequent emergency response route.
- d. Street is adjacent to a school, religious institution, City park, multiple-family residential development, or other use with access that generates higher traffic volumes.
- e. Presence of street trees, especially healthy, mature trees, such that rebuilding the road as proposed would result in the removal of two or more trees on any given block.
- f. A speed study confirms that the 85th percentile speed is more than 5 miles per hour over the posted speed limit and/or city police or engineering departments have documented operational or safety concerns related to traffic patterns along the street.
- g. Street may be as narrow as 20 ft. with parking on one side only if right-of-way is less than 50 ft.

5. BOULEVARD STREETS

Reconstruction of streets with a boulevard, median, or other unique design feature, shall be reconstructed to match the current configuration unless geometric changes are needed based on safety or engineering analysis.



RECONSTRUCTION OF IMPROVED STREET



2'



PUBLIC NOTICE

STREET WIDTH PUBLIC HEARING SCHEDULED
MULTI-MODAL TRANSPORTATION BOARD
YOUR INPUT IS REQUESTED

248-530-1850

www.bhamgov.org/publicnotices

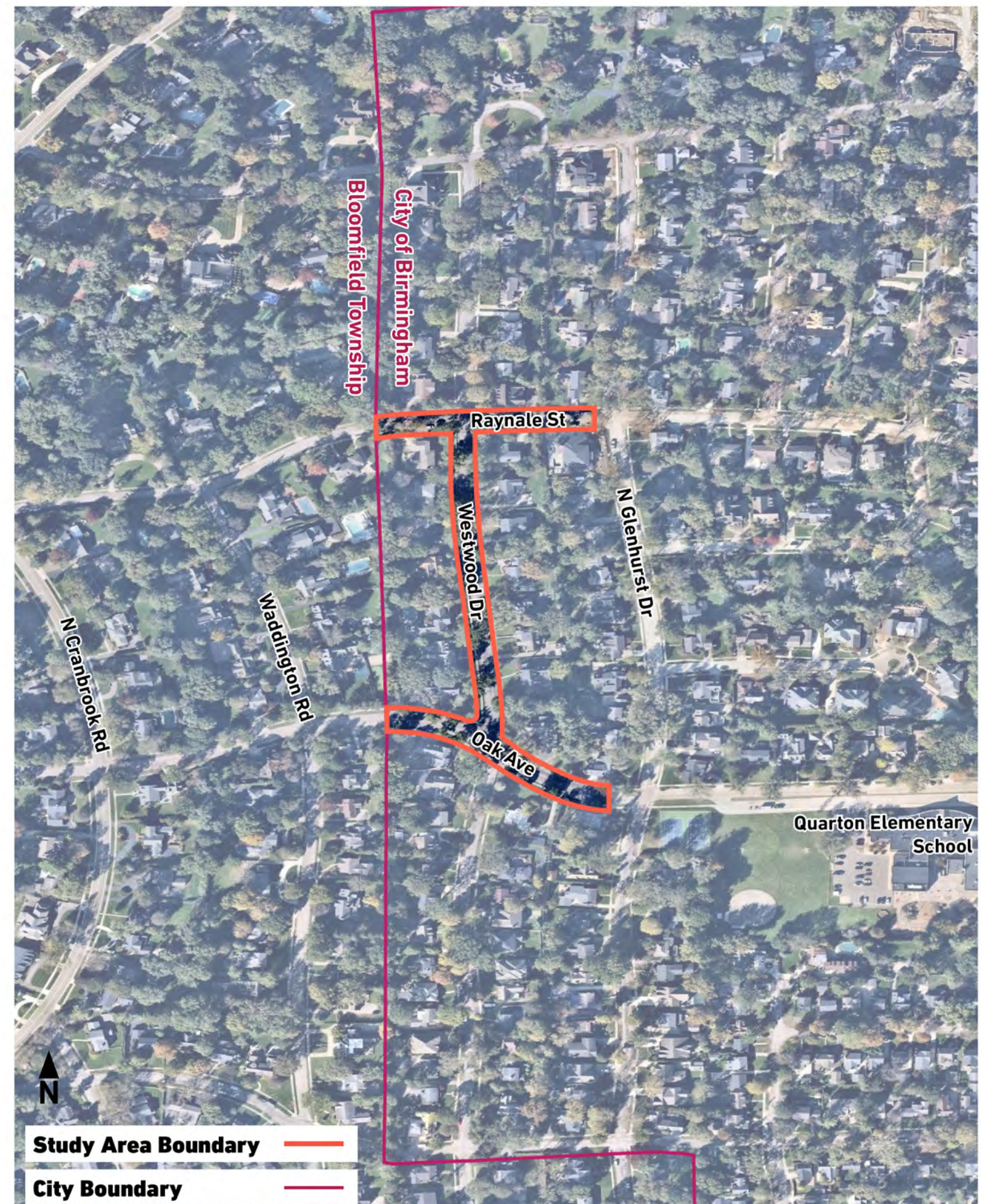


Notice Sign

Located on streets with speed limits of 25 mph

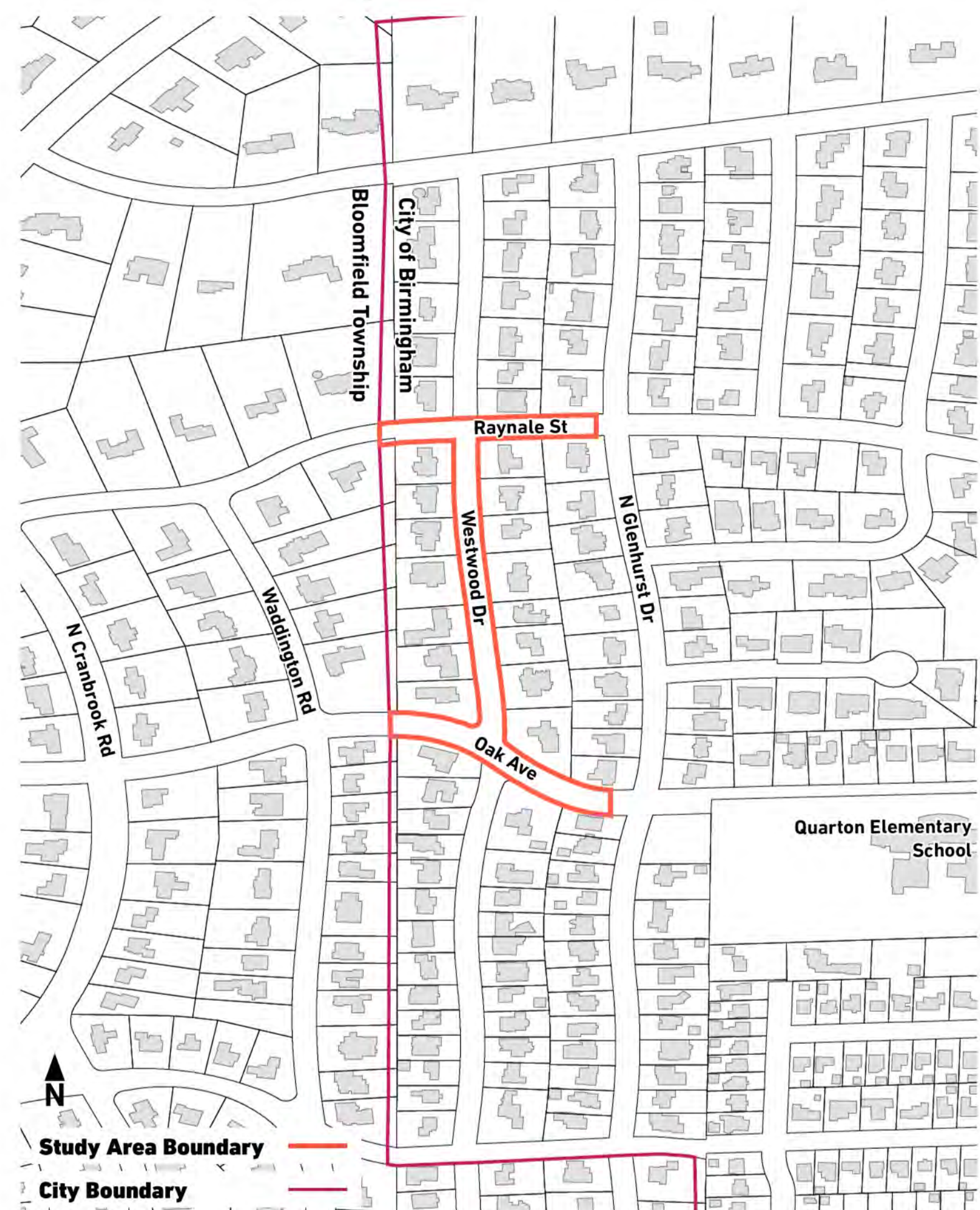
Capital Improvement Plan

- Reconstruct an “unimproved” street in late 2022
 - Westwood
 - Raynale
 - Oak
- New City Policy to initiate an improvement instead of a resident led petition



Project Description

- New 8" water main (some 6" were installed in 1929)
- New storm sewers - to help reduce basements flooding
- Update drives and water sewer laterals, where needed, to meet city standards
- Street and lateral updates funded through special assessment, city pays for water and sewer



Reconstruct the Streets

- Options are to rebuild to the current 31-36 feet wide or reconstruct to meet the current city standards of 26 feet wide

Street	From	To	Existing Width	Proposed Width
Westwood	Raynale	Oak	31	26
Raynale	N Glenhurst	West City limit	31	31
Oak	N Glenhurst	West City limit	36	36/31

- Multi-Modal Transportation Board to make recommendation to City Commission
- Public hearing for resident comments



Factors to Consider

- *Multi-Modal Plan recommendations*
- *City Policy is to rebuild streets to new standard of 26 feet wide in most cases
(27'-28' rebuilt as is / 32'+, max is 31)*
- *Standards intended to have a continuous width, manage traffic speeds, allow for some on-street parking, etc.*
- *Deviations allowed for...*
 - *On-street parking use (25%+ day, 50%+ overnight)*
 - *Volumes are over 1500 vpd (vehicles per day)*
 - *Published school bus or emergency response route*
 - *Speeds more than 5 mph over posted speed*
 - *Public hearing or survey comments and support by engineering*



Multi-Modal Plan Recommendations

- *Multi-Modal Plan lists Oak Ave as a proposed neighborhood connector route and proposed shared-lane markings (nothing listed for Westwood or Raynale)*
- *Neighborhood Connector Route: a route that utilizes residential streets and short connecting pathways that link destinations such as parks, schools and Shared Use Paths*
- *Shared-Lane Markings: a pavement marking consisting of a bike symbol with a double chevron above, also known as “sharrows”*
- *Labeled as “Phase 3” in the implementation plan*

CITY OF BIRMINGHAM MULTIMODAL TRANSPORTATION PLAN

MULTI-MODAL TRANSPORTATION PLAN

November 25, 2013

for consideration by:

submitted by:

THE GREENWAY
COLLABORATIVE, INC.

City of Birmingham
A Vibrant Community

MKSK

City Reviewed the Existing Conditions

- *School pick-up queuing along eastbound Oak Ave*
- *Traffic Speeds*
- *On-street parking*



Queuing in front of school



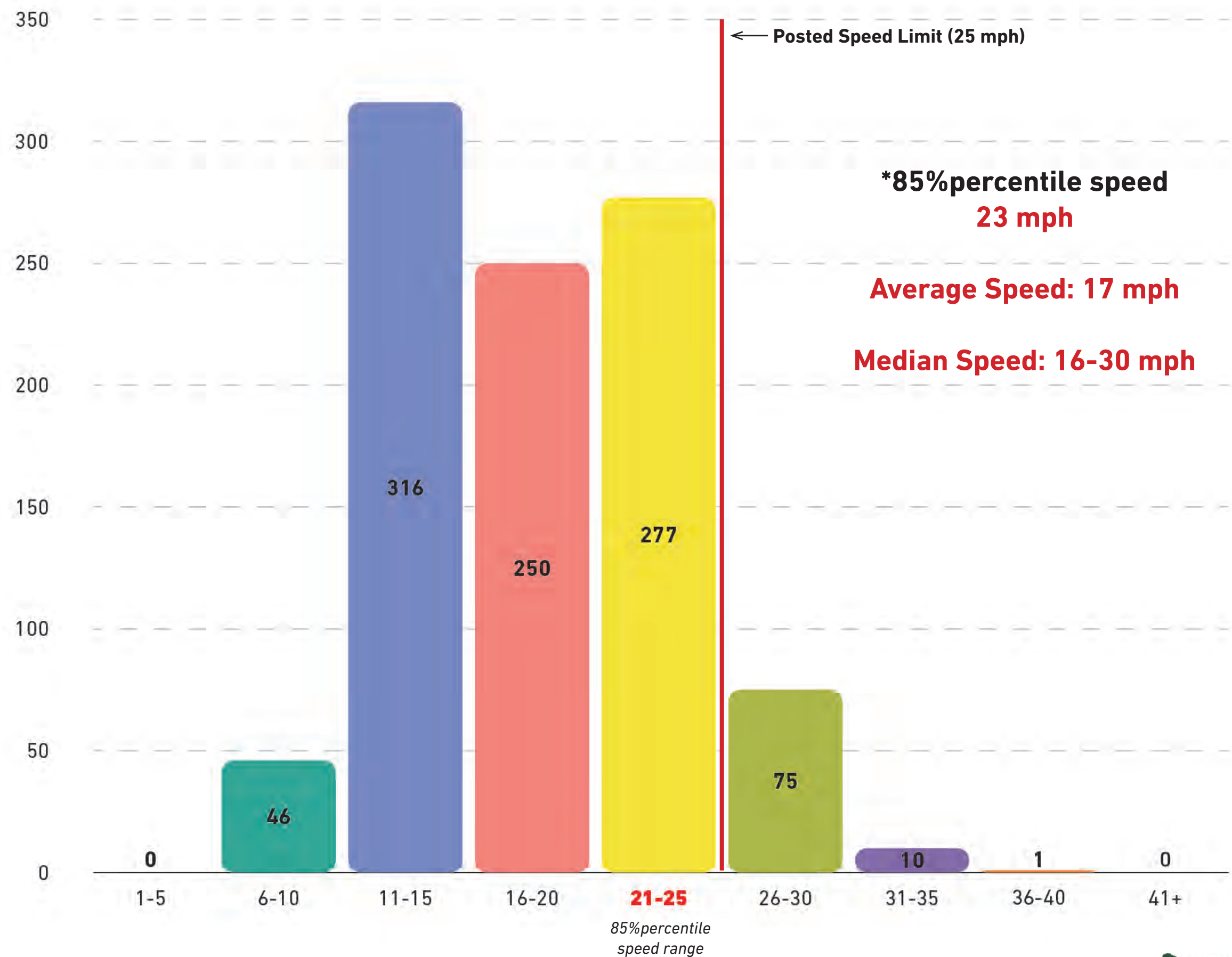
Queuing in front of Glenhurst and Westwood



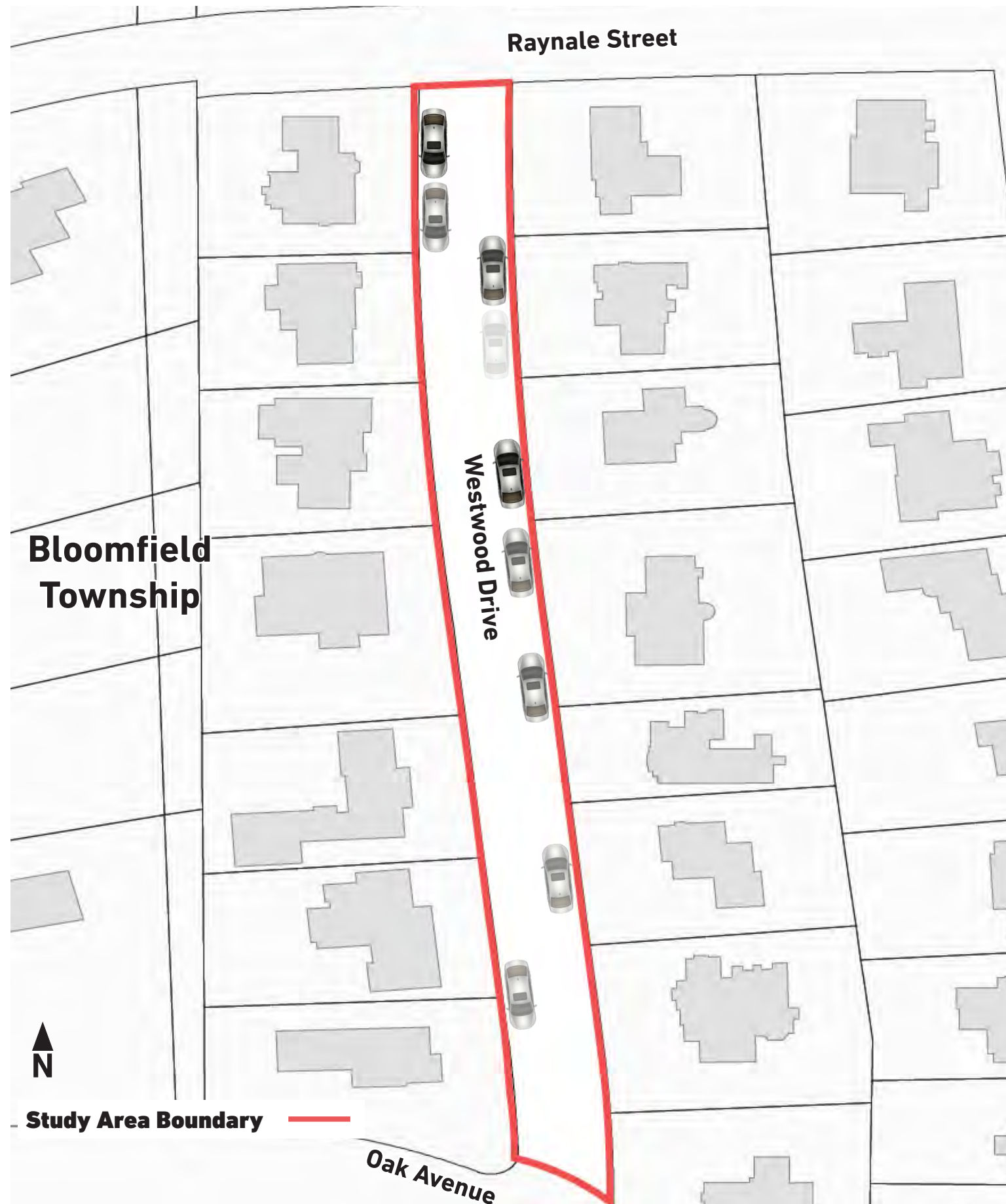
Queuing west of Westwood

Background - Speed Data

Speed Data collected September 10th, 11th, 12th and 13th of 2019



Background - Westwood Study Area Parking Counts



Counts on Westwood Drive from March 16th through March 21st between the hours of 1:25 AM and 5:15 AM

