

US EPA ARCHIVE DOCUMENT



GREENING LAST CHANCE GULCH



GREENING AMERICA'S CAPITALS

Greening America's Capitals is an EPA program to help state capitals develop an implementable vision of distinctive, environmentally friendly neighborhoods that incorporate innovative green infrastructure strategies. In collaboration with the U.S. Department of Housing and Urban Development (HUD) and the U.S. Department of Transportation (DOT) through the Partnership for Sustainable Communities, EPA provides design assistance to help support sustainable communities that protect the environment, economy, and public health and to inspire state leaders to expand this work elsewhere. Greening America's Capitals will help communities consider ways to incorporate sustainable design strategies into their planning and development to create and enhance interesting, distinctive neighborhoods that have multiple social, economic, and environmental benefits.

Helena, Montana was chosen in 2012 as one of five state capital cities to receive this assistance, along with Baton Rouge, Louisiana; Des Moines, Iowa; Frankfort, Kentucky; and Indianapolis, Indiana.

Find more information about Greening America's Capitals at www.epa.gov/smartgrowth/greencapitals.htm.



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EXECUTIVE SUMMARY

The city of Helena, Montana requested assistance from the U.S. Environmental Protection Agency (EPA) to create a common vision for its historic downtown main street, called Last Chance Gulch. EPA funded a team of designers that worked with city staff, local business owners, residents, and other stakeholders to develop design options to revitalize the street and downtown Helena.

This report includes a description of the three-day workshop held in Helena to engage stakeholders in a process that clarified challenges and opportunities for Last Chance Gulch. The report also includes an analysis of the project area and descriptions of recent and ongoing plans and investments. The city and stakeholders identified a set of intersections that should be prioritized for redesign, and the design team developed concepts that address community goals for these sites. The final design options presented in this report include a street redesign that supports all transportation modes, makes better use of existing parking assets, and adds new green infrastructure features for environmental benefit and improved walkability on downtown streets.

I. INTRODUCTION

Last Chance Gulch is downtown Helena's main street and serves as the center for the city's commerce and arts institutions. The Gulch was at the heart of the original mining camp in 1864, and during the territorial period the downtown area became the center of finance. In the early years of statehood, the downtown area became the seat of government functions for the state. Over time, the downtown blocks of Last Chance Gulch have developed into two distinct sections. The blocks south of Neill Avenue have a strong historic influence with structures that were primarily built before the 1940s. The lots along the northern portion were developed mainly after the 1940s and are more suburban in nature and industrial in use. However, these characteristics also create redevelopment opportunities along this stretch of Last Chance Gulch, and some portions have recently seen new more intensive development. More pedestrian-supportive street environments have been created in the Great Northern Town Center and adjacent developments.



Figure 1: Study area and focus sites.

Source: City of Helena GIS

Helena requested assistance from EPA's Greening America's Capitals program to focus on Last Chance Gulch between 6th Avenue and Lyndale Avenue. Greening Last Chance Gulch presents an opportunity to restore some of the natural character of the Gulch through green infrastructure¹ while being sensitive to the development that has occurred in the 150 years since its founding. There is currently no unifying character to the streets in downtown Helena. With the exception of the Last Chance Gulch pedestrian mall, the streets within the downtown are primarily designed for high speed movement of cars with few design features accommodating pedestrians or bikes. Crossings are difficult in many areas and the districts to the north and south of Neill Avenue are not well connected. However, the street right of way is typically large enough to create a better pedestrian and bicycling environment while maintaining space for cars. The right of way could accommodate landscaping and green infrastructure elements that serve multiple goals: managing stormwater, improving pedestrian and bike safety, and enhancing the character of the downtown.

The design concepts in this report illustrate complete streets strategies combined with green infrastructure strategies. "Complete streets" refers to a set of strategies that make streets and sidewalks safe for all users, including pedestrians, bicyclists, drivers, and transit riders. However, a street is not necessarily "complete" without considering its environmental performance. Incorporating green infrastructure into street design adds the environmental component. Streets that have green infrastructure elements are often called "green streets." For the purposes of this report, the term "green and complete street" will be used.

¹ Green infrastructure includes a range of natural and built approaches to stormwater management—such as rain gardens, bioretention, and permeable paving—that mimic natural systems by cleaning stormwater and letting it absorb back into the ground. Green infrastructure strategies for streets can include a connected system of inlets, basins, and outlets for tree planters and other landscaping that allows stormwater to flow into the planting beds and slowly soak into the soil. Green infrastructure could reduce the amount of runoff that enters the traditional piped stormwater system below ground, and could prevent overflows that pollute nearby water bodies. Green infrastructure offers a range of additional environmental, economic, and community benefits, including more walkable streets, reduction of heat island effects, increased property values, and more gathering spaces that benefit residents and customers of local businesses. U.S. EPA Office of Water, www.epa.gov/smartgrowth. <http://water.epa.gov/infrastructure/greeninfrastructure/index.cfm>

The city of Helena's adopted 2010 Complete Streets Policy² supports pedestrian and bicycle amenities, and recent streetscape improvements at the lower end of Last Chance Gulch provide a starting point for the Greening America's Capitals project. The recent streetscape improvements have begun to support increased pedestrian activity and have added new landscaping and, in some locations, wider sidewalks to the downtown. The northern section of Last Chance Gulch has the greatest potential for transformation and redesign, primarily due to available street right of way for improvements and parcels with redevelopment potential.

