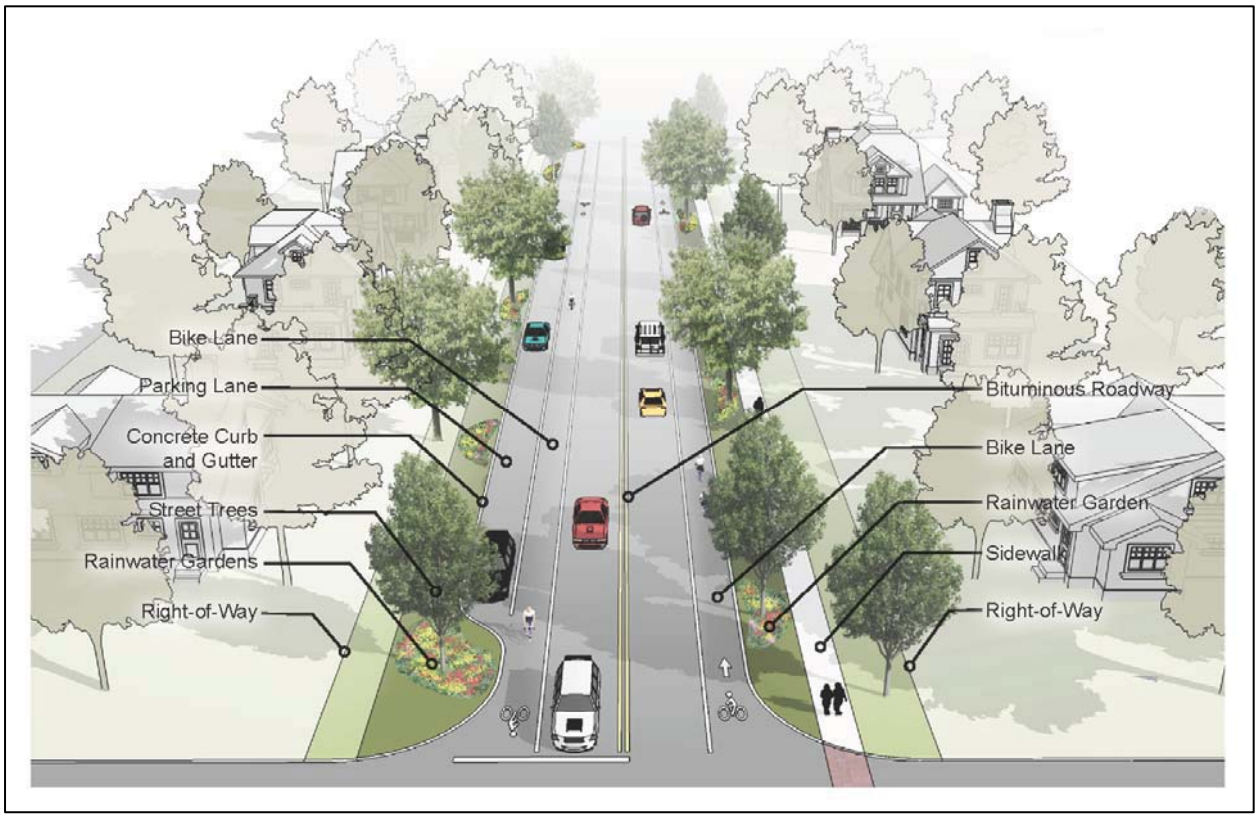

City of Maplewood, Minnesota
Living Streets Policy

By: Michael Thompson, P.E.
Director of Public Works / City Engineer

Adopted by the City Council on January 28, 2013

ACKNOWLDGEMENTS

I would like to thank the Planning Commission, Community Design Review Board, Environmental and Natural Resources Commission, and Business and Economic Development Commission for providing input and direction to help shape this document.

I also want to specifically thank each member that participated on the City's Living Streets Task Force:

- Kathy Juenemann, City Council
- Jason Lamers, Community Design Review Board
- Carol Mason-Sherrill, Environmental and Natural Resources Commission
- Tanya Nuss, Planning Commission
- Jennifer Lewis, Business and Economic Development Authority
- Virginia Gaynor, Natural Resources Coordinator
- Shann Finwall, Environmental Planner
- Bryan Nagel, Street and Storm Sewer Superintendent
- Butch Gervais, Fire Marshal
- Michael Thompson, City Engineer

I also want to acknowledge those people that served on the City's Living Streets Sustainability Work Group:

- Steve Love, Assistant City Engineer
- Steve Kummer, Civil Engineer II
- Jon Jarosch, Civil Engineer I
- Troy Brink, Streets Crew Chief
- Ann Hutchinson, Naturalist
- Virginia Gaynor, Natural Resources Coordinator
- Mike Martin, City Planner
- Michael Thompson, City Engineer

I would like to also recognize the Ramsey-Washington Metro Watershed District (RWMWD), Barr Engineering Company, and the City of North Saint Paul, MN all of which collaborated to create the North Saint Paul (NSP) Living Streets Plan. Materials and insight from that document were used as a background in facilitating discussion and helping to form the Maplewood Living Streets Policy document, with permission from the author(s).

I further wanted to acknowledge Bolton and Menk, Inc. for finalizing this document and creating the street template drawings which greatly assists in visualizing the Living Streets story for varying street types.

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1.0 INTRODUCTION

1.1 Policy Goals

The high level goals of Maplewood's Living Streets Policy are to:

1) Encourage people to travel by walking or bicycling.
2) Enhance the safety and security of streets.
3) Create livable neighborhoods.
4) Maximize the infiltration of stormwater.
5) Improve the quality of stormwater runoff.
6) Enhance the urban forest.
7) Improve the aesthetics of streets within the community.
8) Reduce life cycle costs.

Maplewood's Living Streets Policy focuses on a handful of specific items further discussed under Section 2.2 "Stakeholder Consensus" to meet these goals while understanding that each project must be considered in a context sensitive manner.

1.2 What is a Living Street?

Terminology surrounding this topic can be confusing. *Complete Streets* typically refers to street design that provides for multiple modes of transportation. *Green Streets* typically refers to street design that reduces environmental impacts by reducing impervious surface, managing stormwater, and providing shade. Living Streets for the purpose of this document is a combination of the two. Living Streets combines the concepts of complete streets and green streets, and also puts additional focus on quality of life aspects for City residents.

The State of Minnesota passed Complete Streets legislation in 2010. The Commissioner of Transportation has committed Mn/DOT to implement a complete street vision for the trunk highway system. Cities are encouraged to adopt policies to meet their unique needs; however it is not a mandate.

According to Mn/DOT, Complete Streets does not mean "all modes on all roads"; rather, the goal of Complete Streets should be to develop a balanced transportation system that integrates

all modes via planning inclusive of each mode of transportation (i.e., transit, freight, automobile, bicycle and pedestrian) and include transportation users of all types, ages and abilities.

A few examples of Complete Streets goals and principles listed in the Mn/DOT report to the legislature include:

1) Improve mobility and accessibility of all individuals including those with disabilities in accordance with the legal requirements of the ADA.
2) Encourage mode shift to non-motorized transportation and transit.
3) Reduce air and water pollution and reduce noise impacts.
4) Increase transportation network connectivity.

The City of Maplewood finds the Complete Streets report used to guide Minnesota legislation in 2010 useful, however the City wants to go further in addressing the environment and active living instead of focusing solely on a transportation vision. Thus this Living Streets Policy document reflects Maplewood's vision.

1.3 Background

The City of Maplewood was directed by the City Council in 2009/2010 to explore various city services that could be delivered in a more sustainable manner. A Living Street Sustainability Workgroup comprised of eight city staff persons met on April 28, June 29, and September 30, of 2010 to further define the importance of Living Streets as it relates to sustainable street construction and reconstruction.

To solicit feedback from Maplewood citizens, the Living Streets idea was brought forward to the Planning Commission, Community Design Review Board, and Environmental and Natural Resources Commission. The Living Streets concepts were well received.

The City Council supported the efforts and subsequently an official Task Force was created comprised of a team of ten individuals referred to in the Acknowledgements. The Task Force further refined goals and concepts for Living Streets.

Input was taken from stakeholders to help facilitate this Living Streets Policy document. Further details about stakeholder input can be found in Section 2.1.

1.4 Benefits of Living Streets

As quoted in the NSP Living Streets Plan:

"Most of us think of America as the land of choices. Yet, in just about any community built in the last 50 years, there is pretty much one choice for transportation: the car. North St. Paul isn't any different than most American cities in this regard. Living Streets provide many transportation

choices to the diverse range of city residents and it balances those choices to provide community, environmental and economic benefits as well."

The NSP Living Streets Plan did an excellent job of identifying the numerous benefits resulting from Living Streets. A summary of the benefits is provided below, while an excerpt from the NSP Plan containing more detailed information on the benefits is provided in the Appendix.

Living Streets:

- Provide economic benefits: lower initial costs; lower maintenance costs; increased property values; economic revitalization.

- Build community: improve public health; increase safety; enhance neighborhood beauty; strengthen sense of community; provide positive impact upon children.

- Provide environmental benefits: improve water quality; improve air quality; reduce the urban heat island affect; reduce materials and energy used in street construction; promote the planting of trees.

1.5 Vision for Maplewood

The Living Streets Policy is really a vision of what Maplewood wants to look like in 50 years, 100 years, and well into the future. The Living Streets collaboration has helped shape a vision by providing consensus when building new streets and reconstructing existing ones.

The City of Maplewood has been visionary when it comes to rainwater gardens and stormwater treatment; however, Living Streets further balances the scale of traditional infrastructure versus a sustainable "green" approach. As seen in the figure below this policy means to give additional weight to non-traditional components.

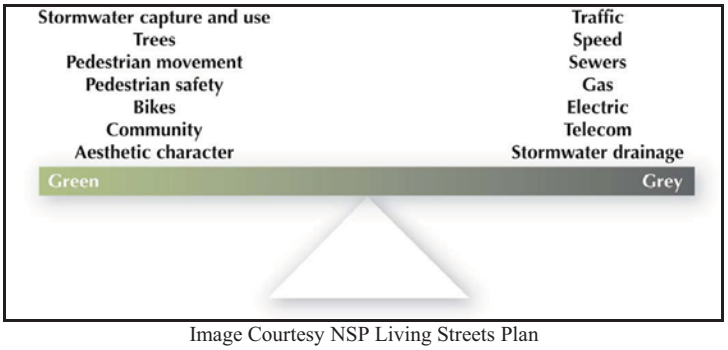
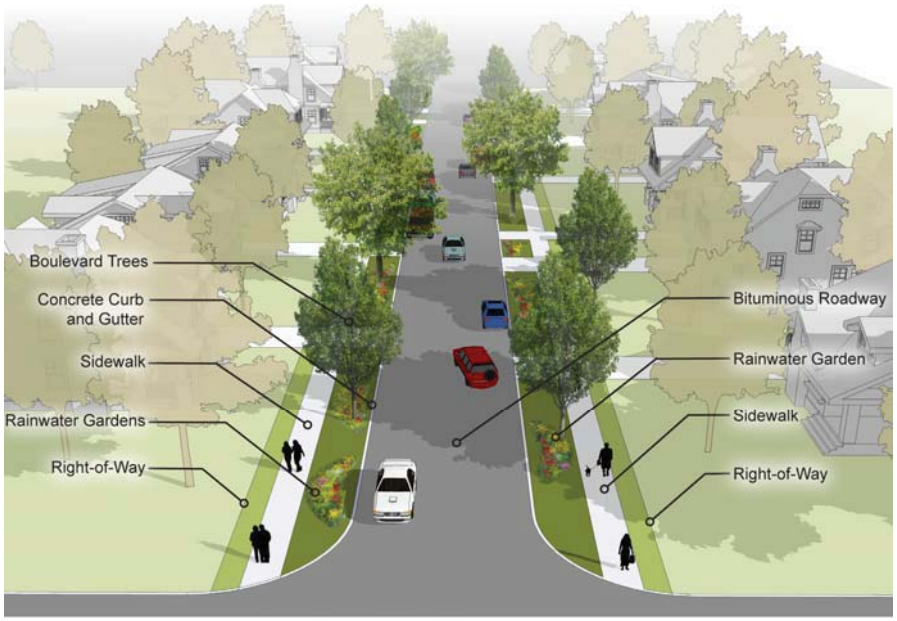


Image Courtesy NSP Living Streets Plan

To provide a very high level summary vision of the streets in Maplewood the following figures are provided. More detailed design standards are included in Section 3 of this document.

The vision for typical local Living Streets is shown below:

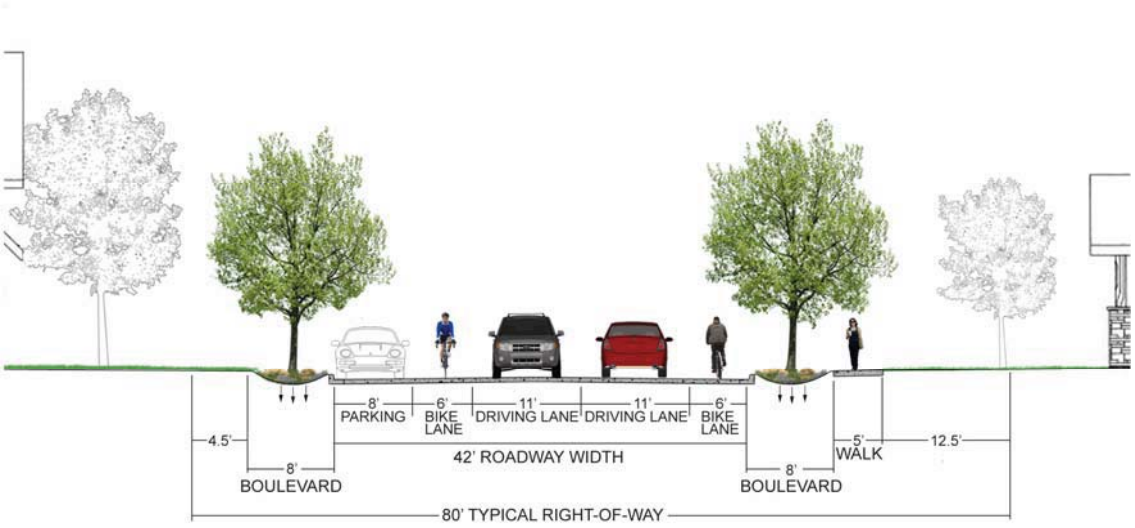


A rendering of a local “pre” Living Street versus a “post” Living Street is shown below:

Images Courtesy NSP Living Streets Plan

The general vision for higher volume collector type Living Streets is shown below:

A cross section view of a collector Living Street is shown below:



2.0 LIVING STREETS FOUNDATION

2.1 Stakeholder Process

As discussed in Section 1.3, an extensive stakeholder process was conducted in order to attain buy-in and move forward with a consensus for the Living Streets vision.

A Living Street Sustainability Workgroup comprised of eight city staff persons met on April 28, June 29, and September 30, of 2010 to further define the importance of Living Streets as it relates to sustainable street construction and reconstruction. That following were part of the Workgroup:

- Steve Love, Assistant City Engineer
- Steve Kummer, Civil Engineer II
- Jon Jarosch, Civil Engineer I
- Troy Brink, Streets Crew Chief
- Ann Hutchinson, Lead Naturalist
- Virginia Gaynor, Natural Resources Coordinator
- Mike Martin, City Planner
- Michael Thompson, City Engineer

The Workgroup discussed that Living Streets should improve stormwater quality through expansion of the rain garden program, reducing the impervious footprint of streets, and meeting or exceeding the 1" infiltration standard. Also important was the implementation of traffic calming measures through the use of techniques best suited for site conditions. Another key area discussed was improved biking and walking conditions along natural connector routes and collector streets through designation of bike lanes, sidewalks, or multi-purpose trails. Creating boulevard tree standards that provide environmental benefits (stormwater management, shade to reduce heating and cooling costs, filtering air pollutants, reduce urban heat island effect) was discussed along with the overall importance that any Living Streets Policy should attempt to minimize construction, replacement, and future maintenance costs in a manner that is equal to or less than that of a standard street section.

To solicit feedback from citizens, the Living Streets idea was brought forward to the following Boards and Commissions:

- Planning Commission on March 15, 2011 and November 20, 2012.
- Community Design Review Board on March 22, 2011 and November 27, 2012.
- Environmental and Natural Resources Commission on April 18, 2011 and October 15, 2012.

The City Engineer presented the Living Streets overview at these meetings. In addition, the Administrator of the Ramsey-Washington Metro Watershed District, Clifton Aichinger, presented

his first hand experience in forming a Living Street Plan for the City of North Saint Paul to the Planning Commission. The Living Streets concepts were well received at each meeting.