Average Number of Parked Cars: 6 cars

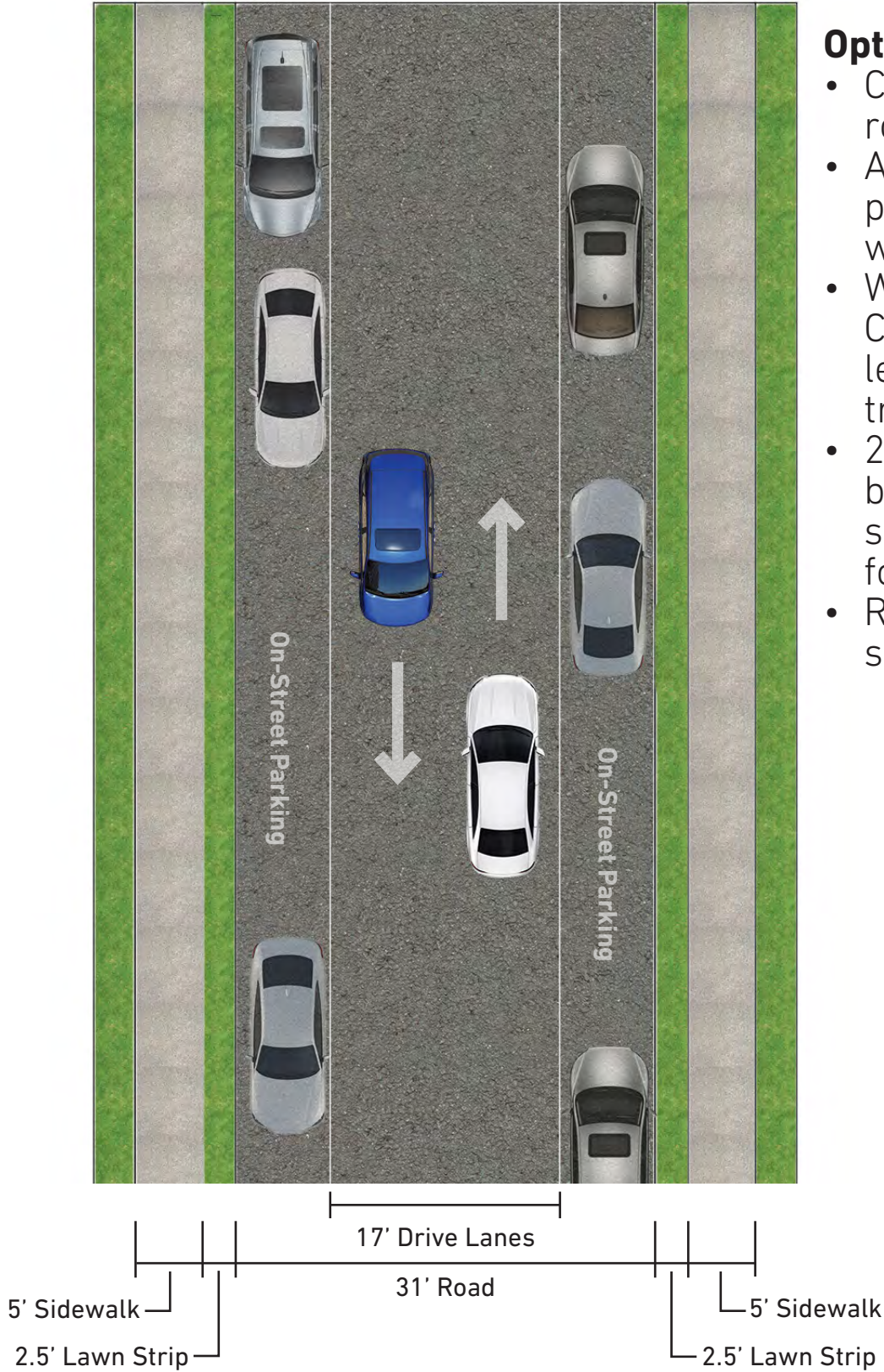
Peak Number of Parked Cars: 7 cars

Max on-street Parking Capacity: 49 cars

Percentage of Capacity at Peak: 14%

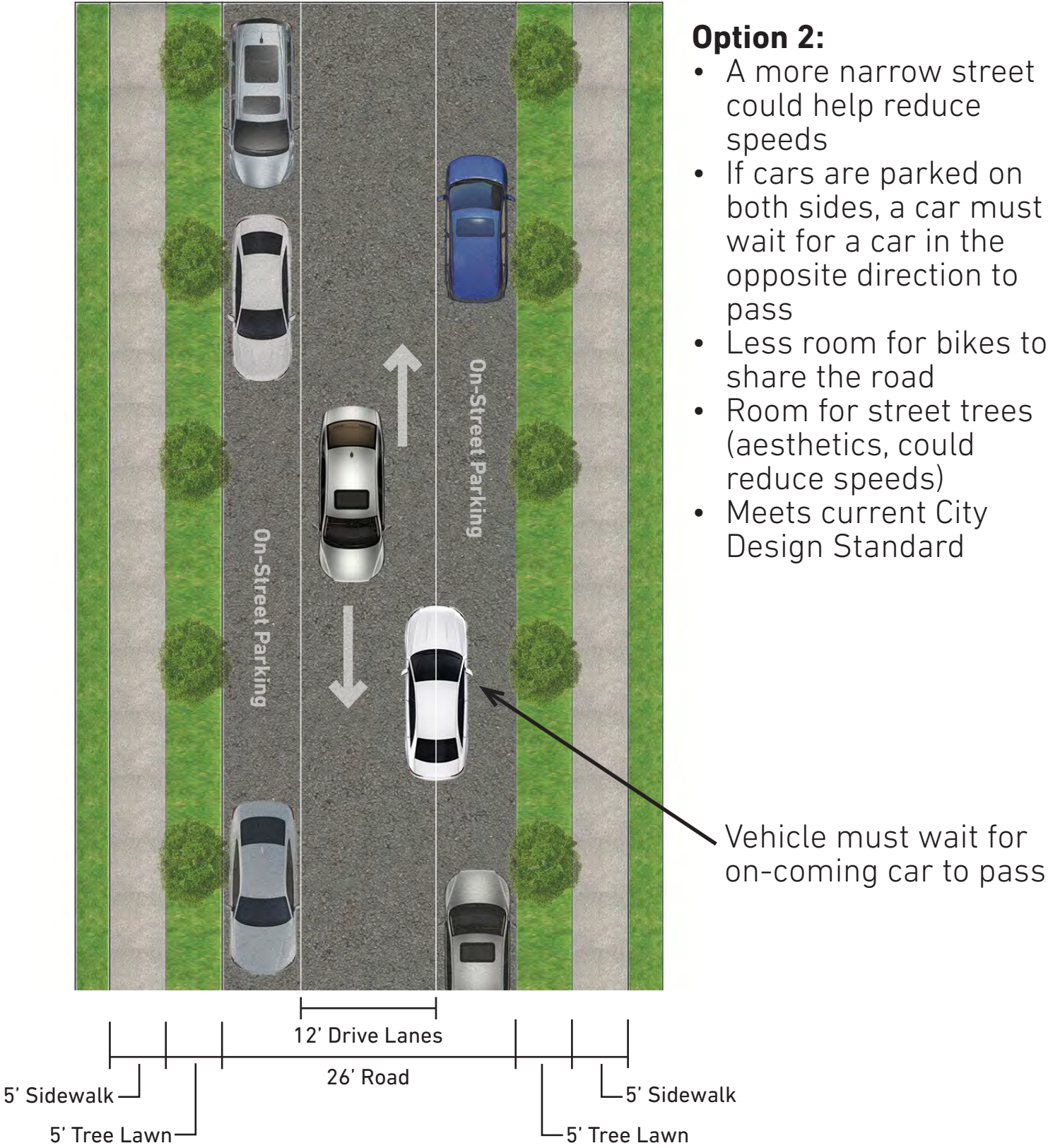
Street Design Options

Westwood Dr Option 1 Two-Way Traffic Flow



- Option 1:**
- Current design of the road
 - Allows on-street parking on both sides, with 2-way traffic
 - Wider street than the City Standard, may lead to slightly higher traffic speeds
 - 2 and a half feet between sidewalk and street leaves no room for street trees
 - Room for bikes to share the road

Westwood Dr Option 2 "Yield" or "Courtesy" Street



- Option 2:**
- A more narrow street could help reduce speeds
 - If cars are parked on both sides, a car must wait for a car in the opposite direction to pass
 - Less room for bikes to share the road
 - Room for street trees (aesthetics, could reduce speeds)
 - Meets current City Design Standard

Discussion

- *Questions on policy or options*
- *Input on street width*
- *Public hearing process*





MEMORANDUM

(Planning)

DATE: April 1st, 2022

TO: Multi-Modal Transportation Board

FROM: Brooks Cowan, Senior Planner
Scott Zielinski, Assistant City Engineer
Commander Scott Grewe, Police Department

SUBJECT: Multi-Modal Transportation Plan Overview

The City of Birmingham adopted the Multi-Modal Transportation Plan (MMTP) in November of 2013. The Multi-Modal Transportation Plan acts as a guiding document for projects related to mobility for automobiles, pedestrians, bicycles, public transit, and other various modes of transportation. As stated in the MMTP's Executive Summary:

The Multi-modal Transportation Plan is very specific in its recommendations by design, perhaps more so than most other master plans. The plan's specificity is a response to the demands of transportation planning within an existing, constricted environment. It presents a realistic picture of what is currently feasible within the confines of the existing roadway and public rights-of-way.

.... this Master Plan should be used as a guide. It provides a pragmatic vision of what can be accomplished in the City of Birmingham in the near future. As each corridor is scheduled for improvements, the recommendations should be revisited to see that they work with the current context, still meet the expectations of the community and reflect current best practices. What will hold over time is the concept of complementary networks. As each corridor is evaluated, it should be done so through the lens of the network of which it is a part and the overall intent of the master plan.

Referring to recommendations in the MMTP is meant to guide the City's boards towards decisions in a consistent manner that is not arbitrary or random. The Multi-Modal Transportation Board refers to recommendations in the MMTP whenever construction and/or repairs are scheduled for a particular road, sidewalk, or right-of-way. Elements including but not limited to road width, sidewalk width, street parking, bike lanes, street trees, signage, crosswalk markings, bus stops, and more are considered when evaluating upcoming projects. The Multi-Modal Transportation Board also refers to the MMTP when the City is evaluating ways to enhance existing conditions with additional multi-modal features such as bike lanes, bump-outs, and bus stops.

The 2013 Multi-Modal Transportation Plan is broken into five main sections of the following:

1. Introduction - Covers items such as vision, goals, and objectives of the plan as well as the project approach.
2. Policy & Program Recommendations – Programs the City should pursue to accommodate a better multi-modal network, such as creating what is now known as the Multi-Modal Transportation Board and ensuring the City's sidewalk and crosswalk network is ADA compliant.
3. Physical Environment Recommendations – a multi-modal network for pedestrians, bicyclists, and transit users that is safe and pleasant to use. This section identifies specific locations in the City that could benefit from multi-modal enhancements.
4. Network Implementation Plan – Recommendations for how the City should approach implementing the Plan's recommendations in a phasing process.
5. Specific Area Concept Plans – Design recommendations for Lincoln Street, West Maple Road, Woodward Avenue, and Downtown.

The five main sections of the MMTP are supplemented with the plan's public engagement process including survey results, workshop results, and open house results. It also includes reference documents related to best practices for public policy, physical environment design, community programs, and quality of life measures.

The following is a brief overview of items covered in the Multi-Modal Transportation Plan which staff will discuss during the board meeting. All Board members should have been emailed a copy of the plan, which is also available online at the link below for more detailed information.

<https://greenwaycollab.com/projects/birmingham-multi-modal-transportation-plan/>

Multi-Modal Transportation Plan: Introduction

COMMUNITY VISION:

The City of Birmingham seeks to build upon its brand as a walkable community. The purpose of this plan is to provide a document that the Community may reference when contemplating future actions regarding infrastructure, policies and programs.

It is envisioned that this plan will guide improvements designed to give people additional transportation choices, thereby enhancing the quality of life in the City of Birmingham.

1.6 PROJECT APPROACH



Multi-Modal Transportation Plan: Introduction

GOAL ONE: COMPLETE THE INFRASTRUCTURE

Provide an appropriate balance between motorized and non-motorized methods of transportation.

OBJECTIVES:

- a. Expand the infrastructure as necessary to create a more pedestrian, bicycle and transit friendly community
- b. Provide convenient and appropriate road crossing opportunities for pedestrians and bicyclists
- c. Provide additional and enhanced bicycle parking options
- d. Enhance transit amenities (e.g. shelters, benches, information resources, etc.) including appropriate pedestrian and bicycle connections to the transit facilities

GOAL TWO: A CONNECTED COMMUNITY

Create a greater sense of community by improving and increasing the opportunities for social interactions between those walking, bicycling and taking transit.

OBJECTIVES:

- a. Increase the number people walking, bicycling and taking transit, especially for daily transportation trips such as commuting to work and running errands
- b. Increase the number of children walking and bicycling to school

GOAL THREE: INCLUSIVE TRANSPORTATION SYSTEM

Develop a multi-modal system that respects the unique needs of all different users.

OBJECTIVES:

- a. Reduce negative and dangerous interactions between motorists, transit users, bicyclists and pedestrians
- b. Enhance the ability for youth, seniors and persons with physical and/or cognitive challenges to travel throughout the community independently
- c. Develop strategies to educate all transportation system users to create an atmosphere of respect among all travelers

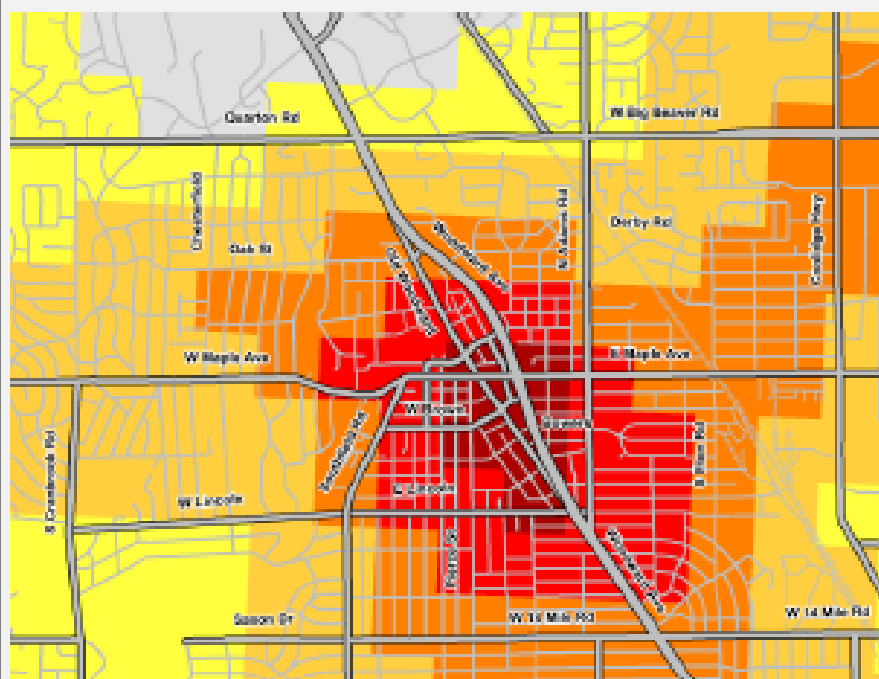
Together, the three goals will combine to enhance the safety of the citizens and visitors of Birmingham through appropriate infrastructure, safety in numbers and a greater understanding among all users of the City's transportation system.

Multi-Modal Transportation Plan: Introduction

KEY FINDINGS

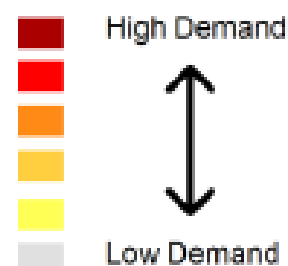
The following are some of the key findings that influenced the development of the Bicycle & Pedestrian Plan:

- The City is characterized by a central located vibrant downtown, wide range of housing opportunities, strong commercial corridors and high density development well served by public amenities.
- The City has a dense urban grid with a nearly complete sidewalk system that contributes to a bicycle and pedestrian friendly community.
- Beyond the Rouge Trails, which are mainly used for recreational use, there are limited transportation facilities for bicyclists in the City.
- Opportunities to cross busy roads are limited with poor bicycle and pedestrian connectivity between neighborhood and destinations that are located on opposite of the roadway; this is especially true for Woodward Avenue.
- Only a small percentage of Birmingham residents currently use transit in the City of Birmingham. SMART provides bus service along the primary arterials with limited service on the weekends. Amtrak service is available in the Rail District with a new Intermodal Transit Center planned in Troy.
- Based on the web survey and relative demand analysis, Downtown Birmingham has a high latent demand for bicycle and pedestrian travel.
- Speeding is an issue on some of the collector roads such as Lincoln and Eton.



This map gives an overview of the latent demand for bicycle and pedestrian travel in the city.

Relative Demand Analysis



Multi-Modal Transportation Plan: Policy & Program Recommendations

2.2 BICYCLE PARKING

DESCRIPTION

The lack of a secure parking space discourages many people from using their bikes for basic transportation. When sufficient bike parking is not provided, theft becomes a concern and it leads to bike being locked up to sign posts, trees, benches and other street furniture. When bicycles are parked in these spaces they often disrupt pedestrian flow because the bikes impede the walkway. Bicycles also get impounded by local enforcement when parked in these areas causing an even greater deterrent to bicycle use. Bicycle parking needs to be visible, accessible, plentiful and convenient. If any of these criteria are not met, there is a good chance a cyclist will not use the facilities and will park their bike wherever they feel it will be safest.



2.3 SNOW REMOVAL

DESCRIPTION

People who rely on non-motorized transportation as a means of travel are often at the mercy of the weather, especially in the winter. In many communities the current practices of snow removal on sidewalks, curb cuts and crossing islands make large portions of the City impassible to many mobility impaired pedestrians as well as those pushing strollers or grocery carts.



Multi-Modal Transportation Plan: Policy & Program Recommendations

2.4 ADA TRANSITION PLAN

DESCRIPTION

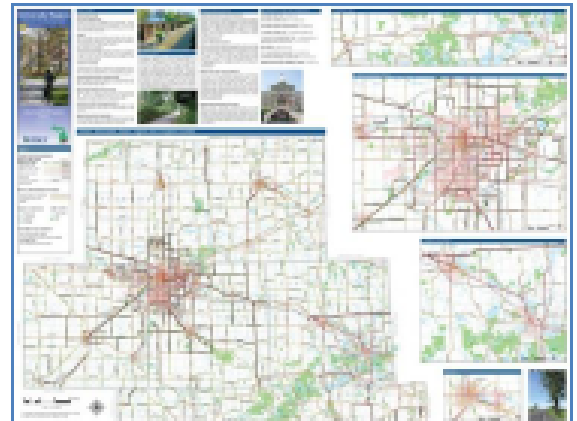
Title II of the Americans with Disabilities Act of 1990 (ADA) requires local governments to make their activities, programs and services accessible to persons with disabilities. In the area of non-motorized transportation, public entities with 50 or more employees are required to use accessible design standards for newly constructed and reconstructed sidewalks and shared use paths to the maximum extent feasible and make altered facilities through the City as part of a transition plan. Title II also requires that the public entity must regularly update the ADA plan and make the plan available to the public.



2.5 WALKING & BIKING MAPS

DESCRIPTION

A bicycle map does more than simply provide wayfinding information. It helps build the brand of the community as an accommodating and welcoming place to bicyclists. A walking map is usually developed for downtown areas and highlights the different amenities and resources in the area. A map can also be an effective marketing tool for local merchants and businesses by offering advertising and sponsorship space, which can offset the cost of production and printing.



Multi-Modal Transportation Plan: Policy & Program Recommendations

2.6 BICYCLE AND PEDESTRIAN COUNTS

DESCRIPTION

Bicycle and pedestrian counts are essential to understand if a community's efforts to increase the number of people walking and bicycling are being successful and to be able to effectively evaluate changes in the overall crash rate as well as the number of crashes at specific locations. They also help gauge a community's progress as compared to other peer communities.

2.7 BICYCLE AND PEDESTRIAN CRASH TRACKING

DESCRIPTION

Streets without safe places to walk, cross, catch a bus or bicycle put people at risk. Nearly 5,000 pedestrians and bicyclists died on U.S. roads in 2010 and more than 120,000 were injured. Bicycle and pedestrian crashes should be monitored and analyzed on a yearly basis. Frequency, type, severity, time of day, time of year, road conditions and location should be analyzed to identify commonalities between crashes and determine how they can be mitigated. Studies have found that measures that design the street with pedestrians and bicycles in mind, such as sidewalks, raised medians, bus stop placement and traffic-calming measures, improve safety for non-motorized users.

2.8 COMMUNITY RECOGNITION

DESCRIPTION

Sense of place is challenging to measure but community recognitions and awards can help provide an outlook on a community's quality of life. If a community receives an award it becomes a great promotional tool not only for the program but for the community as a whole.