The city's goals for Last Chance Gulch were to:

- Integrate green infrastructure elements that reflect the local climate and city maintenance practices.
- Create a sustainable and multimodal transportation system while maintaining the existing character of the downtown.
- Create well-defined gateways and edges.
- Establish a streetscape concept that will support and energize the downtown.
- Connect and unify the historic district with redevelopment areas to the north.
- Address safety and interconnectivity of all transportation modes.
- Improve bicycle, pedestrian, transit, and vehicular facilities and circulation.

The design team for this project, which included EPA-funded experts in landscape architecture, urban design, green infrastructure and land use and transportation planning, considered the relationship of Last Chance Gulch to the surrounding area. Figure 1 illustrates the study area (the larger downtown), focus sites, and the surrounding circulation network and development pattern.

² City of Helena, Montana. Resolution Number 19799 - A Resolution stating the policy and intent to provide "Complete Streets" for all users of public streets in the City of Helena, Montana, and providing an implementation strategy. Resolutions of the City of Helena, Montana. Page 4. December 20, 2010.



Figure 2: The design team initially visited the site in January 2013.



Figure 3: The design team, along with EPA staff, led public meetings in February 2013.

The design team, along with EPA staff, conducted a site assessment (Figure 2) of existing conditions and met with city staff to select locations for further design concept development, understand current policies and parameters, and identify the opportunities and challenges the design concepts must address. The design team selected two blocks and two intersections of Last Chance Gulch for these focused studies. The team presented alternative design concepts at a series of public workshops with stakeholders that included members of the public, residents, business owners, city staff, and elected officials. During the three-day workshop, the community expressed concerns for the study area, including the lack of safe pedestrian crossings, vehicular access, parking and loading for local businesses, street and sidewalk maintenance, and bicycle safety (Figure 3). Six focus group meetings provided a venue for local stakeholders to voice their opinions and suggest areas for further study or refinement of design concepts. These focus groups discussed business and economic development; green infrastructure and landscape; multimodal circulation and transportation; social services and public health; historic preservation, art, and culture; and implementation.

Workshop participants identified several design concepts that met local goals and addressed the community's concerns, including:

- A raised intersection and extension of the pedestrian mall paving into the intersection at 6th Avenue and Last Chance Gulch.
- The use of sharrows,³ or shared lane markings, on the 300-400 blocks of Last Chance Gulch in either a one-way or two-way configuration.
- The use of a “greenabout”⁴ configuration for the five-point intersection at Cruse Avenue, Neill Avenue, Helena Avenue, and Last Chance Gulch.
- A raised intersection promoting pedestrian crossings at Front Street and Neill Avenue.

³ Sharrows are used to indicate that lanes are to be shared by bicycles and automobiles. See the sidebar on page 30 for more detail.

⁴ This is the term used for the design option to reconfigure the existing five-way intersection into a four-way intersection and redirects one-way traffic around an enlarged Cruse Park, hence, driving “about” a civic “green.” See pages 34-37 for more information.

GREEN STREETS INFRASTRUCTURE DESIGN ELEMENTS

Green street stormwater management can be achieved through use of a variety of design elements. Depending on the underlying soil conditions, these elements can either infiltrate storm runoff into the soil to and in some cases recharge or they can be designed with an underdrain system that provide detention of runoff for a short period of time before it is released into to the local storm or storm sewer system. The later approach is typically used in areas with poorly draining or contaminated soils and high groundwater conditions. Both methods catch debris and remove sediments and pollutants before the runoff waters enter the groundwater or utility system. The following are more common elements, any of which could be designed as infiltrative or using an underdrain system:



Rain Gardens: Rain gardens are larger landscape areas designed to capture and hold large amounts of stormwater volume. They can be designed with various sizes and configurations including standalone naturalistic looking ponds and street integrated urban planters. Rain gardens are shallow systems that allow for the separation of debris and allow sediments and pollutants to filter out as water soaks into the ground.



Stormwater Planters: Also referred to as infiltration or flow-through planters, stormwater planters collect and retain runoff within a recessed landscape system. Stormwater planters are typically used in highly urbanized areas where space is often constrained and there is a need to collect and hold larger volumes of runoff. Stormwater planters are typically designed with vertical containment walls and a flat bottom soil grade in order to maximize stormwater management volume within the landscape space.