With the support from staff and citizens, the Living Streets ideas and concepts were presented to the City Council. The City Council supported the efforts and subsequently authorized the creation of an official Task Force on May 23, 2011. The Living Streets Task Force was comprised of the following:

- Kathleen Juenemann, City Council
- Jason Lamers, Community Design Review Board
- Carol Mason-Sherrill, Environmental and Natural Resources Commission
- Tanya Nuss, Planning Commission
- Jennifer Lewis, Business and Economic Development Authority
- Virginia Gaynor, Natural Resources Coordinator
- Shann Finwall, Environmental Planner
- Bryan Nagel, Street and Storm Sewer Superintendent
- Butch Gervais, Fire Marshal
- Michael Thompson, City Engineer

The purpose of the Task Force was to further refine goals and concepts for Living Streets with the intent of proposing an official Living Streets Policy to the City Council for formal adoption. The Task Force met July 27, August 10, and September 14, 2011.

2.2 Stakeholder Consensus

The Task Force was very productive in moving forward with focus items for the Living Streets Policy. The six focus items are listed below and then discussed individually in Sections 2.2.1. through 2.2.6.

- Improve the Quality of Stormwater Runoff.
- Implement Traffic Calming Techniques.
- Enhance Walking/Biking Conditions and Pedestrian Connections.
- Enhance the Urban Forest.
- Ensure Cost-Effective and Practicable Solutions.
- Improve the Aesthetics of Streets within the Community.

2.2.1 Improve the Quality of Stormwater Runoff

The City of Maplewood has always been proactive at managing stormwater runoff. Maplewood is a leader in the design and implementation of rainwater gardens. Living Streets is the next step for further improvements.

Issues that occur from simply sending stormwater down the storm sewer include:

- Stormwater pollutes local waters. Most runoff is not treated. It goes directly into local lakes and streams carrying pollutants like soil, fertilizers, pesticides, oil, soap, litter, organic matter, and pet feces.

- Stormwater runoff in our lakes causes turbid water, sediment buildup, and can contribute to algae blooms. It can impact health of aquatic plants and animals. Poor water quality in lakes also affects aesthetics and recreation.

- Sending runoff out of the neighborhood contributes to flooding downstream.

- Rainwater needs to soak in where it falls so it can help recharge groundwater aquifers.

In order to improve water quality, the City of Maplewood must continue an aggressive rainwater garden implementation program. Encourage and support the construction of rainwater gardens as retrofits. Require all new construction and reconstruction projects to incorporate rainwater gardens. Living Streets also encourage the construction of an appropriate width street for the specific application, often resulting in a narrowing of the pavement compared to current standards. This reduces the amount of impervious surface, producing a direct decrease in the amount of stormwater runoff. Boulevard trees planted along Living Streets also provide a positive Impact on stormwater quality.

The benefits of these components include the following:

- Rainwater Gardens
  - Soak up 30% more runoff than lawns.
  - Keep runoff on site.
  - Filter polluted urban runoff (oil, grease, salts, fertilizers, pesticide residue).
  - Recharge groundwater.
  - Provide habitat and food for butterflies and birds.
  - Beautify a low spot.
  - Serve as a natural filter, removing sediment, phosphorous and nitrogen from runoff.
  - Catch sediments prior to entering downstream water bodies.

- Street Narrowing
  - Less pavement means less impervious surface.
  - Reduces runoff volume.
  - Reduces solar generated heat.
  - Less pavement heat means cooler stormwater runoff temperature.

- Boulevard Trees
  - Intercept rain water with leaves and branches.
  - Improve the ability of water to soak into the ground.
  - Increase the volume of water that can enter the ground by absorption through their root systems.
  - Improve the resiliency and water holding capacity of the adjacent soil.

2.2.2 Implement Traffic Calming Techniques

The City of Maplewood desires to reduce the volume and speed of traffic on neighborhood streets. While all public streets are designed for public use, different roadways are designed to have different functions and serve different types of traffic. The volume of traffic that should be on each street is directly related to how a street is used and its function for the overall Maplewood community.

Traffic calming is an important element of the Living Streets Policy. It is designed to limit the types of traffic that use a specific roadway while simultaneously promoting the use of other non-motorized traffic modes. This involves using different measures or treatments to calm the traffic and ensure each roadway serves its specified needs for the community. The methods for traffic calming depend largely on the type of roadway, its function, and the modes of traffic that should be on the roadway. A significant focus of calming is usually on limiting cut-through traffic, decreasing the speed of vehicles, and providing safety for pedestrians and bicycles.

Traffic calming measures the City will consider implementing include the following:

- Reducing street width.
- Medians.
- Chicanes (artificial features to create extra turns in a road).
- Raised crosswalks.
- Dynamic Speed Display Signs.
- Roundabouts.
- Barriers/Diverters.
- Bump-outs.
- Differentiated pavement surfaces (including pervious pavement).

- Pavement markings.
- Signage.
- Additional Enforcement.

Each traffic calming measure has both positive and negative effects in terms of cost, time, feasibility, emergency response, bike safety, pedestrian safety, parking, maintenance, and aesthetics. City staff will evaluate which traffic calming measure(s) will be utilized for each application based on the context of the specific project or street under consideration.

2.2.3 Enhance Walking and Biking Conditions and Pedestrian Connections

The City has a trail and sidewalk system dedicated to the use of non-vehicular transportation. Users are primarily pedestrians and bicyclists, but also include other multimodal transportation activities such as in-line skating and running. Components of the trail and sidewalk system primarily include off-street facilities, but also include on-street striped lanes and paved shoulders.

The purpose of a trail and sidewalk system is to provide safe routes for non-vehicular transportation, exercise, relaxation or commuting for users of all ages and abilities. Some of the most popular everyday activities include running, walking, bicycling and in-line skating for exercise and pleasure.

The Living Streets Policy will accomplish enhanced walking and biking conditions through providing safe and convenient pedestrian routes along streets that are:

- Adjacent to schools and on nearby streets within reasonable walking distance to the school(s).
- Adjacent to parks and open space and on nearby streets within reasonable walking distance to the park(s) and open space(s).
- In commercial and retail areas.
- Adjacent to high volume roadways.
- Near transit facilities.
- Included within the City's Comprehensive Plan.

- Miscellaneous areas in the best interest of the City to improve its overall trail and sidewalk system.

2.2.4 Enhance the Urban Forest

The urban forest is defined as the collection of trees and vegetation growing within the City. Boulevard trees are part of the urban forest, and the urban forest can be enhanced and expanded by the preservation of existing boulevard trees as well as the strategic planting of new boulevard trees. The numerous environmental, stormwater, and community benefits of boulevard trees were stated in the NSP Living Streets Plan, and a copy of those benefits is provided in the Appendix for reference.

Maplewood has a firmly established position as a proponent of trees. It became a Minnesota "GreenStep City" in 2010 and was first designated as a "Tree City" in 2008. The City has a comprehensive tree ordinance, adopted in 2006, providing for the preservation, protection, and replacement of trees. The ordinance established a Tree Fund, designated specifically for the planting of trees on public property, which includes boulevards. The fund is financed by developers/applicants who are unable to provide complete mitigation for impacts to existing trees caused by work done under their approved permit.

In 2009 the Department of Forest Resources of the University of Minnesota performed a report on boulevard trees for the City of Maplewood. The report discussed the benefits of boulevard trees and guidance for developing a successful boulevard tree program, including elements such as site criteria, planting specifications, and design criteria. The report contains many best management practices (BMPs) that could be employed towards the goals of the Living Streets Policy. The report was presented to the Community Design Review Board and the Environmental and Natural Resources Commission in 2009 for consideration of future action, and was received positively.

Maplewood offers a significant amount of education on the subject of trees, such as information posted on its website, advertisement for area classes and curriculum, and through programs at the Nature Center. The City also provides opportunity for public involvement with trees by activities including its Tree Registry Program and Arbor Day plantings at community parks. Maplewood promotes the planting of new trees on private property through its tree planting rebate program.

The Living Streets Policy provides for the planting of new boulevard trees to enhance the urban forest. Preservation of existing boulevard trees to the maximum extent possible is also recognized, and will be accomplished under the existing tree ordinance. Components of street projects such as sidewalks and rainwater gardens will be modified as necessary to accommodate existing boulevard trees where appropriate.

In implementing the Living Streets Policy, the following issues should be addressed:

- Species selection:
    - Diversification is vital to the success of a boulevard tree population, due to the following reasons:
        - A diverse tree population is more resistant to disease that affects any individual species.
        - A diverse selection of boulevard trees allows for choosing the type most suitable to the site conditions for the specific application.
        - A diverse tree population provides variety to the City, enhancing the attractiveness and aesthetics of the urban forest.
    - Only species suitable for the local climate should be specified.
    - A list of approved species for boulevard trees should be developed. The tree rebate program contains a list of recommended species that could be adopted for this purpose or used as a basis to develop the list.
- Tree specifications:
    - Minimum required caliper should be identified. It should also be indicated whether the use of seedlings will be allowed as a cost-effective measure.
    - Tree planting details should be developed.
    - Locations for planting should be defined, such as not within a certain distance from driveways, intersections, fire hydrants, etc.
    - Recommendations should be made regarding when structured soils or special construction or planting techniques are needed due to the amount of hardscape near trees.
    - Recommended spacing for planting should be identified.
- Maintenance:
    - Boulevard trees requiring low maintenance should be chosen.
    - The responsibility for maintenance of trees in the public right-of-way currently lies with the City. This should be reviewed as the Living Streets Policy is adopted and implemented to determine whether City responsibility for boulevard trees remains the best course of action, or whether some or all of the responsibility should be shifted to the adjacent property owners.
- Other considerations:
    - Height: where utility lines or other overhead obstacles are present, species with heights to avoid interference should be selected.

- Root system: minimize disturbance to adjacent curbs and sidewalks; minimize interference with buried obstacles such as underground utilities.
- Salt/chemical tolerance: the maintenance activities of the road should be considered when selecting species of trees for the adjacent boulevard.
- Canopy: spread of the boulevard tree should be considered for the specific application to avoid interference with driver sight lines and traffic signs.
- Parking accessibility: where parking is allowed, boulevard trees should be located appropriately to avoid interference with the opening of vehicle doors.

Specific requirements for the above listed issues need to be determined and subsequently applied in the implementation of Living Streets.

2.2.5 Ensure Cost-Effective and Practical Solutions

As stated previously in Section 2.1, it is important that the Living Streets Policy minimize construction, replacement, and future maintenance costs in a manner that is equal to or less than that of a standard street section.

The importance of being cost effective and practical is the following:

- Acceptance by the general public.
- Not increase current funding allocations.
- Not increase current assessment rates.

To assure the cost of a living street does not exceed the cost of a traditional street, a comparison will be performed and included in the feasibility report for street improvement projects. Cost savings realized by the narrowing of streets, and subsequent long term maintenance savings, will be utilized for living street amenities. On new construction, living streets guidelines will be followed.

The ways in which cost effectiveness and practicality will be accomplished is through the following:

- Selection of the appropriate street section for each specific application (context sensitive).
- Construction of sidewalks and trails where needed (sidewalks not needed on every street).

- Rainwater gardens sited where they will be effective.
- Narrower streets.
- Proper tree and planting selections.

In addition, the City will realize savings in maintenance and repair costs for the following programs:

- Seal coating.
- Crack filling.
- Mill and overlays.
- Reclamation.

2.2.6 Improve the Aesthetics of Streets

Aesthetics have an impact on the community experience. Creating an atmosphere that is positive, pleasant, and enjoyable helps attract and retain residents in the community. Good aesthetics provide a sense of well-being, belonging, and contentment, and contribute to an overall increased quality of life.

Maplewood recognizes the importance of aesthetics. As part of the City-wide goals stated in its adopted 2030 Comprehensive Plan, Maplewood included an "Urban Design Goal" that stated in part, *"strive to improve the appearance of the City, maintain compatible land uses, and encourage a sensitive integration among activities, man-made facilities, and the natural environment."*

The City has worked toward implementation of aesthetics through such avenues as investment in open space improvements, development of several planting plans for rainwater gardens, and development of streetscapes, as in the Gladstone area. The Transportation Chapter of the 2030 Comprehensive Plan identified that, *"Maplewood should design streetscapes and operations in ways that alleviate the negative impact of major streets on their surroundings…"* and *"…should incorporate streetscape guidelines that emphasize the enhancement of the neighborhood environment."*

Streets, as well as utilities, within the public right-of-way perform a necessary function in supporting the developed environment. They are an asset to the neighborhood in which they are located, and to the City as a whole. Beyond their base functionality, they also provide opportunities for complimenting and contributing to the aesthetic and to the identity of the neighborhood and of Maplewood.

Living Streets incorporate aesthetic considerations into their design and construction. Some of these elements result from the focus items discussed previously in this section:

- Landscaped rainwater gardens for storm water quality.
- Installation of boulevard trees.
- Increased green space due to more narrow street widths.
- Elimination of signal poles due to installation of roundabouts.

Examples of additional aesthetic elements that could be included in Living Streets include:

- Burying of existing overhead utility lines as part of street reconstruction.
- A specific streetscape theme for a street or neighborhood.
- Installation of public art for pure aesthetics and/or to create a desired identity.
- Other street / neighborhood / city specific elements identified by Maplewood.

The Maplewood Living Streets Policy requires aesthetics be considered and included appropriately in the development and implementation of living street projects. Consideration must be given to independent aesthetic elements as well as to the underlying aesthetic impacts of other elements of Living Streets.

2.3 Conformance with Comprehensive Plan

The approved Comprehensive Plan is the overall guiding document for the City of Maplewood. The Living Streets Policy is intended to compliment and build upon the information and goals stated in the Comprehensive Plan, and not to create any contradiction or inconsistency.

The foundation and design guidelines of the Living Streets Policy have been reviewed against the adopted 2030 Comprehensive Plan. Where issues between the documents are found, the

decision must be made whether to revise the Living Streets Policy or amend the Comprehensive Plan to resolve the issue. Due to its role as the overall guiding document, as well as the time and effort necessary to execute an amendment, it is recommended to avoid amending the Comprehensive Plan when possible, and to revise the policy instead.

The sections of the adopted 2030 Comprehensive Plan against which the Living Streets Policy was reviewed include: Chapter 3 – Sustainability; Chapter 6 – Parks, Trails, and Open Spaces; Chapter 7 – Natural Resources; Chapter 8 – Transportation; and Chapter 10 – Surface Water. A summary of the comparison with each chapter is given below. Section 4.1 of this document identifies any recommended amendments to the adopted Comprehensive Plan.

- Chapter 3 – Sustainability
  - The Living Streets Policy promotes the goals and helps move toward fulfilling specific implementation strategies stated in the Sustainability Chapter of the Comprehensive Plan.

- Chapter 6 – Parks, Trails, and Open Space
  - The Living Streets Policy is in good accord with Chapter 6 of the Comprehensive Plan. The Chapter expresses a desire to shift focus to trail development and connections, which the Living Streets Policy will help accomplish.
  - Chapter Goals that are aligned with the Living Streets Policy include:
    - Developing and maintaining an interconnected trail system.
    - Effectively tying parks together.
    - Encouraging residents to commute and access resources using non-motorized means of transportation.
  - Chapter 6 identifies tools for working towards the goals that are consistent with elements of the Living Streets, including:
    - Use of connector trails within road right-of-way.
    - Use of on-street bike lanes.
  - This Chapter recommends a process be developed to support the Parks Commission review of all road improvement projects to identify potential trail connections and opportunities to complete the system.

- Chapter 7 – Natural Resources
  - The Living Streets Policy promotes the goals stated in the Natural Resources Chapter of the Comprehensive Plan.
  - Specific implementation strategies identified in the Chapter which are advanced by the Living Streets Policy include:
    - Creating a program to deliver low impact retrofit ecosystem services, including raingardens.
    - Developing guidelines for environmentally friendly street designs.
    - Developing pedestrian and bicycle friendly street designs.

- Chapter 8 – Transportation
    - The Living Streets Policy is in alignment with and supports the goals and policies presented in the Transportation Chapter of the Comprehensive Plan. However, there is some specific information stated in the Chapter which will need to be updated due to the adoption of the Living Streets Policy. These items are:
        - The Chapter states Minor Arterial roadways will contain at least two drive lanes in each direction. The design templates contained in the Living Streets Program will contain more options for Minor Arterials.
        - Figure 8.2 of the Comprehensive Plan presents typical street sections for the various road types. The Chapter text states the City will design and maintain its roads according to the design standards illustrated in Figure 8.2. The templates contained in the Living Streets Policy will become the new guidelines for roadway design, and will supersede the sections currently shown in Figure 8.2

- Chapter 10 – Surface Water
    - The Living Streets Policy is consistent with the goals and strategies stated in the Surface Water Chapter of the Comprehensive Plan.

2.4 Regulatory Demands

Minnesota Department of Transportation (MnDOT)
Municipal State Aid (MSA) routes within the City will have to be designed and constructed to meet MSA standards and rules. Design elements of the Living Streets Policy that may be affected by the MSA requirements include:

- Sidewalk and trail width.
- Vehicle lane width.
- Parking lane width.
- Bike lane width.
- Clear zones.
- Median width.

