A Master Plan For Sidewalks

Prepared by the Bloomington, IL Department of Public Works

Adopted by the City Council on October 12, 2015

RESOLUTION NO. 2015 - 37
A RESOLUTION APPROVING THE CITY OF BLOOMINGTON SIDEWALK MASTER PLAN

WHEREAS, sidewalks and sidewalk ramps are vital for safe travel of all pedestrians and especially elderly persons and persons with disabilities; and

WHEREAS, a systematic approach is needed by the City to provide proper stewardship, including a budgeted plan of action, for approximately 423 miles of public sidewalks; and

WHEREAS, the City is required to demonstrate progress toward citywide compliance with the American Disabilities Act (ADA) and update its ADA transition plan; and

WHEREAS, the Public Works Department for the City of Bloomington, Illinois, created a sidewalk rating system, rated its sidewalks, calculated cost based on its study of costs, outlined priorities, documented ADA progress, demonstrated its intentions to fully comply with ADA sidewalk requirements, and then produced a Sidewalk Master Plan exceeding 100 pages to capsulize the above elements.

WHEREAS, the City Council finds it to be in the best interests of the City to adopt the City of Bloomington Sidewalk Master Plan.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF BLOOMINGTON, ILLINOIS:

That the City of Bloomington Sidewalk Master Plan is hereby approved.

ADOPTED this 12th day of October, 2015.

APPROVED this 13th day of October, 2015.

CITY OF BLOOMINGTON

Tari Renner, Mayor

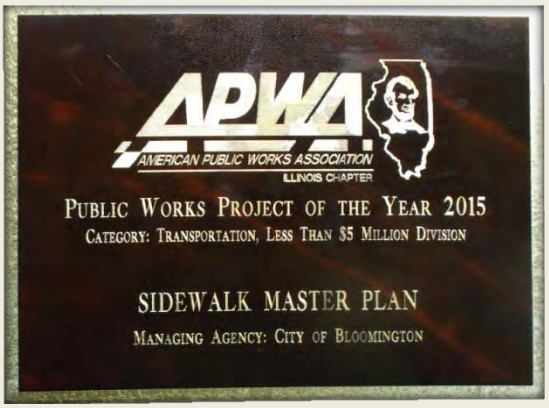
ATTEST

Cherry L. Lawson, City Clerk

APPROVED AS TO FORM

Jeffery R. Jurgens, Corporation Counsel

APWA ILLINOIS CHAPTER



Congratulations!

You have been selected to receive an APWA Project Award for 2015 in the category “Transportation (Less than $5 Million)” for the Sidewalk Master Plan.

Thanks for submitting a nomination to

Sidewalk Master Plan

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ABBREVIATIONS

ADA	Americans with Disabilities Act
CDBG	Community Development Block Grant
GIS	Geographic Information System
HUD	United States Housing and Urban Development
IDOT	Illinois Department of Transportation
MAP-21	Moving Ahead for Progress in the 21st Century Act
PASER	Pavement Surface Evaluation and Rating system
PROWAG	Public Right-of-Ways Accessibility Guidelines
STP	Surface Transportation Program
SAFETEA-LU	Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users Act of 2005

EXECUTIVE SUMMARY

At present, the condition of sidewalks throughout Bloomington falls short of crisis. In fact, about 70 percent of our pedestrian passageways rate as “good” or “excellent.” Nonetheless, there are significant problems. Nearly one in 10 sidewalks is in at least “poor” condition. That's 32 miles of sidewalk in which at least portions are in dire shape. Some of those sidewalks rank below “poor” -- as "failed" and impassible. Further, some streets that should have sidewalks have none. Most sidewalks have ramps at intersections; some don’t. However, 4 out 5 ramps fall short of the standards of the Americans with Disabilities Act. Overall, the sidewalk system is in fair shape with need of improvement. It will not stay that way. Inaction will invariably lead to deterioration to levels that now define Bloomington streets. Decisive action and commitment to stable funding will raise the sidewalk system toward the level the City desires. It desires to be a healthy, pedestrian-friendly community, one where residents can age in place and where all residents can travel safely on foot and by wheelchair.

Priorities

This Master Plan systematically addresses three shortcomings in the sidewalk system: 1) Access for persons with disabilities. 2) Locations with poor overall quality. 3) Key gaps in the sidewalk system. Short-term, the Plan outlines a method to bring every sidewalk in Bloomington to a minimum rating of “Fair-minus,” in the term used by the City’s rating system, while also addressing the highest priority missing pieces or “gaps.” Longer term, the Plan brings the minimum condition to, in rating terms, a “Fair-plus,” while addressing medium-priority missing pieces of sidewalk. The Plan also provides a method to bring Bloomington sidewalks closer to full compliance with the Americans with Disabilities Act (ADA) though an ongoing long-term strategy.

While the Plan produces dollar figures that may cause hesitation, the final portion of the Plan presents a clear roadmap for funding based on a systematic study and objective rating of sidewalks.

Studied in context

The Sidewalk Master Plan was produced by the Engineering Division of the Public Works Department and Public Works Administration. This is important in that the planners generated expectations and goals within context of the City of Bloomington operations rather than taking an isolated view of the sidewalk system, as an outside consulting firm might be expected to produce. The Department sought realistic goals -- practicality that by necessity compromises idealism within the framework of a municipality weighing many costly needs, wants and demands. In fact, the initial draft of the Plan sought to improve all sidewalks to a rating of “Good-minus.” The Department scaled back the level of service because of financial considerations, cutting $2 million in spending from the Ten-Year Action Plan before it even entered a final draft stage.

Cost calculations

The Department used formulas developed by the Public Works Engineering Division in making projections for costs based on lengths of sidewalks and their ratings. The formulas use the average amount of a sidewalk within each parcel needing replacement under a given rating – not the replacement of the entire sidewalk. For example, addressing a sidewalk with a quality rating of 4 ("Fair-minus") translates on average to replacing 27 percent of sidewalk panels, not all panels. Cost calculations also take into account extra depth and cost of sidewalks abutting driveway aprons.

The Master Plan concludes with an Action Plan to meet all goals over a 10-year span, starting with the 2015-2016 budget. It factors inflation at 3 percent annually, taking a cautious approach rather than an optimistic approach on inflation.

Two issues stay atop the agenda throughout the Sidewalk Master Plan:

- **Safety:** Providing safe travel for pedestrians is a City responsibility. City staff sees need to keep existing sidewalks safe, improve marginal and unsafe sidewalks and create new sidewalk in selected areas where none exists. The Master Plan takes into account locations and usage -- near a school, for example -- in setting priorities. The result is a plan for good pedestrian travel for the maximum number of users. However, the Master Plan also seeks good pedestrian travel for individuals who most need it -- outside the issue of amount of usage; hence, the priority of accessibility.

- **Accessibility:** The City began the effort to make its sidewalks accessible to persons with disabilities well before the federal government passed the Americans with Disabilities Act in 1990, and it continues to do so. It started ramping sidewalks at street crosswalks in the early 1980s. However, the job of meeting ADA continues. Most of our sidewalk ramps do not meet our standards or the ADA's, largely because the standards changed. Some of our sidewalks still have no ramps leading to street intersections. And some of our ramps need to be made safer. Furthermore, routine fixes of sidewalk problems and the responsibility to our citizens with disabilities go hand in glove; tripping hazards are all the more dangerous to the elderly, who risk serious injury from falls, and to those with visual impairment and other disabilities.

City of Bloomington Strategic Plan Tie-in

The City's Strategic Plan emphasizes quality infrastructure and puts forward a vision for the future: "Vision 2025." Vision 2025 is for Bloomington to be a beautiful, family-friendly city with great neighborhoods and convenient connectivity. Well-designed public facilities, including sidewalks, work toward that end. The City wants to have great neighborhoods and is dedicated to having easy and safe accessibility to parks and schools. Bloomington wants to increased connectivity, giving citizens the opportunity to work near home and use non-motorized transportation. The Vision considers Downtown as the heart of the City and sees easy pedestrian access there as vital. And it states that achieving the vision requires "(W)ell-maintained city streets, sidewalks." The City sidewalk system is for public use; it is the commitment of Bloomington to keep the sidewalks well maintained so all can benefit.

City of Bloomington Mission Statement Tie-in

The Mission Statement for the City states that Bloomington wants to be financially responsible while providing "quality, basic municipal services at the best value." By using a prioritizing philosophy for sidewalk and ramps maintenance and replacement, City staff can properly plan and deliver services in the most cost-effective and pragmatic manner. Service levels outlined in the Master Plan are “basic.”

The Sidewalk Master Plan further serves the City's goal to keep residents informed. It provides understandable and accessible material. It calls for partnership with citizens in compatibility with the City mission statement.

Tie-in to 2015 Strategic Plan Goals

Strategic Plan Goals set the tone for City government functions in Bloomington and are goals aligned with Vision 2025. They are guiding principles that enter into every government action. Every staff memo asking for City Council action must link to at least one goal. The Sidewalk Master Plan and the sidewalk program directly fit into the following goals:

1. **Financially Sound City Providing Quality Basic Services**
   a Budget with adequate resources to support defined services and level of services
   d City services delivered in the most cost-effective, efficient manner

2. **Upgrade City Infrastructure and Facilities**
   a Better quality roads and sidewalks

4**. Strong Neighborhoods**
   d Improved neighborhood infrastructure

5. **Great Place – Livable, Sustainable City**
   b City decisions consistent with plans and policies

1.0 PURPOSE

The "Vision 2025" in Bloomington's Strategic Plan foresees a beautiful, family-friendly city. Quality sidewalks provide a piece of the equation, a necessary component to achieve this vision, because they affect walkability and connectivity. Communities with strong walkability and connectivity have healthier and more cohesive neighborhoods where pedestrians routinely traverse, where children walk about safety and where residents gain a stronger sense of neighborhood and civic identity. Further, good sidewalks are essential to persons with visual impairment, walking impairment and other disabilities -- members of the community who by right and by law deserve access.

The City needed a framework in order to address the overall quality of sidewalks. The Master Plan provides that framework. The Department created a rating system based on the PASER system used for evaluating streets. It mapped these ratings along each parcel of property. It weighed the dual goals of safety and accessibility and set a level of service compatible with those goals while also being compatible with Staff-Council strategic planning. Objectives are made within the context of practical funding levels. This Sidewalk Master Plan should serve as the primary guide in the allocation of resources and in addressing maintenance and replacement issues and policy.

This Sidewalk Master Plan aims to:

- Increase walkability and connectivity throughout Bloomington.
- Provide a comprehensive maintenance and improvement plan for the City of Bloomington sidewalk system.
- Establish priorities for repairs based on pedestrian needs.
- Update the right-of-way portion of the City's 1992 Americans with Disabilities Act (ADA) Transition Plan.
- Provide a budget for the use of City funds.
- Provide more transparency between the City of Bloomington and its residents.
- Provide understandable information about the maintenance process associated with the City’s sidewalk system.

The Sidewalk Master Plan will not address the construction of new sidewalks in new subdivisions at length. Chapter 24 of City Code, and the Manual of Practice contained within the Code, explain the standard and practice requirements for new sidewalks built in Bloomington.

2.0 THE CITY SIDEWALK SYSTEM

The sidewalk system is one mode of transportation widely used for easy access to neighborhoods, schools, businesses, not-for-profit agencies, government and parks. Sidewalks enhance safety by separating vehicles and pedestrians. In addition to providing a pedestrian network, sidewalks serve as meeting places for friends and neighbors, play areas for children and settings for special events. The sidewalk streetscape areas also add to the aesthetic appeal to city neighborhoods.

2.1 Sidewalk System Defined

A sidewalk is a stretch of land used or intended principally for pedestrian passage. It is a surfaced area which meets or exceeds the design standards for public sidewalks. The Bloomington sidewalk system includes all sidewalks constructed on public right-of-ways, along public easements or on public property and in which the City is responsible for construction, maintenance, repair and replacement. The sidewalk system includes concrete sidewalks, brick sidewalks, asphalt sidewalks and sidewalk curb ramps. The "ramps" are the short inclines that connect sidewalks to crosswalks.

The City sidewalk system does not include private or public driveway approaches or aprons that are constructed in the right-of-way for vehicle access. While carriage walks (walkways between the city sidewalk and the curb within the public right-of-way) are not part of the City sidewalk system, they will be addressed in the Sidewalk Master Plan. The Constitution Trail is maintained within the Parks, Recreation and Cultural Arts Department and should be addressed separately.

2.2 Sidewalk Prioritization Philosophy

Currently, sidewalks are not considered for replacement using City funds unless either the vertical displacement criteria is rated at 6 or less or if the overall sidewalk condition is rated at 3 or less under the Pavement Surface Evaluation and Rating system (PASER) for sidewalks created by the City of Bloomington.

As noted in the Chapter 7 Action Plan, the City should aggressively address the mediocre sidewalks, rated at 4, once it has addressed all sidewalks rated as 1, 2, and 3. This does not mean delaying work on all sidewalks with a rating of 4 or 5. In fact, most sidewalks that are improved under the 50/50 program, discussed later in the Master Plan, rate as 4 and 5. The City should use discretion in selecting sidewalks for repair. If other infrastructure improvements are planned for an area, it becomes prudent for the City to consider repair of the sidewalks along the construction route. Usefulness and use of a sidewalk also should enter the decision process. However, usually, 1s, 2s and 3s should come first. Additional information on the rating system can be found in Section 4. The listed priorities below are intended to assist in decision-making.

Highest Priority

- Reported sidewalk hazards in which a person with a disability is known to use the sidewalk. This requires immediate repair.
- Reported sidewalk hazards in which no person with a disability is known to use the sidewalk.
- Sidewalks rated as 1, 2 and 3 whether located or not located along streets being resurfaced as part of Block by Block Rehabilitation (explained below).
- Any designated school walking route (See Appendix D-3).
- On one side of the street with a high pedestrian volume generator (schools, park entrances, etc.).

Medium Priority

- A missing link (usually a block or less) that impedes pedestrian connectivity in the sidewalk grid and where it is economically and logistically practical to provide that connectivity.
- An area without sidewalks where there is evidence of regular pedestrian traffic (dirt path) and where the City government and residents deem it desirable to place a sidewalk.
- Any sidewalks near a bus stop.
- Sidewalks rated as 4 and located along streets being resurfaced.
- Sidewalks rated as 4 and not located along streets being resurfaced.

Lowest Priority

- Streets in industrial zoned districts.
- On at least one side of the street in cases in which there is no sidewalk present on either side of the street. Sidewalk construction should be undertaken in conjunction with new road construction or resurfacing projects if possible.

- On the second side of any streets with a designated high pedestrian volume generator (schools, park entrances, etc.).
- On the second side of the street where there is sidewalk present on one side of the street.

Work on Lowest Priority Sidewalks is discussed in Section 6.

50/50 Sidewalk Program

The City's 50/50 Sidewalk Program functions outside the priority parameters. The program issues 50 percent matching grants to private property owners willing to pay half the cost of sidewalk improvement. The grants are used in instances in which property owners would like to immediately proceed with sidewalk improvements that cannot be accomplished under the City's short-term sidewalk improvement plans -- either because of a lack of funding or because the sidewalk does not meet City criteria for immediate improvement. Additional information on the City's 50/50 Sidewalk Program can be found in Section 6.

2.3 Block By Block Infrastructure Repair

An emerging outlook in the Public Works field in general and within the City government is called Complete Infrastructure Rehabilitation Block By Block. The concept is that repair of a piece of infrastructure, such as a street or sewer, should not be undertaken in isolation. One reason involves efficiency and financial prudence. For example, planning sewer work in tandem with other work prevents future sewer work from forcing excavation and replacement of newer infrastructure. It also makes sense from the standpoint of preventing repeated disturbance to a neighborhood with return visits by construction crews for various pieces of infrastructure work. Block By Block gets a neighborhood "done" before moving to another area and elevates neighborhood value, pride and aesthetics.

Bloomington Public Works is gradually working toward a system in which all infrastructure within a block gets addressed to a degree that no infrastructure improvements will be needed for at least 20 years. Full Block By Block rehabilitation means addressing streets, sidewalks, curbs and gutters, inlets, sewers, private utilities, fire hydrants and signage as a single project or a carefully staged set of projects. Block By Block was emphasized in 2013 when the City Council approved the extension of a sewer inspection contract as part of preparations for the 2014 street resurfacing program. Funding came from a portion of a $10 million bond issuance, which primarily was aimed at street repair, to ensure resurfacing did not take place atop failing sewers.

In practice, Block By Block already is used to some degree, especially in regard to installation, repair or replacement of sidewalks ramps that comply with the Americans with Disabilities Act. Under federal law, all ramps must be upgraded to ADA standards during street resurfacing. This explains why the highest priority for ramp work, outlined in the next section, is that road resurfacing is being done on the block. The requirement provides the primary vehicle through which Bloomington can gradually make all sidewalk ramps ADA complaint and to create ramps at another 1,370 locations with no sidewalk ramps.

3.0 AMERICANS WITH DISABILITIES ACT

The Americans with Disabilities Act (ADA) was signed into federal law on July 26, 1990. The City's sidewalk system falls under Title II of ADA, which prohibits state and local governments from discriminating against persons with disabilities or from excluding participation in or denying benefits of programs, services or activities to persons with disabilities. Passage of the Americans with Disabilities Act triggered significant changes to the design and construction of pedestrian facilities. Further, pedestrian curb ramps were installed at most intersections in Bloomington. However, the City's sidewalk system is not yet fully accessible and barriers remain.

3.1 ADA Requirements

The Americans with Disabilities Act has numerous requirements on how a city's sidewalks and curb ramps should be constructed in an effort to eliminate barriers for people with disabilities. Among them:

- Sidewalks and curb ramps should have a 2 percent maximum cross slope for drainage purposes.
- The minimum width of sidewalks and curb ramps should be 48 inches.
- The slope of the ramp should a maximum be one inch per foot.
- Curb ramps must have 4-foot by 4-foot level landing clear space for easier mobility and detectable warnings to alert pedestrians to an imminent transition from sidewalk to crosswalk.

3.2 ADA Transition Plan

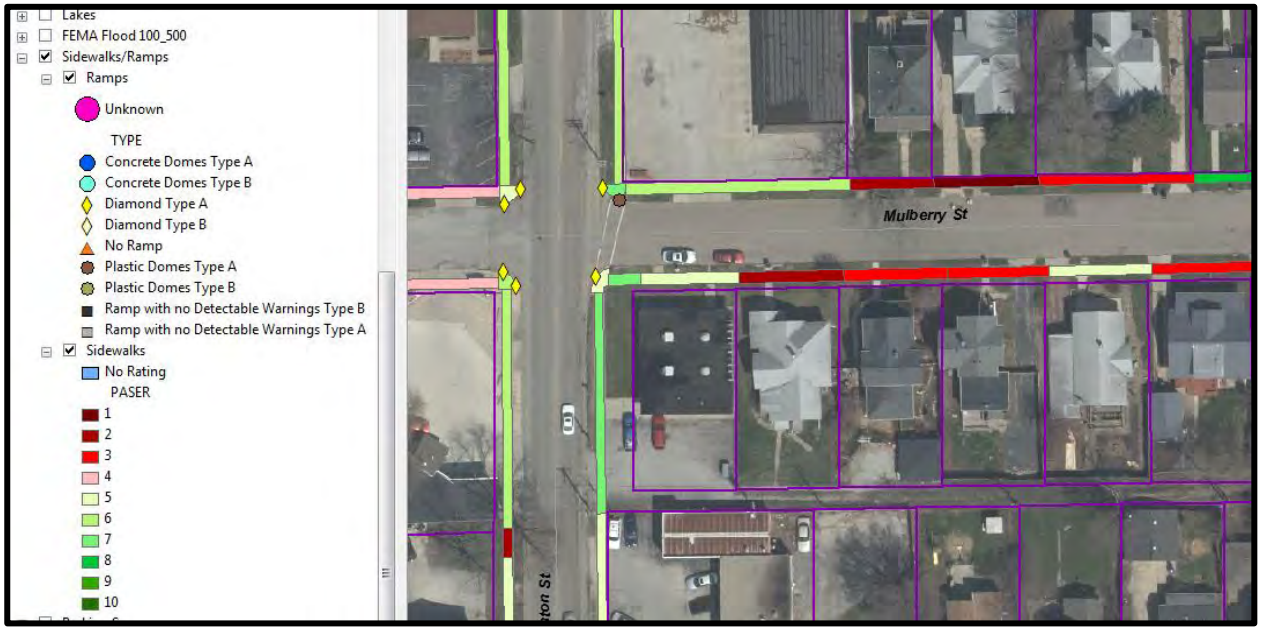
ADA also required municipalities with more than 50 employees to implement a plan for enactment. However, Bloomington last updated its ADA Transition Plan in 1992. The Sidewalk Master Plan serves as an official update to the right-of-way portion of the City's ADA plan.

Bloomington's 1992 Americans with Disabilities Act Transition Plan

The City of Bloomington began installing curb ramps as early as 1982. In October 1986, the City amended the City Code to require curb ramps at all crosswalks in all new subdivisions and planned unit developments. The City adopted an ADA Transition Plan on July 27, 1992. It outlined steps that need to be taken to comply with Title II of the Americans with Disabilities Act.

Shown below are the goals of the right-of-way portion of the 1992 ADA Transition Plan.

- Conduct a survey by physically inspecting all crosswalks.
- Complete a database based on the survey.
- Classify existing crosswalks pursuant to degree of modification required.
- Classify ramps based on priorities and results of the survey.
- Seek funding sources for action required under ADA and accompanying regulations.
- Decide whether to request exemption or deferment of ADA requirements on grounds of undue financial or administrative burden.
- Bid for contracts to complete work on curbs necessary for compliance with ADA and accompanying regulations.



A screen shots from the Bloomington IL ArcReader application show the GIS sidewalk layer, with data for sidewalk ratings by parcel and the type of curb ramp at every crosswalks.

3.3 ADA Transition Plan Components

ADA Coordinator

The ADA Coordinator must be the single contact person to handle issues and investigate complaints for ADA compliance. The official responsible for implementation of the City of Bloomington's ADA Transition Plan in Public Rights-of-Way is:

Kevin Kothe, P.E.
City Engineer
115 East Washington Street
P.O. Box 3157
Bloomington, IL 61702-3157
Telephone: (309) 434-2225
Email: kkothe@cityblm.org

Complaint Process

The City has a formal complaint process, as required under Title II of ADA. Under the procedure, Public Works evaluates all requests and complaints, documents them and documents responses.

Persons with disabilities who require curb ramps -- and any other concerned persons -- are encouraged to contact the Public Works office directly at (309) 434-2225 to ensure that the specific needs of each individual are accurately understood and recorded. Written and e-mailed requests/complaints also are welcomed. The issue and specific locations are then entered into a log and the matter gets referred to the appropriate Engineering administrator for inspection and possible action. The Department of Public Works then coordinates any work and keeps a record of all formal responses to the complainant or requester.

Complaints may be received through a variety of communication methods:

Phone:	Department of Public Works	(309) 434-2225
Email:	kkothe@cityblm.org	
Mail:	Department of Public Works 115 East Washington Street P.O. Box 3157 Bloomington, IL 61702-3157	

Access Standards

ADA does not designate a specific code or standard for evaluating access to existing facilities. However, a federal agency called the United States Access Board created standards. For sidewalks, the City uses the agency's Public Right-of-Way Accessibility Guidelines (PROWAG). When the Sidewalk Master Plan refers to "ADA-compliant" ramps, it means it meets PROWAG specifications.

3.4 Identifying Barriers to Accessibility

The City of Bloomington has not updated its ADA Transition Plan since 1992, and state and federal requirements have changed. With enactment of this plan, the Public Works Department will formally undertake the gradual process of bringing every ramp into ADA compliance. It further is committed to installing ADA-complaint ramps at sidewalks where no ramp exists. (A copy of the curb ramps evaluation survey form is attached as Appendix D-2). In setting priorities for work on sidewalks and sidewalk curb ramps, the Public Works Department should consider the condition of the sidewalk and ramp but also the needs of specific people who use a given sidewalk. For example, if the City knows of a person with a disability who uses a specific sidewalk, that sidewalk's repair gains priority. It is one of six use-related priorities. Those priorities are:

A. Presence of a disabled population or specific request from or on behalf of a person with a disability.
B. Location adjacent to street resurfacing or street reconstruction.
C. High volume of pedestrian traffic, such as locations at or near schools and parks.
D. Nearness to public buildings and business areas.
E. Locations where sidewalks currently have no ramps.
F. Locations where there are no sidewalks. New sidewalk construction will be accompanied by ADA-compliant ramp construction where applicable.

Ideally, all sidewalk curb ramps would have a standard width and incline. They also would have "detectable warnings." Detectable warnings on ramps are grading changes to the surface, often colored, to communicate through sight and feel that the sidewalk is about to transition into a street crosswalk; the warnings are especially important to pedestrians who are visually impaired. Meeting the ideal at every ramp will take considerable resources over years. Therefore, a good ramp may fall short of the ideal, but it gets lower priority than many other ramps locations and locations where no ramp exists. The Public Works Department should set priorities in this order:

1. Sidewalks known to be used by persons with disabilities.
2. Ramps at intersections where roads are being resurfaced or reconstructed. Under ADA, ramps in these construction areas ***must*** be brought to current standards.
3. Intersections without any access ramps.
4. Access ramps without detectable warnings.
5. Existing ramps that fall short of optimal safety because of deterioration, excessive slopes and/or abrupt changes in the surface elevation.
6. Ramps that are generally safe and in good condition but do not fully comply with construction standards.

In making ratings, user information and ramp condition -- or lack of a ramp -- will be collated. For example, a sidewalk with no ramp or a ramp without a detectable warning and in use by a person with disability receives the highest priority.

Figure 1 is the table that Engineering Division should use to evaluate every wheelchair access ramp.