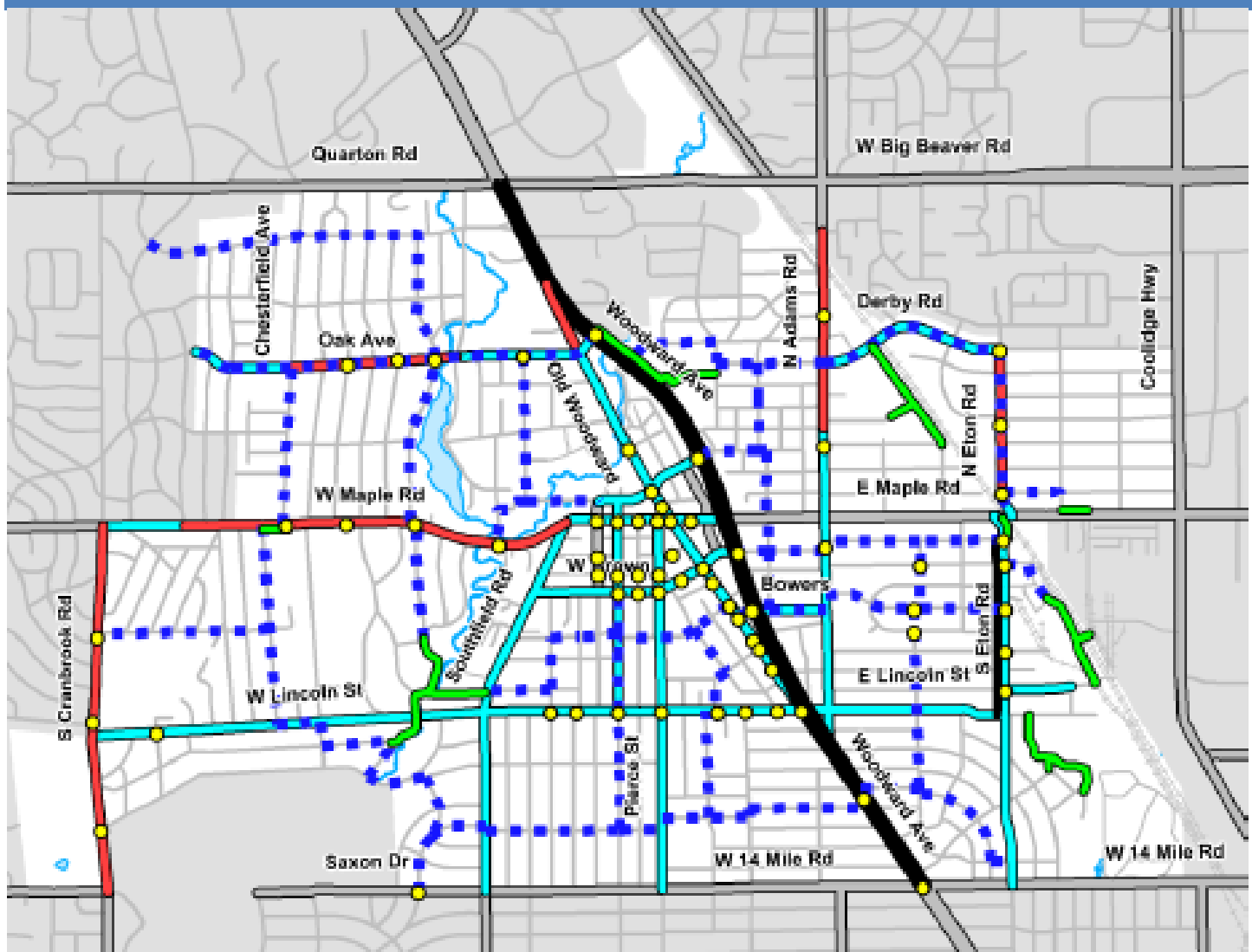
2.9 MEASUREMENTS OF INFRASTRUCTURE PROGRESS

DESCRIPTION

A relatively simple way to measure the progress of the Multi-modal Transportation Network is to track the miles of facilities built every year. Beyond tracking the progress, it is important to keep up-to-date documentation of these facilities because these measurements are used to apply for awards.

Multi-Modal Transportation Plan: Physical Environment Recommendations

FIGURE 3.1E OVERVIEW OF PROPOSED MULTI-MODAL NETWORK

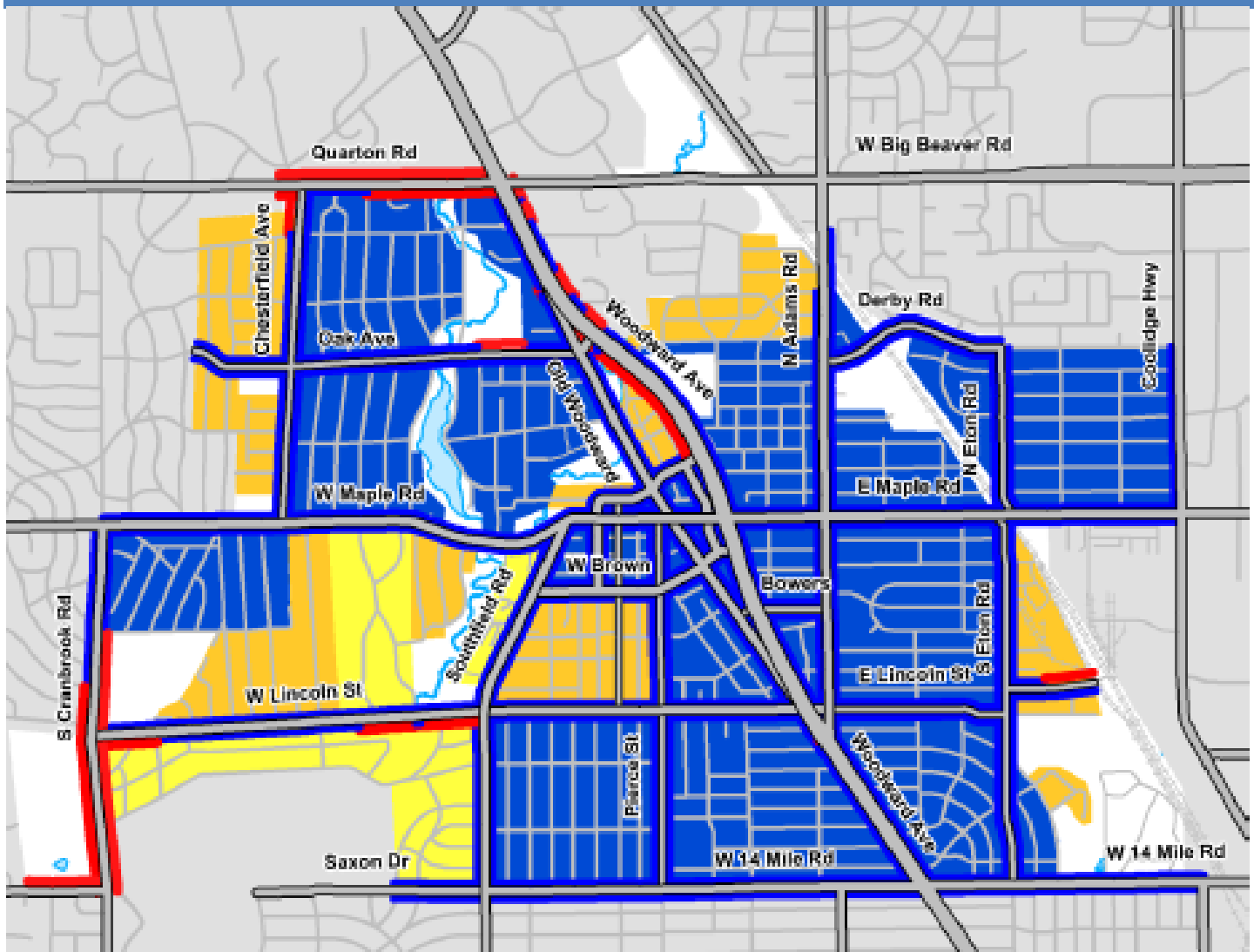


Legend

- Proposed Crossing Improvement
- Proposed Off-road Trail
- - - Proposed Neighborhood Connector Route
- Proposed Bike Lane
- Proposed Buffered Bike Lane
- - - Proposed Shared-lane Marking

Multi-Modal Transportation Plan: Physical Environment Recommendations

FIGURE 3.2A PROPOSED SIDEWALKS



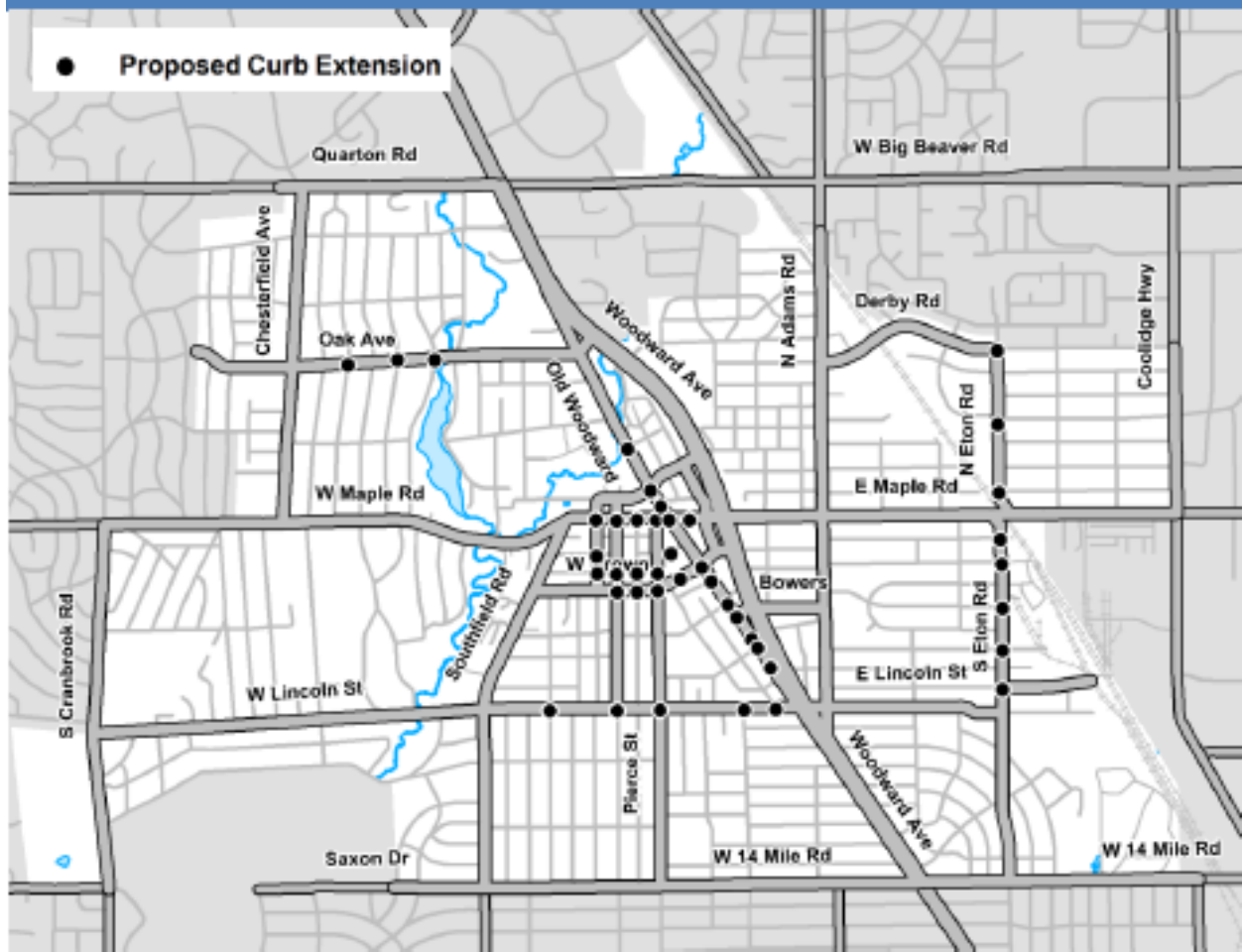
Proposed Sidewalks:

- Existing Sidewalks
- Priority 1: Complete Sidewalks along Major Roads
- Priority 2: Complete Sidewalk Gaps in Neighborhood
- Priority 3: Add Sidewalks to Neighborhood

APPROXIMATELY 2.5
MILES OF SIDEWALK ARE
PROPOSED ALONG
PRIMARY ROADS IN THE
CITY OF BIRMINGHAM

Multi-Modal Transportation Plan: Physical Environment Recommendations

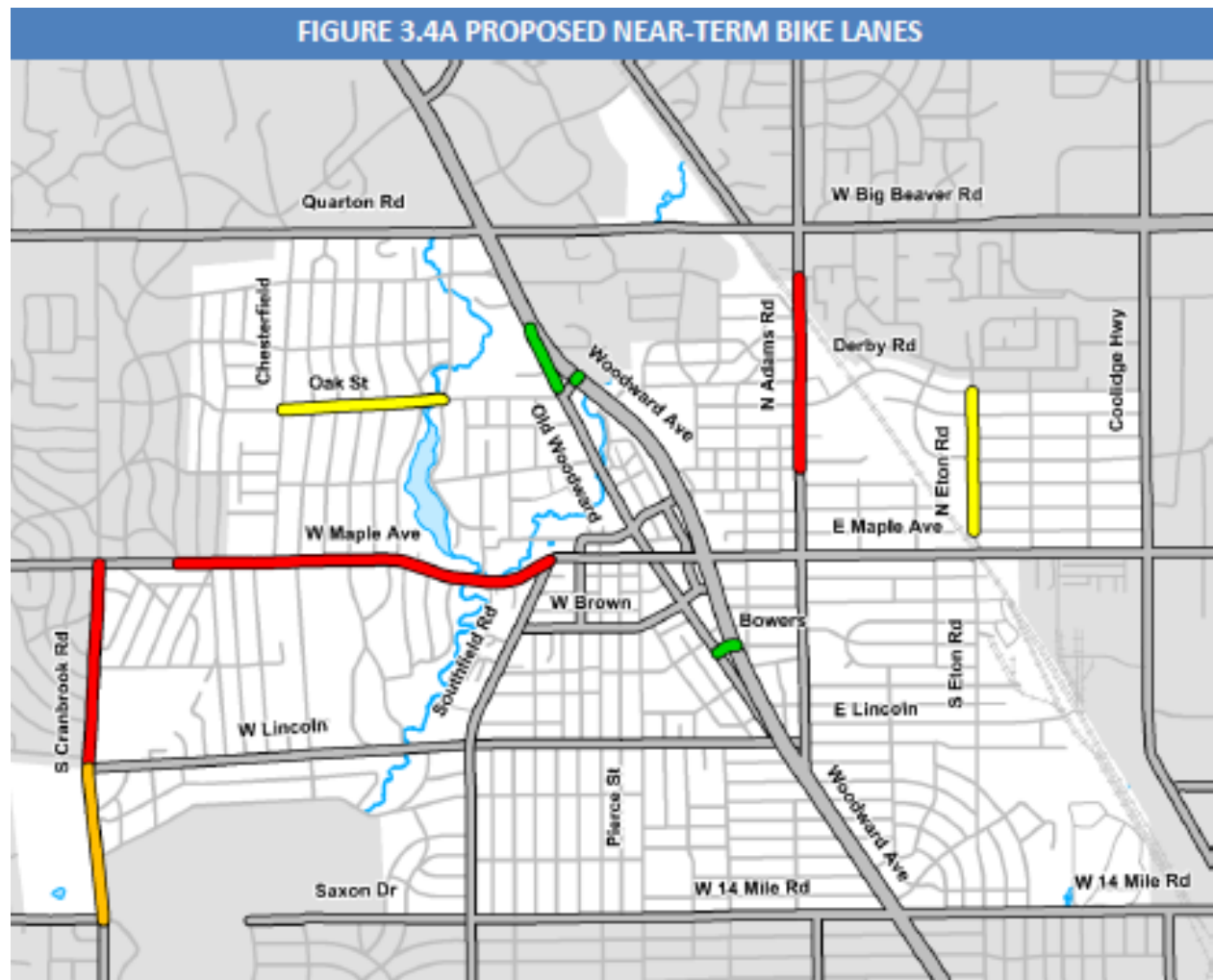
FIGURE 3.3A CROSSING IMPROVEMENTS – CURB EXTENSIONS



42 CURB EXTENSIONS ARE PROPOSED

- Curb Extensions reduce the effective street width by extending the sidewalk or curb into the parking lane
- Curb Extensions shorten the pedestrian's crossing distance and increase visibility between pedestrians and motorists
- Curb Extensions create small curb radii that control traffic speeds around corners
- Curb Extensions reduce the effective street width which encourages motorists to drive slower
- When curb extensions are used on a road with bike lanes, the bike lane continues past the curb extension
- Landscaping may be incorporated

Multi-Modal Transportation Plan: Physical Environment Recommendations



Proposed Bike Lanes

- Through Lane Narrowing
- Through 4 to 3 Lane Conversion
- By Consolidating Parking
- By Paving the Shoulder

APPROXIMATELY 3.7 MILES OF NEW BIKE LANES ARE PROPOSED

Web Survey Results:

- Around 20% of respondents currently bike to work and/or the store on a weekly basis
- Around 68% of respondents would be comfortable riding a bike in a bike lane on a Minor Road
- Around 30% would be comfortable riding a bike in a bike lane on a major road
- Around 58% would be comfortable riding a bike in a bike lane on a minor road
- If the appropriate facilities were constructed 69% of respondents would be interested in bicycling to work and/or for errands

Multi-Modal Transportation Plan: Physical Environment Recommendations

3.7 NEIGHBORHOOD CONNECTOR ROUTES



DESCRIPTION

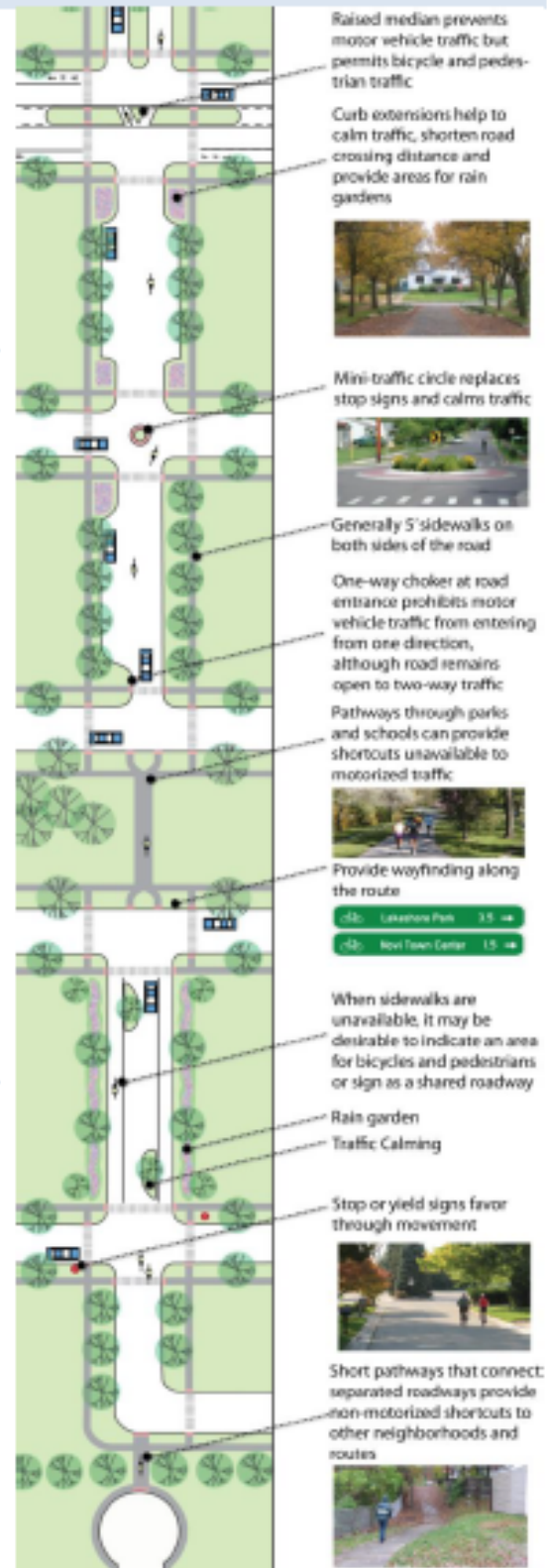
Neighborhood Connector Routes, also known as Bicycle Boulevards, are primarily located on low speed, low volume local roads and connecting pathways. They link neighborhoods to parks, schools and commercial areas. Signs provide wayfinding by noting direction and distance to key destinations. Elements such as traffic calming, public art, rain gardens and historic features can be added to enhance the routes. These routes appeal to families, children and people who are less comfortable walking and bicycling along a major roadway.

For the most up-to-date guidelines please refer to Chapter 9 of the *MUTCD*, Chapter 4 & 5 of AASHTO's *Guide for the Development of Bicycle Facilities*, and the Bike Route Wayfinding section of NACTO's *Urban Bikeway Design Guide*.

RECOMMENDATIONS

Neighborhood Connector Routes should be developed over time. Initial improvements include wayfinding signage and crossing improvements where the route intersects a major roadway. Traffic calming is added only if it is necessary. Environmental and aesthetic improvements are implemented based on community input and available budgets. Please refer to the Network Implementation Plan for more details.

Please refer to Fig. 3.7A for a map of the proposed neighborhood connector routes



Multi-Modal Transportation Plan: Physical Environment Recommendations

CITY OF BIRMINGHAM MULTIMODAL TRANSPORTATION PLAN PHYSICAL ENVIRONMENT RECOMMENDATIONS

3.12 TRANSIT FACILITY AMENITIES

DESCRIPTION

When developing a multi-modal plan it is important to consider transit users because at some point the transit user becomes a pedestrian. Many times, people who use transit do not own an automobile, so walking and bicycling are their main forms of transportation. It is important to not only to provide safe and convenient ways to access transit but also to provide infrastructure and amenities at the transit stop.

At the very minimum bus stops should provide a concrete pad so wheelchair users can safely access the bus stop.

Super Stops are essentially bus stops with additional amenities such as benches, shelters, maps and schedules, bus pull-off area and lighting. Since there are additional amenities, the stops will have a larger draw area. Generally these occur where a bicycle and pedestrian route intersects a bus route and in areas of high ridership.