Ramsey County
County State Aid Highways (CSAH) and County Roads within the City will have to be designed and constructed to meet Ramsey County standards and rules. Design elements of the Living Streets Policy that may be affected by these requirements include the same as those affected by the MnDOT requirements.

Watershed Districts
The City of Maplewood lies within the boundaries of three different watershed districts: Rasmey-Washington Metro Watershed District, Valley Branch, and Capitol Region. Stormwater regulations will apply to projects performed within the boundary of each district, and permits from the districts will be required as necessary.

Minnesota Pollution Control Agency (MPCA)
The MPCA is the regulatory body that administers the National Pollutant Discharge Elimination System (NPDES) in Minnesota. Under the NPDES, the City of Maplewood is required to maintain a permit as a Municipal Separate Storm Sewer System (MS4). All MS4 permit holders are responsible to prepare and implement a Storm Water Pollution Prevention Program (SWPPP). Maplewood was one of 30 MS4 permit holders in the State designated as a "Selected MS4" and required to submit additional information to the MPCA. The City accomplished this through preparation of a Loading Assessment and Non-Degradation Report in 2007.

The Living Streets Policy is in alignment with the goals of the NPDES program as well as the Best Management Practices (BMPs) identified in the City's SWPPP. The Living Streets Policy is also in accordance with the conclusions reached in the Non-Degradation Report, which stated *"the City will play an active role in adopting specific policies aimed at enhancing the surface water quality"*.

The City will continue to comply with the requirements of its NPDES permit, including implementation of the BMPs listed in the SWPPP. Maplewood will also obtain individual NPDES Construction Permits as necessary for individual improvement projects within the City.

2.5 Incorporation of Maplewood's "Raingarden" Tradition

The City of Maplewood made a conscious decision to be forward-thinking in regards to stormwater and the environment, and to lead by example. A result of these decisions was the implementation of rainwater gardens (also referred to as 'raingardens'). Maplewood installed its first rainwater garden in 1996 and since that time has developed an inventory approaching 700 rainwater gardens. The City has developed a reputation as a leader and innovator in stormwater management and a rainwater garden proponent, and is well known outside the community for these aspects.

Over the past 15 years Maplewood has developed a highly successful rainwater garden program. The program provides for the planting of rainwater gardens as part of public street reconstruction projects, and it also encourages the development of private rainwater gardens by homeowners and businesses. The City offers education and guidance on the development of rainwater gardens. The City has established 10 standard rainwater garden designs, which provide varying appearance and accommodate varying site conditions.

In 2003 the City established an Environmental Utility Fund (EUF) for the purpose of financing its Storm Water Management Program. The EUF is funded by a fee collected quarterly from all properties, including tax-exempt properties. The fee is based on impervious surface coverage for commercial/industrial property and a flat fee for residential property. Fees range from lower amounts for single family residential lots to higher amounts for commercial and industrial sites. The EUF is used to maintain the existing overall storm drainage system, as well as to upgrade and replace components as necessary. It is also used for enhancement of wetland areas and improvements to water quality in our natural resources, providing environmental benefits for the community and in turn the region.

In conjunction with the EUF, Maplewood also established a credit program to encourage property owners to utilize BMPs with regard to stormwater. Property owners who establish and maintain approved BMPs receive a credit towards their EUF fee. Rainwater gardens are recognized as an approved BMP, and for the installation and maintenance of a rainwater garden the property owner receives a credit of 30% off their EUF. The location, design, and installation of the rainwater garden must meet Maplewood requirements and must be approved by the City. The City inspects rainwater gardens annually, and as long as they remain in compliance with the requirements and are being properly maintained, the EUF credit can be received in perpetuity. The use of EUF fee credits for rainwater gardens is another means by which Maplewood advances rainwater gardens, by recognizing and rewarding property owners for being proactive and helping treat stormwater and reducing downstream impacts.

The rainwater garden program in Maplewood is voluntary. The majority of rainwater gardens in the City are within the public right-of-way (ROW) in locations where the adjacent property owner wanted the installation of the rainwater garden as part of an overall street reconstruction project. This is provided at no cost to the property owner. The City's contractor creates the depression for the garden during the road project and typically plants and mulches the garden. The property owner then maintains the garden. Other examples include property owners who choose to install a rainwater garden on their private property or within the ROW when a street reconstruction project is not being conducted. In these cases a 30% credit is also applied to their EUF fee. However, these rainwater gardens are completely created, planted, and maintained by the property owner. The City will work with the property owner to provide a curb cut to help direct stormwater into the raingarden. The remaining rainwater gardens in the City are City maintained gardens constructed on City-owned land such as park land.

The approach to rainwater gardens is part of Maplewood's overall big-picture position as promoting sustainability and protection of the environmental and natural resources. This is summed up in the vision statement contained in the Sustainability chapter of the City's 2030 Comprehensive Plan:

"The City of Maplewood, in order to ensure stewardship of its environment, will promote sustainable development and practices for the preservation, design, and maintenance of its natural and built environments. Developments and practices should maintain or enhance economic opportunity and community well-being while protecting and restoring the natural environment that people, economies, and ecological systems depend on."

The Living Streets Policy will not replace nor diminish the rainwater garden program in Maplewood. Rather, the Living Streets Policy compliments the rainwater garden program and incorporates it as part of an integrated approach to street design. Maplewood will continue its strong tradition and maintain its leading reputation with regard to rainwater gardens and stormwater management.

Rainwater gardens are an essential component of living streets. In the context of the Living Streets Policy, the rainwater gardens will have the role of boulevard features on both construction of new streets and on street reconstruction projects. For street reconstruction projects their design, application, installation, and maintenance will be very similar to the current program for boulevard rainwater gardens.

It is recommended the Living Streets Policy expand the rainwater garden program to allow the retrofitting of rainwater gardens. In other words, allow an individual property owner to install and maintain a rainwater garden in the public ROW along a street that has already been reconstructed or is not programmed for improvement. The retrofit program would include a limited number of rainwater gardens annually, would allow them only in appropriate locations, and would require application by the property owner and approval by the City. Additional information on the proposed retrofit program for rainwater gardens is given in Section 4.4 of this document.

2.6 Private Utility Considerations

The public road rights-of-way act also as the corridor for numerous private utilities, such as electric, gas, telecommunications, and fiber optic. The need for the private utilities to utilize the public right-of-way must be recognized, and application of the Living Streets design must be compatible with the requirements of the private utilities.

Installation of private utilities in a joint trench should be required whenever possible to reduce the area of the right-of-way impacted by the installation, as well as to allow greater area in which to place elements of Living Streets.

3.0 DESIGN GUIDELINES

3.1 General Information

The Task Force determined that design templates are needed to guide the implantation of the Living Streets approach as projects are undertaken. The templates would be developed with the focus items identified by the Task Force in mind. However, the templates are intended to be flexible, recognizing that the application for each specific project, neighborhood, and street must be context sensitive.

The Comprehensive Plan for the City identifies the following street classification hierarchy:

- Local Streets: Roadways designed to carry short trips at low speeds. Local streets are traversed to reach collector streets or other higher classification roads.

- Collector Streets: These roadways are intended to carry traffic between the arterial system and the local streets. Traffic volumes are moderate, while speeds are moderate to high. Examples include Hazelwood Street and English Street.

- Minor Arterials: These roadways carry high volumes of traffic at moderate to high speeds, and are the highest classification of roadway under the maintenance jurisdiction of Maplewood. These roadways can be located in more rural or urban corridors. Examples are Lower Afton Road (rural) and White Bear Avenue (urban).

- Principal Arterials: These types of roadways carry the highest volumes of traffic, at the highest speeds. Examples of principal arterials include Trunk Highway 36 and Interstate Highways 35E and 694. Principal arterials are not within the maintenance jurisdiction of the City, and therefore will not be included within the Living Streets Policy.

The Living Streets Policy would apply to the Local Streets, Collectors, and Minor Arterials. Design templates would be developed for each of those types.

In many cases Ramsey County has jurisdiction over Minor Arterials. The Living Streets Policy recognizes this and considers Ramsey County an important partner. The application of the policy on any roadway under their jurisdiction will require close coordination and cooperation between the City and the County.

Additionally, all Minor Arterials as well as a majority of Collectors are designated routes on the Municipal State Aid System. This does not preclude the application of the Living Streets Policy on those roads, but in order to maintain State Aid funding for those roads and use it in their reconstruction, the plans will require review and approval by the Minnesota Department of Transportation (MnDOT). State Aid design rules, such as for lane widths, clear zones, etc., will need to be followed in the application of the Living Streets Policy on those designated State Aid

streets. In instances where the State Aid rules are not able to be complied with, an application for variance from the rule may be submitted to MnDOT. If granted, the variance would allow the street to be constructed as proposed while still utilizing State Aid funds.

Often times in neighborhoods there are local streets that, while not reaching the functional classification of Collector, serve to connect the majority of trips from other local streets to the collectors or minor arterials. These streets tend to experience volumes and usage in the upper range of the typical values for local streets. An example would be Bartelmy Lane between Minnehaha Avenue and Stillwater Road.

Although local, the Task Force felt it appropriate to recognize the increased volumes on such streets, and to provide a design template that accommodated their context as a higher-usage local street. The working term given to these streets by the Task Force was “Local Connector”.

A brief discussion of each type of roadway follows, including the design templates for each. For each type, there are options for design elements such as the number of traffic lanes, whether or not there are parking and/or bike lanes, whether or not sidewalks are provided, etc. The design templates have been prepared to address the most common combination of options for each type of roadway. In addition to the templates, the following matrix has been prepared to summarize the options for each element that are available on each type of street.

Street Design Guidelines[1]												
	Driving Lanes			Parking Lanes[2]			Bike Lanes			Sidewalk(s)[3]		
STREET TYPE	**2**	**3**	**4**	**0**	**1**	**2**	**0**	**1**	**2**	**0**	**1**	**2**
Local	X				X		X			X[4]	X[5]	X
Local Connector	X				X		X			X[4]	X[5]	X
Collector	X	X		X	X	X			X		X[6]	X
Minor Arterial	X	X	X	X	X	X			X			X[7]

NOTES:

1) City code requirements shall be used where more prescriptive.
2) Parking shall fit context, with unnecessary parking avoided.
3) Paved path may be used in lieu of sidewalk where appropriate.
4) Requires wider street width.
5) Required where street abuts or is in vicinity of a school or park.
6) Sidewalk required on one side minimum; both sides as determined by context.
7) Sidewalks required on both sides of street unless not practical.

3.2 Local Street

For the Living Streets Policy, the Local Street will be those with a Local Street functional classification.

The Task Force reached consensus on the following aspects regarding Local Streets:

- Parking should be provided along one side of the street. Studies have shown that for a typical residential street, making provisions for parking along both sides is excessive, and the parking capacity is underutilized.

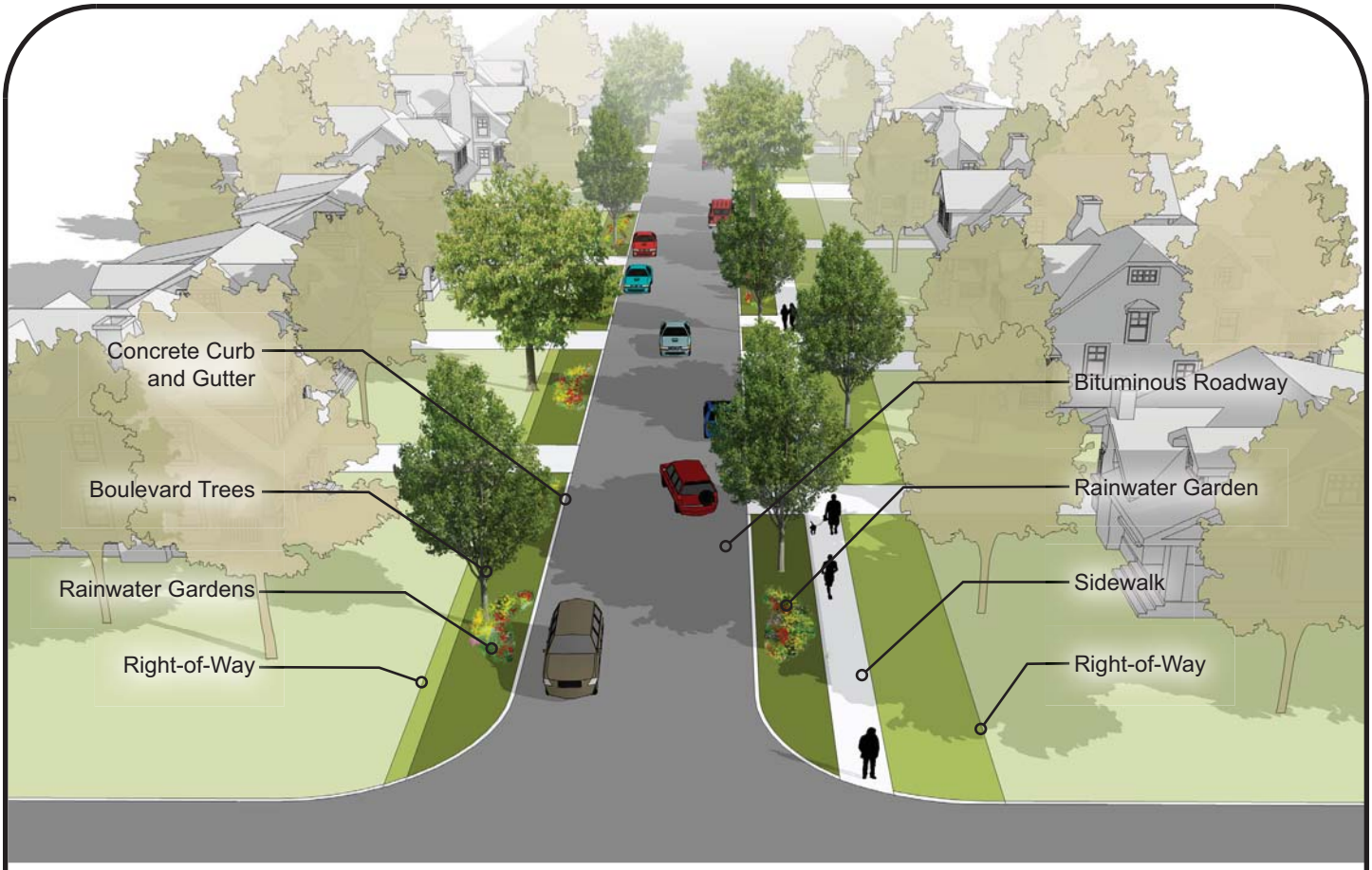
- Sidewalks should be considered along one side of each local street. However the need would be determined based on a context sensitive application. City Code requirements shall be followed where they are more prescriptive than the Living Streets Policy (i.e. requirements for sidewalks on both sides of the street in the Mixed-Use Zoning District).

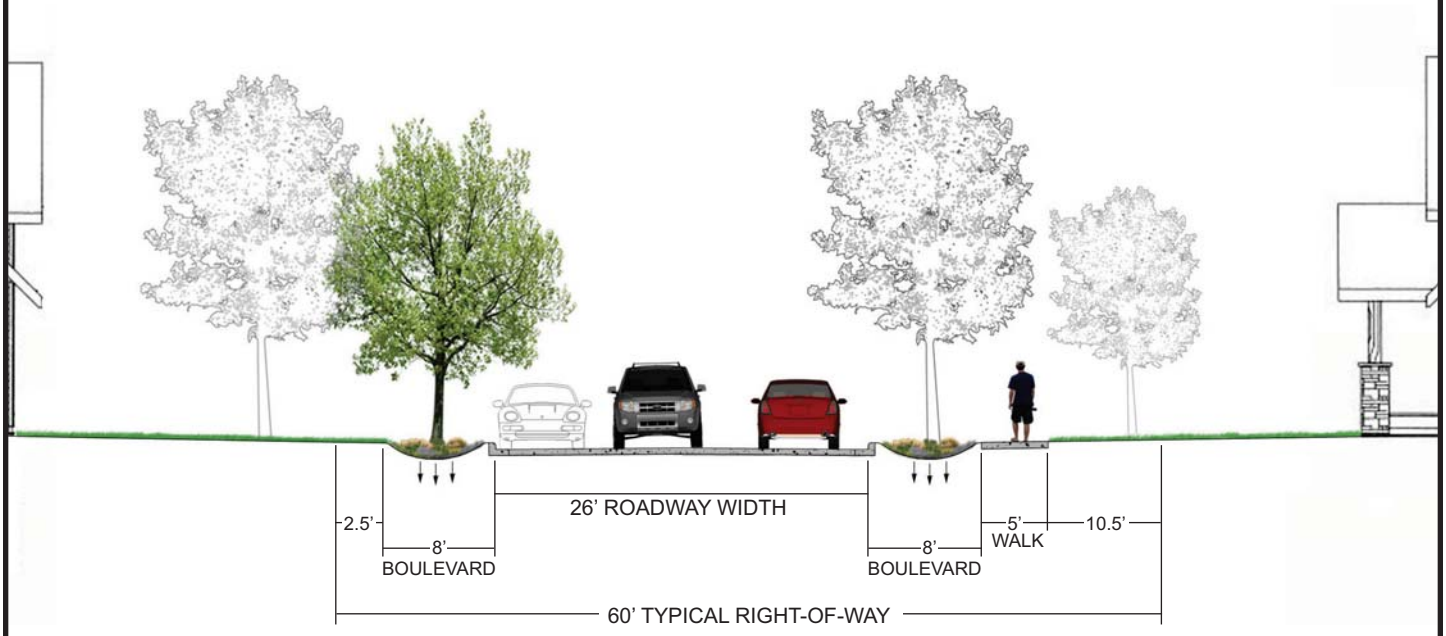
- If a sidewalk is not provided, the street pavement width should be wider to accommodate a shared purpose of bikes/pedestrians along the street edge.