Figure 1: Ramp Priority System

Conditions	Presence of disabled population/special request	High pedestrian volume	Near public buildings and businesses
No ramps or no detectable warnings	A - 1	B - 1	C - 1
Ramps at streets undergoing resurfacing or reconstruction	A-2	B-2	C-2
Ramps deemed below safety threshold	A - 3	B - 3	C - 3
Safe, but non-ADA compliant	A - 4	B - 4	C - 4
Ramps are ADA compliant	A - 5	B - 5	C - 5

- Quadrants rated A1, B1, A2, B-2, C-2, A-3 and B3 are the highest priorities. The second row contains high rating because failure to address ramps at a street undergoing resurfacing constitutes an ADA violation. Color coded red.
- Quadrants rated A-4, B-4, C-1 and C-3 are medium priorities. Color coded orange.
- Quadrant C-4 is a low priority. Safe but non-compliant ramps should wait unless they are adjacent to a street that is being resurfaced. Color coded yellow.
- Ramps are in good condition and ADA-compliant. Color coded green.

3.5 Ramp Inventory

Bloomington entered the 2014 construction year with the following inventory of ramps.

Total sidewalk ramps	Ramps that comply with ADA	Ramps that do not comply with ADA	Locations with no ramps
6,755	1,310	5,445	1,370

Rapid Progress: The City brought about 300 ramps into compliance during the 2013-14 Fiscal Year, and budgeted for another 600 ramps for 2014-15. It will enter the 2015-2016 fiscal year needing 6,215 new and upgraded ramps, combined, to meet full ADA compliance. The cost in 2014 dollars is $7,458,000. The two years of progress is remarkable, and it ties directly to the City Administration's and City Council's emphasis on improving streets. Each street improvement must be accompanied by upgrade of the adjacent sidewalk ramps, or construction of new ramps.

3.6 Strategy to Fix Ramps

Given limits of resources, the most prudent course for the City is to continue its existing strategy in which most ramp work in Bloomington is undertaken in conjunction with and just after street resurfacing. This is sensible because the resurfacing work changes the height of the street. ADA compliance, in part, requires a maximum rise of 1 inch of angular sloping per foot, from the sidewalk to the edge of the street, with a smooth transition from ramp to street intersection. A resurfacing can take a ramp out of compliance in regard to angle of the ramp and its connection to the street. Therefore, resurfacing should come before ramp improvement in most cases.

The City also undertakes ramp work when made aware of a ramp problem, primarily in locations known to be used by persons with disabilities. The Action Plan budget sets aside money for such circumstances under the line item "report-driven repairs." This line item includes ramp and sidewalk work undertaken through the formal complaint process described above.

3.7 Changing ADA Requirements

The Illinois Department of Transportation guidelines and the ADA guidelines have changed since the City of Bloomington last updated the right-of-way portion of its ADA Transition Plan in 1992. Currently, Bloomington has 8 types of curb ramps, which will be described in the following section. Evolving detectable warnings standards and the change in the minimum width of sidewalks are two examples of changing requirements. Bloomington has Type A and Type B ramps, which were accepted under the old guidelines by the Illinois Department of Transportation. However, IDOT changed its curb ramps requirements in 2012.

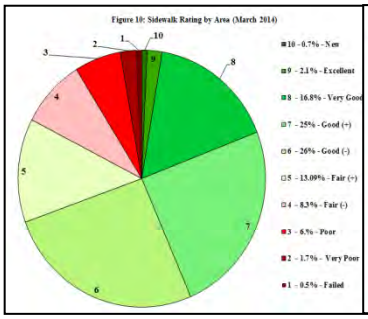
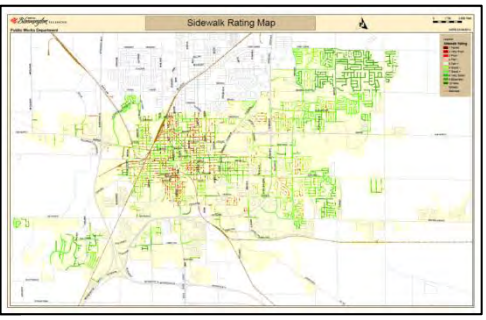


Figure 9: City Sidewalk Ratings (March 2014)

PASER Rating	Description	Miles
10	New	3
9	Excellent	9
8	Very Good	71
7	Good (+)	106
6	Good (-)	110
5	Fair (+)	55
4	Fair (-)	35
3	Poor	25
2	Very Poor	7
1	Failed	2

Total = 423 miles of sidewalk



4.0 QUALITY AND COMPOSITION OF SIDEWALKS

As of March 2014, the City had 423 miles of sidewalks and 6,755 sidewalk wheelchair ramps as documented in the Sidewalks/Ramp layer of the City's Geographic Information Systems (GIS) database.

4.1 Sidewalk Composition

Bloomington's sidewalks are diverse in terms of type, size and age. Although most sidewalks are concrete, asphalt and brick sidewalks remain in the system. **Figure 2** shows totals in feet and miles of each type of material in the City's sidewalk system as of March 2014.

Figure 2: Length of Sidewalks by Material

Type of Material	Length (lineal feet)	Miles
Concrete	2,227,156	422
Asphalt	988	0.19
Brick	4,664	0.88

Width: Typically, sidewalks are four to five feet wide, although a small percentage of City sidewalks have other widths. Sidewalks abutting the curb, with no parkway between the street and the sidewalk, must be six feet wide. Downtown sidewalks run from curb to building.

Thickness: City Code requires all residential sidewalks to be a minimum of four inches thick, except at driveways, where they must be at least six inches thick. All sidewalks along commercial, manufacturing and industrial properties must be six inches thick.

Reinforcement: The City uses steel bars – half-inch rebar – to reinforce sidewalks in certain places. Those spots include entrances of apartment complexes, where heavy trucks enter and exit, and above private sewer and water services when there is visual evidence that the ground is settling above the services.

Portland Cement Concrete (PCC): The City of Bloomington generally should not allow City sidewalks to be replaced by custom concrete. The Public Works Director may consider an exception for a compelling reason. Custom concrete creates a slicker and less durable surface than Portland Cement Concrete. Furthermore, it could be difficult matching the

color of custom concrete on future replacement projects. Bloomington currently allows only standard Portland Cement Concrete (PCC) broom finish to be used whenever any City sidewalks are replaced because of its durability and because the broom finish creates more traction to the surface. Use of other types of sidewalk surfaces, however, may be considered, especially when addressing issues such as tree preservation.

Figure 3 displays pros, cons and estimated life cycle of concrete, asphalt and brick sidewalks.

Figure 3: Sidewalks Surface Material Types

Type of Surface	Estimated Life Cycle	Advantages	Disadvantages
Concrete	20-40 years (depends on variables such as weather, subgrade, quality of construction).	➢ Safe (non-skid surface). ➢ Less maintenance. ➢ Reflects more light than asphalt because of the lighter surface. ➢ Harder surface.	➢ More initial cost. ➢ Not reusable. ➢ Salt can impact the lifespan.
Asphalt	10-20 years (depends on variables such as weather, subgrade, quality of construction).	➢ Less initial cost. ➢ Thinner than concrete. ➢ Easily paved, shaped, and repaired. ➢ Recyclable material. ➢ Salt resistance. ➢ Fast snow & ice melting because of the darker surface.	➢ More prone to damage during snow removal. ➢ Normally requires more maintenance than concrete and brick. ➢ Shorter life-cycle. ➢ Surface becomes soft in extreme heat.
Brick	40+ years (depends on variables, such as weather, subgrade, quality of construction).	➢ Recyclable. ➢ Low maintenance. ➢ Visually appealing.	➢ Very expensive (initial and repair cost). ➢ ADA compliance issues. ➢ Provides little traction when wet. ➢ Easily becomes uneven or loose due to tree roots. ➢ Color of bricks will fade over time. ➢ Grass and weeds grow through cracks, sometimes to the point of obscuring the sidewalk.

4.2 Sidewalks Defects

Four main problems are considered when identifying sidewalk defects: vertical displacement, sloping, cracking and spalling. **Figure 4** identifies the main issues and common causes of defects.

Figure 4: Sidewalk Defects

Type of Problem	Definition	Sidewalks Examples	Common Causes
Vertical displacement	The shifting in the land causing an unevenness of pavement between sidewalk panels.		➢ Roots growing underneath the sidewalks. ➢ Tree trunk flare encroaching on the sidewalk. ➢ Ground is not compacted correctly. ➢ Movement in the ground. ➢ Concrete expands when liquid freezes, causing a shift in panel positioning.
Sloping	The abrupt change in the slope of the whole sidewalk panel.		➢ Roots growing underneath the sidewalks. ➢ Ground is not compacted correctly.
Cracking	A separation of the sidewalk pavement caused by cracks forming in the concrete.		➢ Extreme temperatures causing the concrete to buckle. ➢ Soil underneath is not sufficiently compacted during installment. ➢ Heavy- vehicle traffic on insufficiently supported concrete. ➢ Erosion of the concrete. ➢ Growth of tree root underneath or close to sidewalk structure.
Spalling/ scaling	The flaking away of the hardening concrete.		➢ Cheap/weak concrete mix. ➢ Poor techniques in pouring and finishing. ➢ Foreign substances are accidentally in the mix. ➢ Gradual destruction of material by a chemical reaction. ➢ Exposure to high temperatures.

According to a 2012 Public Works survey, tree location and tree root growth account for much of the sidewalk deterioration. In 2012, fifty-four places with a sidewalk rating 6 or lower were randomly selected within Bloomington. **Figure 5** shows the results.

Figure 5: Causes of Sidewalk Defects

Defect Cause	Total	Percentage
Trees	29	54%
Cracking and/or Spalling	6	11%
Private Sewer Services	4	7%
Failed Subgrade	14	26%
Grass Overtaken	1	2%

Repair Techniques

In preparing the Master Plan, the Public Works Department investigated an array of repair options. It concludes that limited methods should be used. Repair techniques such as mud jacking, asphalt patching and grinding should be avoided for the reasons charted below. These techniques are relatively inexpensive and allow quicker response time. However, these methods do not remedy the problem for the long term and often times do not comply with Americans with Disabilities Act guidelines.

Saw cutting of sidewalks can be effective at times. Tree root cutting can also be used under certain circumstances.

Prevention Techniques

The Master Plan strongly advocates for prevention techniques, designed to avert tree-sidewalk conflicts, when installing new concrete panels and planting new trees. Section 5 of the Plan examines tree-sidewalk issues, including prevention.

Figure 6: Repair Techniques

Repair Method	Process	Cost	Longevity	Pros	Cons
Mud jacking/ Slab Jacking	Injecting a concrete/slurry mix into core drill hole to level the sidewalk panels. Mainly fixes vertical displacement and trip hazards.	Depends on the area and thickness of the zone being mud jacked and costs less than replacing the panel. Estimated at $11 to $14 per linear foot.	Staff members observed examples in which displacement problems returned within a year or two.	Less disruptive to the landscape, less time-consuming and relatively inexpensive.	Mud-jacked panel may settle back over time. Cracks already present tend to open up when the slab is treated Not effective on sidewalks upheaved by tree roots. May not be cost-effective on smaller projects.
Grinding	Grinding down the concrete to reduce the elevation between sidewalk panels. Mainly fixes vertical displacement and trip hazards.	Requires regular replacement of the grinding teeth. Can be done by existing Public Works staff.	Estimated longevity is approximately one year, but depends on many variables (weather, traffic volume, etc.).	Eliminates the trip hazard. Minor grinding is cost effective. Simple repair technique.	Temporary repair which leaves gnarled finish. Technique not recommended for any vertical displacement over one inch.
Asphalt Patching &Wedge	Using asphalt to fill in cracks. Mainly fixes severely spalled or crack sidewalks.	$108 per ton.	Will give more time and financial flexibility to eventually remove and replace the sidewalk.	Initial and replacement cost is cheaper than concrete. Quicker response time. Recyclable material.	Aesthetically unpleasing. Considered temporary repair. Rarely corrects the problem.

Repair Techniques (Continued)

Repair Method	Process	Cost	Longevity	Pros	Cons
Root cutting	Pruning the tree root. Mainly avoids future sidewalk damage caused by tree roots that already have done damage.	Cost of personnel and materials for the City's Forestry Division.	Tree roots will continue to regenerate and may need to be cut again.	Cost- effective. Not time-consuming.	The tree roots grow back. It can damage the strength, stability and health of the tree.
Root Barriers	Using a fabric sheet placed around the tree or along sidewalk and curb. 3 types of barriers redirect root development.	Cost depends on material selected. Recommended: Landscape fabrics because they allow moisture to pass through them while diverting root growth away from hard infrastructure. $18 per 50-foot roll, 3 feet wide.	Should remain effective for 20 years, which is ample time for the tree root system to establish itself away from infrastructure.	Easy to use and apply. Requires minimal resources. Flexible. In well-drained soil, roots may remain at deeper depths longer.	Not useful for trees that are already established and, therefore, not a solution for existing tree-sidewalk conflicts.
Gravel Subbase	Pouring a layer of gravel beneath the sidewalk panel.	3/8ths pea gravel is $24 per ton Recycled concrete is an accepted material too.	Used to greatly extend life of a sidewalk. Subbase should be required as part of a bid and is current City practice.	Air space prevents root growth due to lack of moisture. Roots tend to grow downward. Provides a buffer zone between the roots and the sidewalk panels.	Too much gravel could kill the tree. Problems occur if compacted too tightly.
Saw cutting	Cutting a wedge of up to 2 inches out of the edge of one sidewalk panel to make it align with the adjacent panel.	$3.60 per inch foot.	Repair will last the life of the sidewalk in some cases.	Can bring sidewalk into ADA compliance. Cost effective.	Does not permanently solve a heaving problem caused by tree roots or tree trunk flare. Works best when addressing uneven construction in newer neighborhoods.

Mud jacking: After conducting research and reviewing jacking projects on private property, the Public Works staff concluded that mud-jacking is not a viable option for City sidewalks. Within a year, the employees noticed some of the panels associated with the projects were resettling, which continues to create the same problem of unevenness among the panels. Staff also is concerned that the concrete might

crack at the edge of some panels, while other panels are spreading farther apart from each other.

Grinding: Grinding has been done in-house. It leaves a gnarled appearance and serves as a temporary solution if the cause of panel displacement is not addressed. The City was disappointed with results and ended the practice.

Asphalt wedging: Asphalt wedging delays inevitable panel replacement and looks unappealing. It, too, is not recommended.

Root cutting, root barriers: Tree-sidewalk conflicts and remedies are discussed in Section 5.

Saw cutting: Saw cutting has been used with success and should be continued. In early 2013, the City of Bloomington conducted a pilot program on Kingsbury Court in an effort to eliminate trip hazards through saw cutting. The photo on the right is an example of a completed concrete cut. The City contracted with Safe Sidewalks Company to perform approximately 53 cuts along Kingsbury Court. The City spent $2,730 using the Safe Sidewalks Company and the pilot program has brought a savings of $3,900.

Safe Step reduces and eliminates vertical displacements by slicing off wedges of sidewalk. The City used the method on a limited basis in 2013-14 and 2014-15. Public Works should continue or increase its use of the method, in which up to 2 inches of sidewalk is shaved off. The process is most effective in newer neighborhoods. It is especially useful in adjusting a sidewalk and removing displacement at the point where the work of two contractors, who laid sidewalk at separate times, joins together. In such cases, the sidewalk becomes ADA compliant and free of trip hazards for the foreseeable future because the work corrects a construction irregularity as opposed to, for example, a conflict with tree roots. A saw cut to align two panels costs approximately $75. Replacing the two panels would cost approximately $320.

As a response to tree root conflict, the sawing technique presents a temporary remedy to sidewalk replacement in cases involving minor sidewalk heaving. Public Works does not believe it will solve most tree-sidewalk issues because it does not address the causal problem of root conflict.

Other methods: The City should be open to other methods but should exercise caution. For example:

- Internet searches on **rubber sidewalks** produce an abundance of material, but virtually all of it comes from the manufacturers and media reports on experiments. In the end, we believe it to be an expensive process with debatable overall value. It is not recommended for use in Bloomington at this time.
- Use of **concrete-colored asphalt to bridge tree roots** provides a cost-effective method to repair sidewalk while preserving parkway trees. It appears promising and worth further research. The coloring reduces the unappealing look of asphalt sidewalk.

- Quality research suggests using **tree grates**. However, Bloomington has found tree grates to be collector spots for cigarette butts and other debris, especially in Downtown. The City's infrastructure and lighting plan for Downtown calls for removal of all tree grates.
- Use of **rebar reinforcement** for concrete panels next to trees has been discussed within the Public Works Department. The rebar may be able to overcome the force of tree roots. Rebar adds $1 per square foot to the cost of the sidewalk. A typical reinforced sidewalk panel will cost about $180 instead of $155.

4.3 Sidewalk Rating System

Pavement Surface Evaluation and Rating System

When analyzing sidewalk conditions, the City of Bloomington uses a rating system it created based on the PASER system to rate the surface and/or visual defects of the sidewalks. PASER is an acronym for Pavement Surface Evaluation and Rating system. The system uses a scale of 1 to 10. A rating of 1 means pavement is in a failed condition or the sidewalk is impassible, and a 10 rating means pavement is new and excellent. **Figure 7** shows the condition of the City's sidewalks using the rating system and counting work under contract for the 2014-15 fiscal year.

Figure 7: City Sidewalk Ratings (2015)

	PASER Rating	Description	Miles	
	10	New	3	
	9	Excellent	11	
	8	Very Good	71	
	7	Good (+)	106	
	6	Good (-)	110	
	5	Fair (+)	55	
	4	Fair (-)	35	
	3	Poor	24	
	2	Very Poor	6	
	1	Failed	2	
Total = 423 miles of sidewalk				

The City of Bloomington has 423 miles of sidewalks, and the City's GIS system has recorded the rating of every sidewalk by the adjacent parcel. While the resulting PDF map does not reproduce well in document format, the map gives a snapshot overview of ratings by location. The following section of enlarged map shows all sections of sidewalk with lower ratings. All sidewalks with pink, red and maroon color coding are in need of some degree of improvement.

Figure 8: PASER Ratings by Location

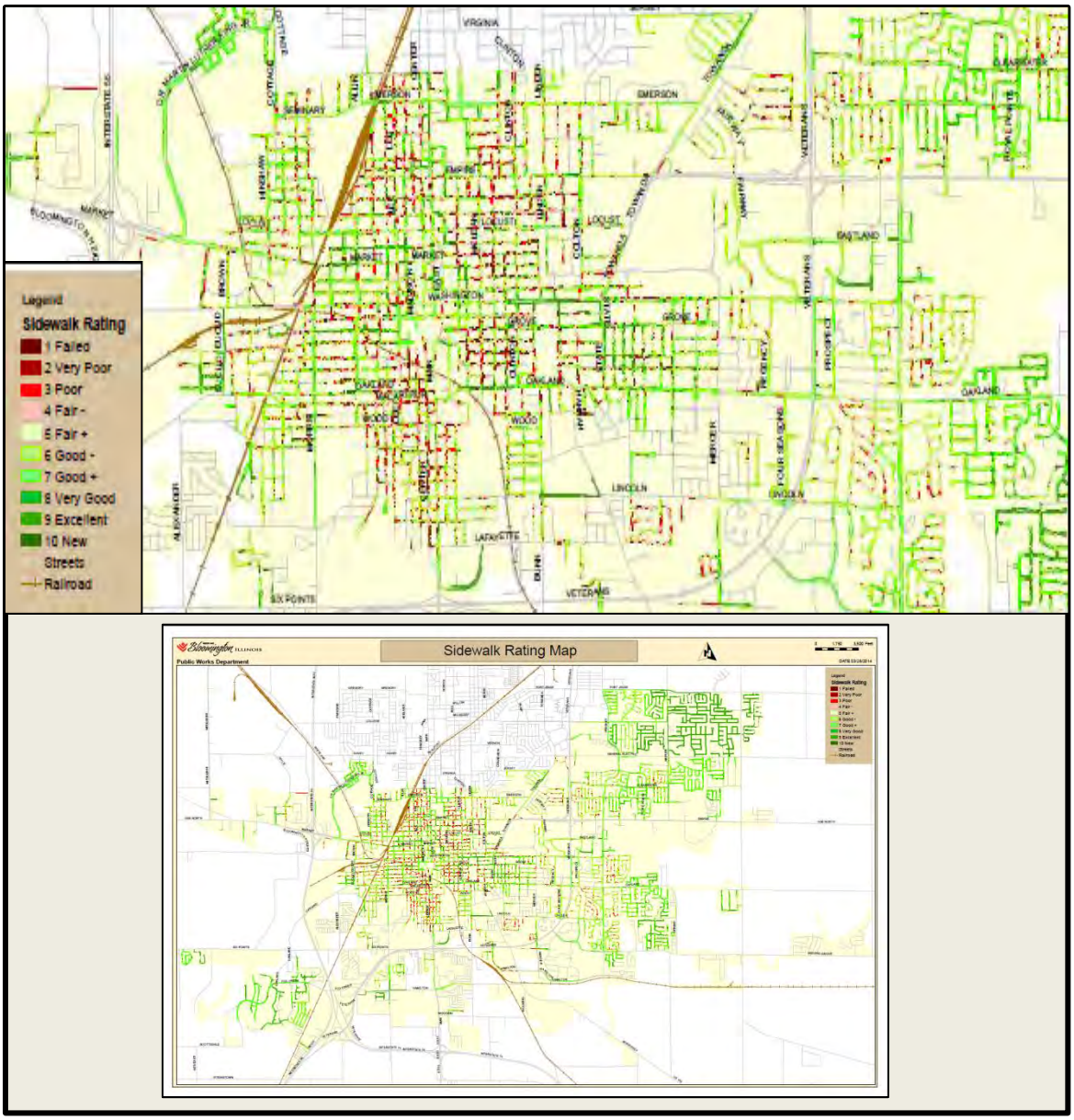


Figure 9 gives the miles of the overall sidewalk system for each of the 10 categories of the rating system.

Figure 9: Sidewalk Rating in Miles (2015)

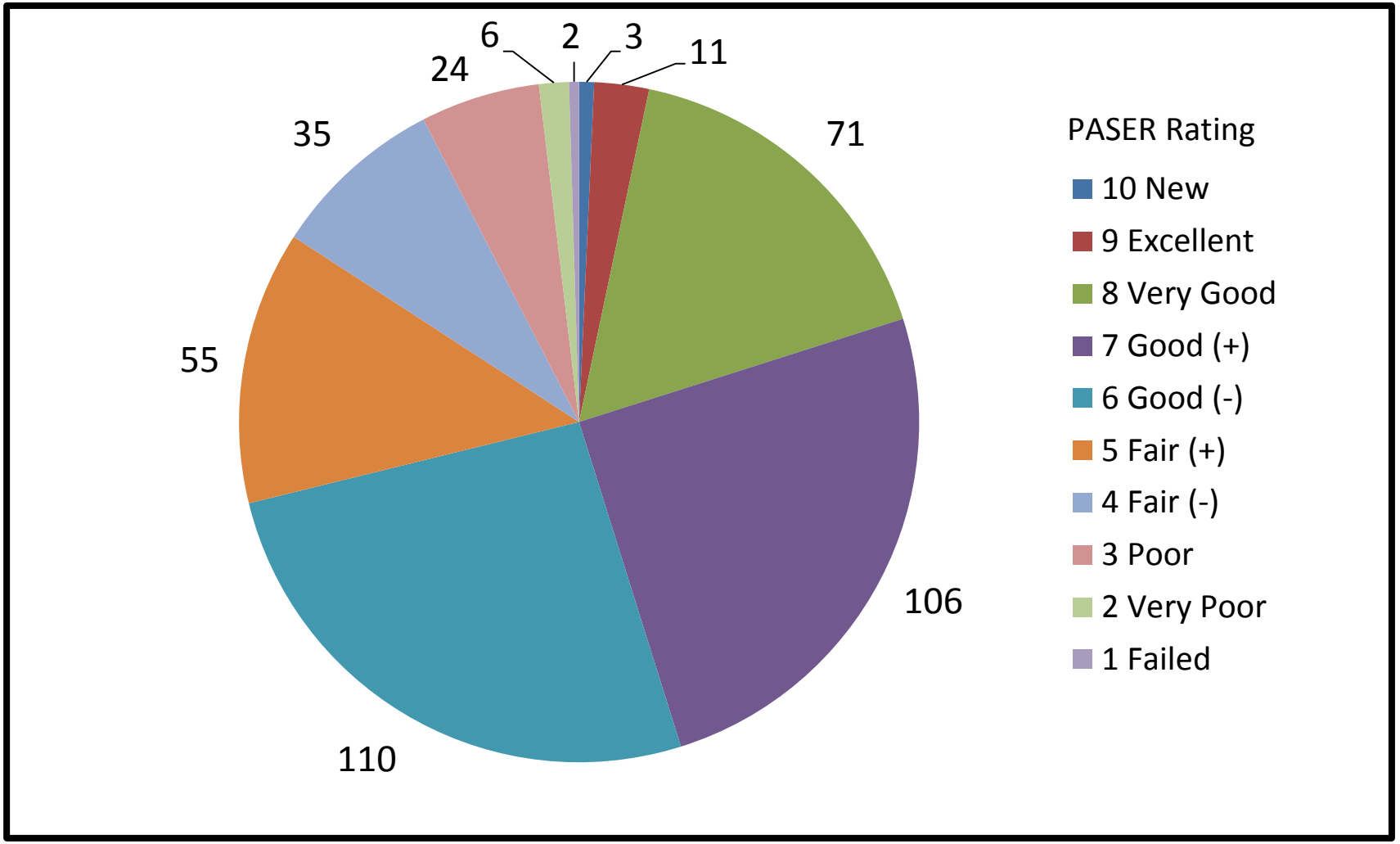


Figure 10 illustrates the visual distress, functionality and aesthetic characteristic for each rating category.

Figure 10: Rating System

Surface Rating	Visible Distress	Ratings Examples	Functionality & Aesthetics
10 New	✓ None		✓ Brand new
9 Excellent	✓ Some weathering in the color.		✓ 1 to 2 years old.
8 Very Good	✓ Less than 25% of the sidewalk panels cracking or spalling. ✓ No tripping hazards.		✓ Minor defects caused by weathering. ✓ Still looks acceptable.
7 Good (+)	✓ Over 25% of the sidewalk has minimal spalling. ✓ 25% to 50% shows minimal cracking along the parcel. ✓ Less than 25% of the sidewalk has minimal sloping.		✓ Weathering and minor defects are becoming visible. ✓ Still functional.
6 Good (-)	✓ Moderate spalling beginning to be visible. ✓ Minimal cracking is visible in over 50% of the parcel. ✓ Minimal vertical displacement in under than 25% of the parcel.		✓ Minor defects. ✓ Functionality and aesthetics are slightly lowered. ✓ Still acceptable.