RECOMMENDATIONS

- ☐ At a minimum, all bus stops should provide a concrete pad so wheelchair users can safely access the bus stop
- ☐ Consistent bus stop signs should be used throughout the City
- ☐ In areas with a high number of people boarding or exiting buses, provide additional amenities such as shelter, lighting, benches, route maps and schedules

Please refer to the Special Area Concept Plans for more information.

Multi-Modal Transportation Plan: Network Implementation Plan

4.1 NETWORK PHASING OVERVIEW

PHASE 1

Phase 1 focuses on already planned road and infrastructure projects in the City that are included within the City's Capital Improvement Plan (CIP). Integrating improvements into other larger projects is typically the most cost effective way to implement improvements. Some elements of Phase 1 are incidental to the cost of the currently planned projects, others expand the scope and cost of the planned projects. The implementation plan identifies the costs that exceed the original scope of the project.

PHASE 2

For the next ten or so years (depending on available funding), the project should focus on establishing the core network. This network includes improvements that may be accomplished by relatively modest changes to the existing road system. It creates connections all the way across the City and establishes the backbone to the multi-modal system. The connections incorporate existing facilities, proposed bike lanes and shared lane markings on primary roads, proposed bike routes on local roads, proposed road crossings improvements, and connections to transit locations. While not everyone will be comfortable using all of these facilities, they will provide a strong foundation from which to build a more comprehensive multi-modal network.

The goal is that with the completion of Phase 1 and Phase 2 there will be a substantial multi-modal network in place that provides connections to key destinations around the City on routes that a large majority of the population would be comfortable using.

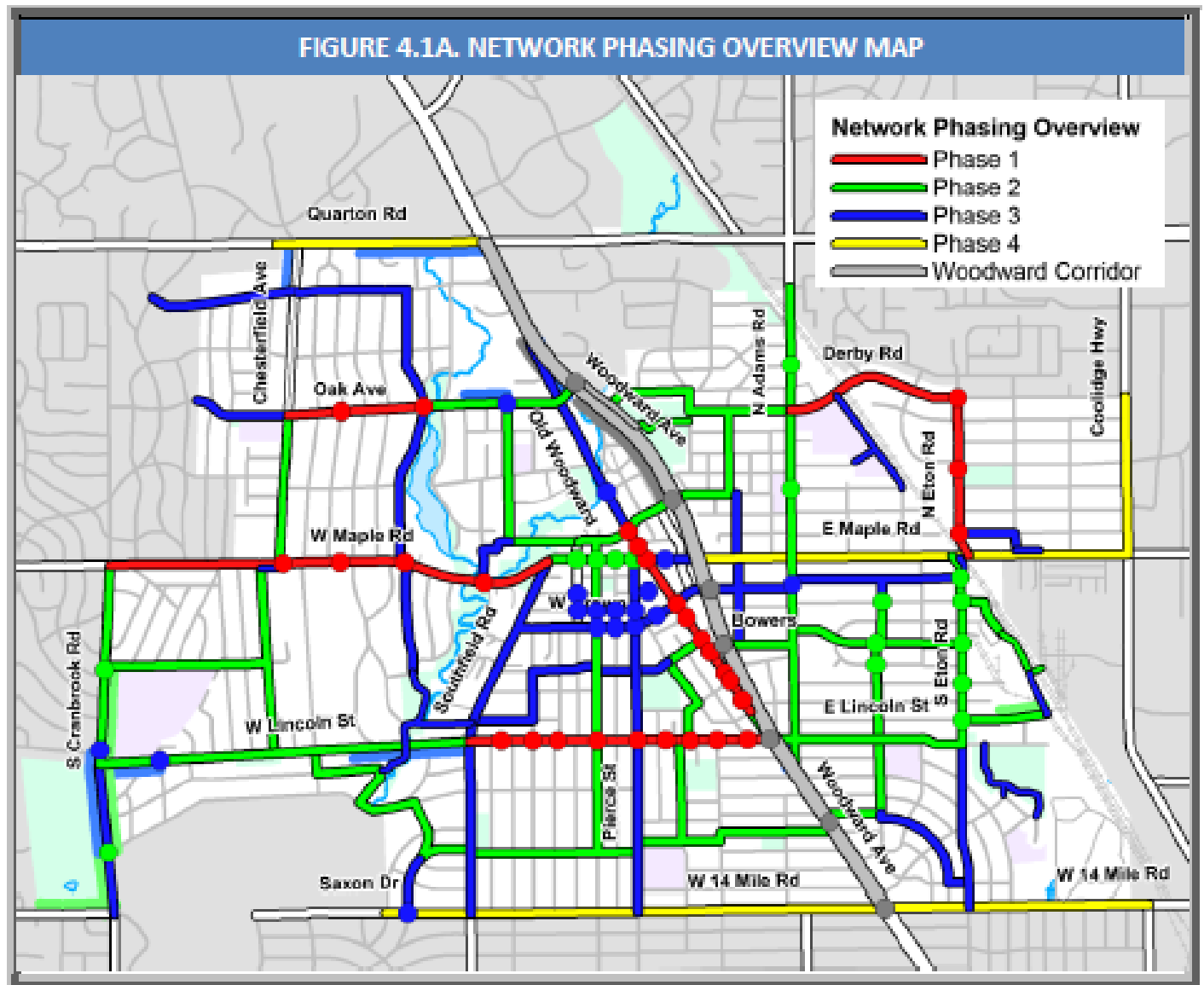
PHASE 3

Phase 3 focuses on expanding the network via cost-effective projects that may generally be accomplished within the existing road cross section. This phase includes all the of the remaining network improvements. Some projects in phase 3 may be dependent on items in phases one and two being completed.

PHASE 4

For some roads such as 14 Mile Road, E. Maple, Quarton Road and Coolidge Highway there are limited cost effective solutions for some mode types in the near-term. In the future, when these streets are reconstructed they should be evaluated at that time to see what types of improvements are possible and desired.

Multi-Modal Transportation Plan: Network Implementation Plan



Multi-Modal Transportation Plan: Specific Area Concept Plans

5.1 LINCOLN STREET

The following concept plan is for the segment of Lincoln Street between Southfield Road and Woodward Avenue, which is going to be resurfaced in 2014.

PROPOSED BICYCLE FACILITIES:

Shared Lane Markings are proposed for Lincoln Street between Southfield Road and Ann Street.

Colored Shared Lane Markings are proposed for Lincoln Street between Ann Street and Woodward Avenue.

The following is a recommendation of how the road should be restriped when it is resurfaced in 2014. All measurements for Lincoln are to face of curb.



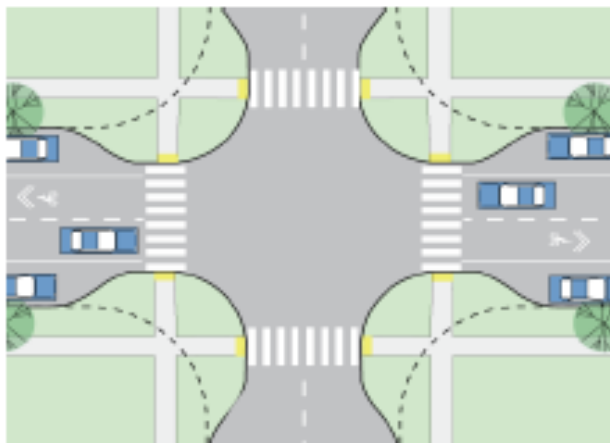
Shared Lane Marking



Colored Shared Lane Marking

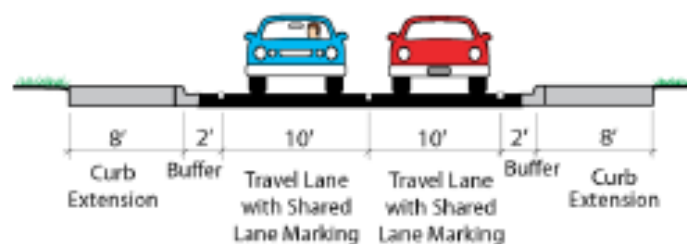


PROPOSED CURB EXTENSIONS:



Curb extensions are proposed at Maryland Boulevard, Bates Street, Pierce Street, Grant Street and Ann Street.

Curb extensions with shared lane markings



At intersections where curb extensions are not proposed the existing pavement markings should be maintained.

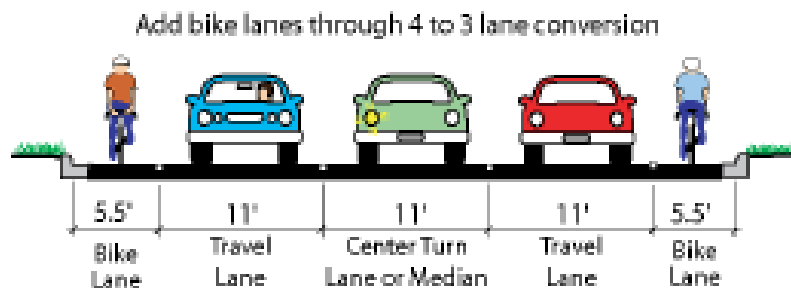
Multi-Modal Transportation Plan: Specific Area Concept Plans

5.2 WEST MAPLE ROAD

The following concept plan is for the segment of W Maple Road between Cranbrook Road and Southfield Road, which is going to be resurfaced in 2015.

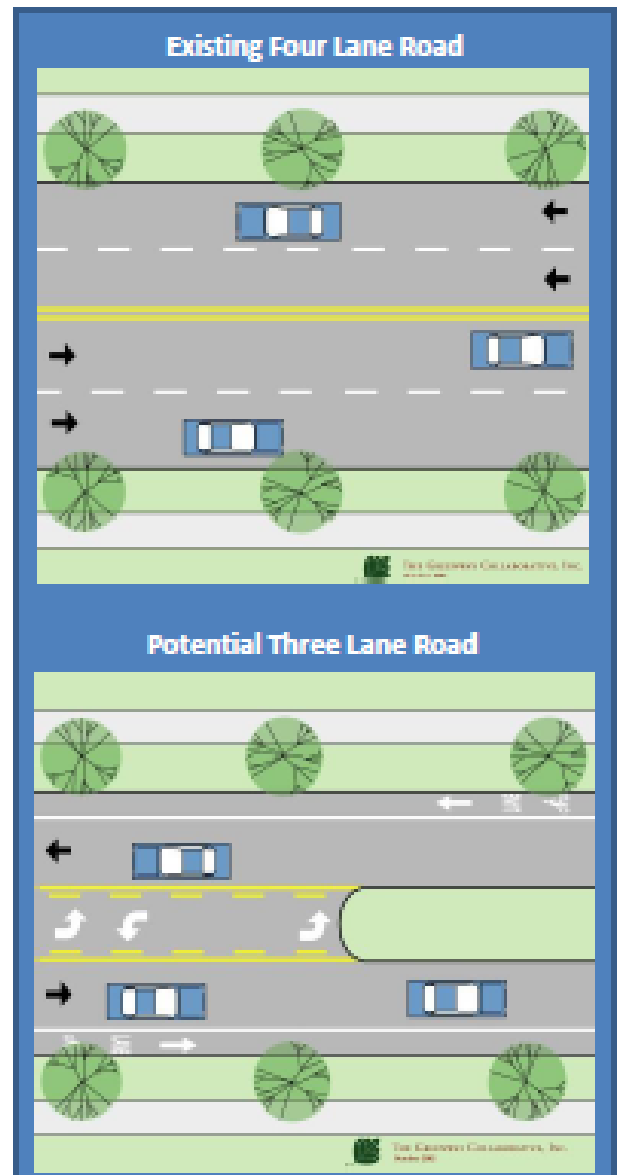
PROPOSED BICYCLE FACILITIES:

A four-lane to three-lane conversion is proposed on W Maple Avenue between Waddington Street and Southfield Road.



The existing road cross-section should be maintained on W Maple Avenue between Waddington Street and Cranbrook Road in order to allow for motor vehicle stacking at the intersection. A shared lane marking is proposed along this segment, along with signage directing bicyclists to a neighborhood connector route where the bike lane ends and the shared lane marking begins.

Please note that W Maple Road between Cranbrook Road and Southfield Road is at the cusp of where a four-lane to three-lane conversion will function. Additional analysis of the corridor is necessary to determine if the conversion is feasible.



Multi-Modal Transportation Plan: Specific Area Concept Plans

5.3 WOODWARD AVENUE

Concurrent with the development of this plan are two regional planning efforts that address the entirety of Woodward Avenue to determine how this iconic corridor can integrate new transit alternatives and become a true complete street. The recommendations in this report are to help inform those studies. While Woodward Ave's transition to a true complete street will take some time, some elements, such as improving the crossing at Oak Street can be undertaken immediately that will provide safety and mobility improvements.

During the Visioning Workshop participants were asked about their vision for the Woodward and overall there was a desire to create more of a "Main Street" feel along the corridor. Some of the key items that were identified for this corridor included parallel parking, a designated transit lane, sidewalks, landscape buffer and a designated bicycle facility in the form of a bike lane or one-way cycle track.

CONCEPTUAL DESIGN:

Using the space between the buildings and the travel lanes, a "Main Street" area within the Woodward Corridor is created. The following conceptual design provides a more pedestrian scaled area that incorporates on-street parking with a service drive, sidewalk, and bike lane that are all buffered from Woodward Avenue by a landscaped median and transit lane.





MEMORANDUM

(Planning Division)

DATE: April 1st, 2022

TO: Multi-Modal Transportation Board

FROM: Brooks Cowan, Senior Planner
Scott Zielinski, Assistant City Engineer
Commander Scott Grewe, Police Department

SUBJECT: Road Crossing Standards

The City of Birmingham considers itself “a walkable city” and places a high priority on pedestrian safety and connectivity. Birmingham’s city standards for crosswalks and the Multi-Modal Transportation Plan’s crosswalk recommendations are meant to ensure pedestrian safety and connectivity as well as compliance with the American Disabilities Act.

The City of Birmingham regulates size and dimensions of crosswalks depending on the location, traffic, and the surrounding uses. Birmingham’s city standard striping is the continental longitudinal bar pattern. Major streets in commercial districts requires broad striping of 12-14 feet wide. The size of crosswalks are scaled down as areas transition to minor streets with less traffic flow.

The Multi-Modal Transportations Plan identifies key areas for road crossing improvements for both pedestrians and bicyclists. Sections 3.3 of the plan covers recommendations for curb extensions (bump-outs) to reduce the crossing distance, crossing islands to slow traffic and increase pedestrian visibility, and recommends specific intersections for crosswalk upgrades to include pedestrian signals, high visibility markings, and curb ramps with detectable warnings.

Factors considered for the installation of crosswalks include but are not limited to traffic speeds, traffic signals, stop signs, transit stops, public amenities such as schools or parks, surrounding land uses, and proximity to major crossings. The City’s traffic consultant team has provided examples of how other cities determine crosswalk installation locations and has created a DRAFT flow chart meant to be a guide for pedestrian crosswalk installations. The flow chart is meant to assist in evaluating all variables impacting an intersection under review and to help guide decision makers to consistent policies for pedestrian safety.

The Multi-Modal Transportation Board may wish to consider coordinating with City staff and the transportation consultant teams towards adopting crosswalk installation guidelines for the City of Birmingham.

3.3 ROAD CROSSING IMPROVEMENTS

DESCRIPTION

Road crossing improvements are needed in areas where there is demand to cross by pedestrians and/or bicyclists. These areas occur where a bike route crosses a collector or arterial road, a major bus stop or bus shelter is present, there is a long distance between crosswalks, or there is a high demand based on land use and population density.



There are many different types of countermeasures that can be used to improve the safety and visibility of pedestrians at crosswalks. Traffic speeds, traffic volume, number of lanes and location of the crossing in context to the surrounding land use will dictate what type of crossing improvement is appropriate for a specific location. In some instances the improvements are as simple as adding high visibility crosswalk markings and in others signalization may be needed.

For the most up-to-date guidelines please refer to all Chapters of the *MUTCD* and Chapter 3 & 4 of AASHTO's *Guide for the Planning, Design and Operation of Pedestrian Facilities*.

RECOMMENDATIONS

The exact solution for every crossing has not been determined; rather, the location and recommended countermeasure has been identified. Please note that these are initial recommendations and that each crossing needs to be studied further prior to implementation. Please refer to the Network Implementation Plan for specific recommendations on near-term crossing improvements.

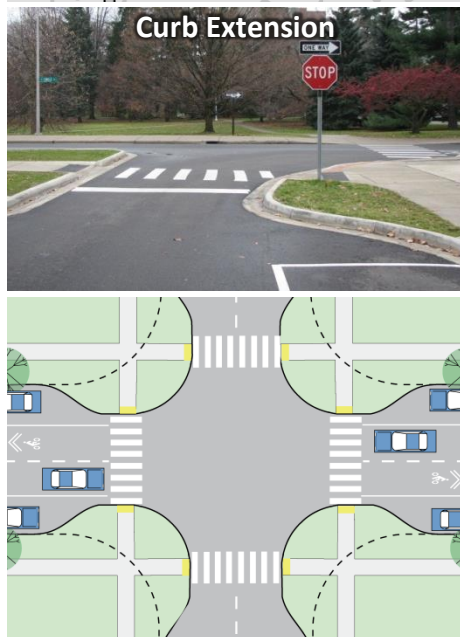
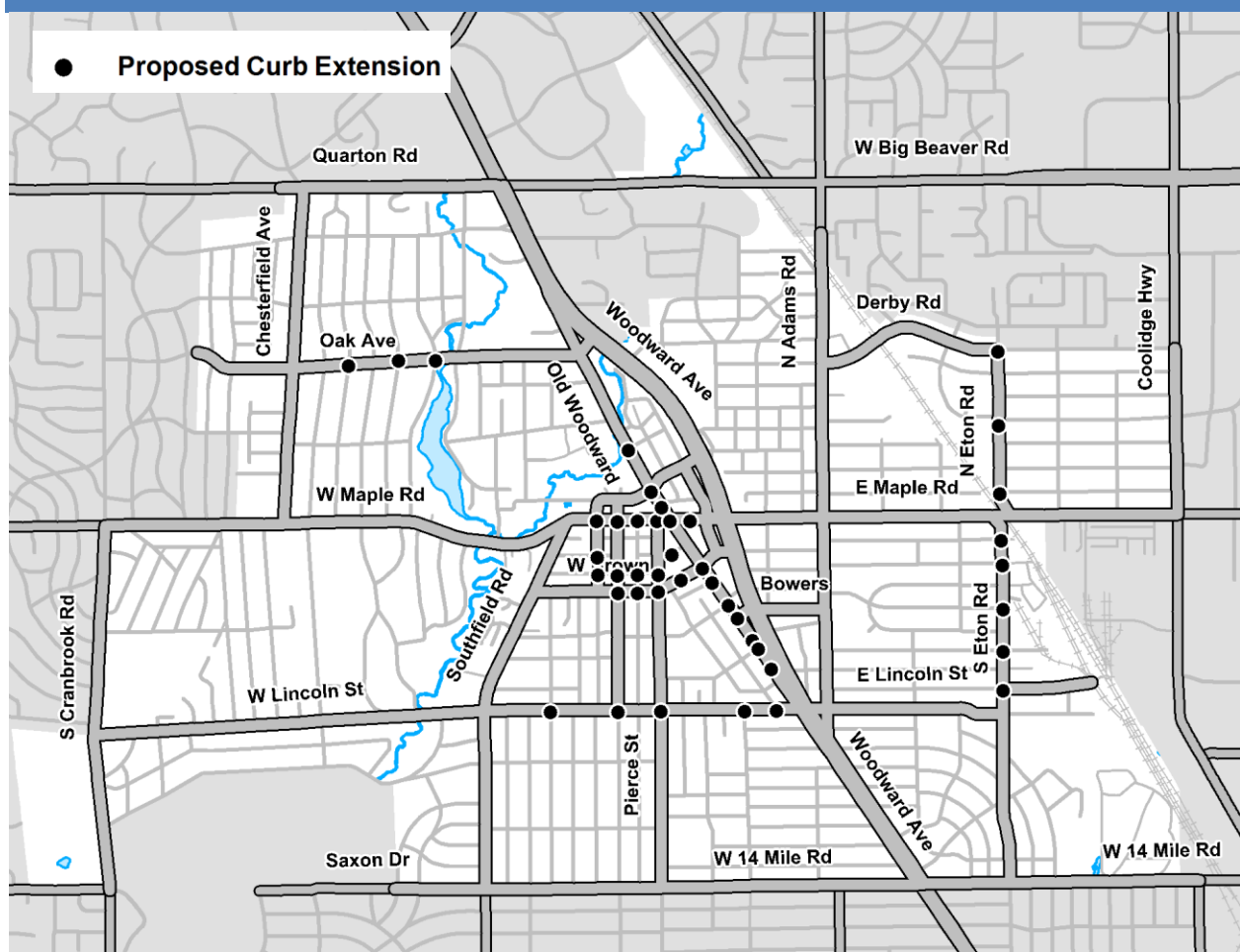
At signalized intersections it is recommended that leading pedestrian signals and signal countdowns be implemented.