- For streets where a sidewalk is deemed applicable, options could be provided to install sidewalk along one or both sides of the street.

- Sidewalks would be required if the street abuts or is in the vicinity of a school or park, is identified with a sidewalk in the Comprehensive Plan, or is part of a larger network of pedestrian routes.

Design templates showing options 1 through 3 are provided for Local Streets.

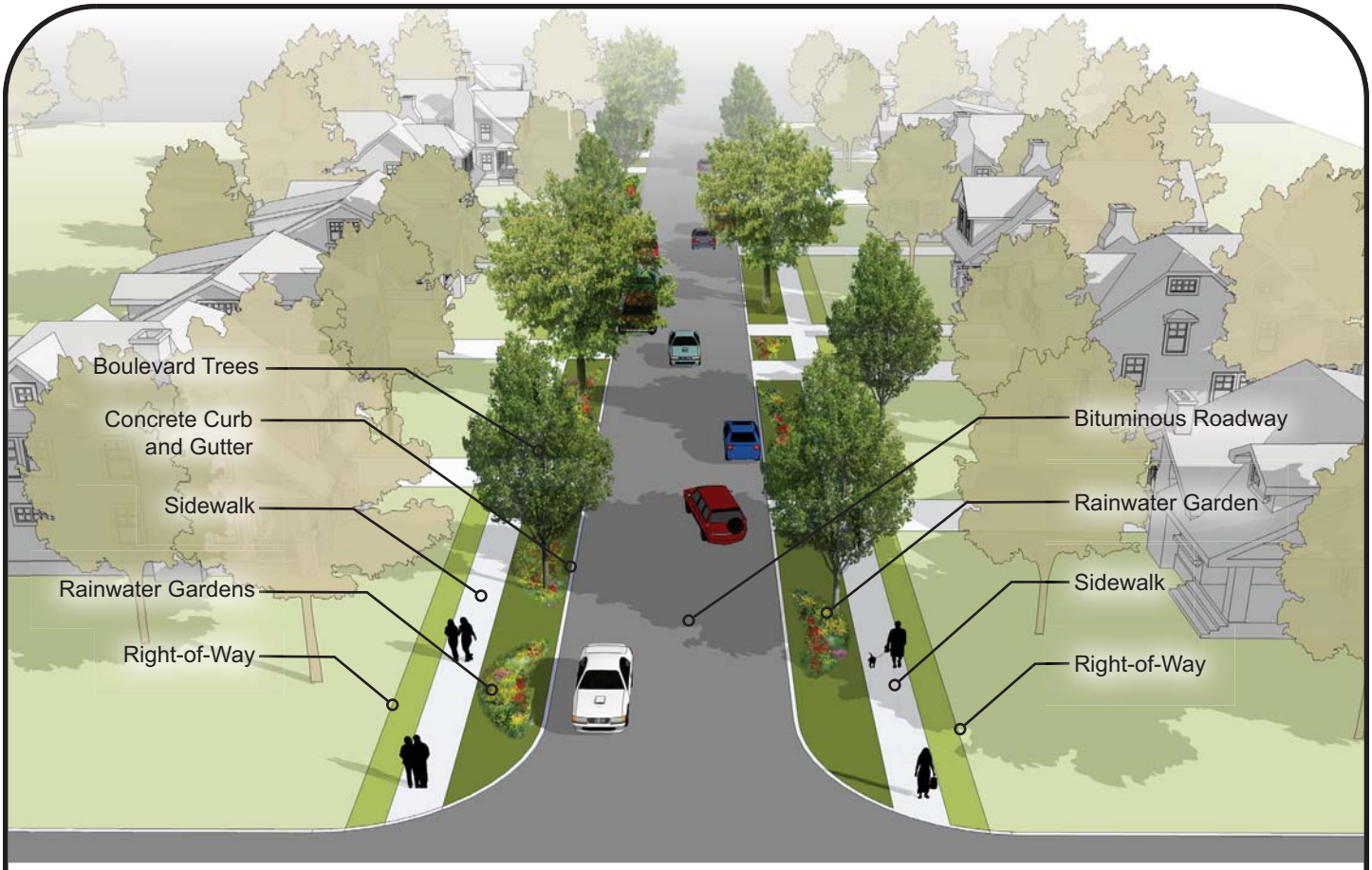


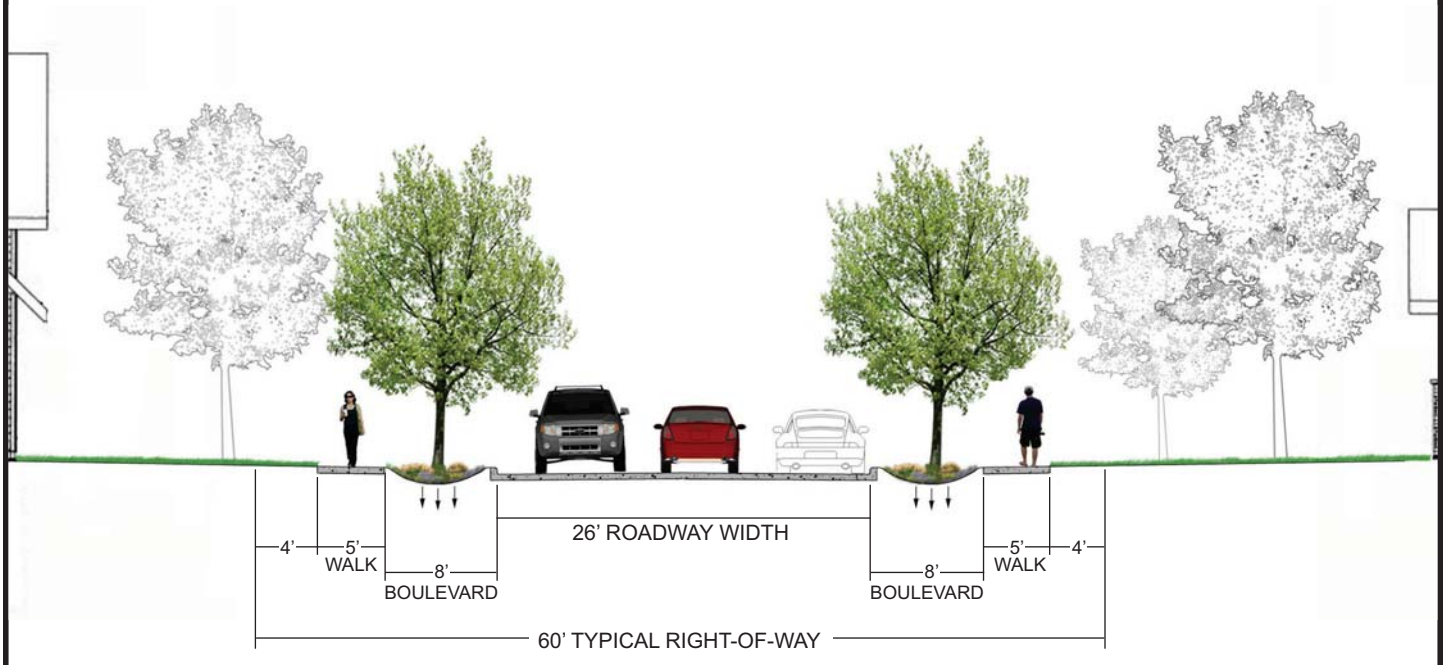


Note: 24' roadway width may be considered in appropriate context

Local Street | Option 1

MAPLEWOOD

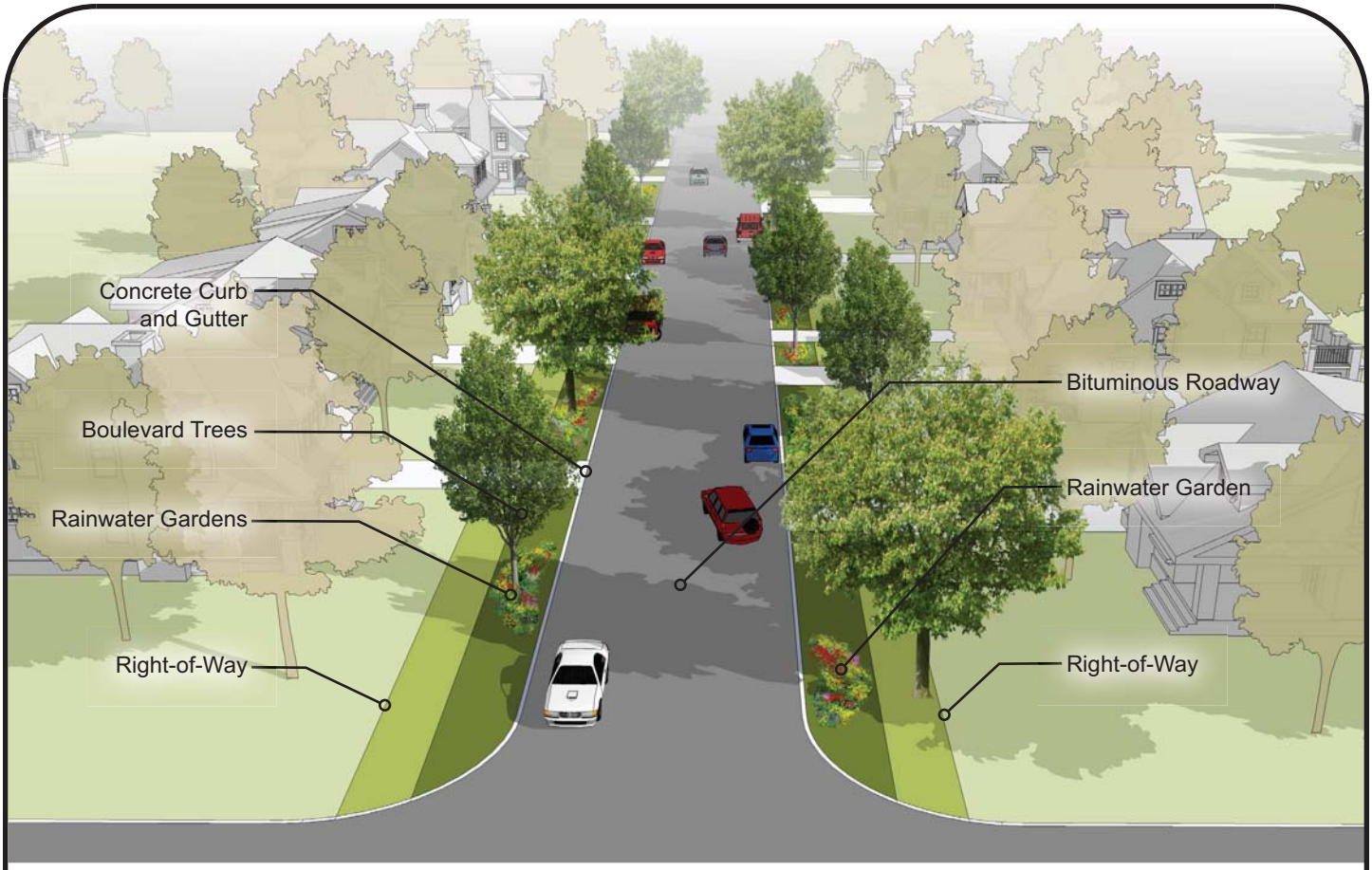


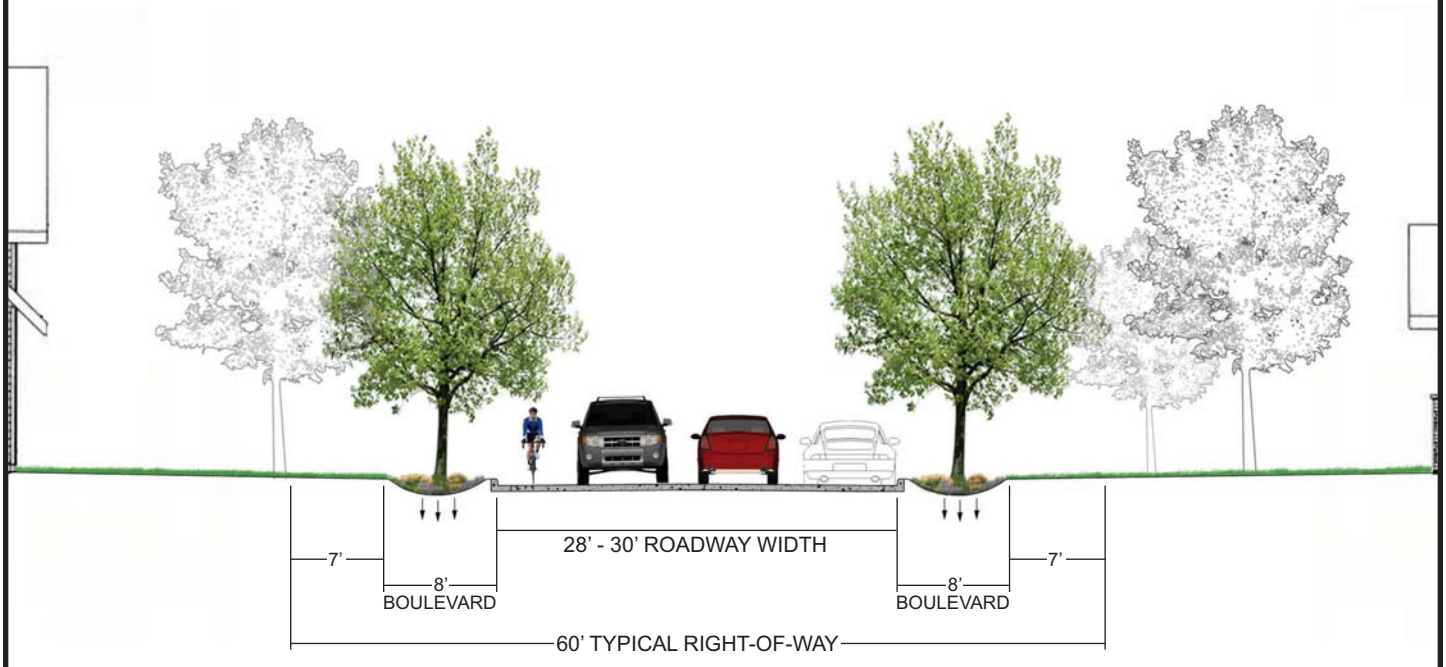


Note: 24' roadway width may be considered in appropriate context

Local Street | Option 2

MAPLEWOOD





Note: Sidewalk required if street abuts or is in vacinity of a school or park

Local Street | Option 3

MAPLEWOOD

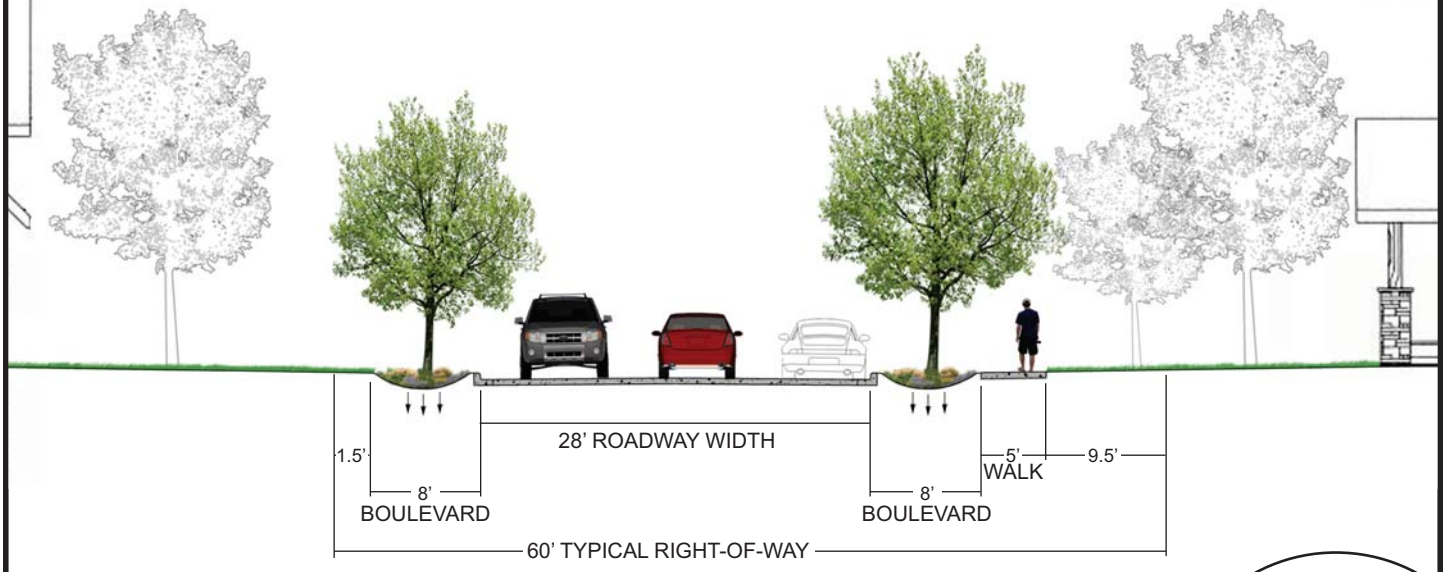
3.3 Local Connector Street

A Local Connector Street will be considered those with a Local Street functional classification, but that have a particular characteristic such as a higher than average volume of vehicular and/or pedestrian traffic, or that connect natural elements. For example, a residential street that funnels traffic between the interior of a neighborhood and the entrance/exit to the neighborhood, or to a nearby street with a Collector or Minor Arterial functional classification. Or a residential street that spans between two streets with sidewalks or trails along them, making it a natural link in the network.