Rating System (continued)

Rating	Visible Distress	Ratings Examples	Functionality & Aesthetics
5 Fair (+)	✓ Minimal displacement is visible in over 50% of the parcel. ✓ Slight overgrowth between the cracks. ✓ Less than 25% of the panel has moderate cracking. ✓ Over 50% of the parcel has moderate spalling.		✓ Might be a hindrance to some pedestrians, but functionality acceptable to most.
4 Fair (-)	✓ Less than 50% of the parcel has severe spalling. ✓ Less than 50% of the sidewalk has moderate cracking. ✓ Minimal vertical displacement in under 25% of the parcel.		✓ Still usable by most. ✓ Not easily navigated by runners, stroller users and wheelchair users. ✓ Lacking aesthetic appeal.
3 Poor	✓ Severe spalling and moderate cracking is evident in 50% of the sidewalk. ✓ Over 25% of the sidewalk has moderate sloping. ✓ Between 25% and 50% of the sidewalk has moderate displacement.		✓ Functionality is almost gone. ✓ Negative aesthetics.
2 Very Poor	✓ Over 50% of the sidewalk displays moderate vertical displacement. ✓ Up to 50% of the sidewalk has severe cracking, sloping, and vertical displacement.		✓ Not functional. ✓ Panels need replacing.
1 Failed	✓ Complete loss of concrete. ✓ Over 50% of the sidewalk has severe cracking, sloping, or displacement.		✓ Sidewalk is impassable. ✓ Needs to be replaced.

4.4 Sidewalk Rating Table

Bloomington uses its PASER rating table matrix (**Figure 11**) to determine priorities. The table uses a 1 to 10 rating system, discussed in the previous section, to evaluate vertical displacement, sloping, cracking, and spalling/scaling. The City should continue using this system.

1. The City identifies a highest priority for sidewalk defects as vertical displacement because of tripping danger. For displacement to be deemed a serious issue, it should have occurred along at least 25 percent of the overall sidewalk parcel. The sidewalk parcel is defined as the section of the sidewalk in front of a property.
2. The next deficiency priority is sloping. To qualify as a repair priority, moderate sloping should be visible along 50 percent of the parcel or along 25 percent if the sloping is severe.
3. Cracking is the third priority for sidewalk deficiencies. For City's funds to pay for the repairs, moderate cracking should be visible along 50 percent of the parcel -- or 25 percent if the cracking is severe.
4. Spalling/scaling is the fourth priority.

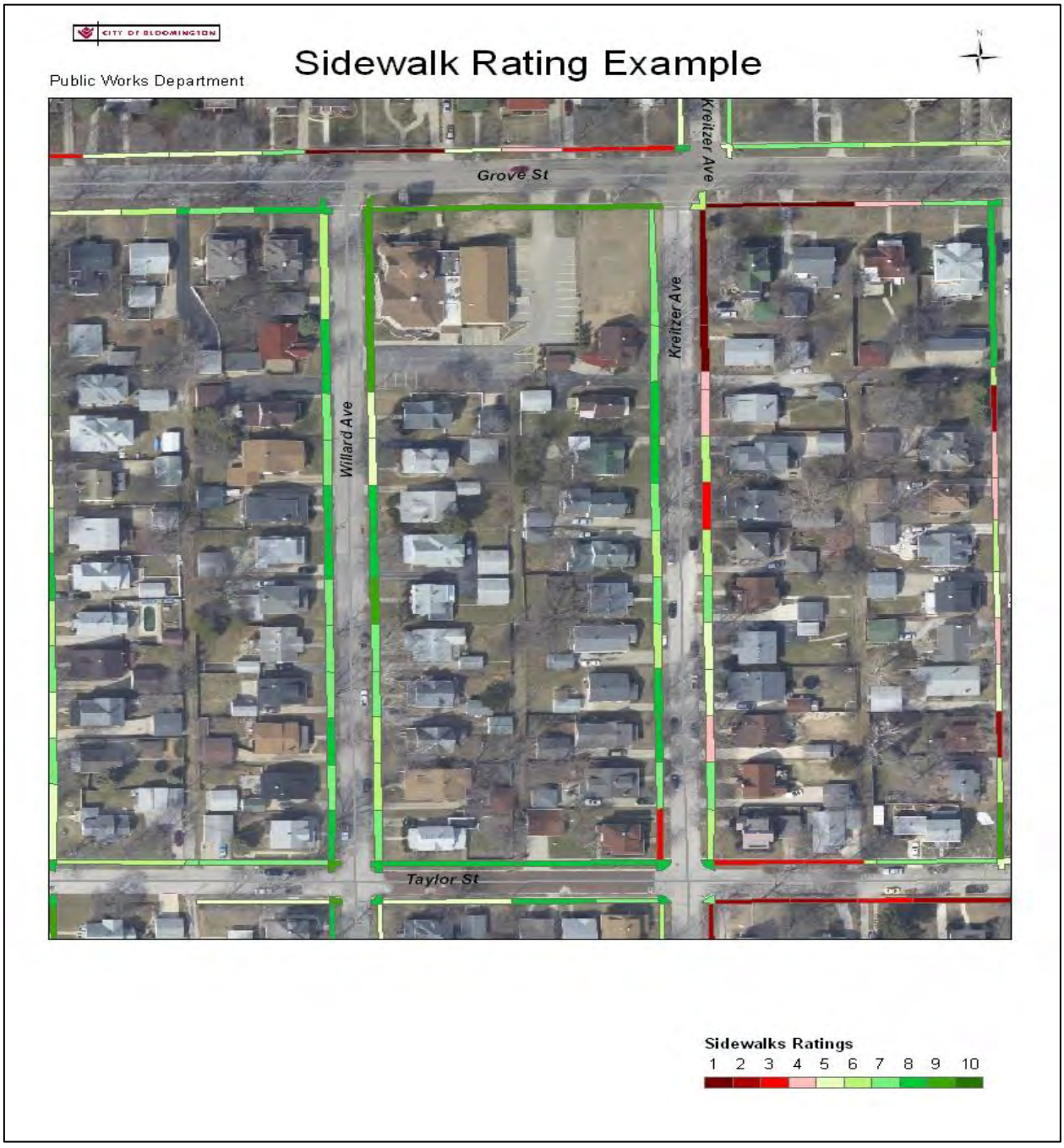
Figure 11: Sidewalk Rating Table Matrix

Percentage	*Level of deficiencies*	*Spalling/ Scaling*	*Cracking*	*Slope*	*Vertical Displacement*
50-100	**Severe**	**3**	**1**	**1**	**1**
25-50	**Severe**	**4**	**2**	**2**	**2**
0-25	**Severe**	**4**	**3**	**3**	**3**
50-100	**Moderate**	**5**	**2**	**2**	**2**
25-50	**Moderate**	**6**	**4**	**3**	**3**
0-25	**Moderate**	**6**	**5**	**4**	**4**
50-100	**Minimum**	**7**	**6**	**5**	**5**
25-50	**Minimum**	**7**	**7**	**6**	**5**
0-25	**Minimum**	**8**	**8**	**7**	**6**

Rating System Map Example

Figure 12 is an example of a neighborhood map with sidewalk ratings. Sidewalks are rated by parcel. As previously explained, the entire length of a parcel usually does not need replacement or repair.

Figure 12: Sidewalk Rating Example



4.5 Sidewalk Rating System Illustrated

The following pages provide photographic examples of sidewalks, their ratings and the number of miles of sidewalk in the respective rating categories.

“10” New sidewalk 3 Miles

“9” Excellent 11 Miles

“8” Very Good 71 Miles

“7”
Good+
106 Miles

“6” Good- 110 Miles

“5” Fair+ 55 Miles

“4” Fair- 35 Miles

“3” Poor 24 Miles

“2” Very Poor 6 Miles

“1” Failed 2 Miles

4.6 Curb Ramps

A curb ramp is a section of sidewalk, typically on a slope, that connects a sidewalk to a roadway and provides pedestrians with a location to cross the street. The Americans with Disabilities Act has requirements on curb ramps for minimum width, maximum slopes, cross slopes, clear space and detectable warning signs.

As of March 2014 the City of Bloomington had eight different types of ramps within the City. The City has diamond pattern, plastic dome, concrete dome and ramps with no detectable warnings. The four designs are each divided into two different types (Type A or Type B). **Figure 13** shows the number of each type of ramp in Bloomington as of March 2014.

Figure 13: Bloomington Ramp Types

Ramps Types	Number of Ramps
Diamond Pattern (Type A) Ramps	**3,792**
Diamond Pattern (Type B) Ramps	**472**
Plastic Dome (Type A) Ramps	**988**
Plastic Dome (Type B) Ramps	**128**
Type A Ramps without detectable warnings	**130**
Type B Ramps without detectable warnings	**474**
Concrete Dome (Type A) Ramps	**663**
Concrete Dome (Type B) Ramps	**108**
Total	**6,755**

4.7 Ramps Classifications and Illustrations

Bloomington has installed a variety of ramp types through the years. Most of these ramps do not meet modern Americans with Disabilities Act standards. However, many of them are functional. Because City budgets are finite, Bloomington's strategy for meeting ADA has been – and should continue to be – gradual conversion of existing ramps to ADA-compliant ramps. Most of these conversions occur when the adjacent street is resurfaced. Ramp replacements also may be implemented based on a citizen request or when City staff becomes aware of its use by a person with a disability. A street-sidewalk intersection with no ramp also shares high priority.

The proper ramp

The modern, ADA-compliant ramp should have a ramp slope of a maximum one inch per foot rise, a cross slope with a maximum of 2 percent sloping, and a minimum 48 inches of accessible walking width. It also must contain a detectable warning strip with contrasting color, preferably brick red. The landing at the top must be level (maximum 2 percent slope in all directions). It must have smooth transition to the street and curbing to keep debris out of the ramp area.

The photograph below, from the Bissell-Koch intersection, shows ADA-compliant ramps. It costs about $2,400 to install a section like this because there are two ramps at the intersection.

The following photographs show different types of ramps found within the City of Bloomington. Next to them are their Illinois Department of Transportation classifications. IDOT stopped using the classifications in 2012, but the labels remain useful in notating existing ramps.

1. **Detectable warning:** Criteria are in letter form. The ratings will either be “D,” “P,” “R,” “N,” or “C.”

D: Indicates the ramp is a diamond pattern with no raised surface. The diamond shapes are engraved into the concrete.

P: Indicates a plastic domed ramp. The color serves to warn pedestrians. These types of ramps are preferred in federal standards.

R: Means a ramp has no detectable warning.

C: Concrete dome ramp. Concrete domes are different than plastic dome because of the texture of the detectable warnings. The City no longer installs concrete dome ramps. It instead affixes a hard plastic pad to concrete sidewalk.

N: The sidewalk-curb connection has no ramp.

Classification: Type A and Type B. In analyzing sidewalks, the City followed the standard 424001-05 set by the Illinois Department of Transportation in classifying a ramp as Type A or Type B. (However, IDOT no longer uses the typing system.)

Type A: Ramps typically adjoin grassy areas, so curbs along the ramps themselves are necessary

Type B: Ramps have side flares instead of curbs and usually are surrounded by concrete.

4.8 Sidewalks in New Developments

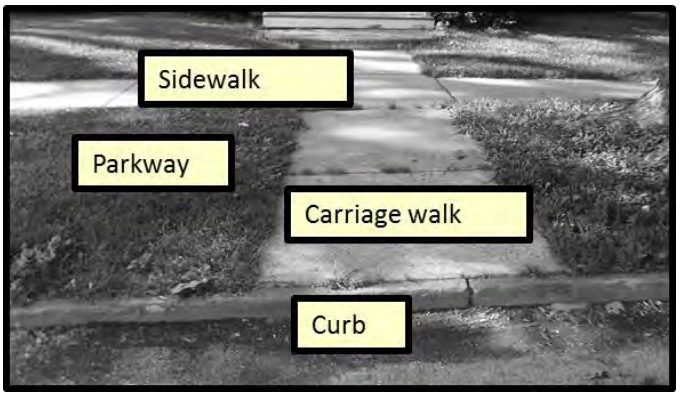
City regulations require sidewalks to be constructed on both sides of a street in a new development unless a waiver has been granted. All new sidewalks must conform to current Americans with Disabilities Act standards. Sidewalks in a residential subdivision should have a minimum thickness of 4 inches in depth, with the exception of 6 inches of thickness required over driveways. This provision applies when a subdivision of the property occurs. New development without a subdivision of the property is exempt.

Problem with connectivity: City regulations perpetuate an ongoing problem with pedestrian connectivity in newer neighborhoods. Sidewalk along a given parcel typically gets built once the adjacent residential construction is finished. Doing so protects the sidewalk from being damaged by heavy equipment during home construction. It also leaves sidewalk gaps in new subdivisions along undeveloped lots. The subdivision developer does not have to complete sidewalk gap construction for five years after the date of the Final Plat is filed or until 90 percent of the lots in the subdivision have been granted occupancy permits.

Potential revision: The City might consider requiring earlier completion of sidewalks in new neighborhoods. However, if companies must build sidewalks before building houses, they also might be required to make all sidewalks 6 inches thick so that sidewalks withstand the weight of construction equipment. The City Council should anticipate opposition to this proposal from the business community because it will increase cost to developers and home builders.

4.9 Carriage Walks

Carriage walks are the pathways in the public right of way connecting curbs to sidewalks. Their removal or preservation became the most contested issue in the Sidewalk Master Plan upon its first-draft release in July 2014.



Carriage walks were constructed during a time when homes did not typically have a garage or fully utilize off-street parking. While some residents wish to keep them, the Public Works Department beginning in 2013 leaned strongly toward removing them.

Structural issues: Carriage walks put structural pressure on the abutting curbs and sidewalks, especially during warm weather when materials expand. This can cause panels of the carriage walks and/or the sidewalks to buckle. A buckled sidewalk presents a tripping hazard and does not comply with the Americans with Disabilities Act. Curbs, too, get damaged. Sometimes chunks of curb dislodge. Sometimes, entire strips of curb pop out of place. Finally, many of the carriage walks themselves have fallen into disrepair and pose pedestrian hazards.

Complaints, Council decision: The Public Works administration and City Manager highlighted the issue and brought it to the forefront for City Council consideration in summer 2014. They did so because complaints by residents who wanted to keep carriage walks made the topic of carriage walks a public policy and Council issue in need of resolution. The City Planner and a representative of the Illinois Historic Preservation Agency added written opinions that the walkways were part of a historically significant development pattern, even in cases in which the original construction had been replaced. In a meeting with the Citizens' Beautification Commission, Public Works Administration heard further arguments that people should be able to keep their carriage walks.

City staff, including the Corporation Counsel, presented a recommended option to the City Council in which property owners could keep their carriage walks only if they insured the walk, signed a right-of-way Encroachment License and assumed financial responsibility for upkeep. On Aug. 25, 2014, the City Council voted 4-5 against the staff proposal.

New practices: As a result of the Council vote, Public Works changed its operational practices and began removing the walks in cases in which property owners want them removed and to leave them for property owners who want them. (Carriage walks were rebuilt for owners in cases in which the walk was removed and the owners wanted to keep them.) The operational practice, however, does not cede control of the right-of-way to the property owner. The City is under no obligation to remove or repair a carriage walk, and it reserves its right to take action regarding any materials in the public right-of-way. Should construction or excavation require removal of a carriage walk, the walk should be replaced if the owner wishes it replaced.

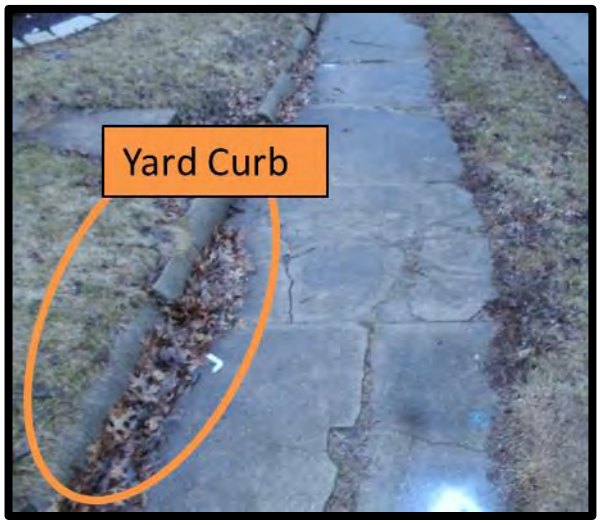
These operational practices are not legal requirements. They are accommodations based on the City Council's direction. The City has a right to control the right-of-way.

Carriage Walks and ADA: The Bloomington Public Works Department and Legal Department examined whether the Americans with Disabilities Act applied to carriage walks. The departments opined that ADA does not apply.

4.10 Driveways and Driveway Approaches or Aprons

Driveways are the responsibility of the property owner. Concrete repairs beyond the sidewalk itself are the responsibility of the property owner.

4.11 Yard curbs



Yard curbs are curbs that run along the sidewalk at the edge of a yard. Decisions of what to fix and whether to replace them require discretion on a case-by-case basis. The issue with yard curbs is expense. In 2014, it cost $25.60 per lineal foot of a 4-foot-wide running sidewalk. Replacing the yard curb was $23, nearly doubling the cost of sidewalk repair. Therefore, the operational practice is and should remain: Avoid replacing yard curbs when possible.

In some instances the yard curb must be replaced, usually in cases in which taking it out and not replacing it would leave an unacceptable slope for mowing and yard maintenance. However, some yard curbing is unneeded and serves a cosmetic function. Replacing this on a widespread basis would effectively reduce the amount of substandard sidewalk that the City can address elsewhere.

Multiple factors enter into decisions on yard curbs, and it is best to communicate with the owner of the adjacent property, often with the engineering technician talking to the property owner in person. Consider the following:

- Nature of the construction. Sometimes yard curb can stay in place when replacing sidewalk panels. This makes the decisions easier: Replace as little curb as possible or, if the owner of the adjacent property agrees, remove the yard curb and do not replace it.
- Sometimes, the curb is part of the same pour as the sidewalk and must be excavated along with the adjacent sidewalk panels. If the sidewalk repair only involves a panel or two, sidewalk curb usually should be replaced – but only along those panels.
- Condition of the yard curb. It is easier to justify removal of yard curb – and no replacement – if the curb is in poor shape. Generally, the property owner will agree with the decision. That said, if many sidewalk panels need to be replaced and the curb must be removed during the sidewalk work, it is difficult to justify replacement of the yard curb regardless of its condition. This is strictly because of the price.

In summary: Public Works must remain mindful of its customer service role and attempt to find yard-curb answers that meet approval of the property owner while also being good stewards of the public's money. However, the City in the matter also has no legal obligation to the individual owner of property adjacent to City infrastructure. The greater service obligation is to residents who live along miles of substandard sidewalk that remains in need of repair.

4.12 Brick Sidewalks

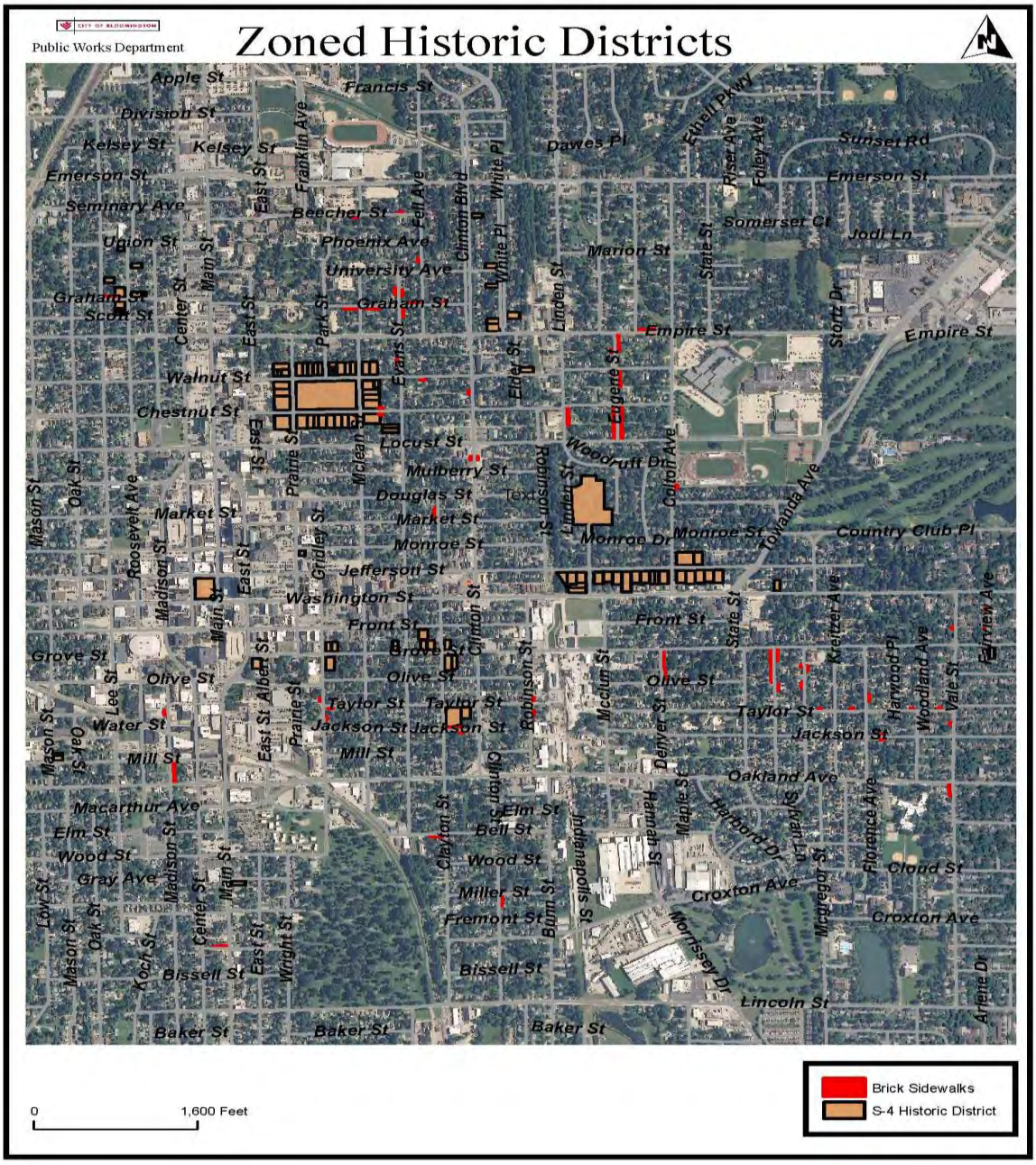
Bloomington has approximately one mile of brick sidewalks. While brick sidewalks have an aesthetic appeal, they are more expensive to install and often fall short of ADA standards. Existing brick sidewalks easily fall victim to vertical displacement, which violates accessibility standards. Further, these pathways become slippery in rain and snow, and repairs are labor intensive.

For these reasons, the City should replace brick with concrete when brick sidewalks fall into disrepair. The City also should attempt to accommodate property owners who wish to have brick sidewalk replaced with concrete walks ahead of the City's replacement

timetable. Property owners may make formal request to the Public Works Director to have the replacement expedited under the 50/50 sidewalk replacement program.

Although there may be sentiment for brick sidewalks, negative aspects of brick sidewalks outweigh sentimental value. Also, as Figure 14 demonstrates, few of the brick sidewalks in Bloomington are located in historic areas of Bloomington.

Figure 14: Brick Sidewalks and Historic Districts or Areas



5.0 TREE-SIDEWALK CONFLICTS

The photo above illustrates an ongoing problem with trees in City parkways. The primary problem is that this particular tree long ago outgrew the parkway space allotted for it. The tree has damaged the curb and the sidewalk. Some time ago, an effort was undertaken to accommodate both the tree and pedestrians. An arc-shaped portion was carved out of a sidewalk replacement panel in order to wrap the sidewalk around the tree's trunk flare. The practice is called "hooking" the sidewalk. The hooked panel has become displaced by the tree trunk flare and has created a significant tripping hazard, adding to the undesirable situation of having a tree trunk jutting into the walking path by hooking the sidewalk around the tree.

Trees are a valued piece of urban landscape. They cool homes and yards. They add visual texture. They provide air filtration, water purification, noise abatement, windbreaks, screening, privacy and other functions. A part of the community's green infrastructure, they also carry financial value. Arborists can calculate these values. There also is a cost to plant and a cost to grow. The planting of a new tree after removal of a valuable, mature tree does not constitute an equal replacement, especially considering the time needed for the new tree to reach maturity. The value of trees and the value that residents place upon trees demand that tree-sidewalk conflicts be reviewed carefully – case-by-case, tree-by-tree.

The City's organizational structure requires interdepartmental cooperation in achieving these reviews. Public Works through its Engineering Division provides the stronger expertise on manmade infrastructure, while the Parks, Recreation & Cultural Arts Department through its

Forestry Division provides the stronger expertise on green infrastructure, such as trees. In a given case, there is room for competent disagreements. However, both departments should start at the same philosophical point: *The goal of the City of Bloomington should be to preserve parkway trees when possible, but not at any cost.* Sometimes trees should and must be removed. When a removal occurs, the site should be analyzed and, if site-feasible, the tree should be replaced by the City with a new tree of appropriate species. The adjacent property owner should be consulted, if possible, on preference among approved species. The City should plant a new parkway tree and root barriers to prevent future conflict with infrastructure. The property owner should not be charged for the replacement of a parkway tree.

Replacement trees should be appropriate for the planting site. Not only are roots a concern, but also the tree canopy. Trees with low-hanging branches encroaching over the roadway interfere with garbage and recycle collection as well as moving vans and other large vehicles. Overhanging branches can be damaged by these vehicles as well as causing damage to trucks and trailers. Replacement trees also should be sited to avoid encroachment into sewer laterals and power lines.

Conflicts: The interests of green infrastructure and manmade infrastructure often collide, but the City need not decisively choose one over the other. Techniques developed by arborists and by engineers have helped create a peaceful coexistence in many cases. This section of the Sidewalk Master Plan explores some of those methods and will encourage the City to be creative when approaching tree-sidewalk conflicts. Overwhelmingly, staff turned to tree specialists during research for the section, and they are leading a movement to address these tree-sidewalk conflicts in ways that save many – but not all – street trees.