Please refer to Fig. 3.3A, 3.3B and 3.3C for maps of the proposed crossing improvements.

Web Survey Results:

- Around 61% of respondents feel that mid-block crosswalks are very important or somewhat important to making future walking and bicycling trips actually happen

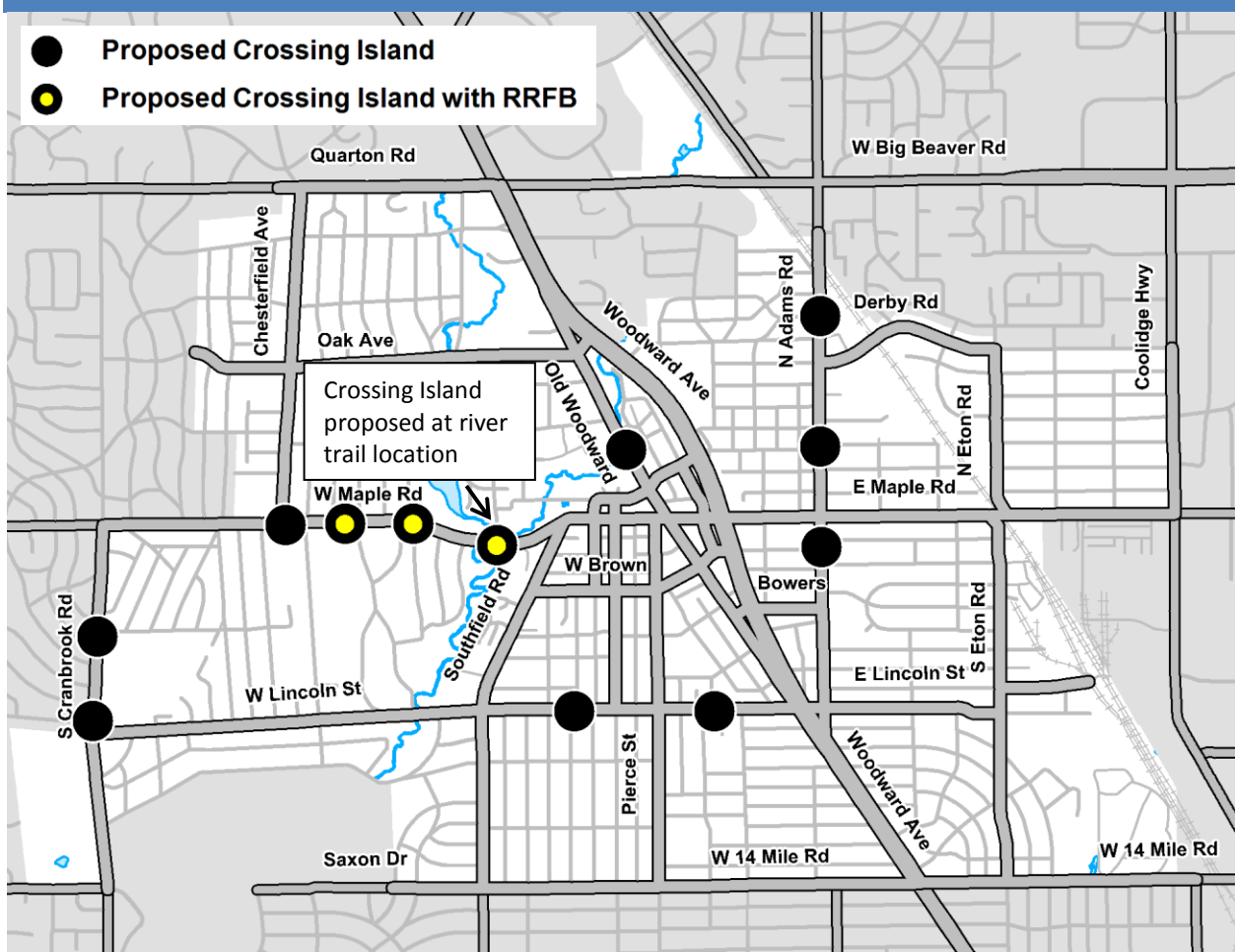
FIGURE 3.3A CROSSING IMPROVEMENTS – CURB EXTENSIONS



42 CURB EXTENSIONS ARE PROPOSED

- Curb Extensions reduce the effective street width by extending the sidewalk or curb into the parking lane
- Curb Extensions shorten the pedestrian's crossing distance and increase visibility between pedestrians and motorists
- Curb Extensions create small curb radii that control traffic speeds around corners
- Curb Extensions reduce the effective street width which encourages motorists to drive slower
- When curb extensions are used on a road with bike lanes, the bike lane continues past the curb extension
- Landscaping may be incorporated

FIGURE 3.3B PROPOSED CROSSING IMPROVEMENTS – CROSSING ISLANDS



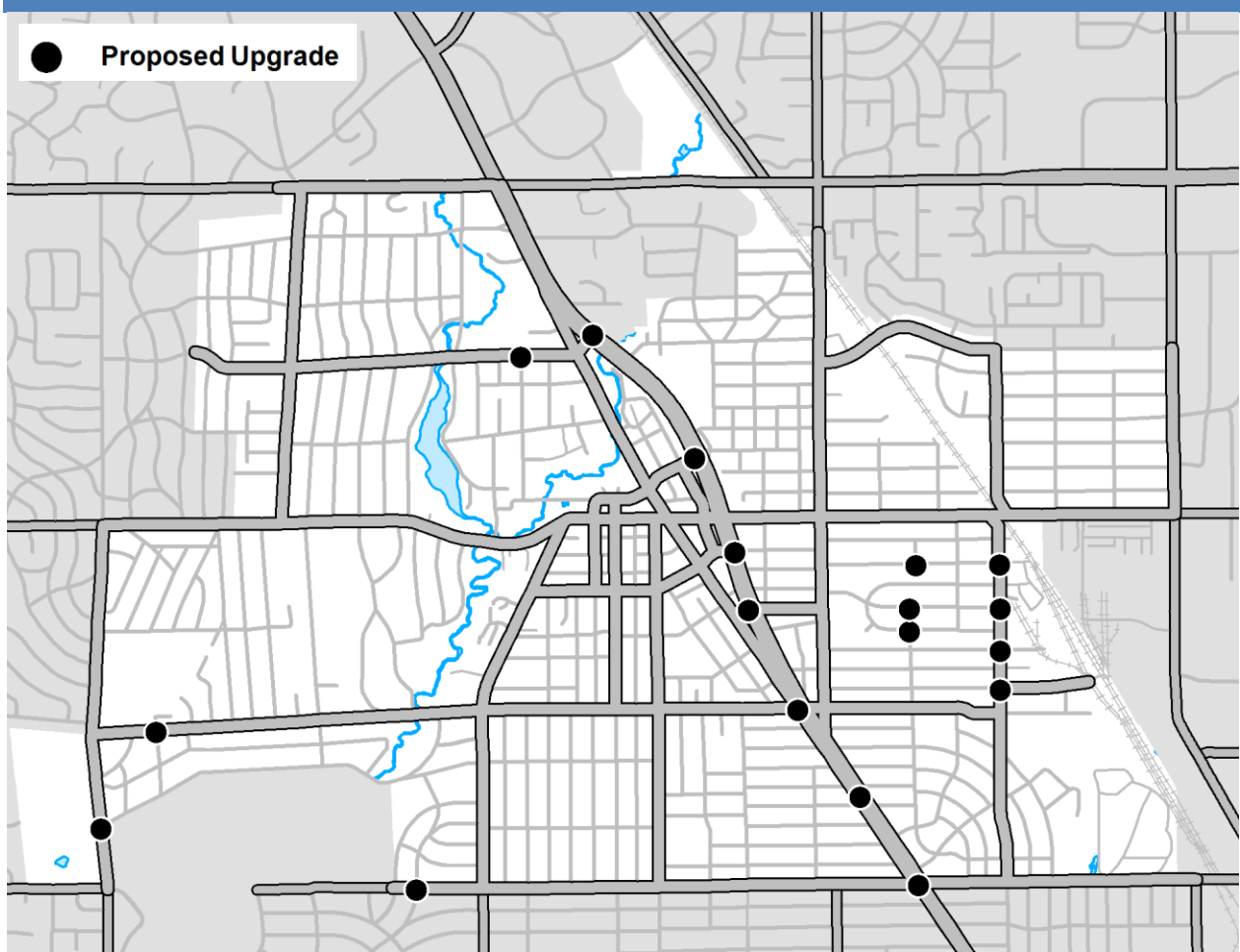
9 CROSSING ISLANDS ARE PROPOSED

- Crossing Islands create a physical barrier in the middle of the roadway which increase visibility of the crosswalk to motorists, reduce pedestrian crossing distances and encourage motorists to drive slower

3 CROSSING ISLANDS WITH RECTANGULAR RAPID FLASH BEACONS (RRFB) ARE PROPOSED

- RRFB are crosswalk signs paired with high intensity LED flashers that alternate and get motorists' attention when activated
- The proposed RRFB would be used in conjunction with crossing islands

FIGURE 3.3C PROPOSED CROSSING IMPROVEMENTS – UPGRADES



18 ROAD CROSSING UPGRADES ARE PROPOSED

Many of the proposed improvements include upgrades such as ramps, detectable warnings, pedestrian signals, and high visibility crosswalk markings.

Please refer to the Network Implementation Plan and Special Area Concept Plans for more details.

Multi-Modal Transportation
Board Training Session:

Review of Crosswalk Standards

April 7th, 2022



MKSK



Purpose

- Pedestrian Crossing Zone – a place designated for pedestrians to cross a road, street, or avenue.
- Intended to slow down vehicles or bring them to a complete stop so that pedestrians may cross safely.
- Used to indicate and direct pedestrian to where safe crossings are located and prevent “jaywalking”.
- Usually marked on road surface to help visibility of crosswalks for pedestrians and vehicles.



Current City Standards

On Major Streets within the Central Business District, Triangle District, Rail District, or Adjacent to Schools:

- Total width of the crosswalk shall be 12 to 14 feet wide. Crosswalks at the upper width limit may be installed when traffic signals are present.
- The following shall be considered Major Streets (within the specific districts noted) for the purposes of this standard: Woodward Ave, Oakland Blvd, Old Woodward Ave, Chester St, Maple Rd, Brown St, Southfield Rd, S. Eton Rd, Adams Rd, and E. Lincoln Ave.



On Local Streets within the Central Business District, Triangle District, Rail District, or Adjacent to Schools:

- Total width of the crosswalk shall be 8 feet wide, unless the adjacent sidewalk main walking path is wider, at which point it shall be widened to match the main walking path width.

At All Other Locations:

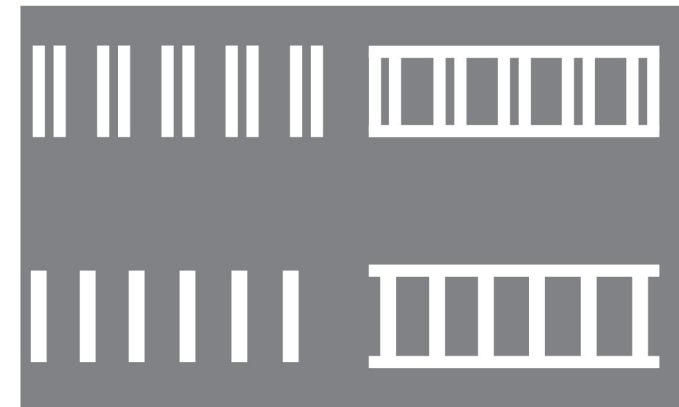
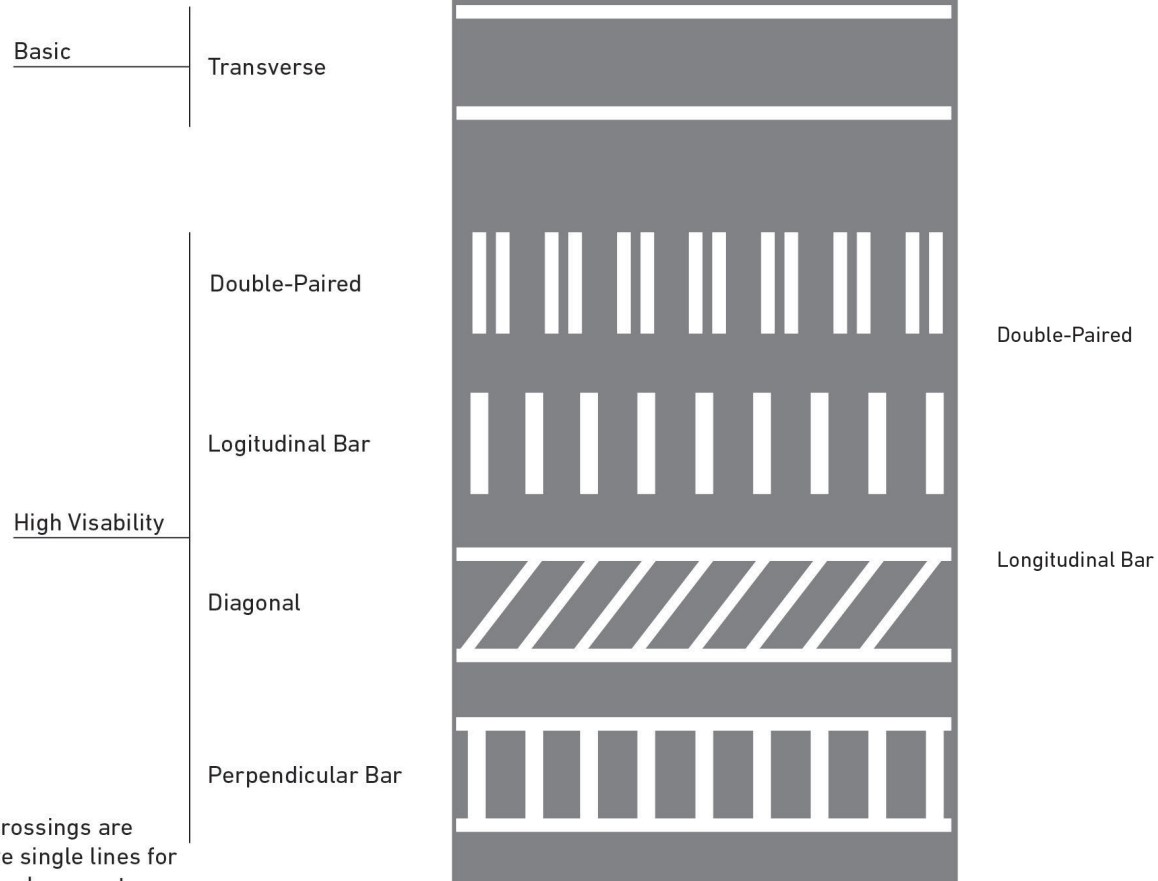
- Total width of the crosswalk shall be 6 feet wide.



Different Types

*What are the
Types of
Crosswalks
Marking?*

Note:
High Visibility Crossings are
twice as effective single lines for
speeds 30 mph or less, costs
significantly more



Crosswalk Flow Chart – Birmingham

- Guidance on where crosswalks should go.
- Where are crosswalks needed?
 - Reviewed National Association of City Transportation Officials (NACTO) standards
 - Federal Highway Administration (FHWA) Guidelines
 - ITE standards
 - Standards from other cities



Crosswalk Flow Chart – Birmingham

The City of Birmingham MI Crosswalk Installation Flow Chart was created to accomplish the following objectives:

1. Create clear guidelines for when a crosswalk should be installed.
2. Leverage planned projects that are part of the city's Capital Improvement Plan.
3. Propose to establish a Crosswalks Capital Initiative that allocates funding to install crosswalks at intersections that meet the requirements established in the flow chart where a capital project is not planned in the near future.

Where available, pedestrian counts and crash history may influence where crosswalks are needed or not required. The City of Birmingham is a compact and walkable city. The city's ongoing planning efforts, development trends and public opinion reflect its commitment to continue to improve safety and access for pedestrians.

This set of guidelines will likely determine whether crosswalks are appropriate at an intersection. These are based on NACTO standards, FHWA guidelines and a simplified version of procedures used in other cities such as Ann Arbor.

Crosswalk Flow Chart – Birmingham

CITY OF BIRMINGHAM MI CROSSWALK INSTALLATION FLOW CHART

Draft - April 7, 2022

This guide is intended to identify where a pedestrian crosswalk may be needed.

Are all intersecting streets at the intersection in question under the city's jurisdiction

YES



NO



Engage with the owner(s) of the roadways (MDOT, RCOC, or the neighboring City of Troy, Royal Oak or the Village of Beverly Hills)

Are there sidewalks and curbing, or are they planned as part of a City Capital Initiative

YES



NO



No crossing

Locational Factors

- Is there a traffic signal or stop sign?
- Is the location within one block of a SMART bus stop or shelter, and/or MoGo bike share location?
- Is this intersection within 2 blocks or 500 feet of a public school, park, library, or the Birmingham Ice Arena?
- Is one, or both, streets designated as a "Key Crossing" or a "Neighborhood Connector" route in the City's Multi-Modal Transportation Plan?
- Is this a mid-block crossing with a high number of pedestrians crossing from a major generator like a pedestrian entrance to a parking structure
- Is this location 1/4 mile or more away from another crossing along Maple, 14 Mile, Lincoln, Adams, Quarton, Cranbrook, Southfield, or Old Woodward



YES on 3 or more:

Ensure crosswalks are included in project plans and consider additional pedestrian improvements as outlined in the Multi-Modal Transportation Plan



YES on 1 or 2:

The intersection should be evaluated to determine ...

- The level of pedestrian volume
- Crash history
- The gaps in traffic flow and maintain level of compliance
- If traffic volumes are over 1500 per day
- Any slight distance issues or other factors

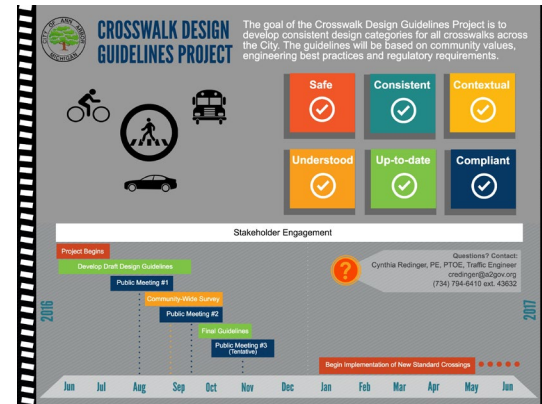


NO on all:

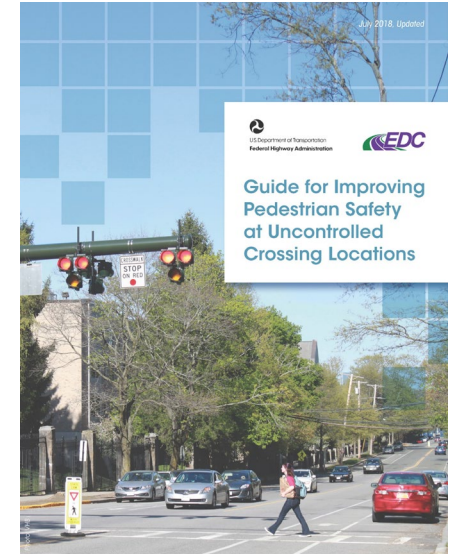
No crosswalks unless there are engineering or safety issues

Appendices

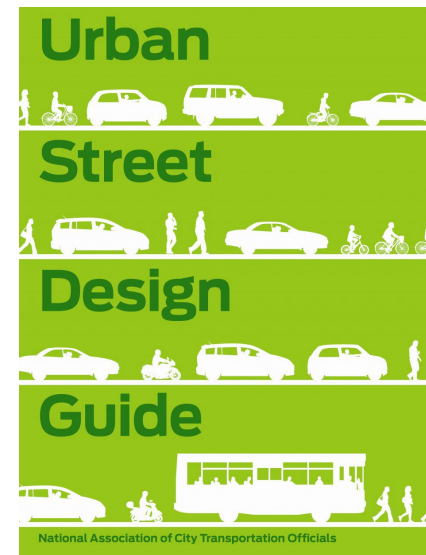
1. Ann Arbor
2. Federal Highway Administration (FHWA)
3. National Association of City Transportation Officials (NACTO)
4. ITE Standards