The Task Force reached consensus on the following aspects regarding Local Connector Streets:

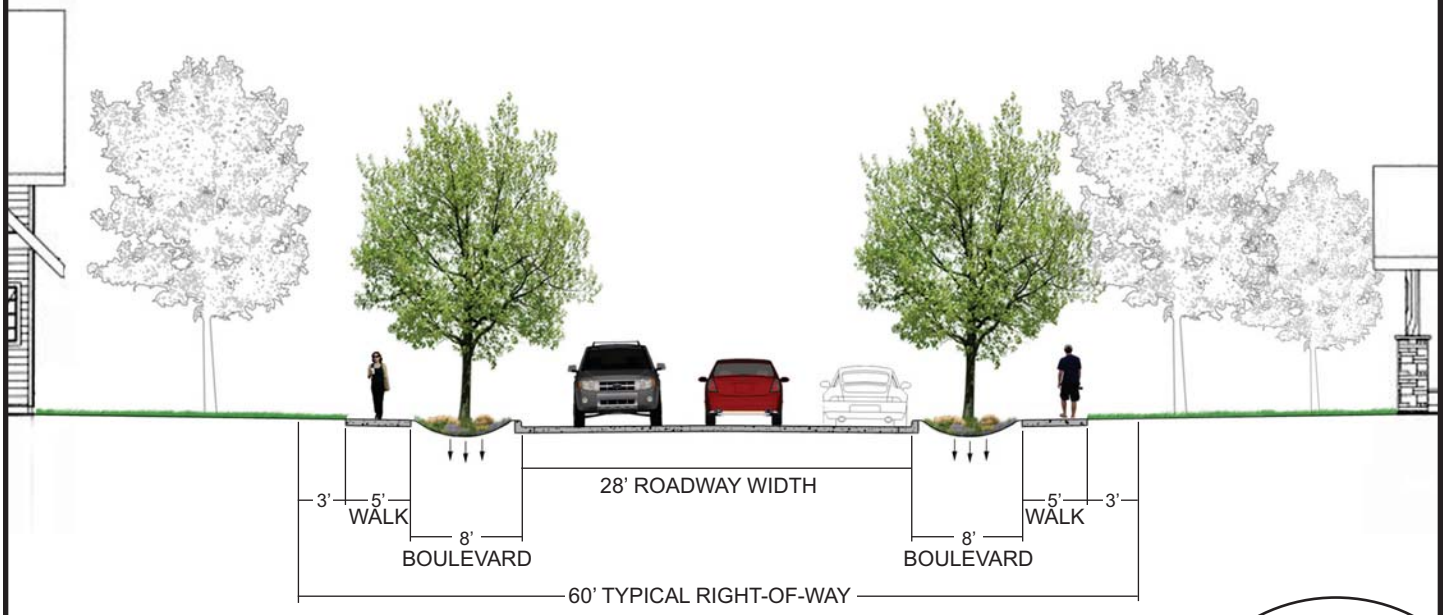
- Parking should be provided along one side of the street, for the same reasons cited as the Local Street.
- Sidewalks need to be provided along this type of street, to provide neighborhood connections and to pedestrian facilities along Collectors and Minor Arterials.
- Options could be provided to install sidewalk along one or both sides of the street.

Design templates showing options 1 and 2 are provided for Local Connector Streets.



Local Connector Street | Option 1

MAPLEWOOD



Local Connector Street | Option 2

MAPLEWOOD

3.4 Collector

A Collector Street will be considered those with a Collector Street functional classification. Collectors convey intra-community traffic between neighborhoods, business centers, industries, parks and the like, and direct access to abutting properties. Spacing of these roads typically places them approximately one-half mile apart.

The Task Force reached consensus on the following aspects regarding Collector streets:

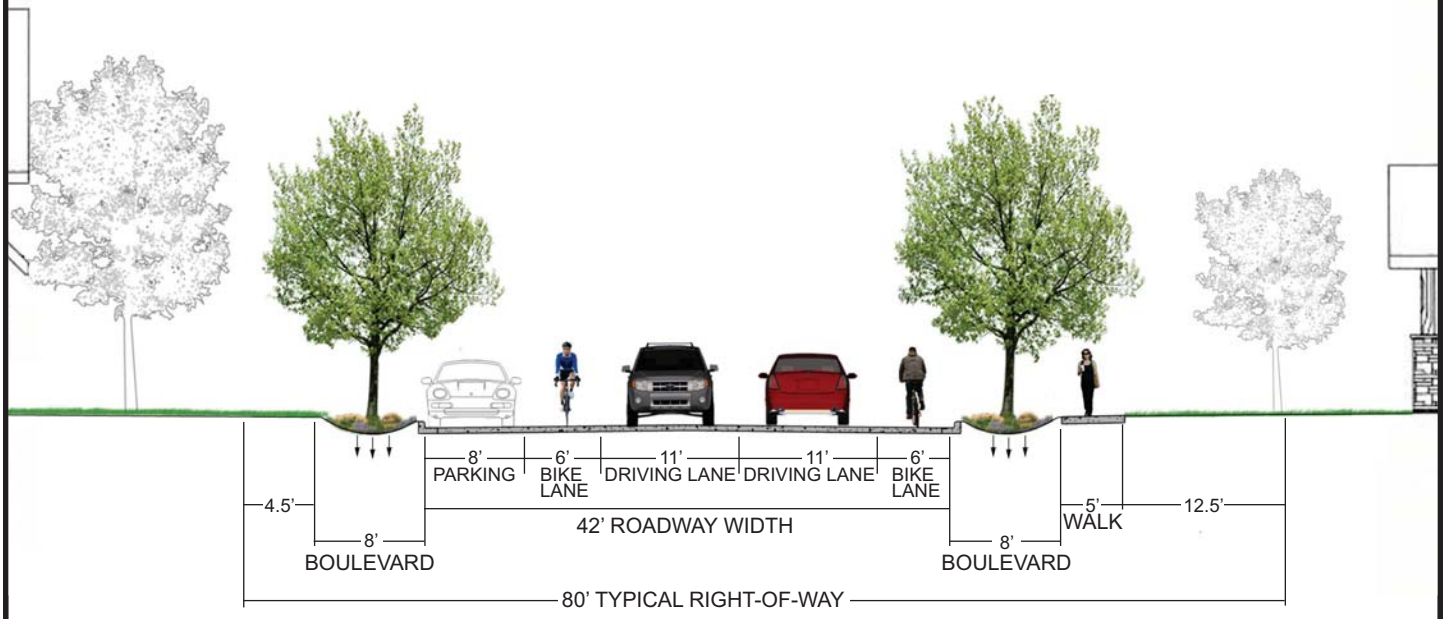
- Parking should be considered along one or both sides of the street, dependent upon context. However, parking provided shall reflect the need and site conditions, with the construction of unnecessary parking avoided.

- An option should be provided for a center opposing turn lane (3-lane design).

- On road bike lanes should be provided for both directions of traffic.

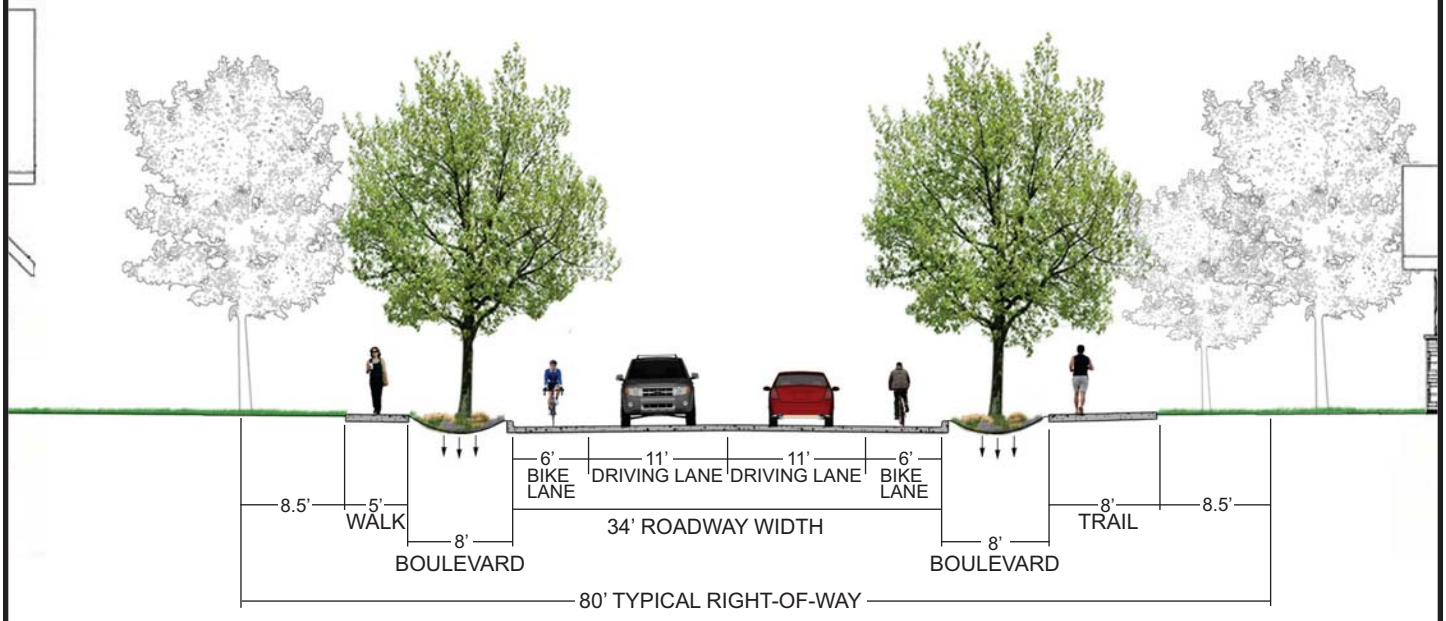
- Sidewalks need to be provided along this type of street, with options provided to install sidewalk along one or both sides. (Trails could be installed in lieu of sidewalks.) City Code requirements shall be followed where they are more prescriptive than the Living Streets Policy (i.e. requirements for sidewalks on both sides of the street in the Mixed-Use Zoning District).

Design templates showing options 1 through 4 are provided for Collector Streets.



Collector | Option 1

MAPLEWOOD



Collector | Option 2

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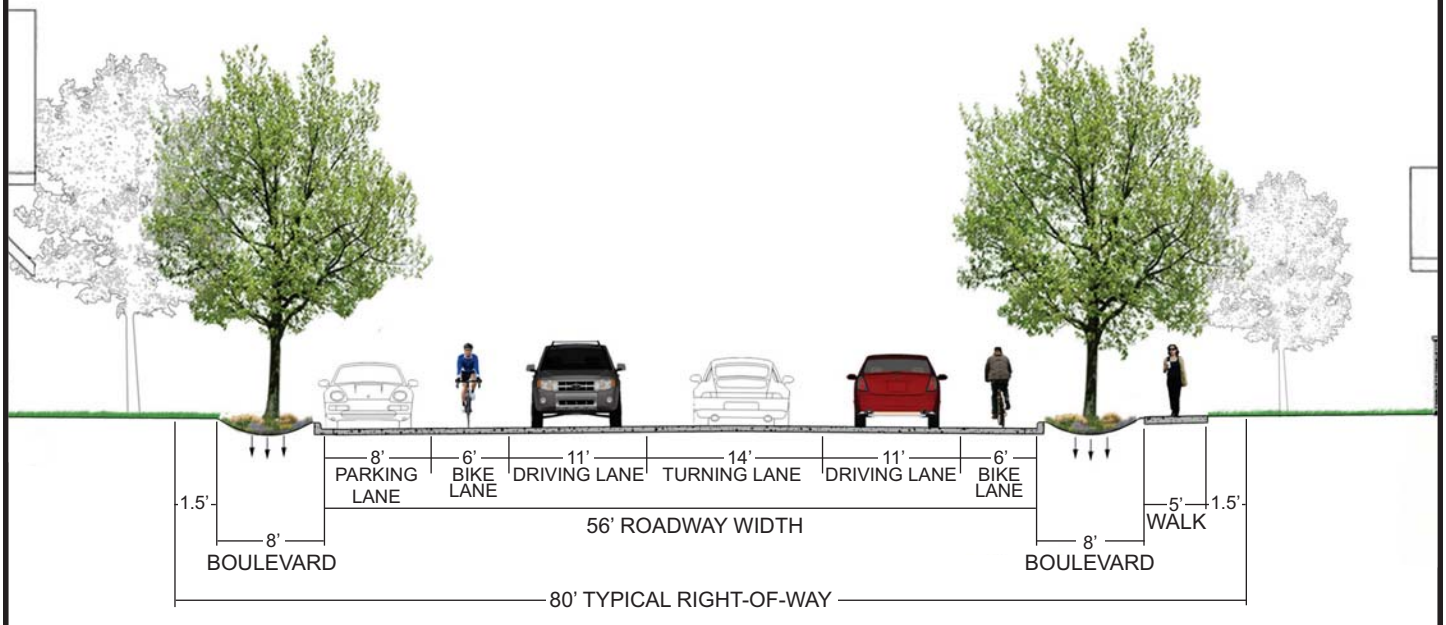
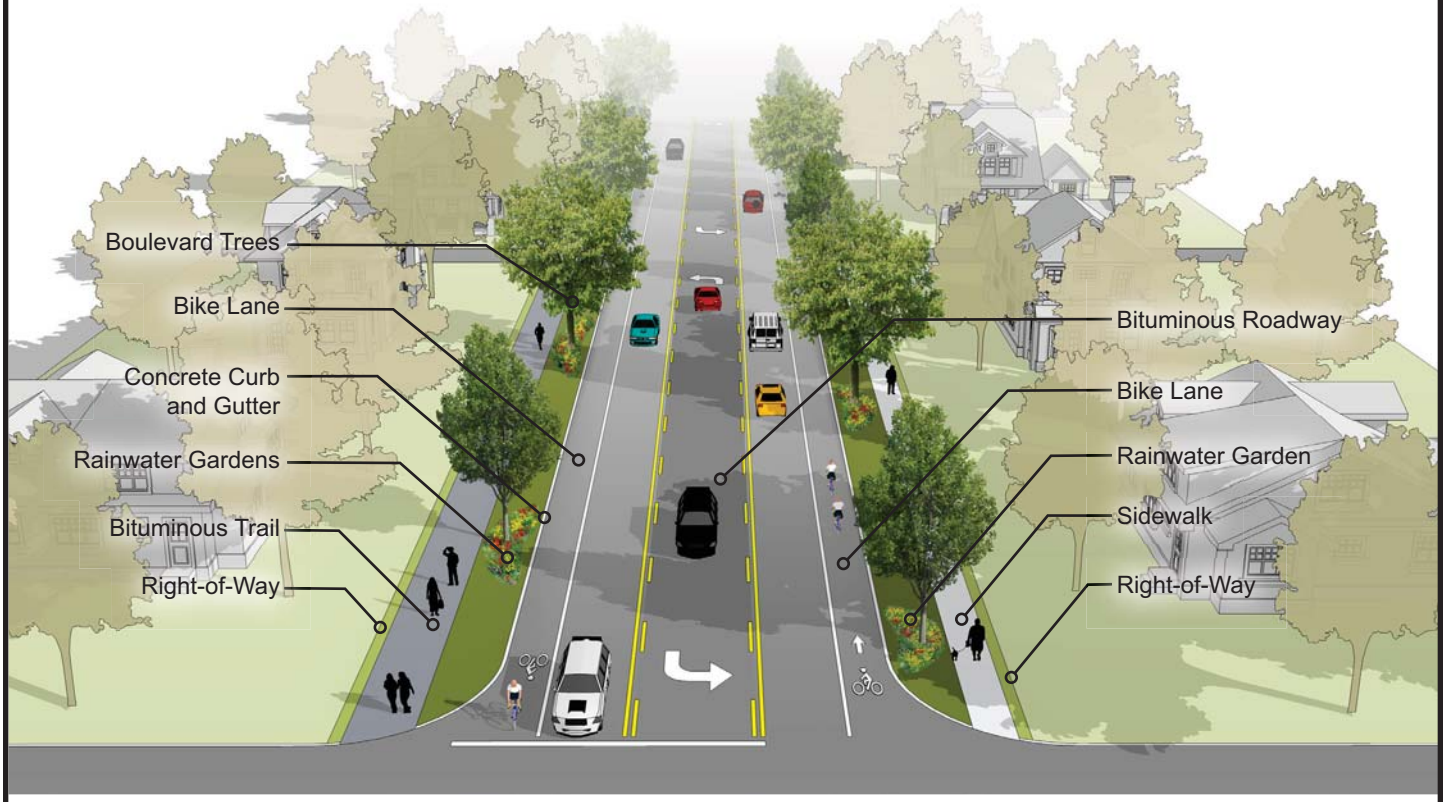
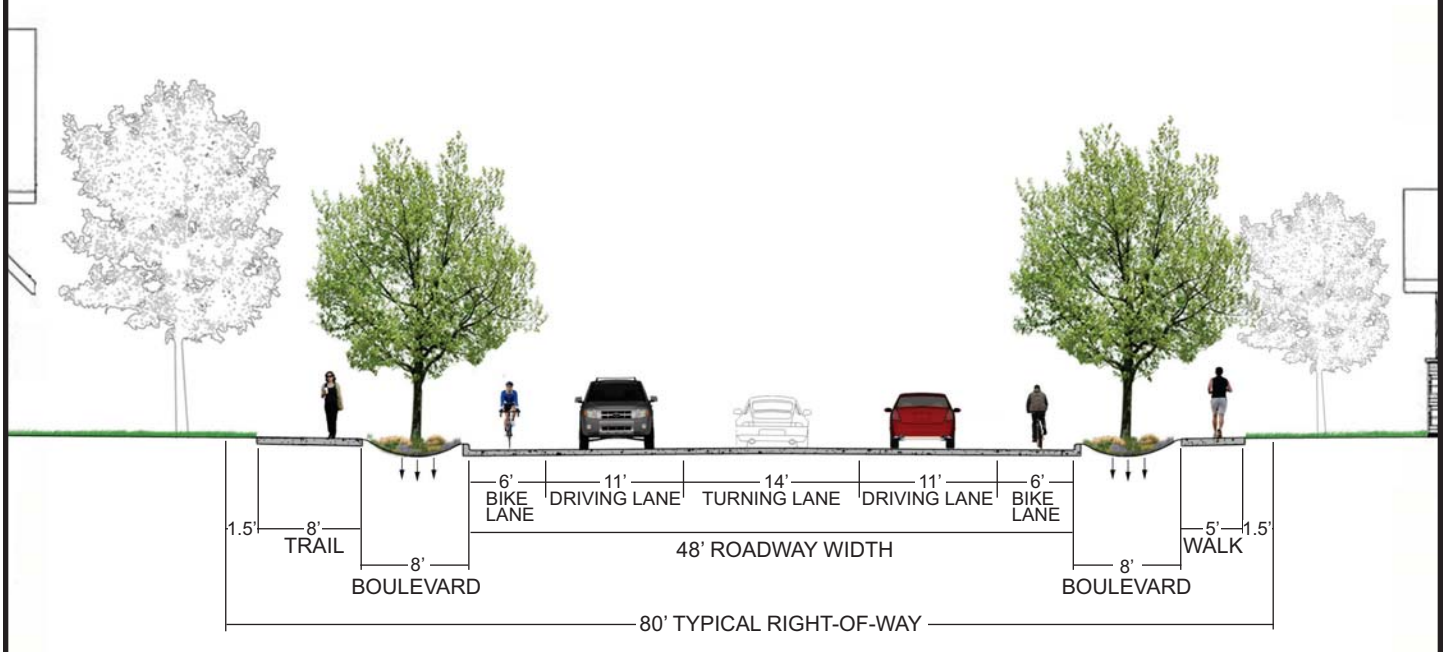