Legal rights: Under City ordinance, the City has the right to plant, trim, spray and preserve any tree on City property to ensure public safety or maintain the health of the tree. It also has the authority to remove trees on the public right of way. In certain cases, it has authority to remove trees on private property. Trees within the public right-of-way that are determined to be detrimental to sidewalks and curbs or determined to be unhealthy may be removed by the City of Bloomington at no expense to the property owner. The Forestry Division carries out this function.

Liability: In some instances, failure to properly correct a sidewalk-tree problem can expose the City to successful legal claims from injuries. The Engineering Division must continue to monitor proper sidewalk installation, repair and maintenance and to respond quickly to complaints and requests for correction to unsafe sidewalk conditions.

Trees on private property: The City prefers to not involve itself in landscaping issues on private property but it can step in to protect public infrastructure. It does so under the following ordinance:

> **Chapter 38: Section 2: Streets for Public Use.**
> The street, avenues, alleys, and sidewalks in the City shall be kept free and clear of all encumbrances and encroachments for the use of the public, and they shall not be used or occupied in any other way than is herein provided in this chapter.

If a tree on private property is creating damage to a sidewalk, an encroachment has occurred. The City may notify the owner in writing and demand that the tree be removed at the owner's expense.

5.1 Conflict Prevention

With proper planning, conflicts between infrastructure and trees can be reduced. The City should ensure that parkways are wide enough to accommodate selected trees prior to new plantings, and it should continue to mandate that only certain species be planted along the parkway. It has this regulatory right because parkways are on City right-of-way. The City also should make efforts to locate sewer services and to plant parkway trees away from sewer services; doing so reduces likelihood of root invasion into the sewer service. Root invasion causes groundwater inflow into the City's sewer system and can adversely affect operation of plumbing in the affected property.

Additionally, root barriers should be installed alongside newly planted trees to protect the sidewalk and curb from future root damage.

5.2 Preferred and Prohibited Tree Species

Parks and Recreation produces the lists of approved and prohibited species. These apply to new plantings. Parks also issues planting permits to individuals who want to plant trees in parkways and removal permits to those wishing to remove a tree from a parkway. The lists of preferred and prohibited species are charted below.

Figure 15: Bloomington's Preferable Street Tree List

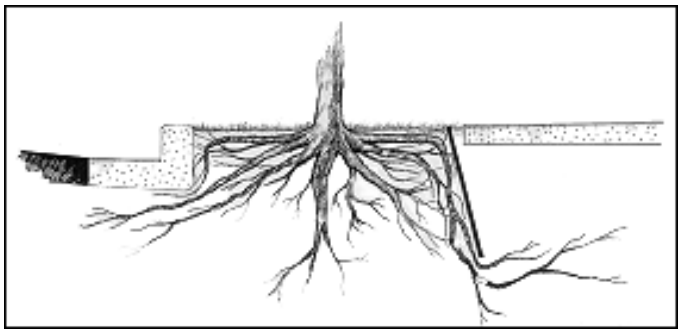
Preferable Streets Trees (as of June 2014)		
✓ Red Maple	✓ Red Oak	✓ Swamp White Oak
✓ Chinquapin Oak	✓ Sugar Maple	✓ Norway Maple
✓ Hedge Maple	✓ Hornbeam	✓ American Chestnut
✓ Hackberry	✓ Hawthorn (Thorn less)	✓ Beech
✓ Ginkgo (Male)	✓ Honey Locust	✓ Kentucky Coffeetree
✓ Tuliptree	✓ Crabapple (Fruitless)	✓ Ironwood (Hornbeam)
✓ Canada Red Chokecherry	✓ Japanese Tree Lilac	✓ Bald Cypress
✓ Linden	✓ Elm	

Figure 16: Prohibited Street Trees

Prohibited Species of Street Trees (as of June 2014)		
Abies species (Firs)	Abies species (Firs)	Abies species (Firs)
Acer saccharinum (Silver Maple)	Acer saccharinum (Silver Maple)	Acer saccharinum (Silver Maple)
Alnus (Alder)	Alnus (Alder)	Alnus (Alder)
Catalpa speciosa (Catalpa)	Catalpa speciosa (Catalpa)	Catalpa speciosa (Catalpa)
Franxinuss species (Ash)	Franxinuss species (Ash)	Franxinuss species (Ash)
Juniperus species (Junipers)	Juniperus species (Junipers)	Juniperus species (Junipers)
Morus species (Mulberry)	Morus species (Mulberry)	Morus species (Mulberry)
Pinus species (Pines)	Pinus species (Pines)	Pinus species (Pines)
Populus species (Populars)	Populus species (Populars)	Populus species (Populars)

5.3 Trees and Root Barriers

Root barriers have been proven effective in directing root growth away from manmade infrastructure. They should be installed along infrastructure at the time a tree gets planted. Plans and procedure should be established by Parks and Public Works to install root barriers between a curb and a tree and between a sidewalk and a tree at the time a new tree is planted in a parkway. There are several types of root barriers: Concrete, plastic, wooden, aggregate and fabric.



USDA graphic

Barrier selection: In preparing the Sidewalk Master Plan, Public Works employees read work of and talked by telephone with Dr. E. Thomas Smiley, Ph.D., an arboricultural researcher for the Bartlett Tree Research Laboratory in Charlotte, NC, and an adjunct professor of Urban Forestry at Clemson University. Dr. Smiley has overseen tests of various barrier types and said he concludes that all the standard barrier materials rate about equally in performance. For that reason, he recommended the lowest-cost barrier: Landscape fabric. The barriers could cost as little as $20 for a 50-foot section. Members of the Parks Department staff would be qualified to install barriers. Engineering Division employees of Public Works should also become familiar with the process in order to competently oversee work being done by contractors involved with sidewalk projects.

Barrier installation: Dr. Smiley recommends burying two rows of landscape fabric horizontally – one along the curb side and one along the sidewalk side of the tree. Fabric should extend a minimum of three feet past either side of the trunk.

Depth: Another specialist interviewed for the Master Plan, Leonard Dunn, makes this recommendation: Install the barriers to at least a foot of depth on the sidewalk side of the tree but install the barrier to at least 18 inches on the curb side. Tree roots grow between the interfaces of various construction materials – between concrete and a subbase, for example. The curb side has more layers and interfaces, and the barrier should be deeper, Dunn said.

5.4 Trees and Gravel Subbase

Dr. Edward F. Gilman, Ph.D., was interviewed by telephone on April 11, 2014. He runs an extensive website called "Landscape Plants," and has written and co-written numerous books. He is a researcher and a professor for the University of Florida Environmental Horticulture Department. In addition to using root barriers, he said, use of a gravel subbase is useful in the process of protecting sidewalks from tree roots.

He recommends a six-inch thick washed gravel subbase. According to research, he said, the gravel will dissuade root growth. The root will grow under the gravel and then grow upward toward the surface after crossing it, creating a U-shaped root.

Enacting this recommendation would require updating City requirements, including its Manual of Practice for new construction. City government should at least consider doing so as a way to prolong the life of sidewalks.

5.5 Process to Address Existing Tree-Infrastructure Conflicts

Initiating: A City engineering technician usually is the first one to assess a tree-infrastructure issue, most often in the course of assessing a sidewalk problem, and he usually will be the first one to initiate a discussion. However, any member of the Public Works and Parks staffs can be the initiator. At Public Works, concerns and ideas should be channeled to the Engineering Division. At Parks, concerns and ideas should be channeled to the Forestry Division.

Designees from the respective departments should have conversations. They need not be overly formal or bureaucratic. In Engineering, this person usually will be the engineering technician assigned to sidewalks or streets. Department representatives should also obtain options/wishes/desires of the property owner adjacent to the location.

Role of the property owner: The property owner should be contacted in the event that a tree in a parkway next to his/her property is proposed for removal. The property owner should be allowed to decide upon a replacement tree, at no cost to the owner, from the City's list of approved species. His/her opinion as to whether to remove the tree should be heard and some weight should be given to the land owner's opinion. The property owner, however, does not have authority to demand that a tree be retained – to hold a veto over professional decisions -- if the tree is on public right-of-way or if the tree is on private property but clearly is damaging City infrastructure. City staff members must make the determination based on their professional judgments and on circumstances. Criteria to assist in those decisions are explained in the next subsection.

Initial Decisions: The designees from Engineering and Forestry should jointly decide what action should be taken. That action might include removal of the tree or root pruning. It may entail a method of sidewalk construction, replacement and repair that falls outside standard construction practice. Both persons should be mindful of the goal to save trees when possible, but not at any cost. The designees should inform and receive approval from their respective supervisors.

Settling a disagreement: In the event of a disagreement between the designees, the directors of the two departments should attempt to resolve the disagreement. If they cannot, they should take the matter to the Assistant City Manager for a decision. They should convey to the Assistant City Manager the opinions of the respective departments and the opinion of the owner of the property directly adjacent to the location of concern.

Tree replacement: In the event of tree removal, a replacement tree should be planted nearby if possible, and root barriers should be used in the process.

5.5 Criteria for Decisions to Remove Trees

As already discussed, removal of trees should never be approached casually and should be decided case by case. The City is taking away a part of a neighborhood – while also adding value by improving/protecting expensive infrastructure. Here are factors to consider.

The Americans with Disabilities Act: Action must comply with ADA.

Neighborhood impact: The positive aspect of a project should be weighed against potential negative impacts. If numerous trees need to be removed to implement construction plans, the City should gather neighborhood input. The City should examine if an objective could be achieved another way. This might especially be true if the building of new sidewalk where no sidewalk now exists would require removal of a row of trees or other landscaping. In such a case, placement of the sidewalk on the other side of the street or abutting the curb (reverse parkway) might be considered. The support or lack of support of neighbors should be weighed. The City should consider engineering techniques that would allow the trees to remain. It also may consider, in certain cases, abandoning the project altogether.

Age diversity: Age and species diversity are important concepts in urban landscaping. In a neighborhood with many old trees, replacing some or adding young trees is in keeping with the urban landscaping concept of diversifying age of trees. Age diversity ensures a continuously vibrant tree population in a neighborhood.

Other potential solutions: The City should test options such as bridging tree roots. More is explained later in this section.

Type of tree: If a tree is from a preferred species or if it is a valued "specimen tree," it should be given greater consideration. A prohibited tree, especially if planted by a resident without authority, should be granted less sympathy. If the species is an unpopular "dirty tree," which drops undesired materials such as sap, residents may desire replacement.

Health of the tree: A tree showing signs of decay is a better candidate for replacement than a vibrant tree. Using extraordinary measures to save a decaying tree usually makes little sense.

Cost of leaving a tree: A tree that has outgrown its place in the parkway may have monetary and emotional value but it creates a cost – the cost of damage to a sidewalk and/or the curb. There also is human cost if a tripping hazard causes injury. Consider replacing the tree with an appropriately sized tree if other options are unavailable and unacceptable.

5.6 Avoid cutting a semi-circle into a panel

The City has cut semi-circles into concrete panels to accommodate trees in the parkway. The Sidewalk Master Plan recommends that this be avoided whenever possible.

As the first picture on the next page shows, the tree trunk flare now is literally in the sidewalk. The first photo also illustrates that the arced cut frequently fails to permanently address the problem of having an oversized tree in the parkway. The trunk flare in this case has again heaved the sidewalk, creating a tripping hazard.

The second photograph illustrates the second problem. If the tree is removed later, the tree cutout in the sidewalk becomes a hole in the sidewalk. The cutout inhibits use and presents a tripping hazard, especially at nighttime in a poorly lighted area.

Liability: Public Works staff members spoke to Betty McCain, SCLA, senior claims adjuster for Alternative Service Concepts. She handles claims for the City of Bloomington. Every case has its nuances, and in most cases the sidewalk cutout would constitute a defensible "open and obvious" hazard, she said. However, Ms. McCain could foresee circumstances in which the sidewalk cutout would present a legal liability to the City of Bloomington.

5.7 Tree Removal Alternative: Relocate the Sidewalk

Rather than cutting into sidewalk panels, the City at times may seize an opportunity to reroute the sidewalk around a tree. The instances in which this option will present itself will be uncommon, but it is a viable option to consider in cases in which there is room to relocate the sidewalk.

The photograph at left, below, shows a minor sidewalk size adjustment – a bump out – created during a 2014 sidewalk improvement at Kelsey and Roosevelt streets. It provides an

Sidewalk bumped out about 12 inches to give space to existing tree, a blue ash, at Kelsey and Roosevelt.

excellent example of relocating a sidewalk to protect a specimen blue ash tree. While the sidewalk narrows, it meets ADA standards. The adjacent, top photograph shows a more dramatic curving of a sidewalk, representing another sound method to preserve green infrastructure. The third image shows an example of sidewalk abutting the curb and street – a reverse parkway -- rather than the standard model of placing the parkway between the sidewalk and street. It presents another viable option for averting tree conflicts. It may be the preferred option when building a new sidewalk in an area where trees already exist. As a safety precaution, the sidewalk in reverse parkway construction must be six feet wide rather than the usual four-foot or five-foot width. That increases cost. Another disadvantage to the reverse-parkway design is that the sidewalks will be covered and re-covered with snow as snow plows clear the streets. The photograph shows a portion of West Market Street near the Union Pacific overpass.

5.8 Tree Removal Alternative: Root Pruning

Root pruning can at times achieve the goal of eliminating sidewalk-root conflict. It is not an optimal solution and should be used with great caution. Some trees can endure root pruning well; others die.

Drs. Gilman and Smiley, among others, note that pruning roots can destabilize some trees, causing them to fall during storms. Pruning also can have a less dramatic negative impact on the overall health of the tree. Younger trees endure better. Older trees, however, are more often the subject of infrastructure conflicts. Tree recovery after pruning, said Gilman, depends on how the roots were pruned but also the tree itself and, especially, the quality of the soil. Among guidelines for pruning:

- The tree roots should only be pruned on one quadrant of the tree. On his website, Gilman posted a photo of a tree that was pruned on multiple sides. The picture and article are shown at right. The tree, as the professor noted, has been reduced to firewood material.

- The tree can be negatively affected and destabilized if roots are cut too close to a tree. However, there is no set industry standard. Dr. Gilman said a defensible standard would be "no closer than 2 times the diameter of the tree." If a tree is 3 feet in diameter, the closest safe root cut would be 6 feet from the tree. Dr. Smiley said he would oppose any cut closer than 1.5 times the diameter of the tree. That would mean the 3-foot diameter tree should not be subject to a root cut any closer than 4.5 feet from the tree trunk. Smiley emphasized that 1.5 is the absolute minimum and that any cut closer than 1.5 feet would create a strong likelihood of killing the tree. Note that both of the sources are leading researchers and advocates for tree preservation in urban areas. Their estimates all but rule out root pruning as an

option for most tree-sidewalk conflicts in Bloomington because the trees involved often are too large and the parkways too narrow to meet the minimum distances.

- The third observation also bodes poorly for trees facing possible root pruning in Bloomington: Older trees are less likely to survive root pruning. These usually are the very trees coming into conflict with sidewalks.
- Pruned trees fare worse in compacted clay soil like that found in Bloomington.
- Mr. Dunn usually avoids severing a root wider than 2 inches in diameter.

Master Plan Conclusion: Bloomington should explore other options before choosing to prune roots.

5.9 Tree Removal Alternative: Reinforce the Sidewalk

In places where sidewalks pass near existing trees, the City should consider engineering solutions to prevent tree roots from lifting the sidewalk.

One such method would be use of half-inch diameter rebar to reinforce the sidewalk. The City began using rebar reinforcement in 2013 for two purposes:

1. To keep sidewalks from sagging where they crossed private sewer and water service lines. At these utilities, soil tends to settle and sink, causing sidewalk panels to sag and become displaced. Rebar reinforcement is used for the sidewalk panel crossing the service line and then the next two panels in each direction. The reinforced sidewalk bridges the ground if it continues to settle.

2. Across ingress and egress points into apartment properties. Reinforcement braces the sidewalk at points where moving vans and garbage trucks regularly cross.

Bloomington City Engineer Kevin Kothe proposed using a similar approach to bridge tree roots. Dr. Gilman confirmed that the method is proven effective. Roots typically expand upward. If the sidewalk is reinforced with rebar, the added mass of the walk should cause the tree root to deform and grow to the side, Gillman said. Gillman added that the health of trees in these cases appears to be unaffected.

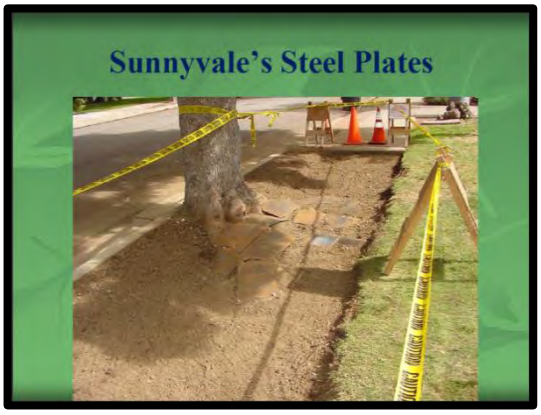
Added cost: Rebar costs about $1 extra per square foot of sidewalk, or $20 to $25 per sidewalk panel. Thus, it raises the cost of a panel from about $120 to about $145. A healthy tree can easily stretch across two sidewalk panels. If reinforced concrete is used in the next two panels in each direction, the sidewalk would be reinforced in six panels total. The total additional cost would be $120 to $150.

The added cost is reasonable given the value of the tree, the value of manmade infrastructure and the expectation that sidewalks last for decades.

5.10 Tree Removal Alternative: Saw Cut the Sidewalk

Safe Step, a City subcontractor, reduces and eliminates vertical displacements by slicing off wedges of sidewalk. The positive experience with this method was discussed in Section 4.2. By slicing up to two inches in thickness from one panel, saw cutting can eliminate vertical displacement. In some cases, saw cutting could be used to eliminate a hazard created by tree roots. However, it would only represent a temporary solution in these cases, as the root would continue to grow upward and continue to displace the sidewalk. The method would, however, buy time at a fairly low cost of less than $50 per panel cut.

5.11 Tree Removal Alternative: Sunnyvale Steel Plates



In 1989, Leonard Dunn was hired by Sunnyvale, CA, with a mandate from its Public Works Director to preserve trees while also fixing sidewalks. Mr. Dunn developed a method to prevent tree roots from growing upward. Starting in 1992, he began bolting steel plates into tree roots that were conflicting with the sidewalk. Arborist Gordon Mann, a consultant with the company Mann Made Resources, is among those who advocate for Mr. Dunn's time-tested results. The accompanying images are from a presentation Mann has given and published on the Internet.

Mr. Dunn was interviewed for the Master Plan on April 22, 2014. He explained the process as follows:

When a sidewalk becomes damaged from tree root, the sidewalk is removed. Sheets of 10-gauge steel are fitted to cover the roots. Sometimes the steel plates can be bent to form around the root. Pilot holes are drilled into the roots. Then, three-eighth inch lag bolts are drilled through the steel plates and into the roots, using the pilot holes. The bolts and the steel plates do little or no harm to the tree. The bolted roots will no longer grow upward. They will grow out to the sides and downward. The small gaps around the roots are then covered with No. 2 base rock. The sidewalk may have to be sloped to bridge tree roots, the trunk flare or both. The No. 2 base rock is used as a subbase in creating a gently sloping terrain leading to and from the tree. Concrete is then poured over the rock. Concrete or asphalt can be poured directly onto the top of the steel plates. The key to the process is making the correct, gradual slope to ensure that the slope complies with ADA standards on inclining and declining sidewalks.

Trees that had to be removed later, for reasons other than sidewalk conflicts, were examined. Post-removal examination of the roots showed the plan worked as envisioned: Roots grew to the side and downward. Growth to the top side of the root had been successfully inhibited.

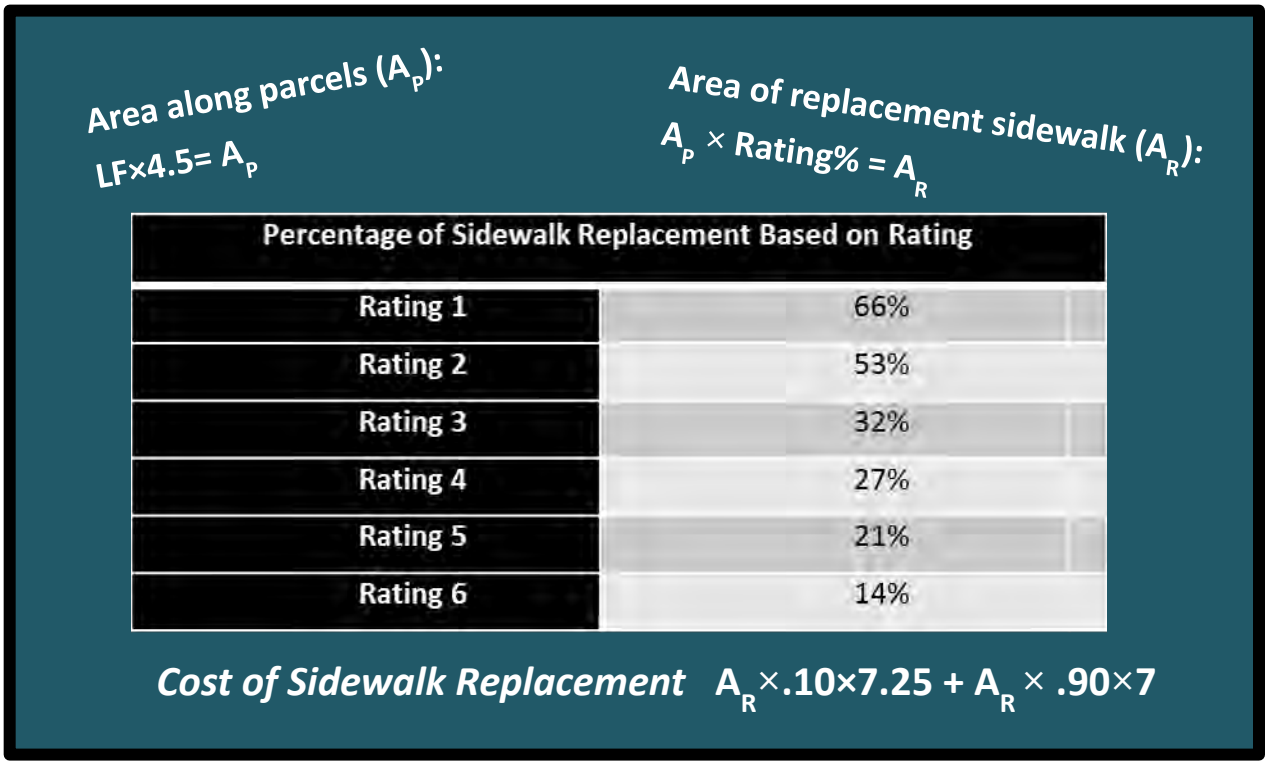
Bloomington should test this process. However, City staff cannot be expected to merely look at pictures when initiating the process. It should consult with an arborist familiar with the technique when the first tests are done and learn the nuances of the process. Dunn oversaw this process himself and all the work was done in-house in Sunnyvale until budget cuts forced staff reductions in 2011. While the city of Sunnyvale now contracts for the work, it also trains contractors on the technique and consults on-site with them.

5.12 Tree Removal Alternative: Other Methods

Bloomington should be creative and open to other possibilities when approaching sidewalk-tree conflicts. It may consider alternatives to Portland Cement Concrete.

Asphalt sidewalks are generally undesirable. They are aesthetically unpleasant heat conductors. However, cement dust can be used to color the asphalt to appear like concrete and reduce the heat generated by asphalt during the summer. The benefit of asphalt is that it is fairly sturdy and economical. It cannot withstand the pressure of root expansion. The sidewalk will eventually rise at the point that roots press them upward. The asphalt will have to be maintained and replaced. It will, however, solve the tree conflict for a period of time. Asphalt sidewalk can be replaced at low cost compared to concrete replacement.

Other materials have entered the market, but they have limited track record. The Public Works and Parks & Rec departments should monitor research. Bloomington should avoid the bleeding edge of technology but look for cutting edge approaches.



6.0 COSTS AND REVENUE

Sidewalk rating methodology and repair and replacement techniques were reviewed in Sections 4 and 5. Section 6 examines costs, establishment of a desired service level and revenue sources. The three are intertwined, as the Plan serves as a practical guide based on economic realities. Section 7 puts forth a Ten-Year Action Plan to enable the City to affordably achieve the policies and goals set forth.

While Section 6 first examines costs, a few words are needed on revenue. The reality is this: Sidewalks don't generate revenue, and funding options are limited. To address sidewalks, the City Council and the Administration must look to the General Fund for the vast majority of funding. The realities of costs and competing City needs and desires, including a desire to keep taxes and fees as low as possible, are taken into consideration throughout the Master Plan.

6.1 The Construction Process

The cost analysis assumes the continued use of the construction process already in place (with modifications in instances in which street trees are being preserved). It is the common and best practice. Locations are inspected and rated by the Public Works staff, reviewed and approved for work by Public Works Department management, approved by the Administration and City Council as part of a Public Works program and documented through GIS recordkeeping. Most construction is contracted through competitive bidding. (For 2014-15, three companies submitted bids.) The private contractor works closely with Public Works staff members, who oversee and document contractor work.

The alternative -- building sidewalks with City employees -- might sound more economical but would require the addition of staff to the Public Works Department. Public Works employees

build sidewalks on occasion; they have the ability. However, the annual volume of sidewalk and sidewalk ramp construction cannot be handled by existing personnel.

6.2 Sidewalk Replacement Estimates

In March 2014, the Public Works Department conducted an analysis of the cost to replace sidewalks, using GIS data and sidewalk ratings. The analysis took into account the average amount of sidewalk that actually would need replacement – not the full length of the sidewalk – based on a Bloomington Public Works Engineering Division formula.

Except in the worst cases, parts of a sidewalk are in acceptable condition. Budget issues and financial prudence demand that Bloomington save as much good sidewalk as it can when improving a stretch of sidewalk. Only the unacceptable portions of the sidewalk get replaced. The Public Works formula calculates the average percentage of replacement based on the sidewalk's ratings.