Ann Arbor Crosswalk Design Guidelines Project



FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Location



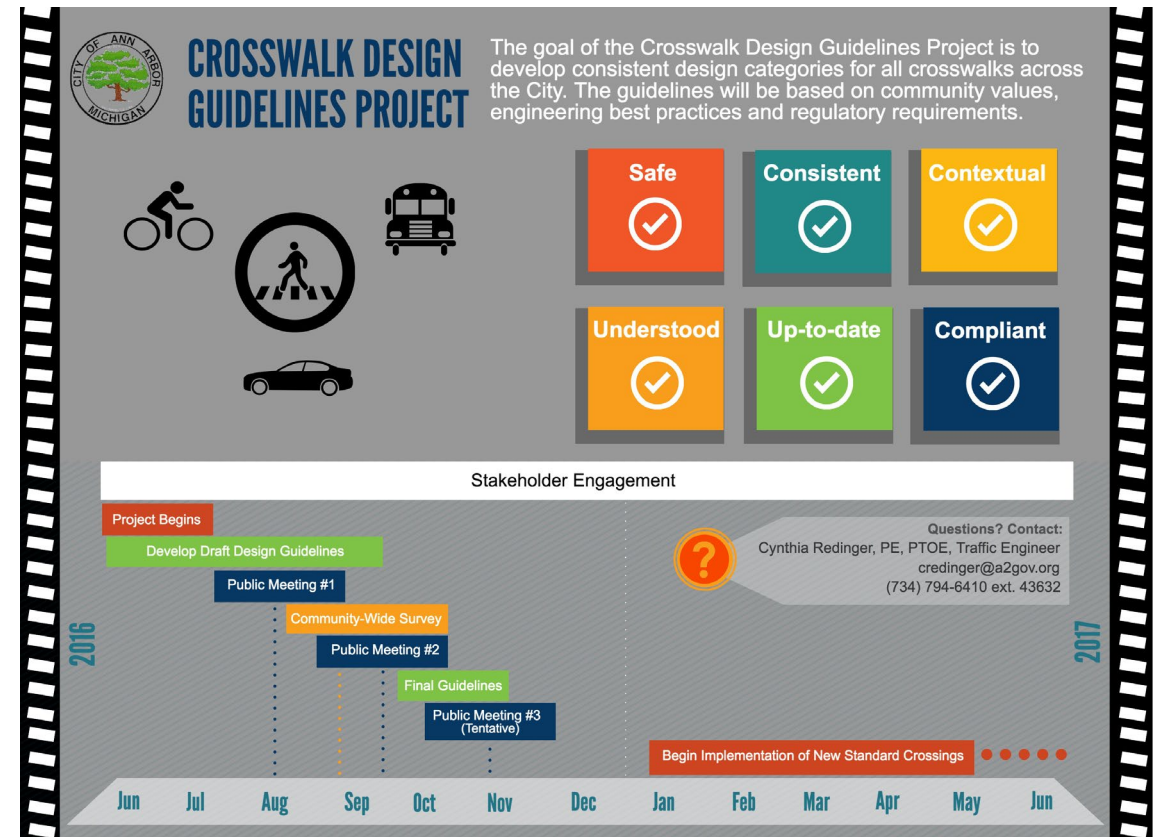
NACTO Urban Street Design Guide



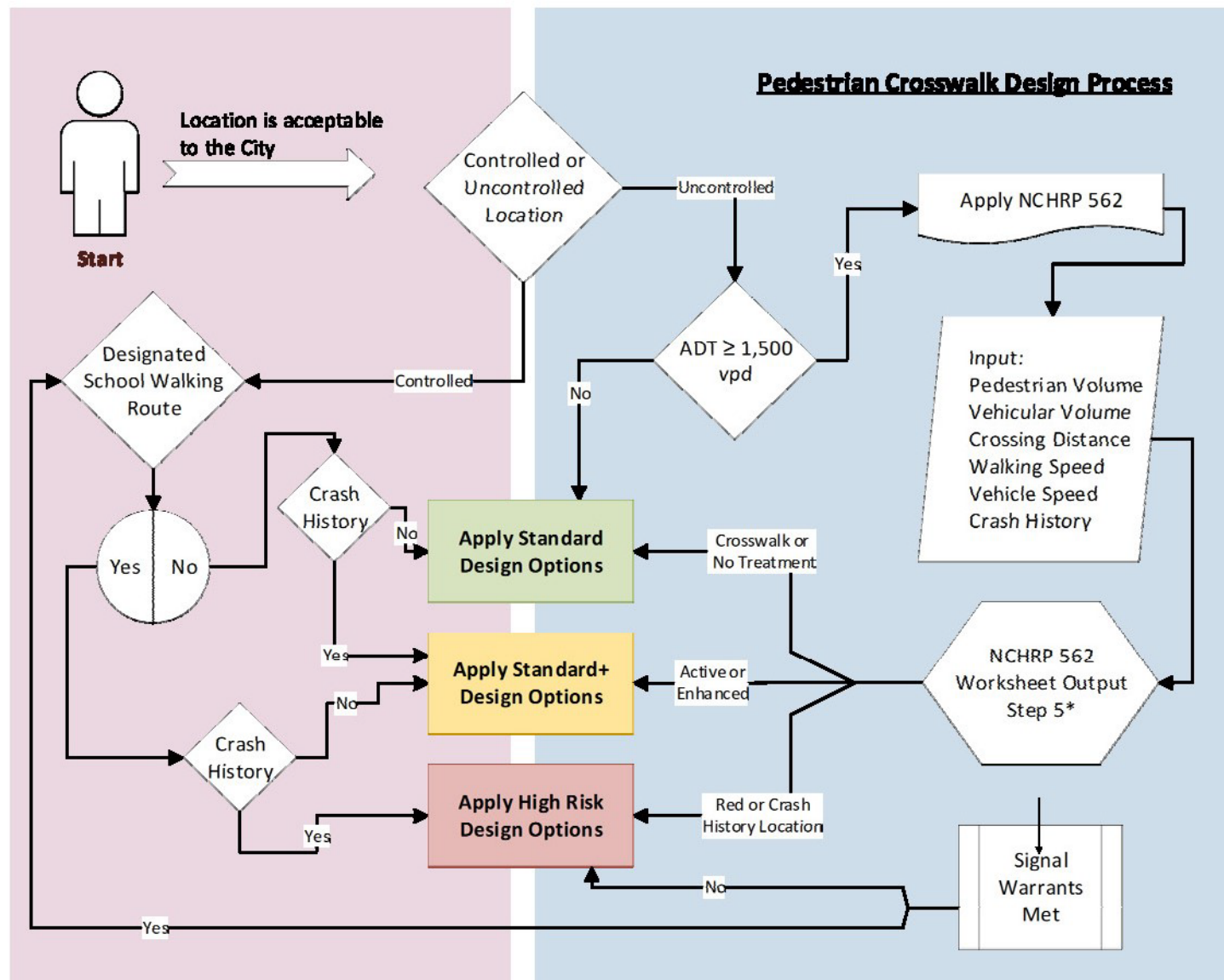
ITE Toolkit

Ann Arbor Crosswalk Design Guidelines

- Outlines process City uses to select appropriate design for controlled and uncontrolled crossings:
- Factors:
 - Crash history
 - Pedestrian and vehicle volumes
 - Types of streets
 - Whether it's a school route
- Factors help determine features to include such as:
 - High-visibility markings
 - Different signage
 - Audible warning device
 - Flashing beacons
 - Refuge islands
- Design options will continue to be maintained/updated as new research and approved devices emerge



Ann Arbor Crosswalk Design Guidelines



FHWA Guidelines

- Marked pedestrian crosswalks may be used:
 - At location with stop or yield signs
 - Designated crossings in a school zone
 - Where engineering judgement dictates based on the number of lanes, higher than average traffic volumes, speed limits over 25 mph, or physical conditions
- Marked crosswalks need traffic calming features, signs, signals, islands, etc. when:
 - 85th percentile speeds exceed 40 mi/hr
 - A street with 4 or more lanes with 12,000 vehicles per day

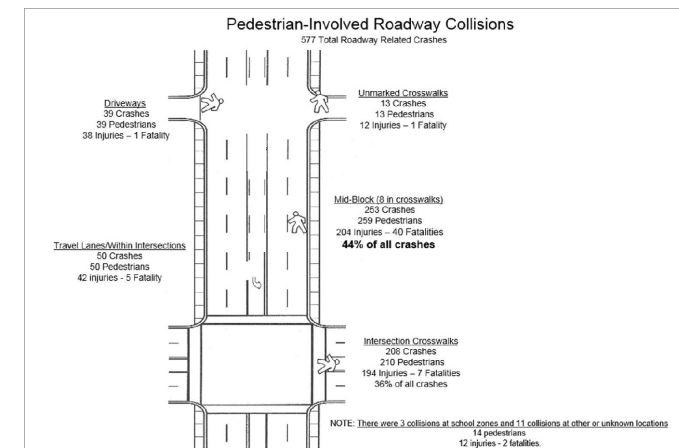
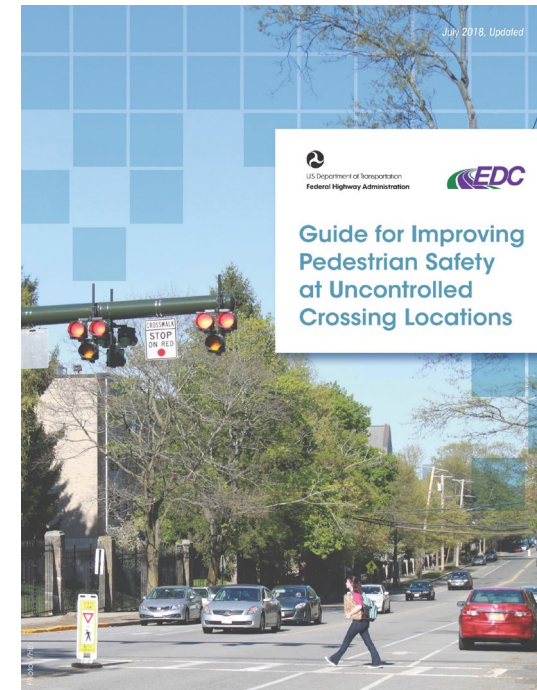
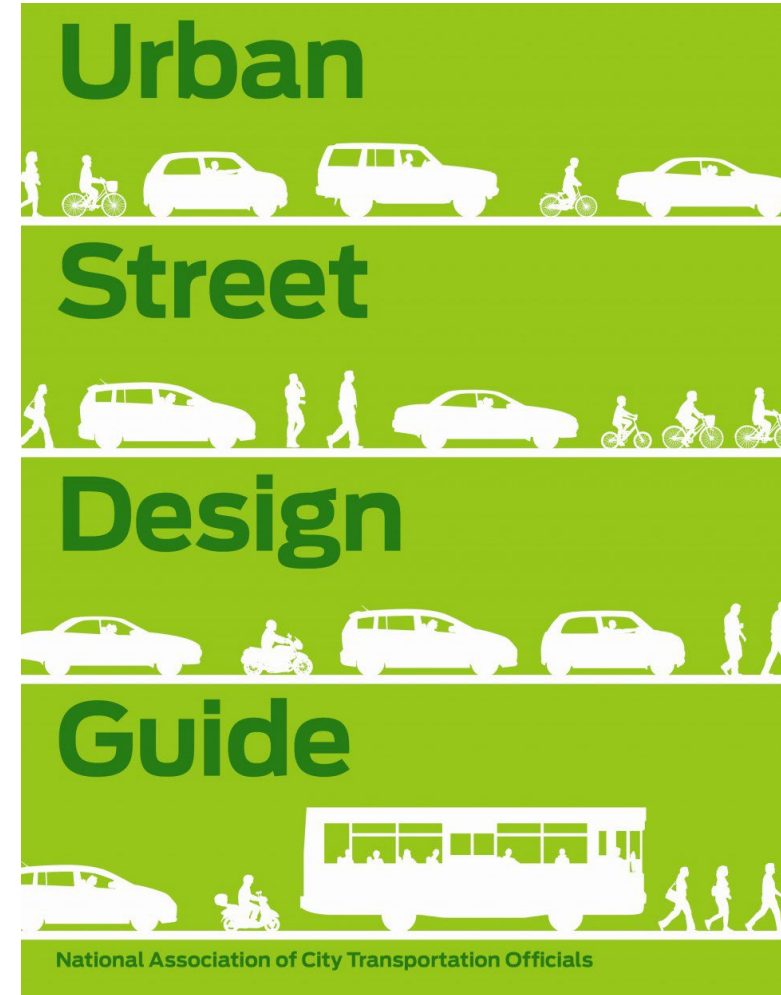


Figure 5. Pedestrian collision summary.

Source: City of Phoenix, AZ. 2015 Pedestrian Collision Summary (2015).

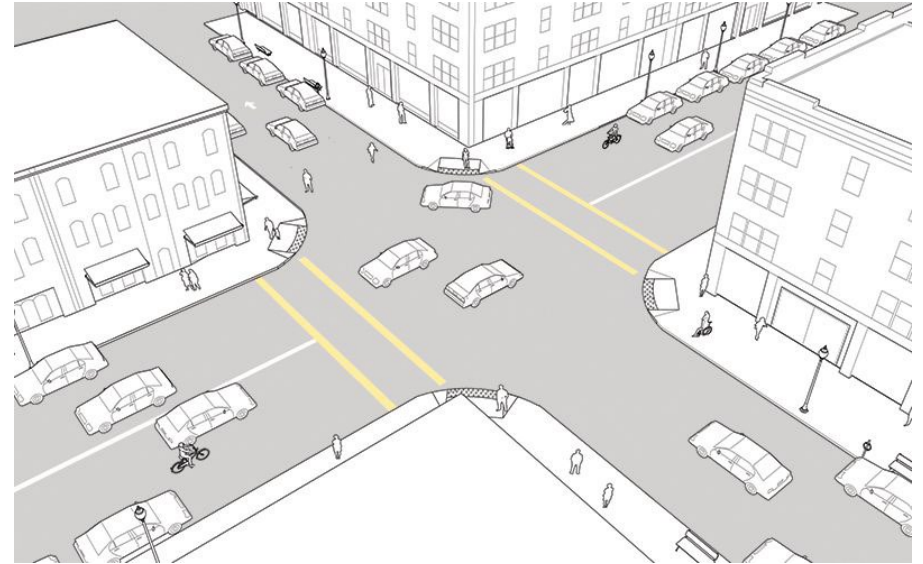
NACTO Guidelines

- On streets with low volume (<3000 ADT, low speeds (<20 mph), and few lanes (1-2)), marked crosswalks are not always necessary at the intersections
 - At schools, parks, plazas, senior centers, transit stops, hospitals, campuses, and major public buildings, marked crosswalks may be beneficial regardless of traffic conditions
- On streets with higher volumes (>3000 ADT) higher speeds (>20 mph), or more lanes (2+), crosswalks should be the norm at intersections

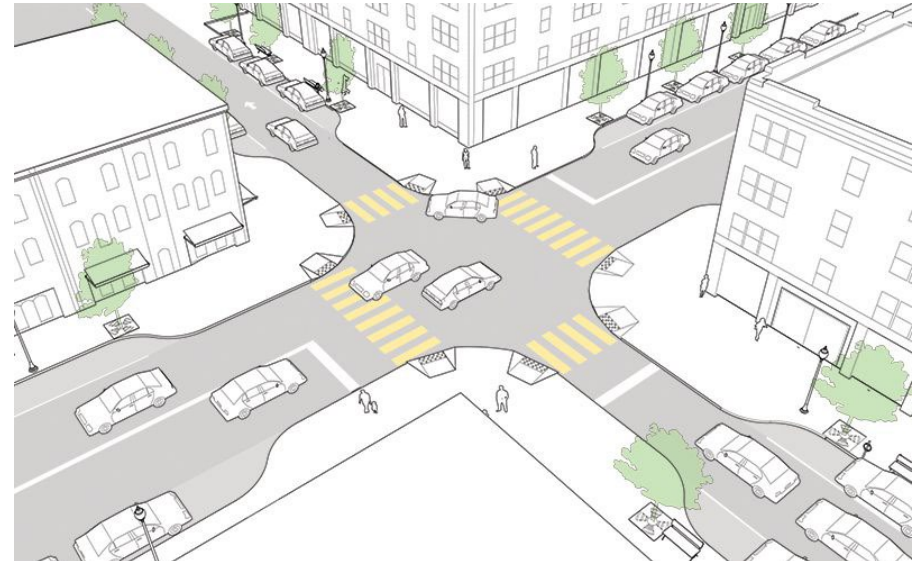


NACTO Guidelines

- Where signalized or stop-controlled pedestrian crossings are not warranted, but demand exists or is anticipated, designers should continue to work toward goals of safety and comfort for people walking through other means, such as actuated crossings or enhanced crossing treatments
- Judgment on application of a crosswalk should be based on multiple factors:
 - Land uses
 - Present and future demand
 - Pedestrian compliance
 - Speed
 - Safety
 - Crash history
- Volumes alone are not enough to determine whether a particular device should be used



Example Existing Conditions



Example Reconstruct



MEMORANDUM

Engineering Department
Planning Department
Police Department

DATE: May 23, 2018

TO: Joseph A. Valentine, City Manager

FROM: Lauren Chapman, Assistant Planner

APPROVED BY: Jana L. Ecker, Planning Director
Commander Scott Grewe, Police Department
Paul O'Meara, City Engineer

SUBJECT: Crosswalk Pavement Markings - Material Options

Over the past year, the Multi-Modal Transportation Board studied material options for crosswalk markings. Staff has conducted research, surveyed other cities, talked to contractors and suppliers and conducted inspections in the field of different marking options. Paint, thermoplastic, polyurea, and HPS-8 were studied. After extensive discussion, on January 4, 2018, the Multi-Modal Transportation Board voted to use polyurea on all major concrete streets and HPS-8 on all major asphalt streets within the Central Business District, Triangle District, Rail District; and waterborne paint on all other streets. Depending on visibility needs and average daily traffic, polyurea or HPS-8 may be used for crosswalks adjacent to schools.

Some cities use tape. Two advantages about tape are that the bars of crosswalks are clean and uniform and are relatively durable (average lifespan of 4 years). However, the material also has disadvantages: the cost is higher than liquid materials, the application process is very exacting and can be done improperly, the material wears unevenly, and when striping needs to be reapplied existing markings must be removed increasing the cost. Due to the disadvantages of tape, it is not recommended for consideration.

Currently the City spends \$12,320 on waterborne paint crosswalks annually. The amount spent on crosswalks would change regardless of whether there is a change in the material because the dimensions of the crosswalks are changing. **The change in the crosswalk design will be a gradual transition as changes are proposed to implemented for newly repaved roads.** Retrofitting crosswalks would require existing crosswalks be removed and the installation of new curbs and ramps. This would be cost prohibitive. The estimated cost of retrofitting all crosswalks is \$1,747,488. The calculation is explained in attached spreadsheets.

The basis for the cost of pavement striping is determined by the number of linear feet that are striped not the number of markings. The cost per linear foot depends on the number of linear feet that are ordered (for instance the price per linear foot is different if 10 linear feet were

ordered or 10,000 were ordered). The calculations below are based on 2,240 linear feet. In order to make things understandable a cost per crosswalk was derived from the quoted cost divided by the total number of crosswalks (398). The vast majority of existing crosswalks (84%) do not conform to the newly adopted standards either in type or by length of bars. The amount in the total cost of crosswalks column assumes that 100% of the crosswalks are painted with the same materials. This is not anticipated to be the case for two reasons; some of the different materials are more conducive for some pavement types than for others and the different areas may warrant more visibility than other areas.

Material	Price per linear foot, 24" crosswalk	Price per crosswalk	Frequency of repainting	Total Cost of crosswalks	Total Cost of crosswalks over 10 years
HPS-8	\$9.15	\$51.50	Every 8 years	\$20,496	\$40,992 (2 applications)
Polyurea	\$8.00	\$45.03	Every 4 years	\$17,920	\$53,760 (3 applications)
Thermoplastic	\$13.55	\$50.65	Every 4 years	\$20,160	\$60,480 (3 applications)
Waterborne paint	\$5.50	\$30.96	Once a year*	\$12,320	\$123,200 (10 applications)

* - Crosswalks Downtown are painted twice a year

Please see attached memos and documents that the Multi-Modal Transportation Board reviewed during their discussion on crosswalk marking material.

SUGGESTED ACTION:

To approve the following materials as recommended by the Multi-Modal Transportation Board on January 4, 2018: Polyurea on all major concrete streets and HPS-8 on all major asphalt streets within the Central Business District, Triangle District, Rail District, and waterborne paint on all other streets. Depending on visibility needs and average daily traffic, polyurea or HPS-8 may be used for crosswalks adjacent to schools.