Collector | Option 3

MAPLEWOOD





Collector | Option 4

MAPLEWOOD

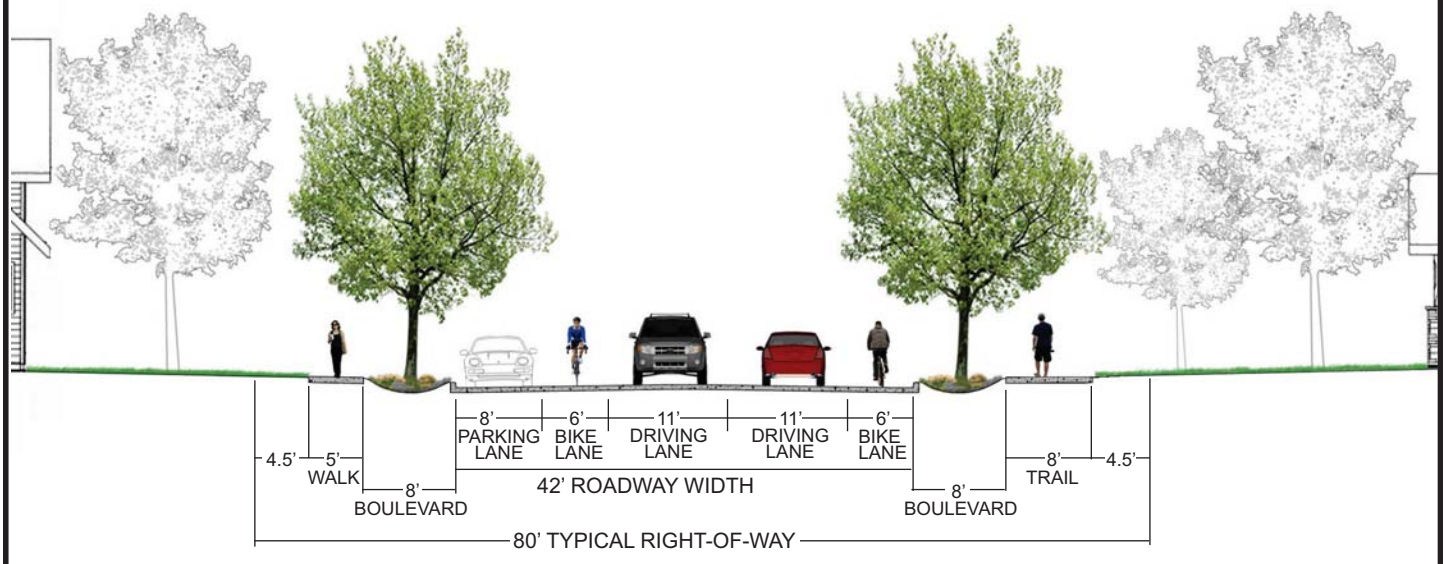
3.5 Minor Arterial

Minor Arterial streets will be those with that functional classification. These roads are the closest routes running parallel to the Principal Arterial system. Minor Arterials supplement and provide relief for traffic to the Principal Arterial system. Direct access from this type of roadway to abutting properties may or may not be allowed, as determined in the Maplewood City Code. Spacing of Minor Arterials is determined by MnDOT and Ramsey County standards, with site specific exceptions. This roadway type serves inter- and intra-community needs for trips, as well as medium to long distance suburb to suburb trips. They may also connect major trip generators, and/or funnel traffic between collectors and restricted access arterials.

The Task Force felt many options could be provided for this type of roadway, due to many different contexts in which they can exist. Following is a summary of some of the guidance points determined by the Task Force regarding Minor Arterial streets:

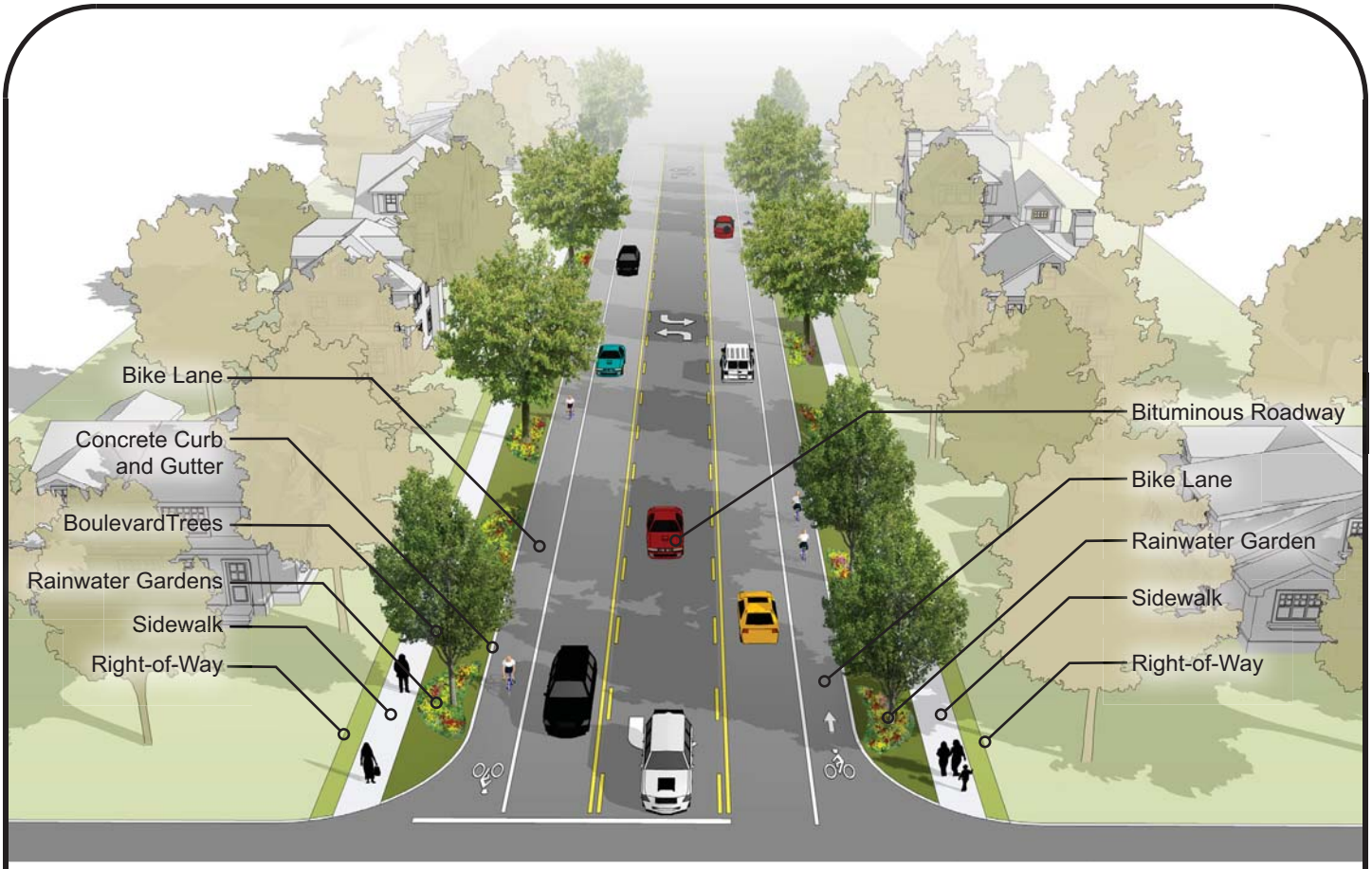
- Parking may or may not be allowed along these streets, depending upon the context.
- Options should be provided for two, three, and four lane designs.
- On road bike lanes should be provided for both directions of traffic.
- Sidewalks need to be provided along both sides of this type of street. A Minor Arterial with sidewalk along just one side should be considered only in a situation where it is not feasible or practical to install sidewalk along both sides.

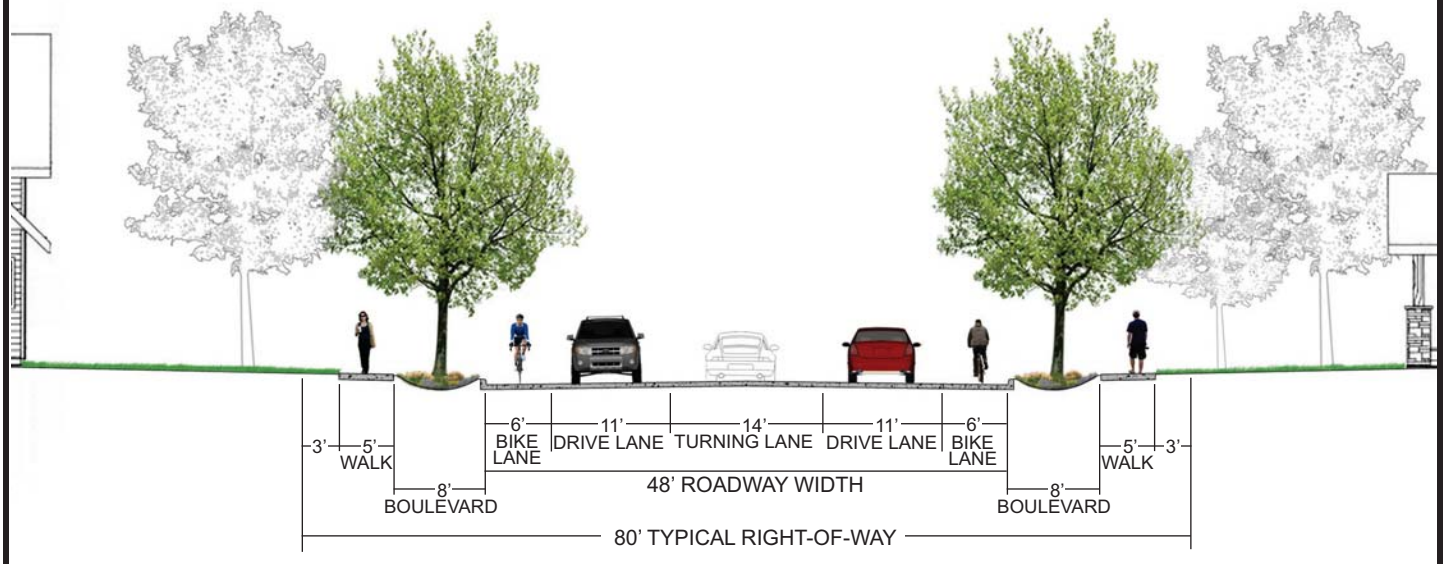
Design templates showing options 1 through 3 are provided for Minor Arterials.