Formula for Sidewalk Replacement Cost

⇒ **Area of Parcels (A_P):** A_P represents the total portion of sidewalk area under consideration. Some sidewalks are 4 feet wide; some are 5 feet. A few are 6 feet. GIS width measurements are inexact regarding sidewalk width. The cost analysis used 4.5 as the width. LF means lineal feet of sidewalk and is the length measurement. Length times width equals area.

$$\mathbf{4.5 \times LF = A_P}$$

⇒ **Area of Replacement Sidewalk (A_R):** A_R is the estimated area of actual sidewalk work required (in square feet) within A_P based on the PASER rating of the sidewalk.

$$\mathbf{A_P \times Rating\% = A_R}$$

Percentage of Sidewalk Replacement Based on PASER Rating	
Rating 1	66%
Rating 2	53%
Rating 3	32%
Rating 4	27%
Rating 5	21%
Rating 6	14%

Formula for Cost of Replacement

The estimation method factors in cost of regular sidewalk (4-inch-thick Portland Concrete Cement) as well as the thicker concrete (6-inch PCC). The thicker concrete is required along driveway aprons, which accounts for about 10 percent of the typical project area. The 2014-15 cost estimate is $7.25 per square foot for 6 PCC and $7 for 4 PCC. Both cost estimates include the cost to remove existing sidewalk.

COST OF REPLACEMENT=

$A_R \times .10 \times 7.25$

+

$A_R \times .90 \times 7$

Figure 17 shows the cost estimate for sidewalk replacement by PASER ratings.

Figure 17: Cost for Sidewalk Replacement (2014 dollars)

PASER Rating	Replacement Needed (Estimated Square Feet)	Estimated Cost of Replacement
1	40,687	$285,826
2	96,010	$674,470
3	190,277	$1,469,896
4	227,116	$1,738,578
5	274,630	$1,929,275
6	355,496	$2,497,166

6.3 Cumulative Cost Totals

The cumulative totals show costs to upgrade to various levels of sidewalk quality. For example, to achieve a minimum rating of 6, the City must fix all sidewalks with ratings 1 through 5. These estimates did not calculate ADA-compliant ramps, which cost $1,200 each.

Figure 18: Cost to Reach Rating Levels (2014 dollars)

Minimum Sidewalk Ratings	Cost to Accomplish
Minimum Rating of 7 (Good+)	$8,595,211
Minimum Rating of 6 (Good -)	$6,098,045
Minimum Rating of 5 (Fair +)	$4,168,770

6.4 Recommended Service Level

An ideal goal would be to raise minimum rating to 7 (Good +). The cost would be $8.6 million in 2014 dollars. A more realistic goal, given competing City needs, is to bring the minimum rating to a 5 (Fair+) over the life of the 10-year plan. This would require a City investment of nearly $4.2 million in 2014 dollars.

The Master Plan recommendation is to bring the minimum rating of Bloomington sidewalks to 5 by fixing all sidewalks rated as 1, 2, 3 and 4.

Accounting for inflation: The Action Plan in Section 7 adds inflation projections in producing a budget to achieve the recommendation.

6.5 Connectivity: Eliminating Sidewalk Gaps

Overall priorities and gaps: The Public Works Department inventoried gaps in the sidewalk system. It then set priorities for these gaps. It did so, however, with the belief that fixing existing sidewalks and fixing and installing ADA-compliant ramps are the primary goals of the Master Plan. This premise speaks to the setting of priorities and the need for moderate cost. Therefore, the Plan recommends addressing a very limited number of gaps in the sidewalk system prior to achieving the service level for existing sidewalks. Filling all connectivity gaps in the City would require uncalculated millions of additional dollars.

The Master Plan identifies just three high-priority gaps. Priority I Gaps involve two areas near schools and an area on South Center Street shown to be heavily traveled. Priority II Gaps run one block or less and represent small connectivity projects at moderate cost. Priority III Gaps were added after the original sidewalk draft plan was published and circulated to the City Council and the public. These gaps were requested by members of the public and Council.

Other gaps projects may be added as need arises. However, the City should be mindful of budgetary concerns and neighborhood concerns when doing so.

Neighborhood considerations: Entire neighborhoods in Bloomington were built with no sidewalks. Retrofitting sidewalks into the neighborhoods can pose problems and expense. Doing so might require removal of numerous trees, and in cases it would represent a vast reduction to already modest front yards. It may require removal of fences and hedgerows that, while on City right-of-way, have been a part of properties, in the residents' perceptions, for decades. Given other economic pressures on the City, retrofitting neighborhoods with sidewalks should be done only for compelling reasons. If a neighborhood opposes a plan, the reasons to proceed should be extremely compelling. Given other sidewalk needs, gap elimination in most cases receives a low priority at this time. When gaps are identified, site reviews should take into account potential negative impacts on the neighborhood. These negatives may be reason to look at other alternatives or to decide against building.

Other portions of the sidewalk system have sidewalks on one side of the street. There must be a compelling reason to build sidewalk on the second side – again, because of other budget needs and because of the alteration of an established neighborhood. Only one such area is identified and budgeted in the Plan: The west side of U.S. 51 south of the South Hill neighborhood, where a well-worn path demonstrates user demand for a sidewalk.

6.6 Cost Formula for Sidewalk Gap Elimination Projects

A different formula applies to cost estimates for new sidewalk, extensions of existing sidewalks and the connection of missing sidewalk links between two stretches of existing sidewalk. For 2014, the gap elimination formula developed by the Bloomington Engineering Division estimates $3 per lineal foot for site preparation, including excavation and installation of sidewalk subbase. (The subbase typically is $3/8^{th}$ inch pea gravel or recycled concrete.) The formula uses $5.10 per square foot for the cost of 6-inch thick sidewalk (A_6), to be used next to driveway aprons and $4.75 for 4-inch concrete to be used for the rest of the project (A_4).

LF is the entire length of the project in lineal feet. A_6 is the area in square feet for the portion abutting driveways. A_4 is the area of non-driveway portion of the new sidewalk.

COST TO INSTALL ALONG A SIDEWALK GAP=
$$\mathbf{(LF \times 3) + (A_6 \times 5.1) + (A_4 \times 4.75)}$$

Root Barriers Not Included

If trees are being planted along the new sidewalk, root barriers should be installed along the entire length of the tree. If the tree is being planted in a parkway along the new sidewalk, barriers should be installed along the sidewalk side of the tree *and* the curb side of the tree. This portion of the project should be overseen by the Bloomington Parks Department if possible. See Section 5 for more on root barriers.

Priority I Gaps, in this order of importance

1. Along parts of Vale and Croxton and the east side of Ryan south of Oakland School. This is referred to as the Oakland School Gap.
2. Along North State Street, from Marion to Emerson, north of Bloomington High School.
3. Along South Center Street adjacent to Highland Golf Course.

Figure 19: Cost of Priority I Connectivity Gaps

PRIORITY I Connectivity Gap Location	Cost
Oakland School Gap	$40,000
North State Street	$18,000
South Center Street	$29,000
TOTAL	**$87,000**

Figure 20: Cost of Priority II Connectivity Gaps

PRIORITY II Connectivity Gap Location	Cost
Barker at Wood	$2,950
Hinshaw at Elm	$3,300
Low at Olive	$3,000
Lumber at Olive	$3,700
Robinhood at Towanda	$6,500
Western at MacArthur	$3,000
Western at Walnut	$2,000
White Oak Road at Locust	$4,180
TOTAL	**$28,630**

Figure 21: Cost of Priority III Connectivity Gaps

PRIORITY III Connectivity Gap Location	Cost
Towanda/Ewing Park II Crossing	$20,000
Ireland Grove Road **Don Bly Way to Crista Ann**	$20,000
Ethel Parkway from Emerson to Ewing II	$65,000
TOTAL	**$105,000**

Combined Total of Priority I, Priority II and Priority III: $220,630

Figure 22: Priority I Gap Projects

Oakland School Gap Area south of Oakland School (Vale, Croxton, Ryan). On a school walking route. Also connects neighborhood to Holiday Park. **$40,000**	
North State Street State Street from Marion to Emerson, north of BHS. Students walk through neighborhood to and from school and often walk in the street. **$18,000**	
South Center Street Center Street adjacent to Highland Golf Course. The worn path demonstrates heavy usage and pedestrian need. (At left, looking north. At right, looking south.) **$29,000**	 

Figure 23: Priority II Gap Projects

Barker at Wood: $2,950

Robinhood at Towanda: $6,500

Hinshaw at Elm: $3,300

Western at MacArthur: $3,000

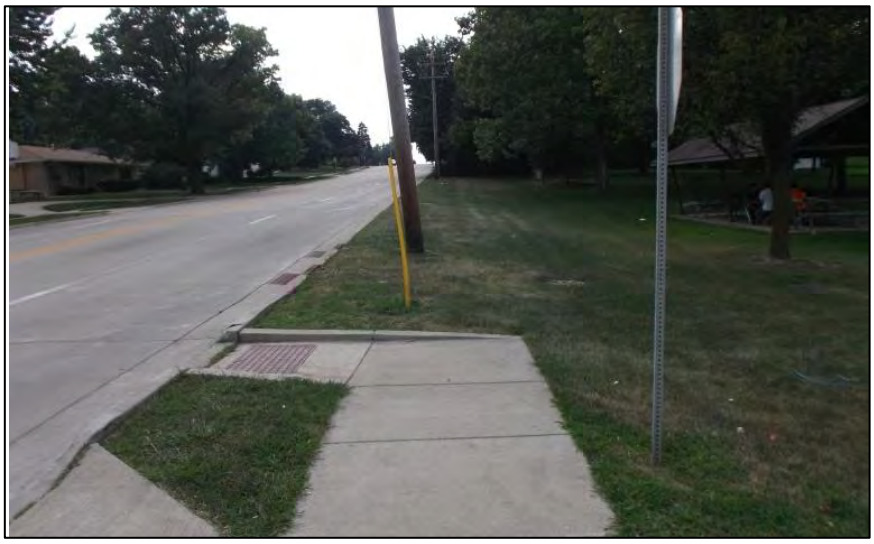
Low at Olive: $3,000

Western at Walnut: $2,000

Lumber at Olive: $3,700

White Oak at Locust: $4,180

Figure 24: Priority III Gap Projects

Towanda Avenue/Ewing Park II Crossing (RRFB) Ewing II Park lacks access from the east, but sidewalk construction along the west side of Towanda Avenue would require enormous expense, including Ewing Manor land acquisition. Instead, the City should install a high-visibility crosswalk at Rowe Drive along with rectangular rapid flashing beacons (RRFBs).Year 4. **$20,000**	
Ireland Grove Road **Don Bly Way to Crista Ann** The stretch of grassy walkway is approximately 900 feet long. Residents use the grassy area as a walkway, which is rutty, as a way to access other neighborhoods and, eventually, the Constitution trail. Year 9. **$20,000**	
Ethel Parkway **Emerson to Ewing II** This project would give residents pedestrian-friendly access to the park. It would require partnership with Normal, because more than half of the area is in Normal. The Bloomington portion would cost about $27,500. Year 10. **$65,000** (Note: A better option may be a Constitution Trial extension along the creek.)	

6.7 Cost of ADA Ramps

ADA requires that the City eventually bring all ramps up to compliance with current standards. Approximately 4,900 ramps still will fall short of compliance after the 2014 construction year. Fixing them would cost $5.9 million in 2014 dollars.

City records show Bloomington has 1,300 additional sidewalk locations which should have ramps but have none. The cost for installation in 2014 dollars is $1.6 million.

The estimates use the standard $1,200 per ramp. The cost will vary by sidewalk. Sometimes the City has to replace multiple sidewalk panels leading up to the ramp to ensure a maximum slope of one inch per foot as required by ADA.

In a few cases, sidewalks have steps leading from the sidewalk to the street. In these cases, the City has to replace multiple sidewalk panels, re-grade the parkway and sidewalk area and erect a retaining wall between the sidewalk and the adjacent property. These repairs cost several thousands of dollars.

6.8 Rising Construction Cost

The City and other municipalities have encountered rising construction costs. That limits effectiveness of any sidewalk program unless budgets go up as well. **Figure 25** shows the average cost of repairs from FY 1995-1996 to FY 2012-2013 and the percent changes in prices between FY 2004-2005 and FY 2012-2013, FY 2001-2002 and FY 2012-2013, and FY 1995-1996 and FY 2012-2013.

Some data is unavailable; detectable warnings for sidewalks ramps didn't become a line item in the bidding until FY 2004-2005, and sidewalk excavation didn't become a line item in the bidding until FY 2001-2002.

Figure 25: Cost of Sidewalk Repair Items

Description of Repair Work	FY 2012-2013 Prices	FY 2004-2005 Prices	% Change from FY 04-05 - FY 12-13	FY 2001-2002 Prices	% Change from FY 01-02 - FY 12-13	FY 95-96 Prices	% Change from FY 95-96 - FY 12-13
Cost for 4" of sidewalk (per square foot)	**$4.75**	**$3.50**	**36%**	**$3.35**	**42%**	**$2.55**	**86%**
Cost for 6" of sidewalk on driveway (per square foot)	**$5.10**	**$3.85**	**32%**	**$3.65**	**40%**	**$2.85**	**79%**
Cost for saw cutting if required (per linear foot)	**$1.40**	**$1.00**	**40%**	**$0.75**	**87%**	**$0.75**	**87%**
Detectable Warnings	**$27.00**	**$19.00**	**42%**	**N/A**	**N/A**	**N/A**	**N/A**
Partial Curb Removal (by saw cutting)	**$19.00**	**$17.00**	**12%**	**$16.00**	**19%**	**$15.00**	**27%**
Curb Removal & Replacement	**$39.00**	**$18.00**	**117%**	**$11.50**	**239%**	**$12.00**	**225%**
Sidewalk Excavation	**$3.00**	**$1.90**	**58%**	**$1.75**	**71%**	**N/A**	**N/A**

6.9 Historical Funding: Capital Sidewalk Program

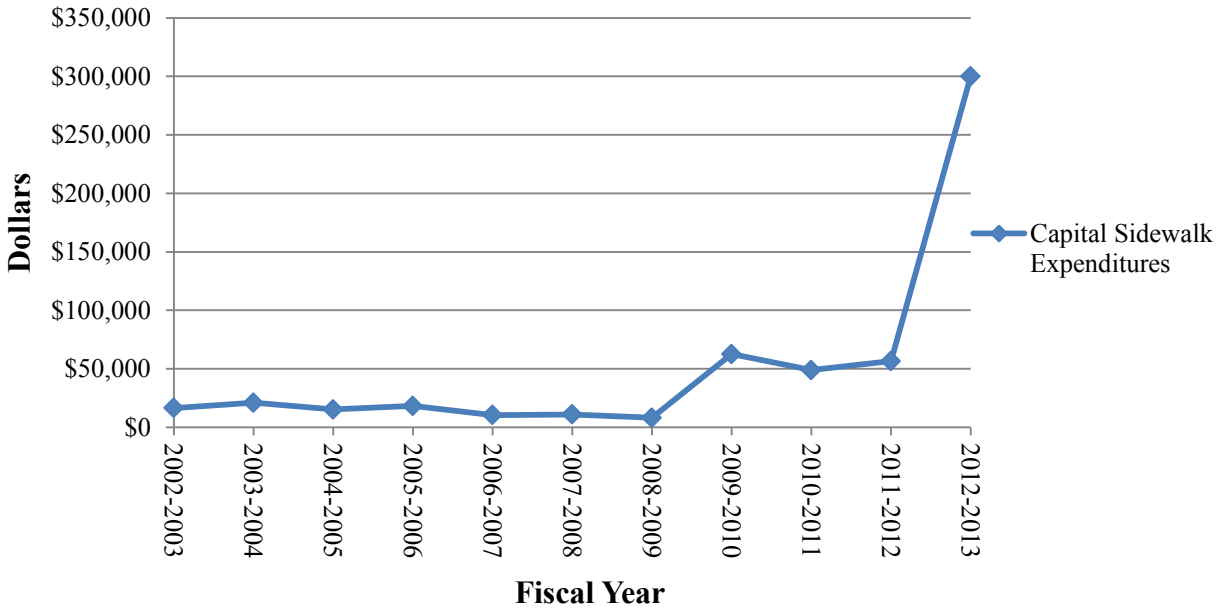
The Capital Sidewalk Program provides funding for sidewalks and ramps with 100 percent City money from the General Fund. Sharp rises in the last two years shows the Administration and Council have increased their emphasis on infrastructure.

Figure 26 shows the expenditures for the Capital Sidewalk Program and ADA Ramps Program from Fiscal Year 2002-2003 to Fiscal Year 2013-2014.

Figure 26: Capital & ADA Expenditures from FY 2002-2003 to FY 2011-2012

Fiscal Year	Capital Sidewalk Program	ADA Ramps Program
2013-2014	$300,000	$375,000
2012-2013	$166,090	$77,763
2011-2012	$56,572	$55,202
2010-2011	$48,955	$51,035
2009-2010	$62,546	$57,040
2008-2009	$11,054	$60,057
2007-2008	$11,043	$62,872
2006-2007	$10,447	$60,002
2005-2006	$19,296	$63,486
2004-2005	$15,247	$58,540
2003-2004	$20,938	$51,614
2002-2003	$16,467	$49,531

*



6.10 CDBG Sidewalk Funding

Bloomington's Community Development Block Grant funds have provided money for public sidewalk repairs in some cases. CDBG receives money from the United States Department of Housing and Urban Development. The money must be applied to aid residents with low and moderate income.

Since 2001, the CDBG Sidewalk Program has been used three times. In Fiscal Year 2008-2009, $27,425 from the Community Development Block Grant was used to repair sidewalks in a designated slum-blight area in Bloomington. Also, the City used $162,384 from Community Development Block Grant-Revitalization, which was federal stimulus money, in the same area for sidewalk replacement in Fiscal Year 2010-2011. The CDBG Sidewalk Program was used again in 2012-2013 with $75,000 paying to replace approximately 13,000 square feet of sidewalk.

While CDBG money for sidewalks has been useful and appropriate, the City also has to balance other needs of low- and moderate-income residents. The 10-year funding plan (Section 7) assumes no CDBG money will be devoted to sidewalks.

6.11 City 50/50 Sidewalk Program

The 50/50 Sidewalk Program provides homeowners the opportunity to replace defective sidewalks along the streets in front of their homes for half of the total cost. The benefit to residents is that they get repairs of serviceable sidewalks that, if applied to the City's regular sidewalk repair program, would have to wait. The benefit for the City is $100,000 worth of sidewalk upgrade per year for $50,000 in City money. Almost all of the 50/50 participants have sidewalks rated as 4 and 5. Fixing these walks sooner than planned, through 50/50, prevents

them from deteriorating further. If the 50/50 applicant has a sidewalk in a serious state of deterioration – rating a 1, 2 or 3 – the resident won't be charged. Public Works considers it unfair to ask a resident to pay for repair to substandard sidewalk.

Figure 27 (shown on the next page) is a flow chart for the program.

Figure 27: Bloomington's 50/50 Sidewalk Program Process

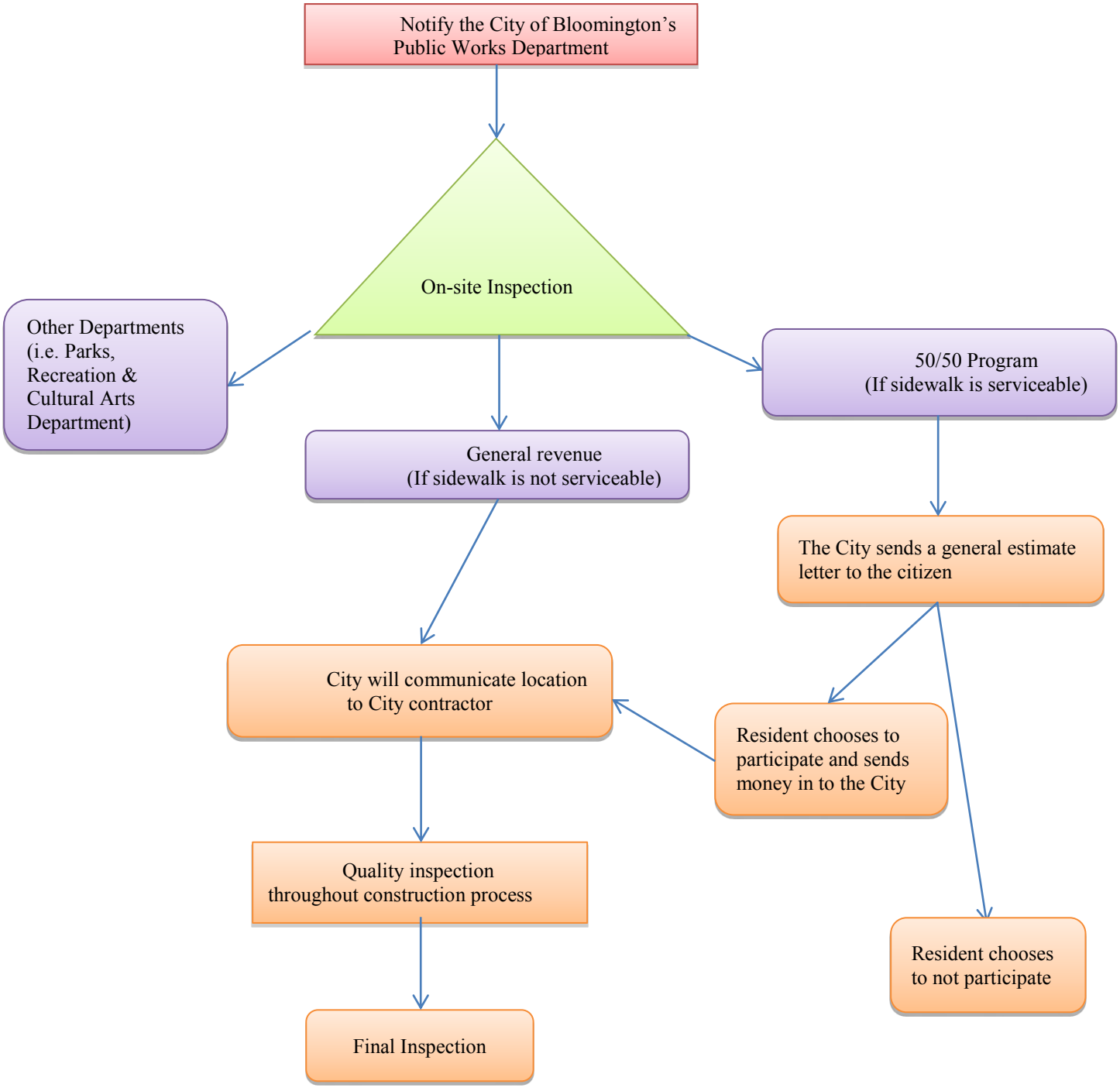


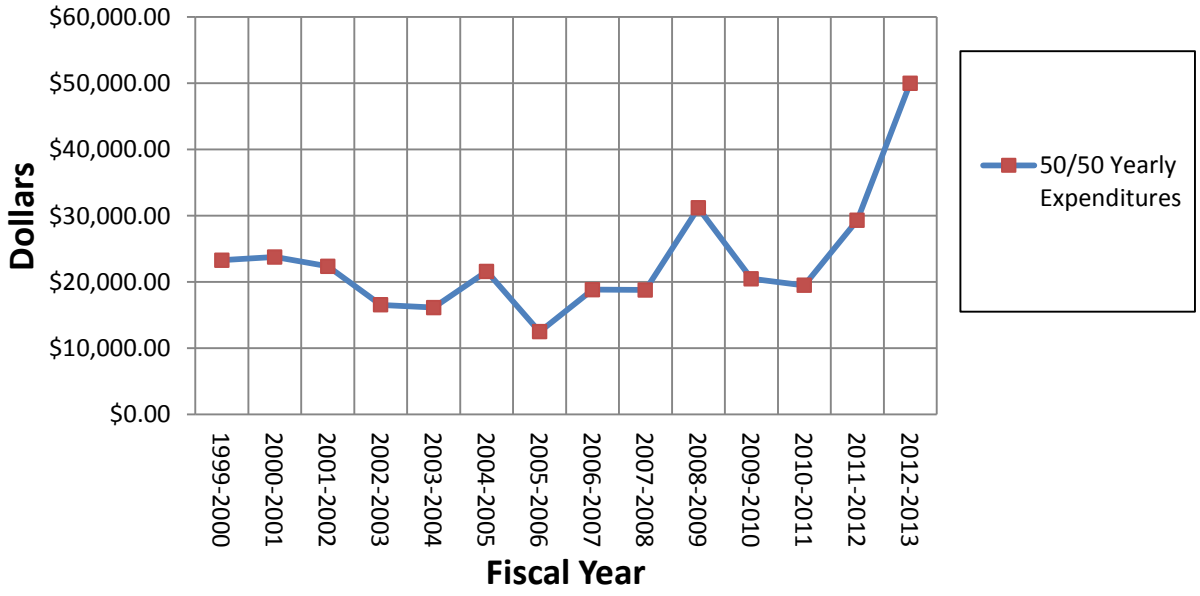
Figure 28 shows the participation rate for the 50/50 program from Fiscal Years 2006-2007 to 2012-2013.

Figure 28: 50/50 Sidewalk Program Participation 7-Year History

Fiscal Year	Number of Letters for 50/50 Requests	Number of 50/50 participants	% of 50/50 Program Participation
2012-2013	84	74	84%
2011-2012	52	24	46%
2010-2011	47	27	57%
2009-2010	50	22	44%
2008-2009	52	14	27%
2007-2008	58	12	21%
2006-2007	42	24	57%

Figure 29 shows how much the City of Bloomington spent yearly for the 50/50 Sidewalk program from Fiscal Years 1999-2000 to 2012-2013. Historically, the City has not spent the entire $100,000 allotted ($50,000 in City money matched by $50,000 in money from property owners). However, the City used its entire 50/50 budget in FY 2013 and FY14 and expects to do so again in FY 2014-15. Public Works staff and management believe the difference is that the City publicizes the program more effectively, through web site material, a brochure and a utility bill insert. It expects continued or increased interest. Therefore, the Master Plan recommends increasing the program by $5,000 annually for the duration of the Ten-Year Action Plan to accommodate demand and to account for inflation.

Figure 29: City Yearly Expenditures for the 50/50 Sidewalk Program



6.12 Grant Funding

Grant funding should be pursued by the City of Bloomington but limited funds are available.