Number	Street Name	Intersection	Type	Street Width	Classification	Proposed Crosswalk Length	Notes
1	14 Mile Rd	Pierce	Zebra	61	All other locations	6	
2		Pierce	Zebra	71	All other locations	6	
3		Woodward	Continental	89	All other locations	6	
4		Woodward	Continental	73	All other locations	6	
5		Greenfield	Standard	46	All other locations	6	
6		S Eton	Standard	62	All other locations	6	
7		S Eton	Standard	60	All other locations	6	
8		Southfield	Standard	72	All other locations	6	
9	N Adams	E Maple	Zebra	62	Triangle- Major Street	12 to 14	
10		Derby/Mohegan	Continental	46	All other locations	6	
11		Derby/Mohegan	Continental	49	All other locations	6	
12		Buckingham	Zebra	42	School- Local Street	8	
13	S Adams	E Maple	Zebra	62	Triangle- Major Street	12 to 14	
14		Bowers	Continental	40	Triangle- Major Street	12 to 14	
15		Bowers	Continental	41	Triangle- Major Street	12 to 14	
16		Hazel	Zebra	46	Triangle- Major Street	12 to 14	
17		E Lincoln	Zebra	50	Triangle- Major Street	12 to 14	
18		E Lincoln	Zebra	50	Triangle- Major Street	12 to 14	
19		Ruffner	Zebra	50	Triangle- Major Street	12 to 14	
20		Webster	Continental	42	Triangle- Major Street	12 to 14	
21		Webster	Continental	40	Triangle- Major Street	12 to 14	
22	Bates	Brown	Continental	42	All other locations	6	
23		Brown	Continental	38	All other locations	6	
24		Martin	Continental	26	CBD- Local Street	8	
25		Martin	Continental	26	CBD- Local Street	8	
26		W. Maple	Continental	50	CBD- Local Street	8	
27		W. Maple	Zebra	46	CBD- Local Street	8	
28		Merrill	Continental	28	CBD- Local Street	8	
29		Merrill	Continental	28	CBD- Local Street	8	
30		Townsend	Continental	34	CBD- Local Street	8	
31		Townsend	Continental	34	CBD- Local Street	8	
32		Willits	Zebra	51	CBD- Local Street	8	

33		Willits	Zebra	51	CBD- Local Street	8	
34	Bird	Edgewood	Zebra	35	School- Local Street	8	
35		Edgewood	Zebra	35	School- Local Street	8	
36		Grant	Standard	33	All other locations	6	
37		Grant	Standard	35	All other locations	6	
38		Pierce	Zebra	48	School- Local Street	8	
39	Bowers	At 1600 Block	Standard	28	All other locations	6	
40		At Post Office	Standard	28	All other locations	6	
41		S Adams	Zebra	45	Triangle- Local Street	8	
42		S Adams	Continental	36	Triangle- Local Street	8	
43		S . Old Woodward	Zebra	41	CBD- Local Street	8	
44		Woodward	Continental	39	CBD- Local Street	8	
45		Woodward	Standard	39	All other locations	6	
46	Bradford	Melton	Standard	30	All other locations	6	
47	Brown	At Alley	Continental	38	CBD- Major Street	12 to 14	
48		Bates	Continental	37	All other locations	6	
49		Bates	Continental	37	All other locations	6	
50		Chester	Continental	44	All other locations	6	
51		Chester	Continental	40	All other locations	6	
52		Henrietta	Continental	38	CBD- Major Street	12 to 14	
53		Henrietta	Continental	40	CBD- Major Street	12 to 14	
54		S. Old Woodward	Zebra	55	CBD- Major Street	12 to 14	
55		S. Old Woodward	Zebra	55	CBD- Major Street	12 to 14	
56		Peabody	Continental	44	CBD- Major Street	12 to 14	
57		Peabody	Continental	38	CBD- Major Street	12 to 14	
58		Pierce	Continental	36	CBD- Major Street	12 to 14	
59		Pierce	Continental	50	CBD- Major Street	12 to 14	
60		Southfield	Continental	60	All other locations	6	
61		Woodward	Continental	42	CBD- Major Street	12 to 14	
62	Buckingham	N Adams	Zebra	42	School- Local Street	8	
63		Brown	Zebra	34	All other locations	6	
64		Brown	Continental	58	All other locations	6	
65		W. Maple	Zebra	40	CBD- Local Street	8	
66		W. Maple	Continental	42	CBD- Local Street	8	

67	Chester	Martin	Continental	40	CBD- Local Street	8	
68		Martin	Continental	33	CBD- Local Street	8	
69		Merrill	Ladder	60	All other locations	6	
70		Merrill	Ladder	57	All other locations	6	
71		Townsend	Ladder	64	All other locations	6	
72		Townsend	Ladder	64	All other locations	6	
73	Chesterfield	W. Maple	Continental	52	All other locations	6	At church may warrant School-Local stnd
74		Oak	Continental	34	School- Local Street	8	
75		Oak	Continental	30	School- Local Street	8	
76	Chestnut	Elm	Continental	30	Triangle- Local Street	8	
77		Woodward	Continental	28	Triangle- Local Street	8	
78	Cranbrook	W. Maple	Standard	56	All other locations	6	
79		Midvale	Ladder	49	School- Local Street	8	
80	Daines	S. Old Woodward	Zebra	24	CBD- Local Street	8	
81	Derby	N. Adams	Continental	35	School- Local Street	8	
82	Dunstable	Melton	Standard	38	School- Local Street	8	
83	Edgewood	Bird	Zebra	35	School- Local Street	8	
84		Bird	Zebra	35	School- Local Street	8	
85		E. Southlawn	Zebra	30	School- Local Street	8	
86		E. Southlawn	Zebra	30	School- Local Street	8	
87		Smith	Zebra	35	School- Local Street	8	
88	Elm	Bowers	Zebra	54	Triangle- Local Street	8	
89		Bowers	Continental	44	Triangle- Local Street	8	
90		E. Maple	Zebra	36	Triangle- Local Street	8	
91		Woodward	Zebra	37	Triangle- Local Street	8	
92	S Eton	14 Mile	Continental	30	All other locations	6	
93		Bowers	Continental	44	Rail- Major Street	12 to 14	
94		Bowers	Continental	44	Rail- Major Street	12 to 14	
95		Cole	Continental	48	Rail- Major Street	12 to 14	
96		Cole	Continental	48	Rail- Major Street	12 to 14	
97		Hazel	Continental	38	Rail- Major Street	12 to 14	
98		Holland	Continental	54	Rail- Major Street	12 to 14	
99		Holland	Continental	54	Rail- Major Street	12 to 14	
100		E Lincoln	Zebra	40	All other locations	6	

101		E Lincoln	Zebra	40	Rail- Major Street	12 to 14	
102		E. Maple	Zebra	82	Rail- Major Street	12 to 14	
103		Melton	Standard	60	All other locations	6	
104		Sheffield	Standard	45	All other locations	6	
105		Sheffield	Standard	45	All other locations	6	
106		Villa	Continental	44	Rail- Major Street	12 to 14	
107		Villa	Continental	44	Rail- Major Street	12 to 14	
108	Euclid	N. Old Woodward	Zebra	36	CBD- Local Street	8	
109	Ferndale	Hamilton	Zebra	31	CBD- Local Street	8	
110		Oakland	Zebra	35	CBD- Local Street	8	
111		Oakland	Zebra	35	CBD- Local Street	8	
112		At Parking Deck	Zebra	23	CBD- Local Street	8	
113	Forest	Elm	Continental	29	Triangle- Local Street	8	
114		Wooward	Continental	30	Triangle- Local Street	8	
115	Frank	S. Old Woodward	Continental	38	CBD- Local Street	8	At park may warrant School-Local stnd
116		Pierce	Continental	27	All other locations	6	
117		Purdy	Continental	28	All other locations	6	
118		Purdy	Continental	28	All other locations	6	
119	Glenhurst	W. Lincoln	Continental	28	All other locations	6	
120		Midvale	Standard	29	All other locations	6	
121		Oak	Zebra	29	School- Local Street	8	
122		Oak	Zebra	29	School- Local Street	8	
123	Golfview	Midvale	Standard	26	School- Local Street	8	
124		W. Lincoln	Continental	24	School- Local Street	8	
125	Grant	Bird	Standard	40	All other locations	6	
126		Bird	Standard	40	All other locations	6	
127		Humphrey	Standard	37	All other locations	6	At park may warrant School-Local stnd
128	Greenwood	Harmon	Standard	37	School- Local Street	8	
129		Harmon	Standard	31	School- Local Street	8	
130		Vinewood	Standard	32	All other locations	6	
131		Vinewood	Standard	30	All other locations	6	
132	George	Clark	Continental	25	All other locations	6	At park may warrant School-Local stnd
133		Clark	Continental	25	All other locations	6	
134		Pierce	Continental	25	All other locations	6	

135		S. Old Woodward	Continental	22	CBD- Local Street	8	
136	Hamilton	Ferndale	Continental	42	CBD- Local Street	8	
137		N. Old Woodward	Continental	36	CBD- Local Street	8	
138		Park	Continental	48	CBD- Local Street	8	
139		Park	Continental	48	CBD- Local Street	8	
140		Woodward	Continental	38	CBD- Local Street	8	
141	Harmon	Greenwood	Standard	31	School- Local Street	8	
142		Greenwood	Standard	31	School- Local Street	8	
143		N. Old Woodward	Zebra	43	CBD- Local Street	8	
144		Woodland	Standard	31	School- Local Street	8	
145		Woodland	Standard	31	School- Local Street	8	
146	Haynes	S Adams	Zebra	43	Triangle- Local Street	8	
147		S. Old Woodward	Zebra	43	CBD- Local Street	8	
148		Torry	Standard	38	All other locations	6	
149		Woodward	Zebra	42	Triangle- Local Street	8	
150	Hazel	S. Old Woodward	Zebra	45	CBD- Local Street	8	
151	Henrietta	Brown	Continental	37	CBD- Local Street	8	
152		Brown	Continental	38	CBD- Local Street	8	
153		W. Maple	Continental	24	CBD- Local Street	8	
154		Martin	Continental	28	CBD- Local Street	8	
155		Martin	Continental	28	CBD- Local Street	8	
156		Merrill	Continental	24	CBD- Local Street	8	
157		Merrill	Continental	24	CBD- Local Street	8	
158		Townsend	Continental	38	CBD- Local Street	8	
159		Townsend	Continental	38	CBD- Local Street	8	
160	Humphrey	Grant	Standard	39	All other locations	6	At park may warrant School-Local stnd
161		Torry	Standard	32	School - Local Street	8	
162		Torry	Standard	32	School - Local Street	8	
163	Lake Park	W. Maple	Zebra	26	All other locations	6	
164	Landon	Elm	Zebra	37	CBD- Local Street	8	
165		Ann	Continental	28	All other locations	6	
166		Cedar	Continental	36	All other locations	6	
167		S. Eton	Zebra	37	Rail - Major Street	12 to 14	
168		S. Eton	Zebra	37	Rail - Major Street	12 to 14	

169	E Lincoln	Floyd	Continental	13	All other locations	6	At YMCA may want to use School-Local stdn
170		Floyd	Continental	13	All other locations	6	
171		Grant	Continental	27	All other locations	6	
172		Pierce	Continental	24	All other locations	6	
173		Pierce	Continental	26	All other locations	6	
174		Taunton	Continental	38	School - Major Street	12 to 14	
175		Taunton	Continental	38	School - Major Street	12 to 14	
176		At Our Shepherd	Continental	36	School - Major Street	12 to 14	
177		S. Adams	Zebra	50	Triangle - Major Street	12 to 14	
178		S. Adams	Zebra	50	Triangle - Major Street	12 to 14	
179		Torry	Continental	36	School - Major Street	12 to 14	
180		Torry	Continental	36	School - Major Street	12 to 14	
181		Woodward	Continental	50	CBD- Major Street	12 to 14	
182		Woodward	Continental	54	CBD- Major Street	12 to 14	
183	W Lincoln	S. Bates	Continental	29	All other locations	6	
184		S. Bates	Continental	30	All other locations	6	
185		Chester	Continental	14	All other locations	6	
186		Golfview	Continental	19	School - Major Street	8	
187		Golfview	Continental	19	School - Major Street	8	
188		S. Glenhurst	Continental	18	All other locations	6	
189		S. Glenhurst	Continental	18	All other locations	6	
190		Larchlea	Continental	16	All other locations	6	
191		Larchlea	Continental	16	All other locations	6	
192		Pleasant	Continental	21	All other locations	6	
193		Pleasant	Continental	21	All other locations	6	
194		Pleasant	Continental	21	All other locations	6	
195		Pleasant	Continental	21	All other locations	6	
196		Shirley	Continental	36	All other locations	6	
197		Southfield	Zebra	52	All other locations	6	
198		Southfield	Zebra	52	All other locations	6	
199		Washington	Continental	14	All other locations	6	
200		Watkins/Maryland	Continental	28	All other locations	6	
201		Watkins/Maryland	Continental	28	All other locations	6	
202		Westchester	Continental	18	All other locations	6	At park may warrant School Local stdn

203		Westchester	Continental	18	All other locations	6	At park may warrant School-Local stnd
204	E Maple	N. Adams	Zebra	82	Triangle- Major Street	12 to 14	
205		S. Adams	Zebra	82	Triangle- Major Street	12 to 14	
206		Elm	Zebra	52	Triangle- Major Street	12 to 14	
207		Elm	Zebra	52	Triangle- Major Street	12 to 14	
208		S. Eton	Continental	60	Rail- Major Street	12 to 14	
209		S. Eton	Zebra	48	Rail- Major Street	12 to 14	
210		Peabody	Zebra	45	CBD- Major Street	12 to 14	
211		Old Woodward	Zebra	70	CBD- Major Street	12 to 14	
212		Old Woodward	Zebra	70	CBD- Major Street	12 to 14	
213		Woodward	Standard	60	CBD- Major Street	12 to 14	
214		Woodward	Standard	52	CBD- Major Street	12 to 14	
215	W Maple	S. Bates	Continental	48	CBD- Major Street	12 to 14	
216		S. Bates	Continental	48	CBD- Major Street	12 to 14	
217		Chester	Continental	50	CBD- Major Street	12 to 14	
218		Chester	Continental	40	CBD- Major Street	12 to 14	
219		Chesterfield	Continental	46	All other locations	6	At church may warrant School-Local stnd
220		Chesterfield	Continental	47	All other locations	6	
221		Cranbrook	Standard	76	All other locations	6	
222		Henrietta	Continental	40	CBD- Major Street	12 to 14	
223		Henrietta	Continental	40	CBD- Major Street	12 to 14	
224		Lake Park	Continental	46	All other locations	6	
225		Pierce	Continental	42	CBD- Major Street	12 to 14	
226		Southfield	Continental	50	CBD- Major Street	12 to 14	
227	Martin	Bates	Continental	28	CBD- Local Street	8	
228		Bates	Continental	28	CBD- Local Street	8	
229		Chester	Continental	34	CBD- Local Street	8	
230		Chester	Continental	36	CBD- Local Street	8	
231		Henrietta	Continental	25	CBD- Local Street	8	
232		Henrietta	Continental	25	CBD- Local Street	8	
233		Pierce	Continental	31	CBD- Local Street	8	
234		Southfield	Zebra	39	CBD- Local Street	8	
235	Melton	14 Mile	Continental	30	All Other Locations	6	
236		Bradford	Standard	30	School-Local Street	8	

237		S. Eton	Standard	45	All Other Locations	6	
238	Merrill	Bates	Continental	31	CBD- Local Street	8	
239		Bates	Continental	31	CBD- Local Street	8	
240		Chester	Zebra	43	CBD- Local Street	8	
241		Chester	Zebra	45	CBD- Local Street	8	
242		Henrietta	Continental	24	CBD- Local Street	8	
243		Henrietta	Continental	24	CBD- Local Street	8	
244		S. Old Woodward	Continental	39	CBD- Local Street	8	
245		Pierce	Continental	37	CBD- Local Street	8	
246		Pierce	Continental	31	CBD- Local Street	8	
247		Southfield	Zebra	45	CBD- Local Street	8	
248	Midvale	Cranbrook	Zebra	28	School- Local Street	8	
249		Golfview	Standard	25	School- Local Street	8	
250		S. Glenhurst	Standard	25	School- Local Street	8	
251	Oak	Chesterfield	Continental	34	School- Local Street	8	
252		Chesterfield	Continental	34	School- Local Street	8	
253		Glenhurst	Zebra	52	School- Local Street	8	
254		Glenhurst	Zebra	51	School- Local Street	8	
255		Lake Park	Continental	17	All other locations	6	
256		Lake Park	Continental	17	All other locations	6	
257		N. Old Woodward	Zebra	52	All other locations	6	
258		N. Old Woodward	Standard	45	All other locations	6	
259		N. Old Woodward	Continental	58	All other locations	6	
260	Oakland	Ferndale	Zebra	28	CBD- Major Street	12 to 14	
261		Ferndale	Zebra	28	CBD- Major Street	12 to 14	
262		Ferndale	Zebra	28	CBD- Major Street	12 to 14	
263		Ferndale	Zebra	28	CBD- Major Street	12 to 14	
264		N. Old Woodward	Zebra	78	CBD- Major Street	12 to 14	
265		Park	Zebra	28	CBD- Major Street	12 to 14	
266		Park	Zebra	30	CBD- Major Street	12 to 14	
267		Park	Zebra	40	CBD- Major Street	12 to 14	
268		Park	Zebra	34	CBD- Major Street	12 to 14	
269		Poppleton	Continental	24	All other locations	6	
270		Woodward	Standard	30	CBD- Major Street	12 to 14	

271		Woodward	Standard	30	CBD- Major Street	12 to 14	
272		N. Worth	Continental	38	School - Major Street	12 to 14	
273	N Old Woodward	Oak	Zebra	78	CBD- Major Street	12 to 14	
274		Oak	Continental	48	CBD- Major Street	12 to 14	
275		Vinewood	Zebra	33	CBD- Major Street	12 to 14	
276		Harmon	Zebra	75	CBD- Major Street	12 to 14	
277		Oakland	Zebra	78	CBD- Major Street	12 to 14	
278		Oakland	Zebra	78	CBD- Major Street	12 to 14	
279		Hamilton	Zebra	72	CBD- Major Street	12 to 14	
280		Hamilton	Zebra	72	CBD- Major Street	12 to 14	
281	S Old Woodward	Bowers	Zebra	75	CBD- Major Street	12 to 14	
282		Brown	Zebra	83	CBD- Major Street	12 to 14	
283		Brown	Zebra	78	CBD- Major Street	12 to 14	
284		Daines	Zebra	74	CBD- Major Street	12 to 14	
285		Frank	Zebra	75	CBD- Major Street	12 to 14	
286		Haynes	Zebra	75	CBD- Major Street	12 to 14	
287		Lincoln	Continental	20	CBD- Major Street	12 to 14	
288		Maple	Zebra	107	CBD- Major Street	12 to 14	
289		Maple	Zebra	90	CBD- Major Street	12 to 14	
290		Merrill	Continental	50	CBD- Major Street	12 to 14	
291		Merrill	Zebra	50	CBD- Major Street	12 to 14	
292	Park	Hamilton	Continental	40	CBD- Local Street	8	
293		Maple	Zebra	30	CBD- Local Street	8	
294		Oakland	Zebra	30	CBD- Local Street	8	
295		Oakland	Zebra	30	CBD- Local Street	8	
296	Peabody	Brown	Zebra	31	CBD- Local Street	8	
297		E. Maple	Zebra	54	CBD- Local Street	8	
298		14 Mile	Zebra	46	All Other Locations	6	
299		At School	Ladder	27	School-Local Street	8	
300		Brown	Continental	48	CBD- Local Street	8	
301		Brown	Continental	40	CBD- Local Street	8	
302		Frank	Continental	28	All Other Locations	6	At park may warrant School-Local stnd
303		Lincoln	Continental	24	All Other Locations	6	
304		Lincoln	Continental	24	All Other Locations	6	

305	Pierce	W. Maple	Continental	38	CBD- Local Street	8	
306		Martin	Continental	32	CBD- Local Street	8	
307		Martin	Continental	32	CBD- Local Street	8	
308		Merrill	Continental	46	CBD- Local Street	8	
309		Merrill	Continental	40	CBD- Local Street	8	
310		Southlawn	Continental	28	School-Local Street	8	
311		Southlawn	Continental	28	School-Local Street	8	
312		Townsend	Zebra	42	CBD- Local Street	8	
313	Poppleton	Oakland	Continental	31	All Other Locations	6	
314		E. Maple	Zebra	36	All Other Locations	6	
315	Purdy	Brown	Continental	28	CBD- Local Street	8	At park may warrant School-Local stnd
316		Frank	Continental	25	All other locations	6	
317		Frank	Continental	25	All other locations	6	
318	Ravine	N. Old Woodward	Zebra	35	CBD- Local Street	8	
319	Ruffner	Adams	Zebra	31	Triangle - Local Street	8	
320		Torry	Standard	27	School- Local Street	8	
321	Saxon	Southfield	Standard	50	All Other Locations	6	
322	Sheffield	S. Eton	Standard	42	All Other Locations	6	
323		S. Eton	Standard	38	All Other Locations	6	
324		Melton	Standard	32	All Other Locations	6	
325	Smith	Edgewood	Zebra	51	School- Local Street	8	
326	Southfield	14 Mile	Zebra	51	All Other Locations	6	
327		Brown	Continental	40	All Other Locations	6	
328		W. Lincoln	Zebra	52	All Other Locations	6	
329		W. Lincoln	Zebra	30	All Other Locations	6	
330		W. Maple	Continental	25	CBD- Major Street	12 to 14	
331		W. Maple	Continental	54	CBD- Major Street	12 to 14	
332		Martin	Zebra	27	All Other Locations	6	
333		Norfolk	Zebra	24	All Other Locations	6	At park may warrant School-Local stnd
334		Northlawn	Zebra	28	All Other Locations	6	
335		Northlawn	Zebra	32	All Other Locations	6	
336		Wallace	Zebra	23	All Other Locations	6	At park may warrant School-Local stnd
337		Worthington	Zebra	27	All Other Locations	6	At park may warrant School-Local stnd
338		Edgewood	Zebra	35	School- Local Street	8	