Minor Arterial | Option 1

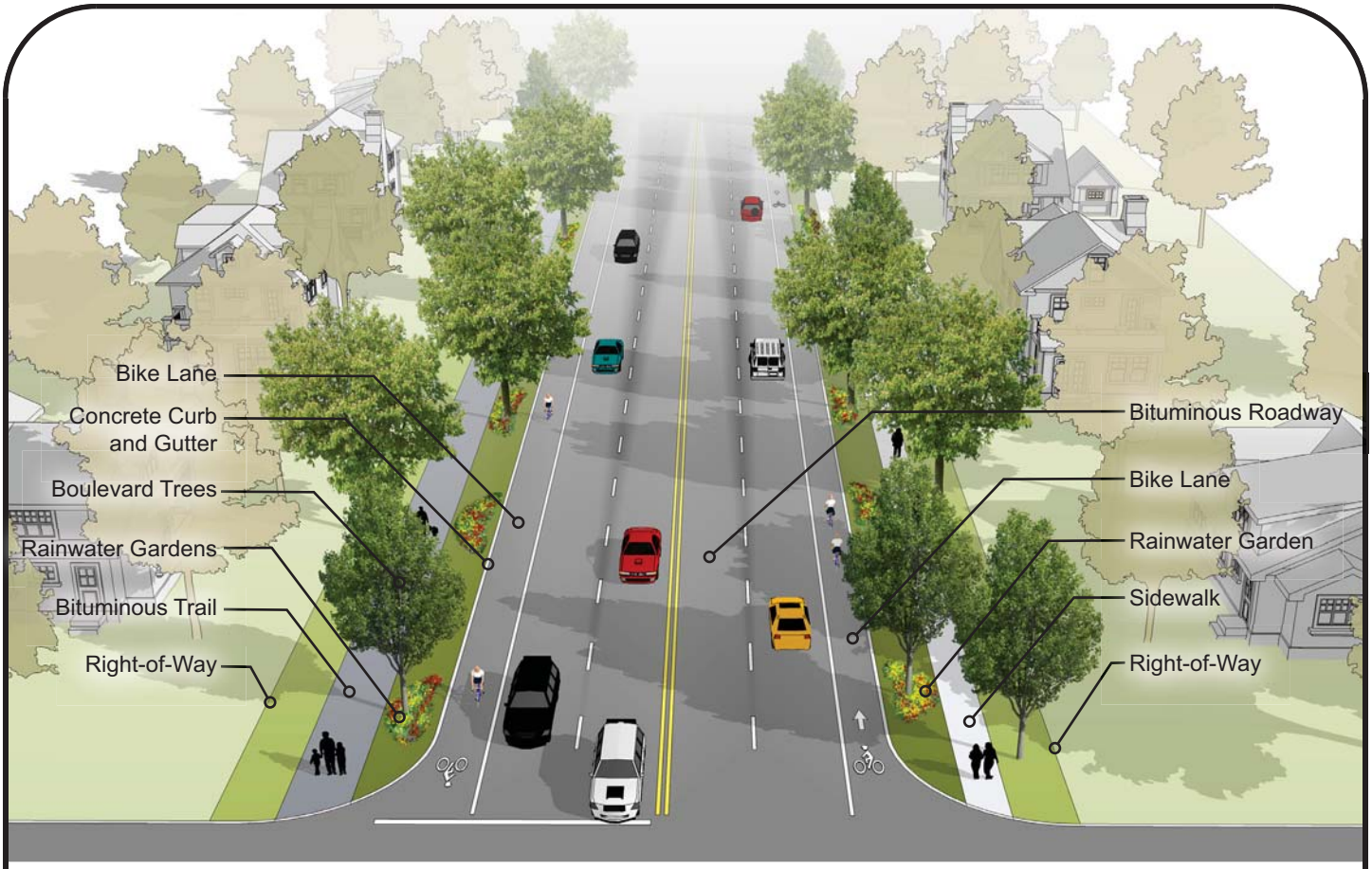
MAPLEWOOD

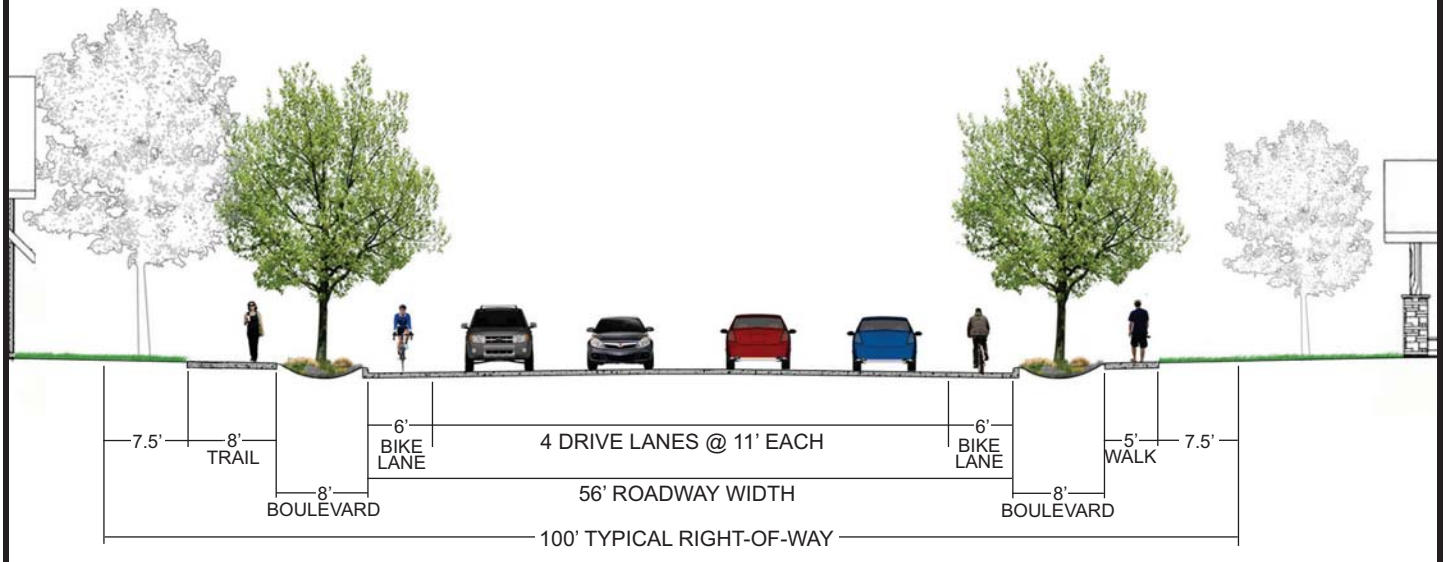




MAPLEWOOD

Minor Arterial | Option 2





Minor Arterial | Option 3

MAPLEWOOD

3.6 Miscellaneous

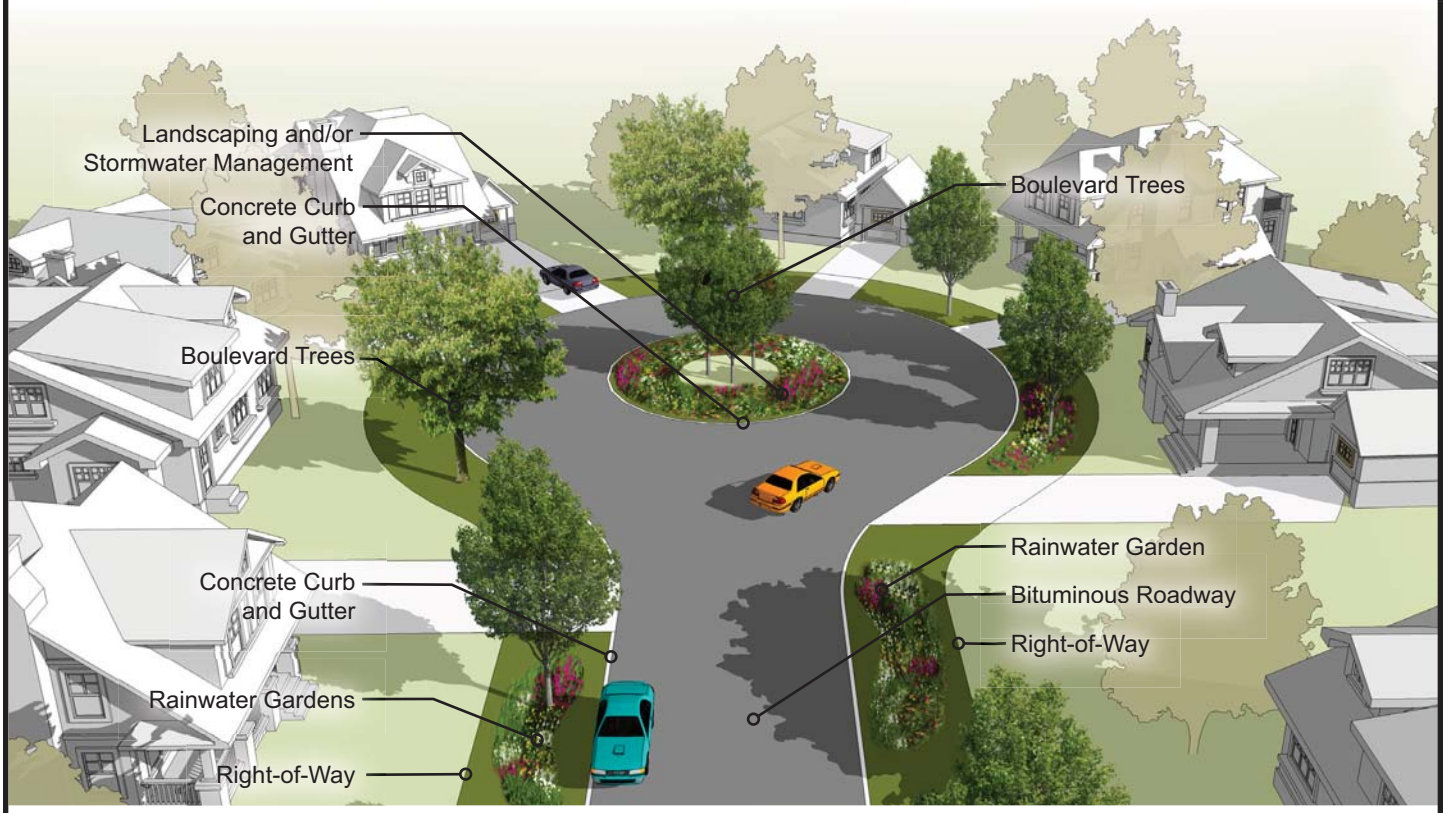
Miscellaneous streets will be those that do not fit any of the types previously discussed. The most common example of a Miscellaneous street is a cul-de-sac.

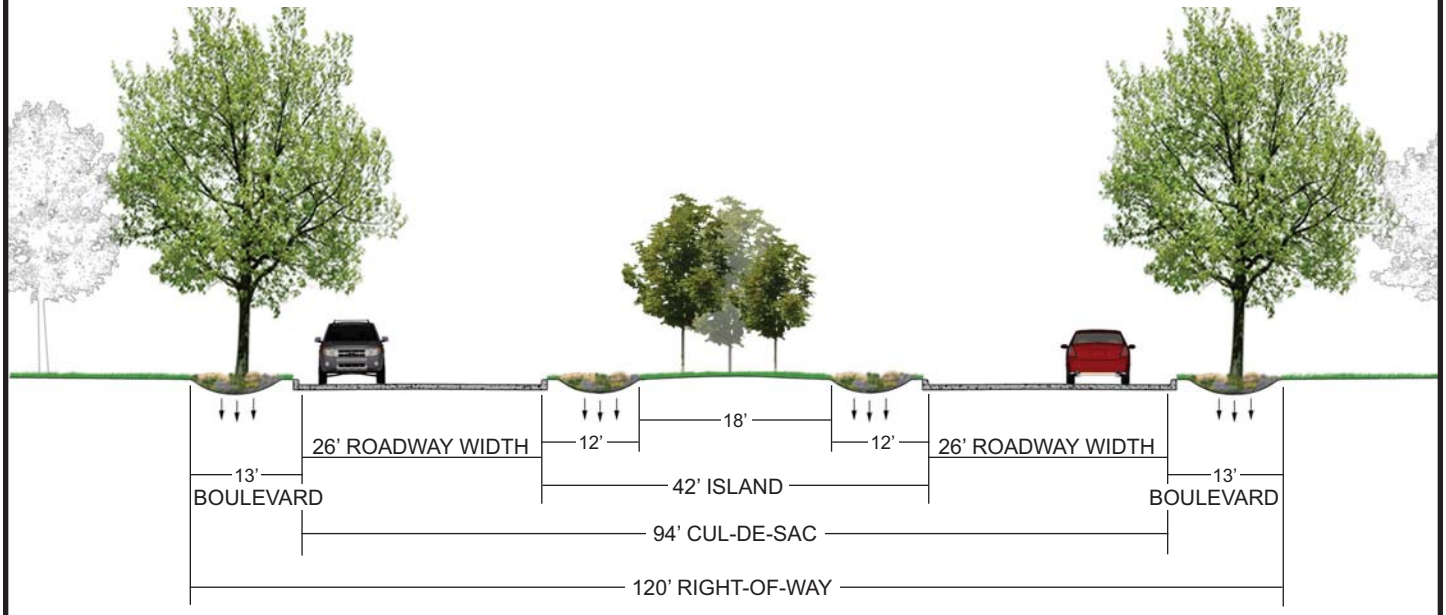
Following is a summary of the guidance for Miscellaneous streets:

- The “throat” of a cul-de-sac should be considered as a typical Local Street (see Section 3.2).
    - Narrow street widths should be allowed only when a boulevard sidewalk is provided.
- The “circle” of a cul-de-sac should be sized to meet access requirements of the current version of the Minnesota State Fire Code.
- The “circle” of a cul-de-sac should be designed with green space in its center for stormwater treatment and/or landscaping.

Design templates showing options 1 and 2 are provided for offset and standard cul-de-sacs.

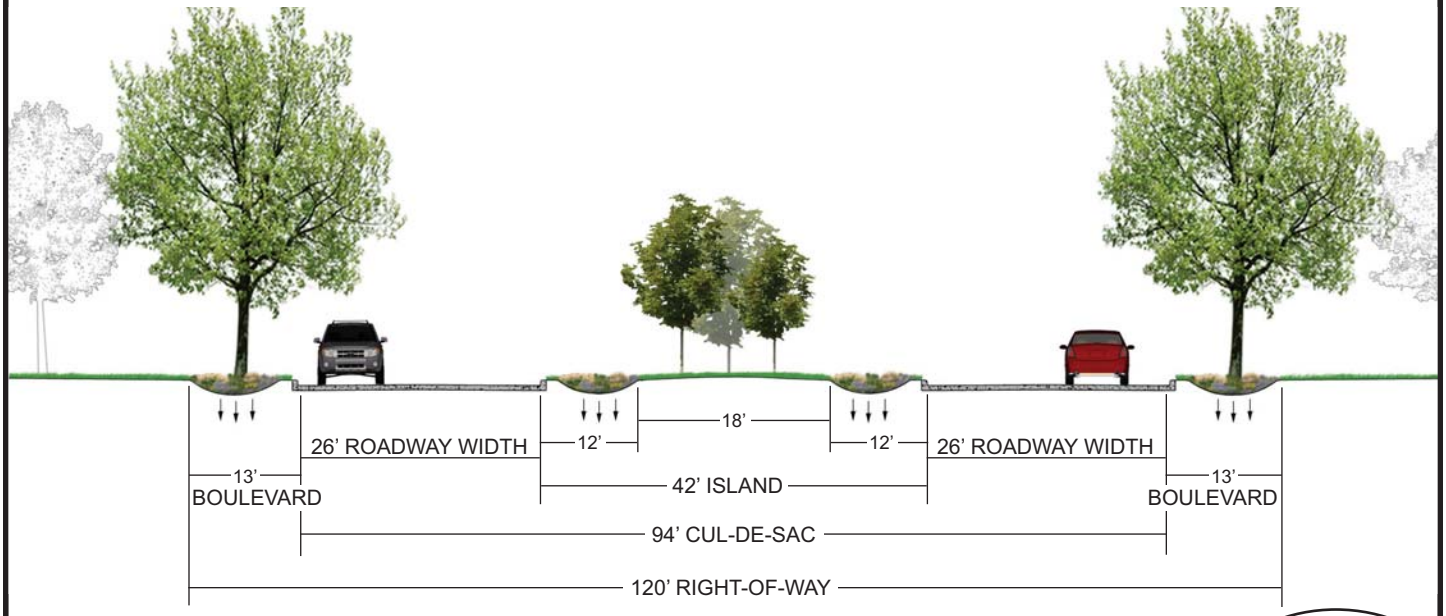
Types of Miscellaneous streets besides cul-de-sacs could include special or unique roadways, such as parkways, guided corridors, or alleys. For those situations, each would be considered on a case-by-case basis.





MAPLEWOOD

Cul-De-Sac | Option 1



MAPLEWOOD

Cul-De-Sac | Option 2

4.0 IMPLEMENTATION

4.1 Comprehensive Plan Amendments

Based on the comparison of the Living Streets Policy to the City of Maplewood adopted 2030 Comprehensive Plan as discussed in Section 2.3, following is a summary list of the recommended amendments that should be considered for the Comprehensive Plan:

- Chapter 8: Amend the definition of Minor Arterial to remove the statement that such a road contains at least two drive lanes in each direction.

- Chapter 8: Amend the Comprehensive Plan to replace Figure 8.2 with the design templates from the Living Streets Policy.

4.2 City Code Revisions

The Living Streets Policy has been reviewed against the current City Code to determine where updates to the Code will be needed as part of the adoption and implementation of Living Streets. Each section of the Code reviewed is listed below, along with recommended revisions:

- Community Design Review Board (Chapter 2, Sections 2-281 through 2-300):
  - No revisions needed.

- Utilities and Streets (Chapter 12, Article VII, Division 4):
  - No revisions needed.

- Environment (Chapter 18):
  - No revisions needed.