A federal transportation program enacted in 2012 provides some funding for sidewalks, although the program is temporary. It is called Moving Ahead for Progress in the 21st Century (MAP-21). MAP-21 replaces the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users Act of 2005 (SAFETEA-LU). MAP-21 lists sidewalk work under two different funding programs:

- **Transportation Alternatives Program:** This program is for the construction, planning and design of non-motorized forms of transportation and includes money for sidewalks, pedestrian signals, safety-related infrastructure and other transportation projects to achieve ADA compliance.

- **Surface Transportation Program (STP)**: STP pays for modifications of public sidewalks to make them ADA compliant. The STP funds are distributed to municipalities with populations over 5,000.

MAP-21 was set to expire in 2014 and future availability of federal funds for sidewalks remains uncertain.

- **Safe Routes to School (SRTS):** SRTS falls under MAP-21. SRTS provides 80 percent federal funding of a project. Awards and allocation in Illinois are handled by the Illinois Department of Transportation. For 2014-15, Bloomington received a $160,000 SRTS grant, with a $40,000 City match, to provide a 4,180-foot long, 10-foot-wide, ADA-compliant pedestrian and bike path. The Benjamin School Trail will provide connectivity within The Grove on Kickapoo Creek subdivision and deliver students to and from Benjamin Elementary School. The Trail will parallel Ireland Grove Road, which has rural construction, a 45 mph speed limit and is not appropriate

for sidewalks because of its character. The City should apply for SRTS money for other school-related sidewalk projects if the SRTS program is extended.

6.13 Citizens Replacing Sidewalk on Their Own

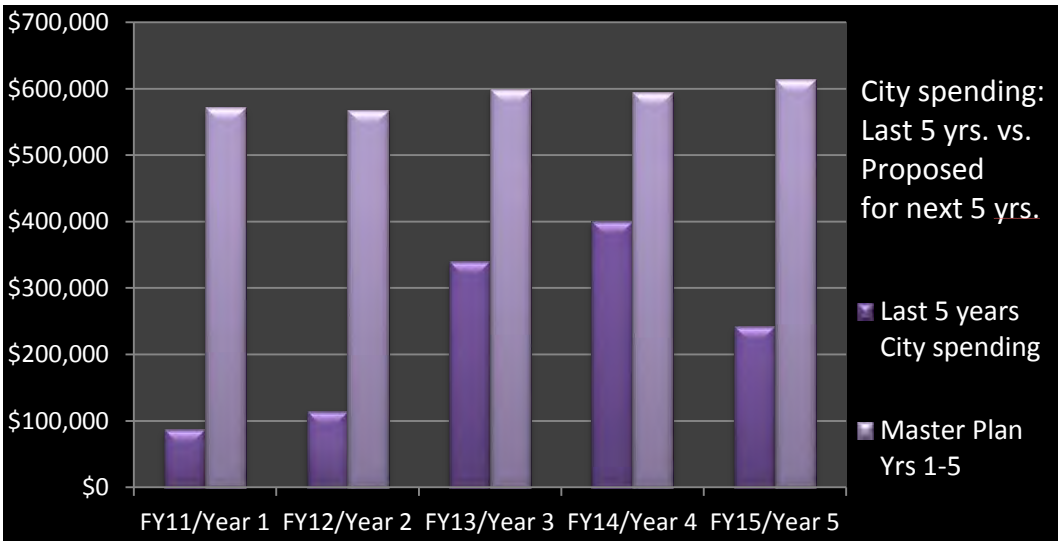
Residents can either choose to work with the City on sidewalks through the 50/50 Sidewalk Program or choose to have sidewalks replaced outside the City sidewalk program. However, the City discourages residents from replacing sidewalks on their own because the City does not inspect their construction to ensure the quality of work, and the work must be compliant with state and local city's codes and ADA requirements.

Citizens who choose to use a contractor not selected through the public bidding process must use a bonded/license sidewalk contractor approved by the City. Prior to any work, they must obtain a permit from the City. Also, residents who choose to work outside of the 50/50 Sidewalk Program are responsible for 100 percent of the cost of the sidewalk.

7.0 TEN-YEAR ACTION PLAN

The Sidewalk Master Plan proposes a realistic approach to put every Bloomington sidewalk into respectable shape within 10 years while also making major inroads toward full ADA compliance in regard to sidewalk segments and sidewalk ramps. All sidewalks with ratings of 1, 2, 3 and 4 would be upgraded. Some gaps in the sidewalk system will be connected with new sidewalks. Sidewalks will essentially meet Vision 2025 goals by the Year 2025.

The plan requires an increased funding priority from the City Council and it needs consistent funding. While the total dollars are not overwhelming given the scope of the City budget, the amounts do mark a steep increase in sidewalk funding compared to previous funding levels. Another way to look at it is that current funding levels do not meet clearly identified need. The accompanying chart compares the amounts allocated to sidewalks by the City over the past five years, ending in FY 2015, compared to the estimated amounts for the first five years of spending under the Sidewalk Master Plan. On average, the City spent $236,840 annually on sidewalks panel construction from FY 2010 to FY 2015. The Master Plan



calls for spending on average $589,474 annually in the first five years of plan enactment. Neither amount includes sidewalk ramps.

In 2014 dollars, the Master Plan shows $5.5 million of work. Spread over 10 years and assuming 3 percent annual inflation, the cost is $6.3 million; 9.7 percent of that amount is paid by property owner contributions to the 50/50 program. The Plan asks the City to fund the rest through the General Fund. It encourages the City to seek grants, but it assumes no money from grants will be received or that the City's will choose to spend federal Community Development Block Grant money on sidewalks.

A review of the goals of the Master Plan demonstrates that goals are basic: Provide serviceable sidewalks for all residents.

7.1 Basic Elements of the Action Plan

PASER Rating and Service Level: The Ten-Year Action Plan brings Bloomington sidewalks to a minimum rating of 5 (Fair +), indicating all sidewalks will be at least acceptable (and most will be better than that). It would be preferable to bring the minimum rating to 7 (Good+) or 6 (Good-). The lower goal of 5, however, is more realistic. It is compatible with the City's Strategic Goal of "Financially Sound City Providing Quality Basic Services" at a time when the City addresses needs of the street and sewer systems and needs in other areas, such as pensions and public safety.

Sidewalk Connectivity: Key gaps in City sidewalk connectivity are identified and prioritized. While not a high priority in most cases, extending sidewalks along these gaps meets Vision 2025. Some of the gaps are small missing pieces that can be constructed in conjunction with resurfacing projects. Others, however, are more extensive projects. Keeping in mind budget realities, the Plan makes no attempt to fill every sidewalk connectivity gap in Bloomington. The Plan emphasizes fixing existing sidewalks.

Ramp Construction: Many sidewalks now have serviceable ramps connecting them to intersections, but most of these ramps do not comply with the specifications of the Americans with Disabilities Act. The most realistic way to achieve the goal of ADA ramp compliance already is being undertaken. That is, the Block By Block strategy of upgrading ramps when adjacent streets are being repaved or reconstructed. In addition, some ramps are being upgraded when a need becomes known. The needs of specific persons with disabilities would be an example of pressing need. The process of ADA compliance has been and should continue to be gradual because of the enormous costs involved but helping specific people with specific needs is priority.

Block By Block Sidewalk Upgrades: Ramps already have been improved under the Block by Block strategy (explained in Section 2.2). For the 2014-15 Fiscal Year, sidewalks rated as 1, 2 or 3 also were repaired or replaced under Block By Block if they were adjacent to streets being resurfaced. In future years, the City should continue to fund robust street repair, and it should improve sidewalks with 1, 2 and 3 ratings along streets being resurfaced. It already must fix ramps on these routes. When selecting which poor-quality sidewalks to fix first, Public Works should use its list of upcoming road resurfacing projects as a primary guide.

50/50 Funding: The 50/50 program produces $100,000 in work for $50,000 of City money and should be gradually expanding, providing $1.2 million of work during the life of the Action Plan. The program is the City's best way to economically fix sidewalks that do not rate at 1, 2 or 3. Almost all sidewalks under the 50/50 program rate as 4 and 5 prior to the work. Fixing them now, with citizen financial participation, keeps them from deteriorating into "poor" sidewalks.

Report-based Funding: The City should respond promptly when a person makes a valid report of hazardous or problematic conditions on a sidewalk. Doing so reduces City liability risk while meeting goals of outstanding public service and responsiveness. At times, the complaint- or report-based problem affects a person with a disability, making it the highest priority for repair. Report-based problems represent unplanned repairs, but the City should budget for them because they arise every year. This line item, responding to urgent and unforeseen, arguably is the most important line item in the Master Plan. The Action Plan sets aside $75,000 in Year 1 and raises the amount 3 percent to absorb inflating construction costs. Report-based repairs include sidewalk upgrades and installation of ADA-complaint ramps.

Legal opinion on report-based responses**:** Jeffrey R. Jurgens, Bloomington Corporation Counsel, reviewed implications of delays in making repairs. In an August 25, 2014 Council memo, he wrote the following:

Under past court rulings, an argument can be made that a municipality is liable for injuries resulting from a defective public sidewalk if the injured person was a permitted and intended user, the defect was not de minimis and/or open and obvious, and the municipality had actual or constructive notice of the defect. This follows the general principle that a municipality is not considered to be an insurer against all accidents occurring on public way, but a municipality is required to maintain its streets and sidewalks in a reasonably safe condition for the amount and kind of travel which may be fairly expected upon them. Unfortunately, there is no bright line test to determine whether a sidewalk defect is de minimis or too minor to be actionable, so caution is advised. As an example, past court rulings suggest that deviations in adjoining slabs of more than two inches are likely to be considered an unreasonable tripping hazard and therefore potentially actionable.

Developer Construction: Sidewalks in new residential and commercial subdivisions must be provided by the project developer. The City Administration and the City Council should review its practice of allowing pieces of the sidewalk in these subdivisions to remain unbuilt for years while the subdivision gradually builds out.

7.2 Updated Inventory After 2014-15 Construction

The 2014-2015 fiscal year was atypical in Public Works funding because of the City Council decision to issue $10 million in bonds to be used primarily for streets. Other issues, such as pensions, produced a tight budget. Consequently, the City did not budget for sidewalk capital funding beyond the $100,000 50/50 program. However, under Block By Block, substandard sidewalks along resurfacing routes were fixed with bond revenue. The bond money produced $900,000 million of sidewalk work. About $750,000 went to ramps in compliance with ADA regulations, while $150,000 went to substandard sidewalk segments rated as 1, 2 or 3. A mid-year budget amendment devoted another $100,000 to sidewalks for report-based sidewalk segment and ramp problems. The construction year produced the following sidewalk segment improvements, plus installation of 630 ADA-compliant ramps.

Figure 30: 2014 Construction Year `Bond' Work

Rated as 1 Failed	6,305 square feet	0.2 miles
Rated as 2 Very Poor	14,940 square feet	0.6 miles
Rated as 3 Poor	25,235 square feet	1 mile

After the 2014-15 construction work, Public Works data shows the following amounts of sidewalks rated as 1, 2, 3 and 4 remain.

Figure 31: Ratings, Miles and Costs after 2014-15 Bond Construction

Rating	Square Feet	Cost in 2014 dollars
1 Failed	34,380	$241,319
2 Very Poor	81,070	$569,516
3 Poor	165,054	$1,159,504
4 Fair -	227,116	$1,595,489
	TOTAL	**$3,565,828**

7.3 Action Plan Objective I: Continued Progress on Ramps

As detailed in Section 3.6, the City will continue to make rapid progress on ramps because of the City Council's commitment to street repair. Ramp repair must accompany street resurfacing and reconstruction. This is the primary vehicle through which new ramps are installed and existing ramps are upgraded. The plan recommends continued funding through the resurfacing budget. The Public Works Department calculated unmet need as follows after the 2014 construction season:

Making Ramps ADA-Compliant	
$5,880,000	Fixing 4,900 existing ramps
$1,560,000	Installing 1,300 new ramps
$7,440,000	**Total (in 2014 dollars)**

Should the City work ahead and fix its ramps prior to street resurfacing, many of those ramps will have to be fixed again once resurfacing occurs because street resurfacing results in a change to the street-sidewalk interface. The ramp may fall out of ADA compliance after resurfacing. Given the City's financial position, it can ill afford to fix the same ramps twice.

7.4 Action Plan Objective II: Repair/Replace All Sidewalks with a Rating of 1, 2 and 3

The first objective entails upgrading all poor, very poor and failed sidewalks -- rated as a 3, 2, and 1, respectively. Phase I will cost $1.97 million in 2014 dollars. Spread out over five-plus years, adjusting for 3 percent annual inflation, the cost will be approximately $2.1 million. After that time, the City will have no sidewalks with a rating below 4.

7.5 Objective III: Repair/Replace All Sidewalks with a Rating of 4

Continuing with steady, annual progress, the objective will be met by the end of Year 10 at an inflation-adjusted cost of $2 million.

7.6 Objective IV: Construct Sidewalk Along Priority I Connectivity Gaps

The Plan identifies three key gaps in sidewalk connectivity: The Oakland School Gap, North State Street by Bloomington High School and South Center Street stretching from South Hill nearly to Veterans Parkway along Highland Golf Course. The Action Plan recommends completing one of these gaps per year during the first three years.

The Oakland School Gap is top priority. It involves areas along a designated school walking route, and the pedestrians are elementary school students. It is placed in Year 1. The City should apply for Safe Routes To School (SRTS) funding through the Illinois Department of Transportation.

North State Street is the second priority. While it is not on a school route, Bloomington High School students use it daily and have been seen walking in the street. It is budgeted in Year 2.

In Year 3, the City should complete the South Center sidewalk. The well-worn grass path though this congested area of Bloomington demonstrates need for sidewalk at the location.

7.7 Objective V: Address Priority II Connectivity Gaps

Public Works staff identified eight of these Priority II connectivity gaps and assumes additional need to address small gaps will arise. The budget for these gaps begins in Year 4 at $8,000 and rises by $500 per year in all subsequent years.

7.8 Objective VI: Address Priority III Connectivity Gaps

Priority III gaps are important but comparatively expensive projects. The Sidewalk Master Plan places one project, the Rowe Avenue crossing to Ewing II Park, in Year 4 and the other two in the final years.

7.9 Objective VII: Increase Funding of 50/50 Sidewalk Program by $5,000 Annually

The City pays $50,000 for $100,000 of sidewalk work. Overwhelmingly, this work is done on sidewalks rated as 4 and 5. Therefore, the 50/50 program will eliminate some 4s and it will delay some 5s from deteriorating into 4s.

7.10 Objective VIII: Designate Money Annually for Report-based Work

The City must be able to respond quickly to valid, citizen-reported sidewalk hazards. Doing otherwise goes against the value of responsiveness to the citizenry and opens the City to liability for injuries created by the hazards.

Service Level and Spot Repairs

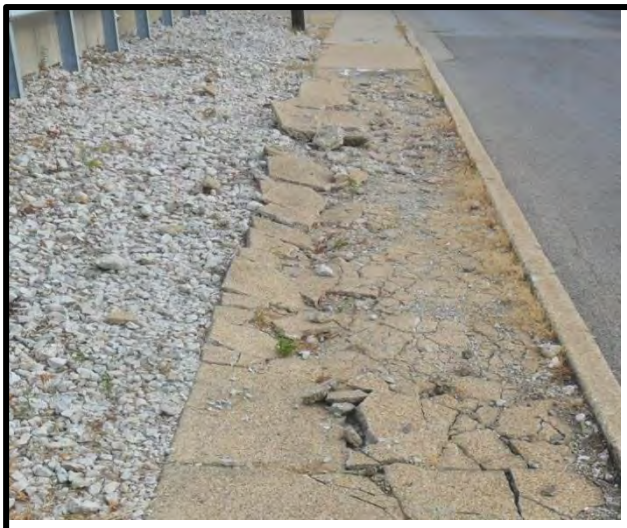
Spot repairs leave an uneven appearance along sidewalks, as demonstrated by this example on West Elm Street. However, economic realities dictate that spot repairs are enacted and that abutting sidewalk be left intact. The new pavement will fade into a similar color as the rest of the sidewalk.

7.11 The Master Plan Budget

Figure 32: Action Plan Budget Years 1-5

Expenditures					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Sidewalks rated 1, 2, 3	356,583	367,280	378,298	389,647	401,336
Sidewalks rated 4	0	0	0	0	0
Sidewalk Connectivity (Gaps)	40,000	18,540	31,000	28,000	8,500
50/50 Program	100,000	105,000	110,000	115,000	120,000
Report-driven repairs	75,000	77,250	79,568	81,955	84,414
TOTAL	**571,583**	**568,070**	**598,866**	**610,602**	**614,250**
Revenue					
50/50 contribution	**50,000**	**52,500**	**55,000**	**57,500**	**58,000**

Years 1-5 Recap: Most sidewalks rated as Poor, Very Poor and Failed are fixed. Four key connectivity gaps are addressed, and the City starts addressing small, Priority II connectivity gaps and creates a Ewing Park crossing at Rowe Drive (RRFB). The 50/50 Program continues. Report-driven and emergency repairs are addressed.



Transformation

Changing a stretch of sidewalk from a 1 rating to a 10 makes a dramatic difference, as seen on Bunn Street at MacArthur Avenue.

Figure 33: Action Plan Budget Year 6

Expenditures	
	Year 6
Sidewalks rated 1, 2, 3	217,270
Sidewalks rated 4	196,186
Sidewalk Connectivity (Gaps)	9,000
50/50 Program	125,000
Report-driven repairs	86,946
TOTAL	**634,402**
Revenue	
50/50 contribution	**62,500**

Year 6 Recap: The 1s, 2s and 3s now are completely eliminated. The emphasis shifts to 4s. Priority II connectivity gaps are being addressed. The 50/50 Program continues. Report-driven and emergency repairs are addressed.

The 4s: Fair-minus

- Still usable by most.
- Not easily navigated by runners, strollers and wheelchairs.
- Less than 50% of the parcel has severe spalling.
- Less than 50% of the sidewalk has moderate cracking.
- Minimal vertical displacement is under 25% of the parcel.

Figure 34: Action Plan Budget, Years 7-10

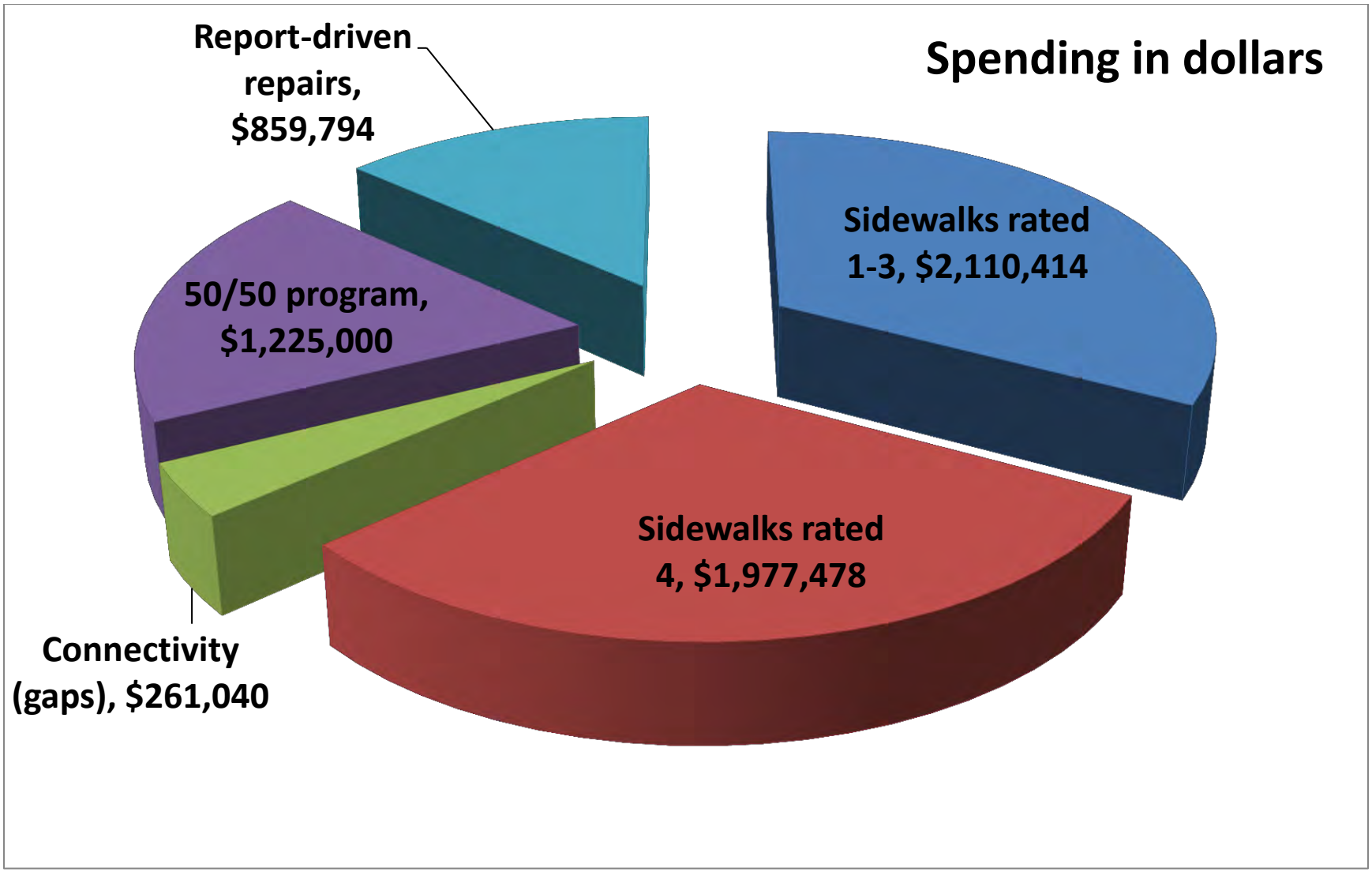
Expenditures				
	Year 7	**Year 8**	**Year 9**	**Year 10**
Sidewalks rated 1, 2, 3	0	0	0	0
Sidewalks rated 4	425,777	438,550	451,707	465,258
Sidewalk Connectivity (Gaps)	9,500	10,000	30,500	76,000
50/50 Program	130,000	135,000	140,000	145,000
Report-driven repairs	89,554	92,241	95,008	97,858
TOTAL	**654,831**	**675,791**	**717,215**	**784,116**
Revenue				
50/50 contribution	**65,000**	**67,500**	**70,000**	**72,500**

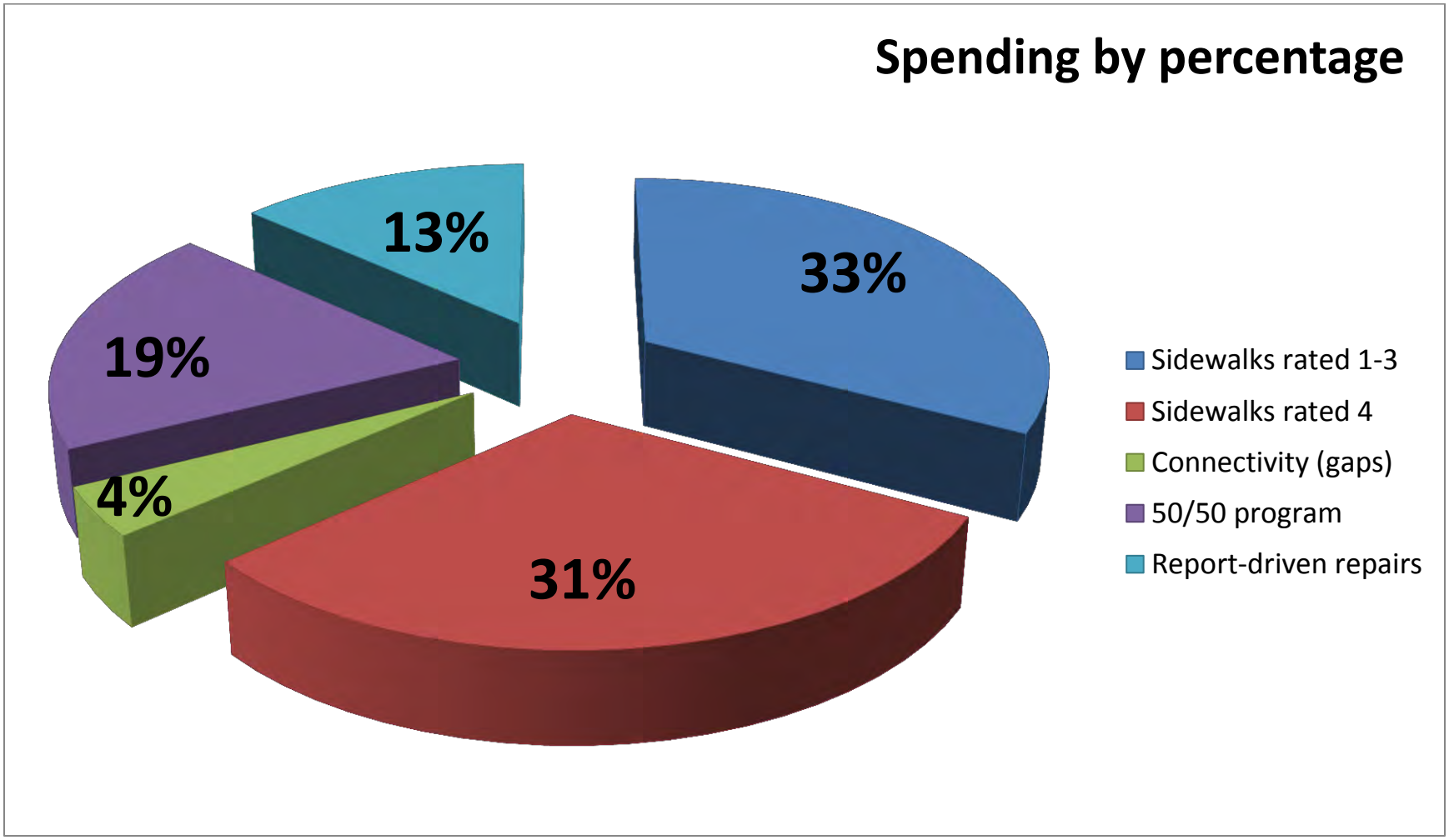
Year 7-10 Recap: All 4s are eliminated. Priority II and two remaining Priority III connectivity gaps are addressed. The 50/50 Program continues. Report-driven and emergency repairs are addressed.