339	Southlawn	Edgewood	Zebra	35	School- Local Street	8	
340		Pierce	Continental	27	School- Local Street	8	
341		Pierce	Zebra	30	School- Local Street	8	
342	Taunton	E. Lincoln	Standard	31	School- Local Street	8	
343	Torry	Humphrey	Standard	28	School- Local Street	8	
344		Humphrey	Standard	28	School- Local Street	8	
345		Lincoln	Continental	36	School- Local Street	8	
346		Lincoln	Continental	34	School- Local Street	8	
347		Ruffner	Standard	35	School- Local Street	8	
348	Townsend	Bates	Continental	35	CBD- Local Street	8	
349		Bates	Continental	35	CBD- Local Street	8	
350		Chester	Zebra	50	CBD- Local Street	8	
351		Chester	Zebra	50	CBD- Local Street	8	
352		Henrietta	Continental	30	CBD- Local Street	8	
353		Henrietta	Continental	30	CBD- Local Street	8	
354		Pierce	Zebra	38	CBD- Local Street	8	
355		Southfield	Zebra	50	All Other Locations	6	
356	Vinewood	Greenwood	Standard	31	All Other Locations	6	
357		Greenwood	Standard	32	All Other Locations	6	
358		N. Old Woodward	Zebra	35	All Other Locations	6	
359		Woodland	Standard	40	All Other Locations	6	
360		Woodland	Standard	35	All Other Locations	6	
361	Webster	S. Adams	Continental	36	Triangle - Local Street	8	
362		Worth	Zebra	56	Triangle - Local Street	8	
363		Worth	Zebra	56	Triangle - Local Street	8	
364	Westboro	N. Adams	Continental	38	All Other Locations	6	
365	Willits	Bates	Zebra	45	CBD- Local Street	8	
366		Bates	Zebra	42	CBD- Local Street	8	
367		N. Old Woodward	Zebra	54	CBD- Local Street	8	
368	Woodland	Harmon	Standard	32	School- Local Street	8	
369		Vinewood	Standard	35	All Other Locations	6	
370		Vinewood	Standard	32	All Other Locations	6	
371		14 Mile	Continental	55	All Other Locations	6	
372		14 Mile	Continental	84	All Other Locations	6	

373	Woodward	At 33500 Block	Standard	46	All Other Locations	6	
374		At 33500 Block	Standard	45	All Other Locations	6	
375		Bowers	Standard	75	Triangle- Major Street	12 to 14	
376		Bowers	Standard	65	Triangle- Major Street	12 to 14	
377		Bowers	Standard	55	CBD- Major Street	12 to 14	
378		Bowers	Standard	70	CBD- Major Street	12 to 14	
379		Brown	Standard	52	CBD- Major Street	12 to 14	
380		Forest	Standard	54	Triangle- Major Street	12 to 14	
381		Forest	Standard	54	CBD- Major Street	12 to 14	
382		Lincoln	Continental	70	All Other Locations	6	
383		Lincoln	Continental	64	All Other Locations	6	
384		Lincoln	Continental	60	CBD- Major Street	12 to 14	
385		Lincoln	Continental	70	Triangle - Major Street	12 to 14	
386		Maple	Standard	58	CBD- Major Street	12 to 14	
387		Maple	Standard	58	CBD- Major Street	12 to 14	
388		Maple	Standard	50	CBD- Major Street	12 to 14	
389		Maple	Standard	50	CBD- Major Street	12 to 14	
390		Oakland	Standard	58	All Other Locations	6	
391		Oakland	Standard	62	All Other Locations	6	Will be shortened to 47
392	N. Worth	Madison	Continental	35	School- Local Street	8	
393		Oakland	Continental	28	School- Local Street	8	
394		Oakland	Continental	28	School- Local Street	8	
395		Ridgedale	Continental	26	School- Local Street	8	
396	S. Worth	Webster	Zebra	47	Triangle- Local Street	8	
397		Webster	Zebra	48	Triangle- Local Street	8	
398		Haynes	Zebra	41	Triangle- Local Street	8	
	335/398	84% of the existing crosswalks do not meet the new standards (type and/or length).					
	353/398	89% Including some locations near parks and churches.					
	130/398	27% (includes notes) -33% will not require a new curb					130 crosswalks at \$1,309 = \$173,291
	161/398	41% of the existing crosswalks will need a slight change to the curbs					161 crosswalks at \$5,317 = \$856,037
	94/398	24% of the existing crosswalks would need a big change to the curbs					94 crosswalks at \$7,640 = \$718,160
							\$1,747,488

		Average cost			
	No change to curbs (6 ft proposed length)	Pavement Marking Removal	76 ft. x \$2.50=	\$190	
		HPS 8 or Polyurea 24 in crosswalk bars	114 ft. X \$8.58 =	\$978	
		+ 15% contingency		\$175	
		Total per crosswalk=		\$1,343	
		129 crosswalks at \$1,343 ea =		\$173,291	
		Average Cost			
	Slight change to curbs (8 ft proposed length)	Sidewalk Removal & Replacement	180 sq.ft. x \$6.25 =	\$1,125	
		Curb & Gutter Removal & Replacement	30 ft. x \$35 =	\$1,050	
		Handicap Dome Plates	32 sq.ft. x \$40 =	\$1,280	
		Pavement Marking Removal	76 ft. x \$2.50 =	\$190	
		HPS or Polyurea 24 in crosswalk bars	114 ft. X \$8.58 =	\$978	
		+15% Contingency		\$693	
		Total per crosswalk		\$5,317	
		161 crosswalks at \$5,317 =		\$856,037	
		Average Cost			
	Big change to curbs (12-14 ft proposed length)	Sidewalk Removal & Replacement	180 sq.ft. x \$6.25 =	\$1,125	
		Curb & Gutter Removal & Replacement	30 ft. x \$35 =	\$1,050	
		Handicap Dome Plates	60 sq.ft. x \$40 =	\$2,400	
		Pavement Marking Removal	100 ft. x \$2.50 =	\$250	
		HPS 8 or Polyurea 24 in crosswalk bars	150 ft. X \$8.58 =	\$1,287	
		+25% Contingency		\$1,528	
		Total per crosswalk		\$7,640	
		94 crosswalks at \$7,640 =		\$718,160	



MEMORANDUM

Engineering Department
Planning Department
Police Department

DATE: December 1, 2017

TO: Multi-Modal Transportation Board

FROM: Lauren Chapman, Assistant Planner

APPROVED: Jana L. Ecker, Planning Director
Commander Scott Grewe, Police Department
Paul O'Meara, City Engineer

SUBJECT: Crosswalk Pavement Markings - Material Options

At the February 27, 2017 meeting the City Commission voted to adopt the following standard policy for the design of all future crosswalk pavement markings in the City of Birmingham:

All new painted crosswalks installed shall be of the continental style, as outlined on MDOT Detail Sheet PAVE-945-C, Sheet 3 of 3, with the exception that all painted bars shall be 24 inches wide spaced as close to 24 inches apart as possible. Crosswalk widths shall be installed as follows:

On Major Streets within the Central Business District, Triangle District, Rail District, or Adjacent to Schools:

- Total width of the crosswalk shall be 12 to 14 feet wide. Crosswalks at the upper width limit may be installed when traffic signals are present.
- The following shall be considered Major Streets (within the specific districts noted) for the purposes of this standard:

Woodward Ave.	Oakland Blvd.
Old Woodward Ave.	Chester St.
Maple Rd.	Brown St.
Southfield Rd.	S. Eton Rd.
Adams Rd.	E. Lincoln Ave.

On Local Streets within the Central Business District, Triangle District, Rail District, or Adjacent to Schools:

- Total width of the crosswalk shall be 8 feet wide, unless the adjacent sidewalk main walking path is wider, at which point it shall be widened to match the main walking path width.

At All Other Locations:

- Total width of the crosswalk shall be 6 feet wide.

Over the next several months the MMTB began discussing pavement marking material choices. After much discussion, at the September 9th 2017 meeting the Multi-Modal Transportation Board (MMTB) recommended:

"To use paint on all non-major street crosswalks. Use paint on all major streets that are not going to be completely re-built; but when those major street crosswalks are being re-paved and re-built all markings will be grooved and filled with thermoplastic. Re-evaluate annually with the thermoplastics that are applied to make sure they are truly living up to their suggested retail life span."

This memo is intended to inform the board of the further research that has been conducted by City staff during attempts to find a specification for the new thermoplastic standard to be used in bidding documents.

Overview

Staff from the Planning and Police Departments contacted a variety of contractors and product manufacturers and visited the City of Ann Arbor. These actions provided further insight on the previously recommended material and other pavement marking material options. Further research was conducted into paint, thermoplastic, polyurea and a newer material, HPS-8. Numerous contractors, a manufacturer, and the City of Ann Arbor all found HPS-8 to be a superior product and stated that thermoplastic does not bind well to concrete and that polyurea is a dependable material for both asphalt and concrete surfaces. Polyurea was the top choice of the MMTB originally but the board selected thermoplastic because polyurea was more expensive. However, further research has found that the cost differential between polyurea and thermoplastic was based on outdated information and that the two materials are much more similar in cost than originally reported.

Paint Pavement Marking



Paint pavement marking is the most widely used material in pavement markings in Canada and the United States.

Waterborne paints are favored over solvent based paints because they are environmentally friendly, and lack heavy metals and volatile organic compounds without affecting the service life. Moreover, waterborne paints don't have a strong solvent odor that may induce respiratory complaints from users.

Advantages and Disadvantages of Paints Pavement Marking: One of the major advantages of paint markings is that they are significantly cheaper than any other method; however, they can be worn away rapidly on high volume roadways, and consequently these roadways need to be restriped more than once a year.

Thermoplastic Pavement Marking

Thermoplastics are similar to paint, and applied as a liquid, but they require higher application temperature to create the liquid state. Thermoplastic markings are installed in a molten state using either an extrusion or spraying method.

Pavement surface condition is an important factor that affects thermoplastic application because old pavement may not provide a sufficient chemical bond between asphalt and the thermoplastic marking material. Thermoplastics provide excellent performance when applied properly. The service life of thermoplastic marking paints normally ranges between forty eight months and eighty four months depending on different factors including application procedures, pavement type, traffic volume, snowplow activity and atmospheric conditions when placed.



Advantages of Alkyd-based Thermoplastic

Thermoplastic has demonstrated a long service life on all traffic volume roads (low, medium, and high). They also have a high retroreflectivity level without using glass beads. In addition, thermoplastics can be applied in all weathering conditions. Finally, thermoplastic pavement markings have a very strong bond on asphalt surfaces.

Disadvantages of Alkyd-based Thermoplastic

Thermoplastics are considered the most sensitive to surface preparation and atmospheric conditions during application. Concrete road surfaces need coating with an epoxy primer before thermoplastic markings are installed. A study by the Florida Department of Transportation wrote "Thermoplastic markings are known to have poor adhesion on concrete surfaces. They lose their bond with the concrete and tend to flake off. Failure has been observed within six to eight months. The markings



appear to hold better on asphalt surfaces [...] Overall, thermoplastics performed better on asphalt than on concrete.”

Polyurea Pavement Marking

Manufacturers have reported that polyurea has a service life of up to five years, but actual observed applications have a typical lifespan of three to four years. Polyurea markings are a sprayed, two-component durable pavement marking material. Various formulations of polyurea markings exist on the market. Polyurea pavement markings are used by the Michigan Department of Transportation (MDOT).

Advantages of Polyurea

Polyurea materials are marketed as durable pavement markings that provide exceptional color stability, resistance to abrasion, and adhesion to all pavement surfaces. Polyurea markings appear to be less sensitive to pavement surface moisture than thermoplastics and can be applied at temperatures as low as freezing. The material is resistant to UV degradation. The material offers some advantages in that it sets within 180 seconds, does not require any beads to be dropped on top of it, it lasts longer, has little waste and limited clean-up, and will harden when the pavement is wet.

Disadvantages of Polyurea Pavement Marking

One of the drawbacks associated with polyurea materials is that some must be applied by a special striping apparatus, which limits the number of contractors available to apply the material. Additionally, new material cannot be applied on top of old material. When polyurea markings need maintenance the material needs to be scraped off and new material applied.

HPS-8 Pavement Marking

HPS-8 is a unique binder material made up of multiple polymers to give it very high durability, long term retroreflectivity, and fast cure, yet can be applied with standard thermoplastic equipment. HPS-8 is applied using the extrude method at thicknesses ranging from 60 to 120 mils.

HPS-8 can be surface applied onto asphalt or concrete roadways or inlaid for longer service life and is engineered for durable long line usage even in extreme conditions. HPS-8 is resistant to snow plow damage and provides superior long life retroreflectivity.



Advantages of HPS-8

Glass beads are intermixed into HPS-8 unlike thermoplastics where the beads are applied over the wet material, and thus result in extended retroreflectivity. A four year warranty is available for durability and retroreflectivity. Formulated for quick dry of <2 minutes at temperatures as low as 50 °F. HPS-8 is described as abrasion resistant and having a comparable durability to thermoplastic. HPS-8 is applied with the standard extrude thermoplastic equipment; hand liner or truck mount.



Disadvantages of HPS-8 Pavement Marking

The material has not been on the market for long so promises of durability have not yet been thoroughly proven.

Cost Considerations

The table below of cost was provided by Ennis-Flint a manufacturer of several pavement marking materials.

Material	Price per LF 4"	Average Life	Cost / Year – LF 4"
Alkyd Thermoplastic	.28	4 Years	.07
Polyurea	.24	4 Years	.06
HPS-8	.68	8 Years	.085

Observations from Ann Arbor

Ann Arbor uses three types of pavement marking materials for crosswalks, thermoplastic, HPS-8 and polyurea. Ann Arbor prefers thermoplastic on asphalt because it is easier to maintain than polyurea. After the initial installation, the city is able to use a different thermoplastic made for maintenance, and spray it on top of the existing markings. When the thermoplastic is layered it actually has better retroreflectivity than it did for initial application. This is because new glass beads are exposed as the material wears down. Ann Arbor prefers to use polyurea on concrete. When polyurea needs to be maintained the old marking needs to be scraped off. Ann Arbor staff said that the process made the material less cost effective on asphalt. Ann Arbor has not always recessed road marking, but is beginning to do that more.

Summary

Crosswalk markings and other transverse markings are required to be retroreflective, but are not subject to minimum levels. Despite not having a required minimum, all of the marking

options that are up for consideration meet the highest minimum level that is required for longitudinal markings (250 mcd/m²/lux).

- **Waterborne Paint**

- Average estimated lifespan: 1 year
- Cheapest option
- Must be reapplied annually

- **Alkyd Thermoplastic**

- Average estimated lifespan: 3-4 years
- Easy reapplication
- Good for asphalt
- Retroreflectivity increases when new material is applied on top of old material
- Not recommended for concrete

- **Polyurea**

- Average estimated lifespan: 4-6 years
- Established material
- Used by MDOT
- Recommended by Ann Arbor for concrete
- Must be scraped off for reapplication

- **HPS-8**

- Average estimated lifespan: 6-8 years
- Newer material
- Works better on asphalt than concrete
- Recommended by contractor and manufacturer
- Recommended by Ann Arbor

Thermoplastic is no longer recommended for major streets uniformly because it drastically underperforms on concrete. Paint continues to be recommended on other streets because it is the cheapest material as far as quotes are concerned. Paint is not recommended on major streets because it needs to be restriped at least once a year.

SUGGESTED RECOMMENDATION:

OPTION 1: Polyurea on all major streets within the Central Business District, Triangle District, Rail District, and waterborne paint on all other streets. Depending on visibility needs and average daily traffic, polyurea may be used for crosswalks adjacent to schools.

OPTION 2: Polyurea on all major concrete streets and alkyd thermoplastic on all major asphalt streets within the Central Business District, Triangle District, Rail District, and waterborne paint on all other streets. Depending on visibility needs and average daily traffic, polyurea or thermoplastic may be used for crosswalks adjacent to schools.

OPTION 3: Polyurea on all major concrete streets and HPS-8 on all major asphalt streets within the Central Business District, Triangle District, Rail District, and waterborne paint on all other streets. Depending on visibility needs and average daily traffic, polyurea or HPS-8 may be used for crosswalks adjacent to schools.



Brooks Cowan <bcowan@bhamgov.org>

Fwd: The Social Media Team Got Your Message! Contact Us

1 message

Melissa Fairbairn <mfairbairn@bhamgov.org>

Wed, Mar 2, 2022 at 10:26 AM

To: Scott Grewe <Sgrewe@bhamgov.org>, Brooks Cowan <bcowan@bhamgov.org>, Marianne Gamboa <MGamboa@bhamgov.org>

Please see below for a resident comment.

Melissa Fairbairn

Assistant to the City Manager

City of Birmingham

151 Martin Street

Birmingham, MI 48009

Direct Line: 248.530.1807

mfairbairn@bhamgov.org

Important Note to ResidentsLet's connect! Join the Citywide Email System to receive important City updates and critical information specific to your neighborhood at www.bhamgov.org/citywideemail.

----- Forwarded message -----

From: <noreply@revize.com>

Date: Wed, Mar 2, 2022 at 10:09 AM

Subject: The Social Media Team Got Your Message! Contact Us

To: <socialmedia@bhamgov.org>

Cc: <support@revize.com>

Name = Romel Llarena

Address = [1808 Cole St](#)

Address2 =

City-or-Town = Birmingham

State = MI

Zip-Code = 48009

Phone = 2483218198

phone =

email = rdllarena@yahoo.com

issue = Hello City of Birmingham. I stumbled on this interesting pedestrian design feature, Raised Crosswalks.

https://safety.fhwa.dot.gov/ped_bike/step/docs/techSheet_RaisedCW2018.pdf

"Elevated crossing makes the pedestrian more prominent in the driver's field of vision, and allows pedestrians to cross at grade with the sidewalk."

Given the visibility challenges we've experienced or read about when crossing S. Eton (i.e. West of Holland to East of Holland) I believe this is one more effective layer for calming traffic and enhancing pedestrian safety.

Thank you.

preferred_contact = email

Client IP = 99.9.109.92



Brooks Cowan <bcowan@bhamgov.org>

Fwd: The Social Media Team Got Your Message! Contact Us

1 message

Melissa Fairbairn <mfairbairn@bhamgov.org>

Wed, Mar 2, 2022 at 10:27 AM

To: Scott Grewe <Sgrewe@bhamgov.org>, Brooks Cowan <bcowan@bhamgov.org>, Marianne Gamboa <MGamboa@bhamgov.org>

A continuation of the previous comment...

Melissa Fairbairn

Assistant to the City Manager

City of Birmingham

151 Martin Street

Birmingham, MI 48009

Direct Line: 248.530.1807

mfairbairn@bhamgov.org***Important Note to Residents***Let's connect! Join the Citywide Email System to receive important City updates and critical information specific to your neighborhood at www.bhamgov.org/citywideemail.

----- Forwarded message -----

From: <noreply@revize.com>

Date: Wed, Mar 2, 2022 at 10:20 AM

Subject: The Social Media Team Got Your Message! Contact Us

To: <socialmedia@bhamgov.org>

Cc: <support@revize.com>

Name = Romel Llarena

Address = [1808 Cole St](#)

Address2 =

City-or-Town = Birmingham

State = MI

Zip-Code = 48009

Phone = 2483218198

phone =

email = rdllarena@yahoo.com

issue = Hello City of Birmingham.

This is additional information regarding the use of traffic humps. Ann Arbor, the City of Detroit, and other local communities are installing speed humps as an effective means of managing speeds in the neighborhood. Their design and installation nullifies many of the arguments against the use of "speed bumps". As Cole street residential side appears to be a gateway to Cole St commercial side, residents and businesses alike have shared their concerns about speeding down the street. I kindly ask Cole St be considered for speed humps and not bumps, for traffic calming and safety.

<https://www.clickondetroit.com/news/local/2022/02/10/detroit-plans-to-install-more-speed-humps-on-residential-streets-heres-how-to-apply/>

Thank you.

preferred_contact = email

Client IP = 99.9.109.92