- Streets, Sidewalks, and Other Public Places (Chapter 32):
  - Section 32-11.(b). Recommend addition of item (16) to require joint trench installation of underground utilities when possible.
  - Section 32-92.(a)(5) states *"A permanent relaxed urban street design may be used with lots that are over one acre, when approved by the city council."* Although Living Streets will become the new standard for street construction, the option for the relaxed design can still be offered in those areas of the City that meet the requirements. Therefore, no revision is needed.
  - Section 32-92.(a)(6) should be expanded to incorporate sidewalk placement in accordance with the Living Streets Policy as well.
  - Section 32-92.(a)(7) currently states that Minor Arterials shall not be less than 52 feet in width. This needs to be revised, as the Living Streets Policy includes options for Minor Arterials as narrow as 42 feet in width. It is recommended the statement of specific width be removed from the Code, and that 32-92.(a)(7)

simply say, *"Principal and minor arterial streets shall be of adequate width to accommodate projected traffic volumes."*

- Section 32-92.(a)(8) currently states that Collector streets shall be 34 to 44 feet in width. This needs to be revised, as the Living Streets Policy includes options outside that range. It is recommended the statement of specific width be removed from the Code, and that 32-92.(a)(7) simply say, *"Collector streets shall be constructed to widths in accordance with current City standards."*
- Section 32-92.(a)(9) currently states that Local streets shall be 32 feet in width. This needs to be revised, as the Living Streets Policy provides for more narrow streets. It is recommended the statement of specific width be removed from the Code, and that 32-92.(a)(7) simply say, *"Local streets shall be constructed to widths in accordance with current City standards."*

- Subdivisions (Chapter 34):
  - Section 34-8.(b)(1) currently states *"No full-width street shall be less than 60 feet wide."* This sentence is unclear, as the width referenced applies to the right-of-way, not the actual improved street surface. The sentence should be revised to say *"No full-width street shall have right-of-way less than 60 feet wide."*
  - Section 34-12.(a)(6) should be expanded to incorporate all boulevard elements of Living Streets, beyond just turf.
  - Section 34-16.(7) requires sidewalks on both sides of roads in the mixed-use MU district. This can be compatible with the Living Streets policy, provided it is clarified that City Code takes precedence where it is more prescriptive.

- Traffic and Vehicles (Chapter 36):
  - Section 36-204.addresses riding a bicycle upon a roadway. Recommended that 36-204.(a)(4) be added to state: *"A specified bicycle lane is provided and marked upon the roadway."*
  - Section 34-16.(7) requires sidewalks on both sides of roads in the mixed-use MU district. This can be compatible with the Living Streets policy, provided it is clarified that City Code takes precedence where it is more prescriptive.

- Trees (Chapter 38):
  - Section 38-1 currently prohibits the planting of trees in the public right-of-way. This section will need to be revised to allow tree planting in the right-of-way.
  - The Task Force recommended the allowance of planting of trees in the public right-of-way be limited to that done by the City or its agents as part of a public improvement project; or that which is done in accordance with an approved City planning or guidance document (such as an approved Tree Plan).

- Utilities (Chapter 40):
  - No revisions needed.

- Zoning (Chapter 44):
    - No revisions needed.

4.3 Engineering Specifications and Standards Revisions

The Maplewood Engineering Department maintains a set of written Engineering Standards as well as Standard Plates and Standard Specifications. The following revisions are recommended to make those documents consistent with the Living Streets Policy:

Engineering Standards:

- Section 3.7 – Tree Plan
    - No revisions necessary due to the Living Streets Policy, but this section should be reviewed again for potential updating once the City has developed an overall Tree Plan as recommended in Section 4.5 of the Living Streets Policy.

- Section 4.1 – References
    - Add the *Maplewood Living Streets Policy* as a reference.

- Section 4.7 – Pavement Section
    - The first paragraph specifies lane layouts and widths for local and collector streets. This paragraph will need to be revised or replaced, as the Living Streets policy contains the new standards for widths and configurations.
    - The first sentence of the second paragraph states the local street section is shown on Standard Plate 111. This reference will need to be updated.

Standard Plates

- The following standard plates will need to be updated:
    - Plate 110 – Typical Intersection
    - Plate 111 – Typical Residential Street Section – Urban
    - Plate 116 – Rainwater Garden.
        - To accommodate boulevard sizes proposed on Living Streets.
        - To accommodate potential for planting trees within gardens.
    - Plate 500 – Hydrant Installation
        - Typical dimension from right of way does not work with all options for Living Streets. Notes need to be added to address.
    - Plate 620 – Typical Boulevard Utilities
        - Typical dimension from right of way for utility trench does not work with all options for Living Streets. Notes need to be added to address.
    - Plates 650, 651, and 652 – Tree, Shrub, and Ground Cover Planting Details
        - These plates will continue to be acceptable for locations not in rainwater gardens. Recommend the names for these plates be expanded to clarify.

- It may be appropriate to develop three new plates for planting of trees, shrubs, and ground cover within rainwater gardens.

Standard Specifications:

- Section MW-2571A – Rainwater Garden Preparation
  - 2571A.4.D.3 lists the dimensions for standard garden sizes. The garden sizes are also listed on Standard Plate 116. As noted previously, the garden sizes will need to be revised to accommodate the boulevards proposed on Living Streets. It is recommended the garden sizes continue to be listed on Standard Plate 116 and be removed from the Standard Specification. It is recommended Section 2571A.4.D.3 simply reference the garden sizes shown on Standard Plate 116. This will ensure the Standard Specification references the current and correct garden sizes, and will eliminate the possibility of contradiction between the Standard Specification and the Standard Plates.

- Section MW-2572 – Protection and Restoration Of Vegetation
  - 2572.3.A.8 states the requirements for tree replacements if trees are damaged during construction. No revisions to this section are necessary due to the Living Streets Policy, but this section should be reviewed again for potential updating once the City has developed an overall Tree Plan as recommended in Section 4.5 of the Living Streets Policy. It is likely that once a Tree Plan is adopted, it would be most appropriate for Standard Specification section 2572.3.A.8 to just reference the current requirements of the approved Tree Plan.

4.4 Environmental Utility Fee Policy Revisions

- Increase the EUF credit from 30% to 50% to maintain and increase the level of voluntary participation in the rainwater garden program.

- Clarify that continuance of credits is not guaranteed for perpetuity. Credits are reviewed periodically and can be terminated if the BMP is not being adequately maintained.

- Establish a program to allow for retrofitting of rainwater gardens.

  - Designate an amount annually from the EUF to be used for retrofitted rainwater gardens. Recommended initial amount is $10,000.

  - Establish a procedure for interested property owners to apply for consideration of having a retrofitted rainwater garden constructed.

- Approve up to five applications for funding for retrofitted rainwater gardens per year, with an award of $2,000 to be made to the property owner upon successful establishment of the rainwater garden.
  - All applications for retrofit rainwater gardens within any given year would be approved if appropriate, however only five applications would be approved to receive funding support.

- Curb cut would be provided as necessary by the City at no cost to the property owner for approved retrofit applications.

4.5 Tree Plan Development

- It is recommended Maplewood develop and implement an integrated Tree Plan.

  - The Tree Plan should identify and establish a consistent, reliable, stable source of revenue for the Tree Fund.

The need for a comprehensive tree plan for the City has been identified in several ways. The Sustainability Chapter of the adopted 2030 Comprehensive Plan states a goal of the City is to *"Adopt an urban tree program that encourages a healthy and thriving urban tree canopy"*; the Natural Resources Chapter of the Comprehensive Plan states an implementation strategy should be to *"Develop and implement an Urban Tree Management Plan"*; the Living Streets Task Force in their discussions recognized the need for a tree policy/program, including funding mechanism; and the Maplewood Public Works Department initiated a Forestry program in its budget for 2013 to begin this process. Finally, this Living Streets Policy has established enhancing the urban forest as a focal point of street projects going forward.

Maplewood has several programs that protect our urban forest: diseased tree inspection, tree trimming, tree planting, tree purchase rebate for residents, big tree registry, tree ordinance, and educational programs and materials. A comprehensive tree plan would integrate these existing items cohesively, identify the requirements for the trees in the Living Streets Policy as discussed in Section 2.2.4, and also identify and address any other gaps in the approach to the urban forest.

Establishing a stable funding source needs to be an important component of an overall tree plan. Currently, the sole revenue source for the Tree Fund is developer contributions, required only when a developer is not able to preserve trees or provide adequate replacement trees as part of a development. As a result, the revenue flow for the Tree Fund is inconsistent and unpredictable. During a period of slow development activity or if developers meet their tree requirements, the revenue into the Tree Fund is low. However, the City is experiencing increasing and more consistent expenses related to trees and the urban forest, as exhibited by the proposed forestry budget in 2013 and the commitment to the Living Streets approach.

4.6 Street Reconstruction and New Development

Upon adoption, it should be clearly identified the Living Streets Policy is the new standard for all street projects, both new and reconstruction, within the City of Maplewood.

4.7 Outreach and Education

Outreach and education is an important aspect of establishing an adopted Living Streets Policy within the City of Maplewood. The success of Living Streets will be greatly increased if the understanding and support of the community can be attained.

Maplewood already has an effective program for communication as part of street reconstruction projects. That program should be maintained and incorporated as part of a larger overall communication plan for Living Streets.

- The standards established by this Living Streets Policy should be presented and communicated to property owners within project areas, and should be the starting point for discussion of project elements.

The outreach and education for the Living Streets Policy can be broken down into elemental components: who needs to be communicated with; where the communication should occur; how the communication can be conveyed; what should be in the message. An outline of these components is shown below:

Tools for communication:

- Create a specific image to represent the Living Streets Policy.
- Create a summary fact sheet or brochure, similar to as was done for raingardens.

Elements of Message:

- Benefits.
- Long-term thinking.
- Sustainability and environmental stewardship.

Target groups for communication:

- Parents.
- Children.
- Volunteer Organizations (i.e. Boy/Girl Scouts).

- Seniors.
- Cyclists.
- Pedestrians.
- Businesses.
- Environmentalists.
- Gardeners.
- Properties along proposed projects.

Ways to communicate:

- Coalitions.
- Special events.
- Existing outlets (newsletter, web page, cable tv).
- Project process (specific public meetings).
- Tours of Living Streets projects.

Aspects of communication:

- Early communication.
- Engage the audience / group.
- Promote two-way communication.
- Package the message appropriately for the context.

APPENDICES

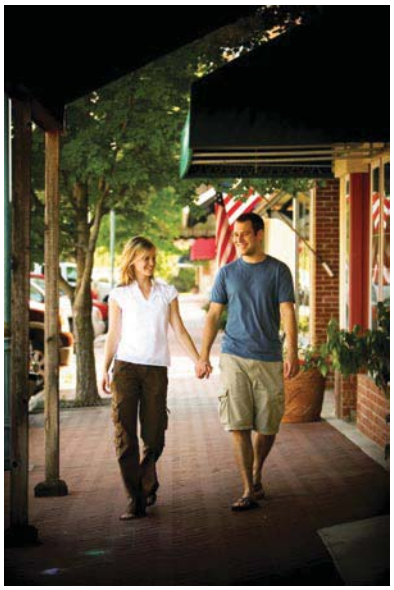
Benefits of Living Streets – excerpt from the North St. Paul Living Streets Plan

Benefits of Living Streets

Most of us think of America as the land of choices. Yet, in just about any community built in the last 50 years, there is pretty much one choice for transportation: the car. North St. Paul isn't any different than most American cities in this regard. Living Streets provide many transportation choices to the diverse range of city residents and it balances those choices to provide community, environmental and economic benefits as well.

Walkable streets raise home values

Studies show that homes in more walkable neighborhoods have higher values than similar homes in less-walkable areas. The report, "Walking the Walk: How Walkability Raises Housing Values in U.S. Cities" by Joseph Cortright, analyzed data from 94,000 real estate transactions in 15 major markets and found that in 13 of 15 markets, higher levels of walkability were directly linked to higher home values.



Surveys indicate that shoppers spend more time and money in commercial districts with tree-lined streets.

Living Streets have economic benefits because they:

Make Fiscal Sense. Smaller streets, less pavement and fewer underground storm sewer pipes cost less to build. These are savings that residents will notice on special assessments associated with their street reconstruction project.

Lower Long Term Maintenance Costs. Smaller streets also cost less to plow and repair benefiting the city's annual budget and taxpayers.

Increase Property Values. Walkable communities with tree lined streets and slowed traffic increases neighborhood desirability and property value, an asset residents will realize at the time of sale.

Spark Economic Revitalization. By making local businesses more accessible to bicyclists and walkers, residents are more likely to shop locally and encouraging local business investment and job growth. Research shows that shoppers are attracted to businesses with tree lined streets.

Good bike and pedestrian access to downtown could help business.

Living Streets build community because they:

Help Children. Streets that provide room for safe walking and biking help children get physical activity and gain independence. More children walk to school where there are sidewalks, and children who have safe walking and bicycling routes have a more positive view of their neighborhood.

Improve Public Health. By offering easy opportunities for walking and bicycling, living streets encourage a healthy life-style for people of all ages, especially the elderly, and are an important strategy to combat obesity.

Increase Safety. Traffic-calming elements like curb extensions, bump-outs and narrowed streets improve safety by reducing traffic speeds. Streets are safer for walkers, bicyclists, children, the elderly, as well as for drivers.

Enhance Neighborhood Beauty and Strengthen a Sense of Community. By making room for the planting of trees and rainwater gardens, our neighborhoods become more beautiful and attract young families that make communities thrive.

Living Streets improve environmental quality because they:

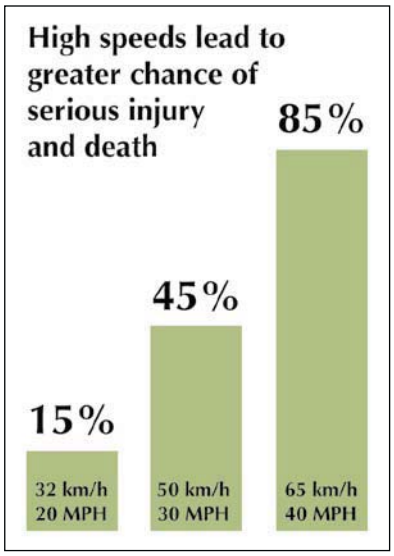
Improve Water Quality of Lakes and Streams. Rainwater gardens along roads intercept and filter stormwater runoff. Much of it soaks into the ground to water street trees while over flow water during big storms is filtered by plants before making its way to the storm sewer pipe that takes it to Kohlman Lake and ultimately further downstream to the Mississippi River.

Improve Air Quality. By providing space for walking and biking, complete green streets reduce the emissions of $C0_2$ and other pollutants harmful to the planet and human health. Trees also filter the air, trapping dust.

Reduce the Urban Heat Island Affect. Less asphalt and more street trees reduce heat build-up in pavement and in the ambient air during hot summer days making outdoor activities more comfortable and reducing air conditioning costs in our homes and businesses.

Reduce Raw Material and Energy Used in Street Construction. Smaller streets require less asphalt, gravel beneath the street and other natural resources, and requires less energy used for their construction than larger conventional streets. This reduces the pollution and greenhouse gases emitted during the manufacturing and transporting of these materials.

Safety for children is a primary concern. Living Streets will provide safe walking and bicycling routes.



Source: *Killing Speed and Saving Lives*, UK Department of Transportation

Pedestrians' chances of death if hit by a motor vehicle at different speeds.

What are the benefits of street trees?

Living Streets promote the planting of street trees. Trees provide many benefits to the environment and community. The past few decades of tree research has focused on documenting and quantifying the benefits of trees. Early on, researchers were quantifying the amount of greenhouse gases trees remove from the atmosphere (about ½ ton of carbon dioxide per tree per year) and pollutants (about 4.3 pounds of pollutants per tree per year). Since then, researchers have begun to document an ever growing list of benefits that may not be so obvious.

Environmental Benefits

In addition to the direct removal of greenhouse gases and pollutants, mentioned above, trees:

- Reduce temperatures by shading streets, sidewalks and other hardscapes, resulting in reduced use of electricity.
- Increase the amount of water that reaches the groundwater table by helping water soak into the ground.
- Intercept rain with leaves and branches, reducing the amount of water that reaches the storm system.
- Add organic matter to the soil which further improves the water-holding capacity of the soil.
- Improve the resiliency of soil to respond to rain events. One mature tree can capture over 5,000 gallons of water in a year.
- In whole, trees can reduce stormwater by about 2% for each 5% increase in the community's tree canopy.
- Reduce soil erosion with dense root systems. Less soil, contaminated or clean, reaches the stormwater system, creeks and rivers.

Community Benefits

Trees help promote pride in the community and a sense of place, as well as providing a long list of other direct and indirect benefits.

- Street trees are an important factor in reducing road maintenance costs, by shading the pavement from the sun.
- Tree-filled neighborhoods show lower levels of domestic violence.
- Street trees can calm traffic and lower traffic speed by reducing the perceived width of street.
- Trees help reduce noise levels.
- Trees are known to shorten hospital stays and reduce workplace stress.
- Trees can be used to screen unsightly views.
- Healthy trees in neighborhoods enhance property values, increasing sale prices by 1% for each large front-yard tree and 10% for a specimen tree.
- Trees are also good for business. Surveys of shoppers in commercial districts with tree-lined streets reported that they shop there more frequently, shop longer, are willing to pay for parking, and spend on average 12% more on goods.