Figure 35: Ten-Year Budget

Ten-Year Action Plan, Bloomington Sidewalk Master Plan										
Expenditures										
	Yr. 1	**Yr. 2**	**Yr. 3**	**Yr. 4**	**Yr. 5**	**Yr. 6**	**Yr. 7**	**Yr. 8**	**Yr. 9**	**Yr. 10**
***Sidewalks rated 1-3**	356,583	367,280	378,298	389,647	401,336	217,270	0	0	0	0
***Sidewalks rated 4**	0	0	0	0	0	196,186	425,777	438,550	451,707	465,258
Connectivity (Gaps)	40,000	18,540	31,000	28,000	8,500	9,000	9,500	10,000	30,500	76,000
50/50 Program	100,000	105,000	110,000	115,000	120,000	125,000	130,000	135,000	140,000	145,000
***Report-driven repairs**	75,000	77,250	79,568	81,955	84,414	86,946	89,554	92,241	95,008	97,858
TOTAL	**571,583**	**568,070**	**598,866**	**614,602**	**614,250**	**634,402**	**654,831**	**675,791**	**717,215**	**784,116**
10-Year Spending Total: $6,433,726										
Revenue										
50/50 Resident Contributions	**50,000**	**52,500**	**55,000**	**57,500**	**60,000**	**62,500**	**65,000**	**67,500**	**70,000**	**72,500**
10-Year Revenue Total: $612,500										

**Factors in 3 percent annual inflation*


Spending in dollars
Report-driven repairs, $859,794
Sidewalks rated 1-3, $2,110,414
50/50 program, $1,225,000
Sidewalks rated 4, $1,977,478
Connectivity (gaps), $261,040


Spending by percentage
13%
33%
19%
4%
31%
Sidewalks rated 1-3
Sidewalks rated 4
Connectivity (gaps)
50/50 program
Report-driven repairs

7.12 Consequences of Underfunding

The consequences of underfunding the Sidewalk Master Plan are fairly clear. Obviously, some work will not be undertaken. The work that will be completed first breaks down as follows:

- ADA sidewalk ramps: It is required by law that the City brings ramps into ADA compliance when resurfacing occurs on adjacent streets.
- Need of person with disability. The City has a moral and legal duty to accommodate persons with disabilities who use City sidewalks.
- Report-driven repairs. Once reports are received, the City is on notice. Inaction harms credibility and increases liability.

Work most likely to be delayed:

- Correction of sidewalks rated as 4, 3, 2 and 1. These are sidewalks that already have suffered neglect.
- Gaps in sidewalk connectivity.

7.13 If More Funds Become Available

As the Sidewalk Master Plan was being revised, the City also undertook a Bicycle Master Plan. The City's consultant, the League of Illinois Bicyclists, noted that sidewalks are a crucial component of bicycle routing. In drafts of the Bloomington Bicycle Master Plan, the casual adult cyclist was identified as the target constituency for bike routing but the drafts stated that needs of advanced cyclists, novices and children also were being met. Children generally do not use on-road bicycle paths; they ride on the sidewalk. Therefore, sidewalk should exist or be built along bicycle routes.

Numerous preferred routes in the Bicycle Master Plan include stretches of Bloomington that have no sidewalks. The illustration at right shows one of many.

Cottage Avenue along White Oak Park

The drafting of the Bicycle Plan does not negate the top priorities of the Sidewalks Master Plan: Fix existing substandard sidewalks and bring existing sidewalks into ADA compliance. Rather, it highlights need for more connectivity gap projects*, if additional funding becomes available.*

7.14 Following Up

If the Master Plan is followed as recommended, sidewalk spending for existing sidewalks should vastly decrease after enactment of the Ten-Year Action Plan. The City should then take steps to ensure its existing sidewalks remain in good shape. The best methods to do so are to

continue responding to complaints and observations of specific sidewalk problems – report-driven repairs -- and inspect all sidewalks periodically. The Master Plan recommends the following actions:

- Inspect and re-rate every sidewalk within a 10-year cycle. Technicians, interns and engineers conducting the inspections should take particular care in viewing sidewalks rated as 5 and 6.
- Repair or replace sidewalk panels for sidewalks in which ratings drop to 4 or less.
- Continue funding the 50-50 program.
- Continue budgeting for report-based issues to enable Public Works responds promptly to reported problems and complaints.
- Continue gradual upgrades of sidewalk ramps through the Block By Block system and through report-driven repairs.

ADA Transition Plan: The right-of-way portion of the ADA Transition Plan should be updated every 10 years.

Addressing other gaps: Post-plan spending also should be used to fill connectivity gaps throughout the sidewalk system that are not addressed in the Sidewalk Master Plan. There are numerous areas in in which smaller and larger stretches of road lack sidewalks. Need and desirability of the sidewalks should be evaluated case by case. Resident wishes should be taken into account, especially in long-established neighborhoods in which an added sidewalk in the right-of-way would constitute, in the residents' perceptions, an incursion into their "yards."

The City may wish to address another need: Sidewalks along long stretches of roads, such as Ireland Grove Road, in which sidewalks were never built. In addressing these connectivity gaps, plans for bicycle routes should add priority to a project..

Department of Public Works
Sidewalk Master Plan

APPENDIX

A-1: Glossary

50/50 sidewalk program: A program in which property owners request and pay half the cost of sidewalk replacement ahead of the City's timetable for replacing a given stretch of sidewalk. The City pays the other half.

Americans with Disabilities Act (ADA): Federal civil rights legislation signed in 1990 to extend protection, including public access, to people with disabilities.

ADA Transition Plan: A required evaluation for compliance with accessibility guidelines set forth by state and federal governments.

Block By Block: A strategy to address multiple infrastructure needs in a given area as a single project or a series of staged projects.

Capital Sidewalk Program: A program that is funded 100 percent by City funds to provide repairs and replacement of public sidewalks.

Carriage walk: A concrete pathway which connects a sidewalk and a curb, usually running perpendicular to the two.

Clear space: The minimum space required to accommodate a single, stationary wheelchair.

Community Development Block Grant (CDBG): A program created under the Housing and Community Development Act of 1974. It provides grant funds to local and state governments to develop viable urban communities by providing housing and other items including infrastructure to low- and moderate-income residents.

Community Development Block Grant-Revitalization: A one-time grant program that offered federal stimulus money to municipalities. The intent was to invest in economic development, housing, infrastructure and other public facilities activities that would quickly spur further economic investment, increased energy efficiency and job creation or retention.

Connectivity: The ability to make and maintain a connection in the City sidewalk system without missing links or gaps.

Cracking: The separation of sidewalk pavement cause by breakage in the concrete.

Cross slope: The degree of inclination measured transversely across pavements rather than longitudinally in the direction traffic moves on the pavement.

Curb: A concrete border or row of joined stones forming part of a gutter along the edge of a street.

Curb ramp: A combined ramp and landing to accomplish a change of level to enable transition from a sidewalk to a street.

Detectable warning: A standardized surface feature built into or applied onto walking surfaces or other elements to warn visually impaired people of pending transition from sidewalk to street.

Driveway: A private access way for motor vehicles between a public or private street and off-street parking areas.

Driveway approach or apron: A portion of the driveway extending from the gutter flow line of the street to the sidewalk section.

Grinding: A repair technique to fix sidewalks by grinding down the concrete to reduce the elevation difference between adjacent sidewalk panels.

High Pedestrian Activities Generators: Areas within municipalities that will produce a higher volume of pedestrian traffic.

Hooking the sidewalk: The cutting of a semi-circular portion of a sidewalk panel in order for the sidewalk to wrap around a tree.

HUD: An acronym for United States Department of Housing and Urban Development.

MAP-21: An acronym for Moving Ahead for Progress in the 21st Century Act. The act was signed into law by on July 6, 2012. MAP-21 is a federal transportation funding and policy bill that updates and replaces the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users Act of 2005 (SAFETEA-LU).

Mud jacking: A repair technique to fix sidewalks by injecting a concrete/slurry mix into core drill hole to lift a sidewalk panel.

Parkway: A strip of ground that is between the curb and sidewalk. Parkways are considered to be in the public right-of-way.

PASER: An acronym for Pavement Surface Evaluation and Rating system. It is a system for visually rating the surface condition of a pavement from a scale of 1 to 10, with 1 being a pavement in a failed condition and 10 being a pavement in excellent condition.

Portland Cement Concrete (PCC): A standard mixture used on most sidewalks.

PROWAG: An acronym for Public Right-of-Way Accessibility guidelines**.** These guidelines were created by the United States Access Board.

Rebar reinforced concrete: Construction material made more solid by placing cylindrical strips of steel into the concrete while it is being poured.

Report-based funding: Money budgeted to respond to complaints of hazardous sidewalk conditions.

Right-of-Way: A strip of land dedicated to or used by the public for vehicular and/or pedestrian passage; storm, surface or ground water drainage; or public utility placement.

Root barrier: A material installed between newly planted trees and infrastructure to prevent roots from affecting infrastructure.

Root cutting: A technique of root removal designed to keep tree roots from disrupting infrastructure.

Saw cutting: A technique to remove a wedge of a sidewalk panel so that it lines up more evenly with the adjacent sidewalk panel.

School walking routes: Routes designated by **t**he City of Bloomington and school officials to produce safe walking for students.

Sidewalk: A portion of a right-of-way principally used by or intended for pedestrian passage.

Sidewalk panel: The individual section of concrete sidewalk that is divided by a joint or cut.

Sidewalk parcel: The sidewalk along a tract or plot of land.

Sloping: The change in the angle of a sidewalk panels.

Slum/Blighted area: A term used by United States Department of Housing and Urban Development to define a specific area in a municipality. To be eligible, the specific area must meet certain guidelines set by HUD.

Spalling/scaling: The flaking away of the hardening concrete and brick.

Ten-Year Action Plan: The budget set out in the Sidewalk Master Plan to achieve the Master Plan's objectives.

Trip hazards: Any vertical change of 1/4 inch or more at a sidewalk panel joint or crack.

Vertical displacement: The shifting in the land causing an unevenness of pavement between sidewalk panels.

Walkability: A measurement of how friendly an area is to walking.

A-2: Curb Ramps Evaluation Form

Curb Ramps Survey

Intersection_____
And_____
Date_____
By_____

Transition Plan Priority System

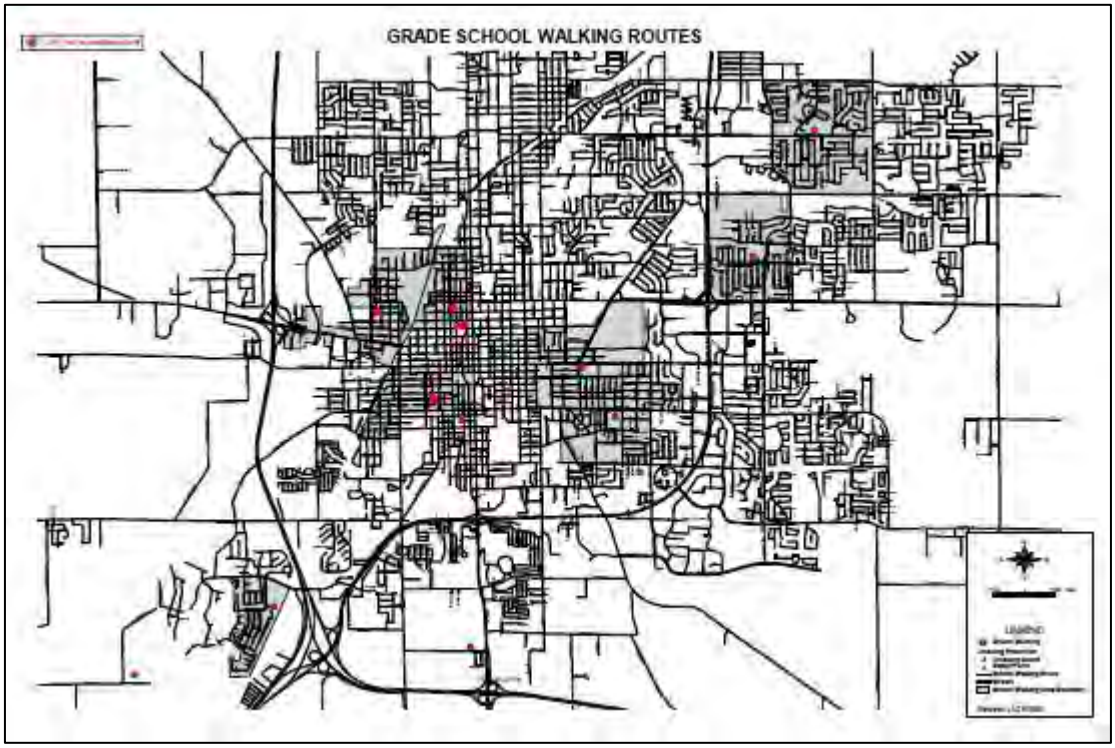
Use-related Needs

Conditions	Presence of disabled population/ special request	High pedestrian volume	Near public buildings and businesses
No ramps or no detectable warnings	A - 1	B - 1	C - 1
Ramps at streets undergoing resurfacing or reconstruction	A-2	B-2	C-2
Ramps deemed below safety threshold	A - 3	B - 3	C - 3
Safe, but non-ADA compliant	A - 4	B - 4	C - 4
Ramps are ADA compliant	A - 5	B - 5	C - 5

- Quadrants rated A1, B1, A2, B-2, C-2, A-3 and B3 are the highest priorities. The second row contains high rating because failure to address ramps at a street undergoing resurfacing constitutes an ADA violation. Color coded red.
- Quadrants rated A-4, B-4, C-1, and C-3 are medium priorities. Color coded orange.
- Quadrants C-4 is a low priority. Safe but non-compliant ramps should wait unless they are adjacent to a street that is being resurfaced. Color coded yellow.
- Ramps are in good condition and ADA-compliant. Color coded green.

	NE corner	NW corner	SE corner	SW corner
Slope 1)	_____	_____	_____	_____
Slope 2)	_____	_____	_____	_____
Detectable Warnings:	1. Y N 2. Y N	1. Y N 2. Y N	1. Y N 2. Y N	1. Y N 2. Y N
Ratings:	1. ____ 2. _____	1. ____ 2. _____	1. ____ 2. _____	1. ____ 2. _____

A-3: School Walking Routes

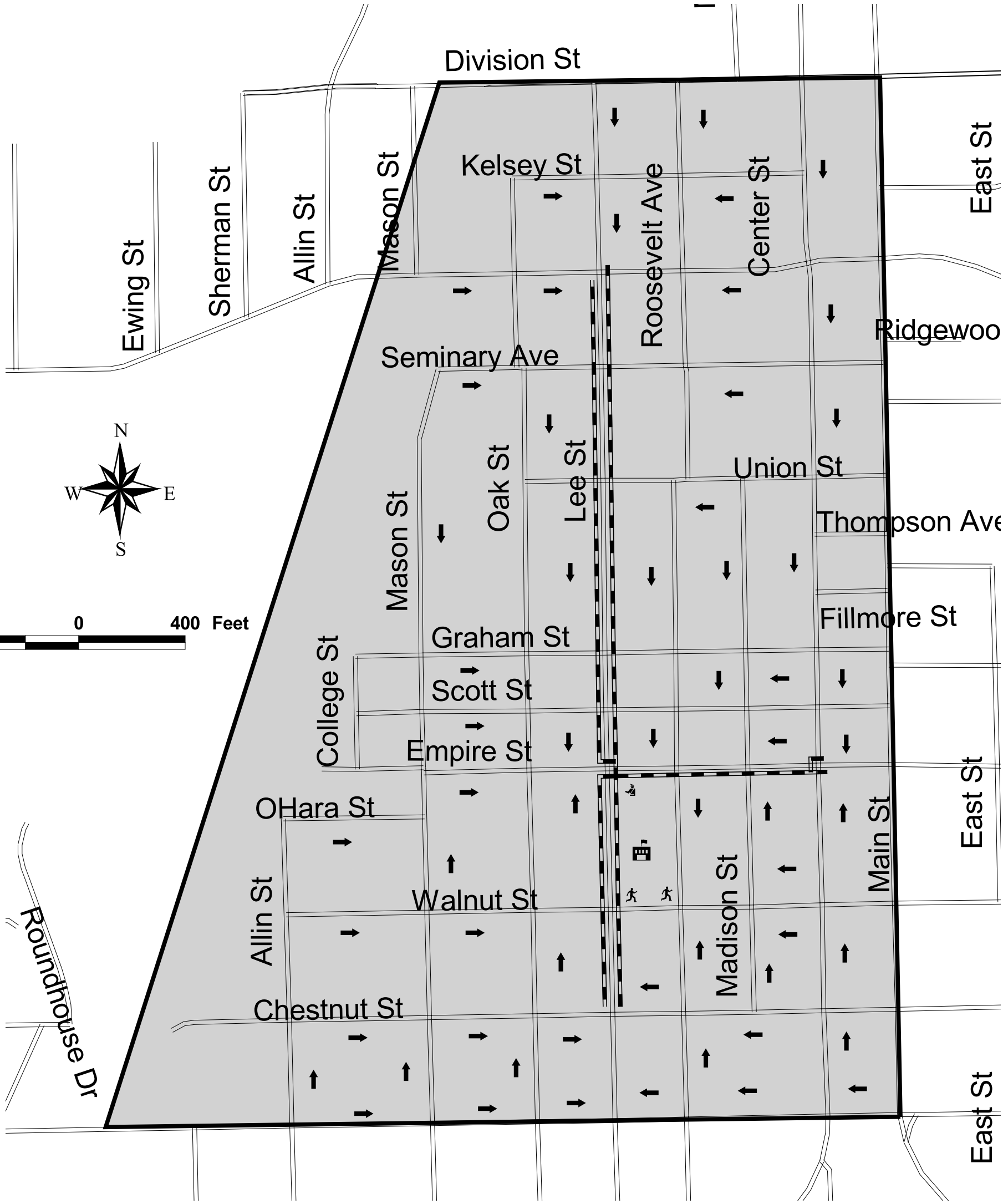


School Walking Route Boundaries
Bent School Walking Route Plan
Irving School Walking Route Plan
North Pointe School Walking Route Plan
Oakland School Walking Route Plan
Pepper Ridge School Walking Route Plan
Sheridan School Walking Route Plan
Stevenson School Walking Route Plan
Washington School Walking Route Plan
Bloomington High School & Junior High School Walking Route Plan

CITY OF BLOOMINGTON

GRADE SCHOOL WALKING ROUTES

Bent School
Walking Route Plan



- School Building
- Safe Direction to School

Crossing Protection

- Crossing Guard
- Safety Patrol
- School Walking Route
- Streets
- School Walking Area Boundary

CITY OF BLOOMINGTON

Produced 5/25/00
by the
City of Bloomington
Engineering Department
with Data from
the McLean County GIS

Produced from ArcView 3.1 Layout in R:\TRAFFIC\GIS\SCHOOL\BN-MAP.APR

Irving School Walking Route Plan

k School Building

- Safe Direction to School Crossing Protection

í Crossing Guard

ù Safety Patrol

School Walking Route

Streets

School Walking Area Boundary

CITY OF BLOOMINGTON

Produced 1/17/03
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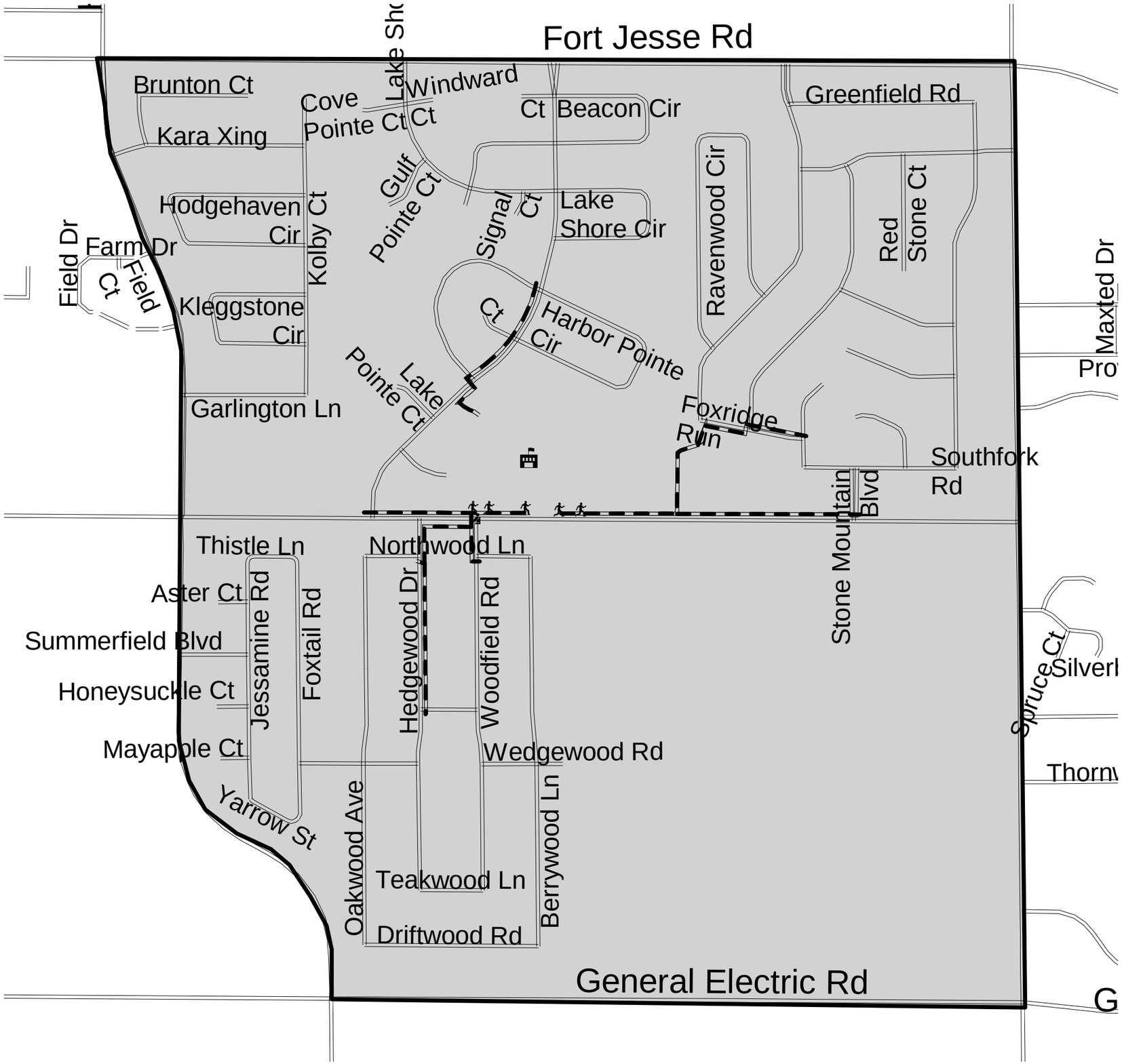

CITY OF BLOOMINGTON

North Pointe School
Walking Route Plan

N
W E
S

- School Building
- Safe Direction to School
- Crossing Protection
- Crossing Guard
- Safety Patrol
- School Walking Route
- Streets
- School Walking Area Boundary

600 0 600 Feet

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by the
City of Bloomington
Engineering Department
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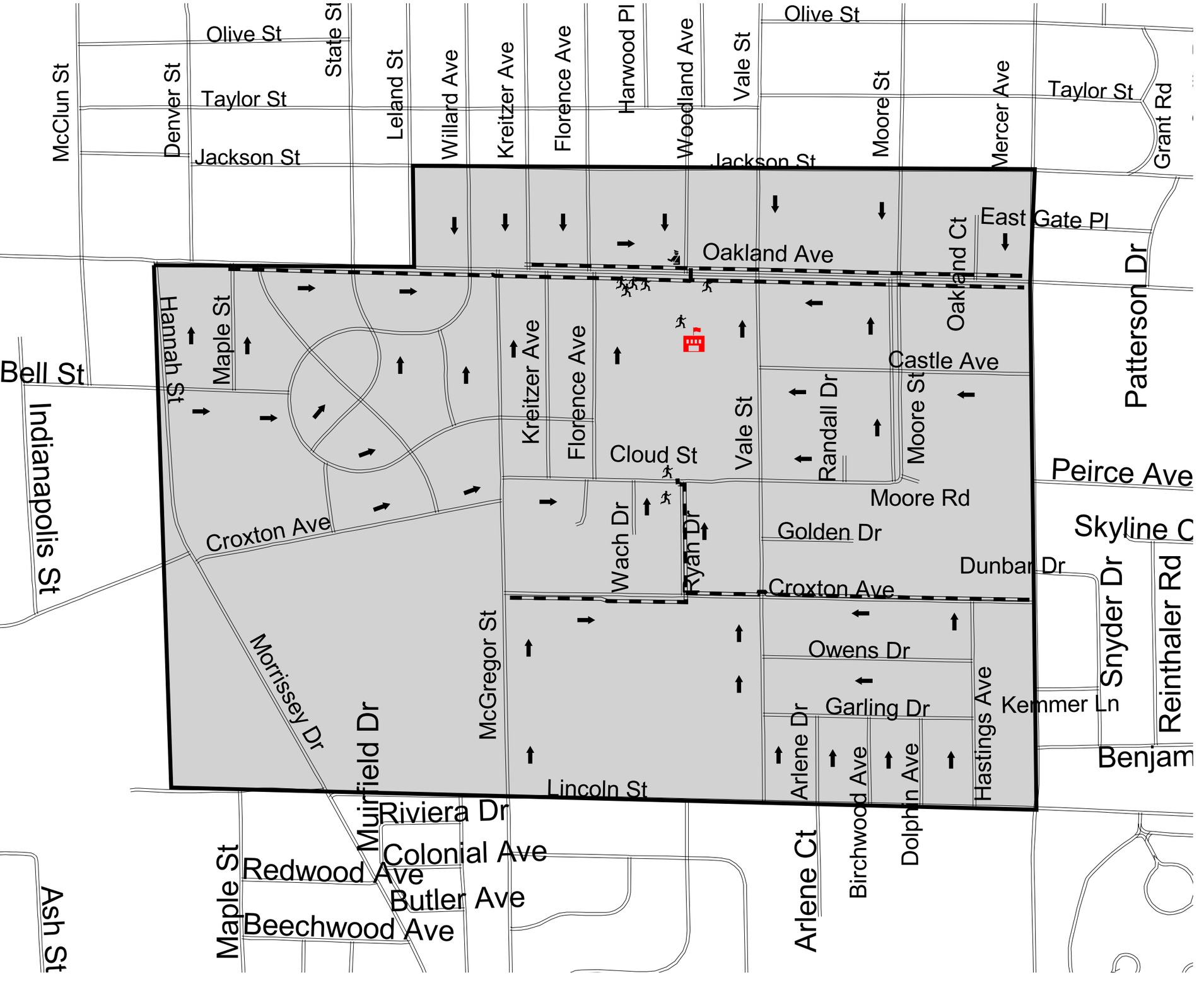
Oakland School Walking Route Plan



- School Building
- Safe Direction to School

Crossing Protection

- Crossing Guard
- Safety Patrol
- School Walking Route
- Streets
- School Walking Area Boundary

N
W E
S

500 0 500 1000 Feet

CITY OF BLOOMINGTON

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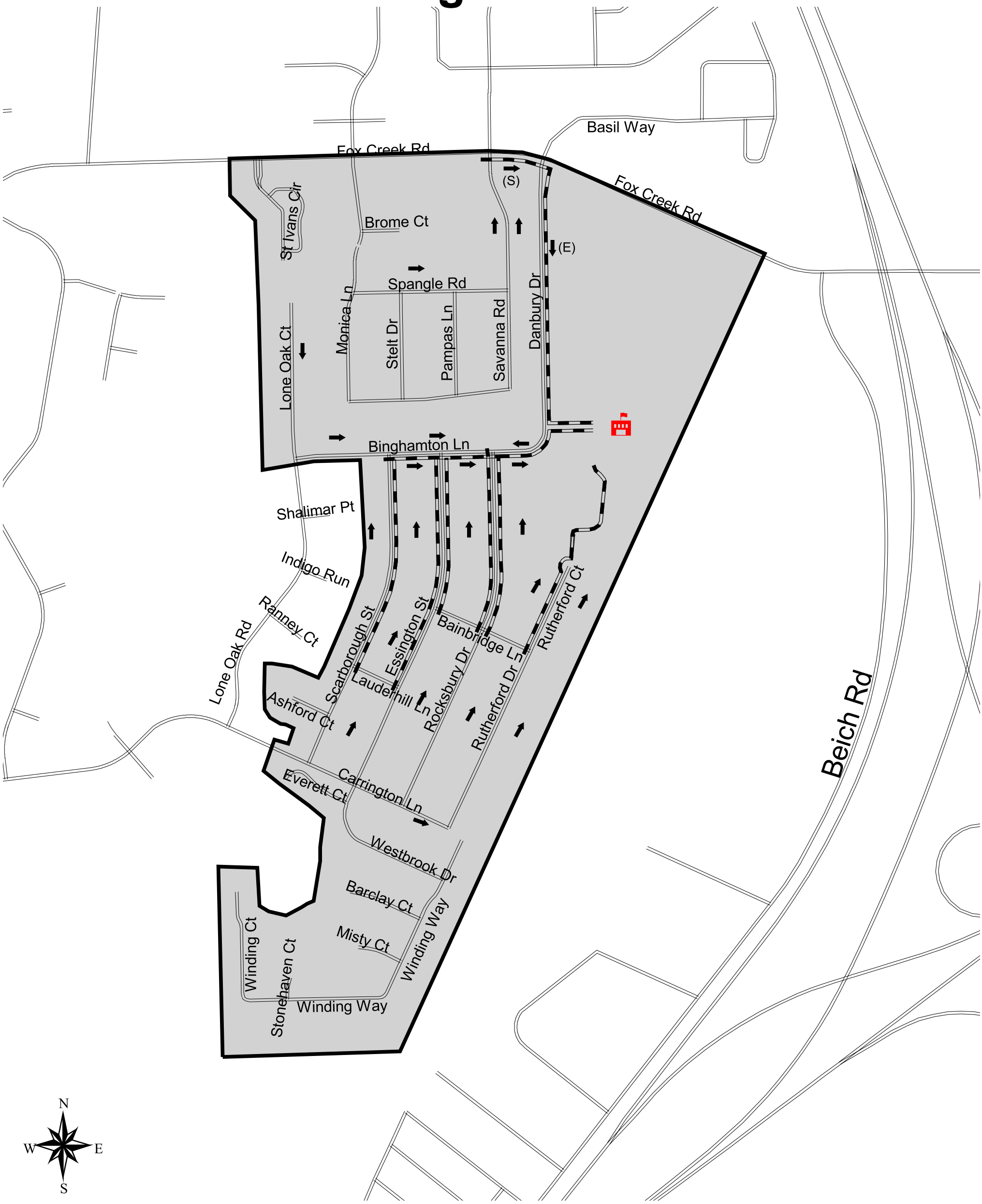
Pepper Ridge School
Walking Route Plan



500 0 500 1000 Feet

CITY OF BLOOMINGTON

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School Building

Safe Direction to School

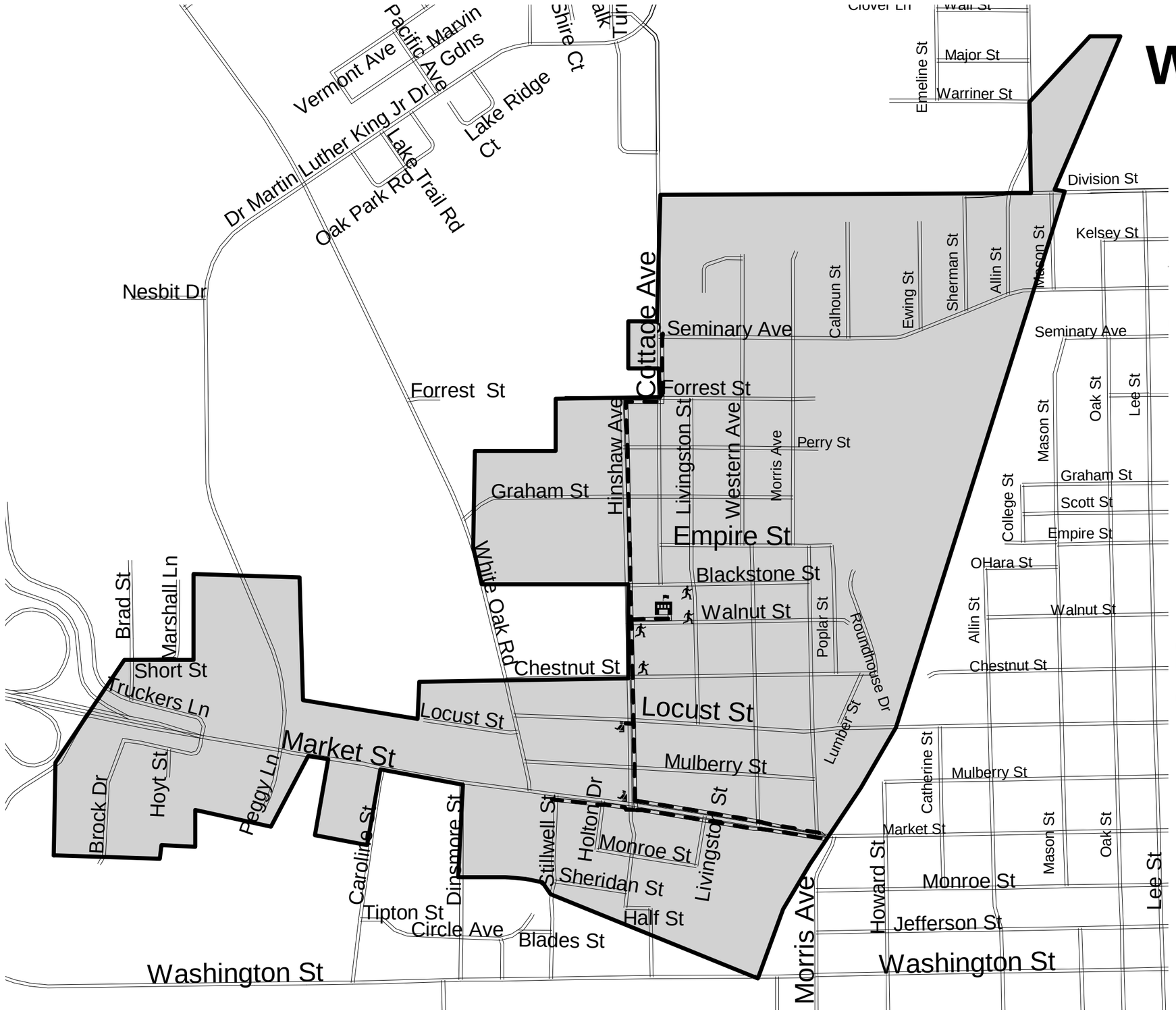
School Walking Route

Streets

School Walking Area Boundary

(S) **SAFEST SIDE OF THE STREET TO WALK**
(IF NO SIDE IS INDICATED EITHER SIDE MAY BE USED)

Sheridan School Walking Route Plan



- School Building
- Safe Direction to School
- Crossing Protection
- Crossing Guard
- Safety Patrol
- School Walking Route
- Streets
- School Walking Area Boundary

N
W E
S

800 0 800 1600 Feet

CITY OF BLOOMINGTON

City of Bloomington Engineering & Water

Produced 5/24//00
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Engineering Department
with Data from
the McLean County GIS

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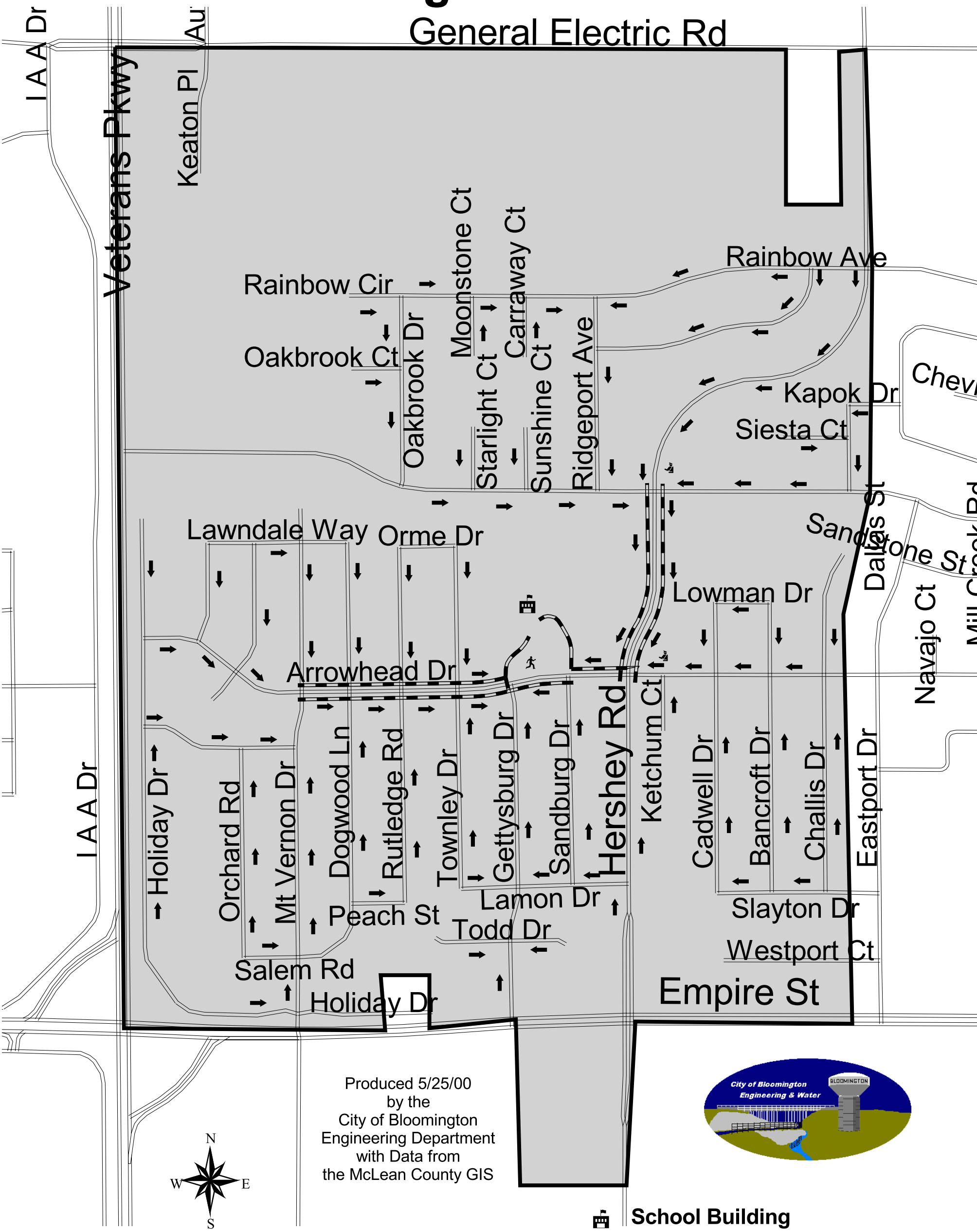
Stevenson School
Walking Route Plan



Produced 5/25/00
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City of Bloomington
Engineering Department
with Data from
the McLean County GIS

City of Bloomington
Engineering & Water

School Building
Safe Direction to School
Crossing Protection
Crossing Guard
Safety Patrol
School Walking Route
Streets
School Walking Area Boundary

CITY OF BLOOMINGTON

Produced from ArcView 3.1 Layout in R:\TRAFFIC\GIS\SCHOOL\BN-MAP.APR

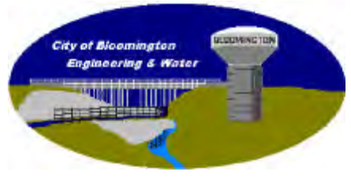
CITY OF BLOOMINGTON

Washington School
Walking Route Plan

N
W E
S

- School Building
- Safe Direction to School Crossing Protection
- Crossing Guard
- Safety Patrol
- School Walking Route
- Streets
- School Walking Area Boundary

500 0 500 Feet



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CITY OF BLOOMINGTON

Bloomington High School and Bloomington Junior High School Walking Route Plan

N
W E
S

1000 0 1000 Feet

School Building

Crossing Protection

Crossing Guard

Safety Patrol

School Walking Route

Streets

School Walking Area Boundary

Produced 9/25//07
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Engineering Department
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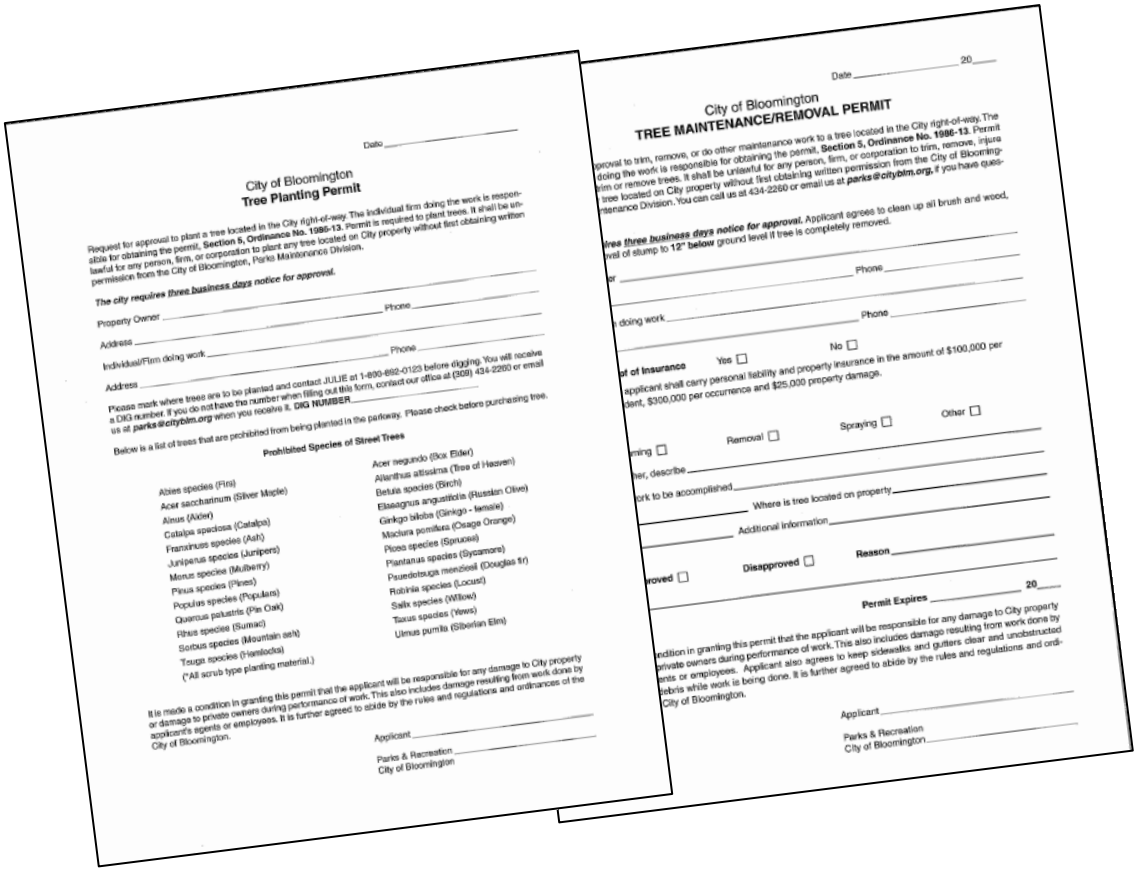
CITY OF Bloomington ILLINOIS

Sidewalk Master Plan

A-4: Tree Planting Permit
Tree Removal Permit



City of Bloomington
Tree Planting Permit

Date _____

Request for approval to plant a tree located in the City right-of-way. The individual firm doing the work is responsible for obtaining the permit, **Section 5, Ordinance No. 1986-13.** Permit is required to plant trees. It shall be unlawful for any person, firm, or corporation to plant any tree located on City property without first obtaining written permission from the City of Bloomington, Parks Maintenance Division.

The city requires three business days notice for approval.

Property Owner _____ Phone _____

Address _____

Individual/Firm doing work _____ Phone _____

Address _____

Please mark where trees are to be planted and contact JULIE at 1-800-892-0123 before digging. You will receive a DIG number. If you do not have the number when filling out this form, contact our office at (309) 434-2260 or email us at **parks@citybm.org** when you receive it. **DIG NUMBER** _____

Below is a list of trees that are prohibited from being planted in the parkway. Please check before purchasing tree.

Prohibited Species of Street Trees

Abies species (Firs)
Acer saccharinum (Silver Maple)
Alnus (Alder)
Catalpa speciosa (Catalpa)
Fraxinuss species (Ash)
Juniperus species (Junipers)
Morus species (Mulberry)
Pinus species (Pines)
Populus species (Populars)
Quercus palustris (Pin Oak)
Rhus species (Sumac)
Sorbus species (Mountain ash)
Tsuga species (Hemlocks)
(*All scrub type planting material.)

Acer negundo (Box Elder)
Allanthus altissima (Tree of Heaven)
Betula species (Birch)
Elaeagnus angustifolia (Russian Olive)
Ginkgo biloba (Ginkgo - female)
Maclura pomifera (Osage Orange)
Picea species (Spruces)
Plantanus species (Sycamore)
Pseudotsuga menziesii (Douglas fir)
Robinia species (Locust)
Salix species (Willow)
Taxus species (Yews)
Ulmus pumila (Siberian Elm)

It is made a condition in granting this permit that the applicant will be responsible for any damage to City property or damage to private owners during performance of work. This also includes damage resulting from work done by applicant's agents or employees. It is further agreed to abide by the rules and regulations and ordinances of the City of Bloomington.

Applicant _____

Parks & Recreation
City of Bloomington _____

Date _____ 20____

City of Bloomington
TREE MAINTENANCE/REMOVAL PERMIT

...proval to trim, remove, or do other maintenance work to a tree located in the City right-of-way. The ...doing the work is responsible for obtaining the permit, **Section 5, Ordinance No. 1986-13.** Permit ...him or remove trees. It shall be unlawful for any person, firm, or corporation to trim, remove, injure ...tree located on City property without first obtaining written permission from the City of Blooming- ...tenance Division. You can call us at 434-2260 or email us at **parks@citybm.org,** if you have ques-

...ires three business days notice for approval. Applicant agrees to clean up all brush and wood, ...evel of stump to 12" **below** ground level if tree is completely removed.

...r _____ Phone _____

...doing work _____ Phone _____

...of Insurance Yes ☐ No ☐

...applicant shall carry personal liability and property insurance in the amount of $100,000 per ...dent, $300,000 per occurrence and $25,000 property damage.

...ming ☐ Removal ☐ Spraying ☐ Other ☐

...her, describe _____

...ork to be accomplished _____

_____ Where is tree located on property _____

_____ Additional information _____

...roved ☐ **Disapproved** ☐ **Reason** _____

Permit Expires _____ 20____

...ndition in granting this permit that the applicant will be responsible for any damage to City property ...private owners during performance of work. This also includes damage resulting from work done by ...ents or employees. Applicant also agrees to keep sidewalks and gutters clear and unobstructed ...ebris while work is being done. It is further agreed to abide by the rules and regulations and ordi- ...City of Bloomington.

Applicant _____

Parks & Recreation
City of Bloomington _____

Date _____

City of Bloomington
Tree Planting Permit

Request for approval to plant a tree located in the City right-of-way. The individual firm doing the work is responsible for obtaining the permit, **Section 5, Ordinance No. 1986-13.** Permit is required to plant trees. It shall be unlawful for any person, firm, or corporation to plant any tree located on City property without first obtaining written permission from the City of Bloomington, Parks Maintenance Division.

The city requires three business days notice for approval.

Property Owner _____

Address _____ Phone _____

Individual/Firm doing work _____

Address _____ Phone _____

Please mark where trees are to be planted and contact JULIE at 1-800-892-0123 before digging. You will receive a DIG number. If you do not have the number when filling out this form, contact our office at (309) 434-2260 or email us at ***parks@cityblm.org*** when you receive it. **DIG NUMBER**_____

Below is a list of trees that are prohibited from being planted in the parkway. Please check before purchasing tree.

Prohibited Species of Street Trees

Abies species (Firs)
Acer saccharinum (Silver Maple)
Alnus (Alder)
Catalpa speciosa (Catalpa)
Franxinuss species (Ash)
Juniperus species (Junipers)
Morus species (Mulberry)
Pinus species (Pines)
Populus species (Populars)
Quercus palustris (Pin Oak)
Rhus species (Sumac)
Sorbus species (Mountain ash)
Tsuga species (Hemlocks)
(*All scrub type planting material.)

Acer negundo (Box Elder)
Ailanthus altissima (Tree of Heaven)
Betula species (Birch)
Elaeagnus angustifolia (Russian Olive)
Ginkgo biloba (Ginkgo - female)
Maclura pomifera (Osage Orange)
Picea species (Spruces)
Plantanus species (Sycamore)
Psuedotsuga menziesii (Douglas fir)
Robinia species (Locust)
Salix species (Willow)
Taxus species (Yews)
Ulmus pumila (Siberian Elm)

It is made a condition in granting this permit that the applicant will be responsible for any damage to City property or damage to private owners during performance of work. This also includes damage resulting from work done by applicant's agents or employees. It is further agreed to abide by the rules and regulations and ordinances of the City of Bloomington.

Applicant _____

Parks & Recreation _____
City of Bloomington

Date _____ 20____

City of Bloomington

TREE MAINTENANCE/REMOVAL PERMIT

Request for approval to trim, remove, or do other maintenance work to a tree located in the City right-of-way. The individual firm doing the work is responsible for obtaining the permit, **Section 5, Ordinance No. 1986-13**. Permit is required to trim or remove trees. It shall be unlawful for any person, firm, or corporation to trim, remove, injure or destroy any tree located on City property without first obtaining written permission from the City of Bloomington, Parks Maintenance Division. You can call us at 434-2260 or email us at ***parks@cityblm.org,*** if you have questions.

The city requires three business days notice for approval. Applicant agrees to clean up all brush and wood, including removal of stump to **12" below** ground level if tree is completely removed.

Property Owner _____

Address _____ Phone _____

Individual/Firm doing work _____

Address _____ Phone _____

Proof of Insurance Yes ☐ No ☐

The applicant shall carry personal liability and property insurance in the amount of $100,000 per accident, $300,000 per occurrence and $25,000 property damage.

Type of Work

Trimming ☐ Removal ☐ Spraying ☐ Other ☐

If other, describe _____

When is the work to be accomplished _____

Type of Tree _____ Where is tree located on property _____

_____ Additional information _____

Approved ☐ **Disapproved** ☐ **Reason** _____

_____

Permit Expires _____ **20**____

It is made a condition in granting this permit that the applicant will be responsible for any damage to City property or damage to private owners during performance of work. This also includes damage resulting from work done by applicant's agents or employees. Applicant also agrees to keep sidewalks and gutters clear and unobstructed from dirt and debris while work is being done. It is further agreed to abide by the rules and regulations and ordinances of the City of Bloomington.

Applicant _____

Parks & Recreation
City of Bloomington _____

A-5: Current City Codes

Chapter 38 of the Bloomington's City Codes discusses sidewalks, streets, and other public ways regulations. Below are some common topics for sidewalks:

Section 2: Sidewalks are intended for public use and should be kept free and clear for the public's use.

Section 17: It is unlawful for performances and exhibitions to impede passage on sidewalks.

Section 25: No one should pile snow, ice, or other waste on any public right-a-way.

Section 53: No steps, platforms or other fixtures may be extended into or upon any sidewalk.

Section 62: It is unlawful for any person to occupy or encumber any sidewalk.

Section 65: No signs or advertisements may be placed on sidewalks.

Section 69: No storage of personal property is permitted on sidewalks.

Section 71: Every owner or occupant should keep the sidewalk clear of snow, ice, or any other obstruction to maintain safe passage for pedestrians.

Section 74: Criteria for snow removal on sidewalks by owner or occupant are given.

Section 148: No one is permitted to cut or injure any tree standing on the City's public right-of-way without the consent of the City Forester or the consent of the owner of the property.

Section 171: Special assessments for sidewalk improvements are detailed.