Stormwater Curb Extensions: Stormwater curb extensions are landscape zones within the parking zone of a street that can occur at street corners or along the length of a block. These landscape systems are designed to capture stormwater flow along the street and manage it within the recessed landscape area. Stormwater curb extensions are very versatile in size and shape and can provide water quality and/or volume reduction benefits, as well as providing benefit to pedestrians by reducing street crossing width and managing the speed of traffic.



Green Gutters: Green gutters are placed along the length of a street adjacent to its curb and are located at or slightly below the surface of the roadway. These elements are narrow in nature, typically no wider than three feet and may or may not be contained by curbs. Green gutters are primarily used to filter sediment and pollutants loads rather than retaining runoff volume.



Pervious Paving: Pervious paving allows rainwater to either pass through the paving system itself or through joint openings between pavers. Depending on the underlying soil conditions, runoff can either infiltrate into the soil or be collected into an underdrain system. Types of pervious paving include interlocking concrete pavers, reinforced grass paving, pervious asphalt, pervious concrete, and reinforced crushed rock/gravel.



Trees: While often overlooked as a true stormwater facility, trees provide the very first form of runoff treatment during storm events. The leaves and bark of trees can collect rainfall and slows it down before it reaches the landscape or pavement surfaces. The rainfall collected on trees may also evaporate into the air before it reaches the ground. When water does reach the ground, tree roots help in the uptake of stormwater and limit the amount of downstream runoff.



Vegetated Swales: Vegetated swales are long, narrow landscaped depressions with a slight longitudinal slope. They are primarily used to convey stormwater runoff on the land's surface while also providing water quality treatment. As water flows through a vegetated swale, it is slowed by the interaction with plants and soil, allowing sediments and associated pollutants to settle out.

- Further green infrastructure along North Last Chance Gulch, with additional study and consideration to include green gutters, rain gardens, stormwater planters, stormwater curb extensions, conventional landscaping and street trees, intermittent planters and medians, and pervious paving options that are appropriate for Helena's arid and seasonably cold climate (see sidebar on pages 4-5).

The design options presented in this report focus on the key locations identified during the three-day workshop and address the city's goals for Last Chance Gulch. The design team suggested green street elements to manage runoff from streets and development, to improve water and air quality, to reduce the heat island effect (the phenomenon in which developed areas are hotter than nearby rural areas), and to create a better streetscape for walking and biking. The design options highlight pedestrian, bicycle, and vehicular circulation and facilities that can increase transportation choices and improve safety for all users in the downtown. The combination of these landscape and circulation improvements could improve the attractiveness of the downtown, link new development areas with the historic core, support new economic development, and help create a more positive identity for downtown Helena.

II. PROJECT AREA AND SITE ANALYSIS

SITE CHARACTER

The project area consists of two sections of Last Chance Gulch with distinctive characteristics. The southern portion of the downtown and Last Chance Gulch has a strong historic character set by the many buildings with pre-war architectural styles and materials. These building frontages sit very close to the sidewalk and provide a nearly continuous building edge along the street (Figure 4). Parking lots and other erosions of the street edge do exist, particularly toward the edges of the area along Neill Avenue, Cruse Avenue, and Park Avenue. In contrast, the northern portion is characterized by more recent suburban style development and has more industry-oriented land use. In many instances, off-street parking lots line the street edge and buildings are set back from the sidewalk, which creates an environment less friendly to walking and is less visually interesting. More recent infill and redevelopment projects in the area have more contemporary architectural styles and materials and generally locate the buildings adjacent to the sidewalk (Figure 5). Figure 6 depicts the existing transportation and land use of downtown, and defines the two downtown zones.

In the 1960s and 1970s a number of historic downtown buildings were demolished to accommodate the reconstruction of Park Street and creation of Cruse Street. Along with increased traffic capacity, the redesign included the development of larger surface parking and parking garage areas. While this period of change resulted in the removal of substandard buildings and infrastructure, it also significantly altered an existing development pattern and street network that was more conducive to walking.



Figure 4: The southern portion of Last Chance Gulch is characterized by continuous street frontage and historic architecture.



Figure 5: The Great Northern Town Center is characterized by more modern mixed use development and contemporary architectural styles.

The northern portions of the study area have recently seen new development activity under Montana Community Development Corporation's New Markets Tax Credit program, which supports development in economically disadvantaged communities. The area now has several new office developments, including the LEED-certified Montana State Fund building, the Crowley/Fleck building, and the Pioneer Block.

The 2011 Helena Growth Policy will guide future growth in the area. The policy defines the downtown as a mixed-use area that should support increased residential, commercial, and civic uses. These goals for increased development activity highlight the need for safe and convenient pedestrian and bicycle routes and other transportation choices for those traveling in and around downtown. New green infrastructure features along Last Chance Gulch could create a better walking environment, improve storm-water management, and encourage more customers to walk and shop in the downtown.

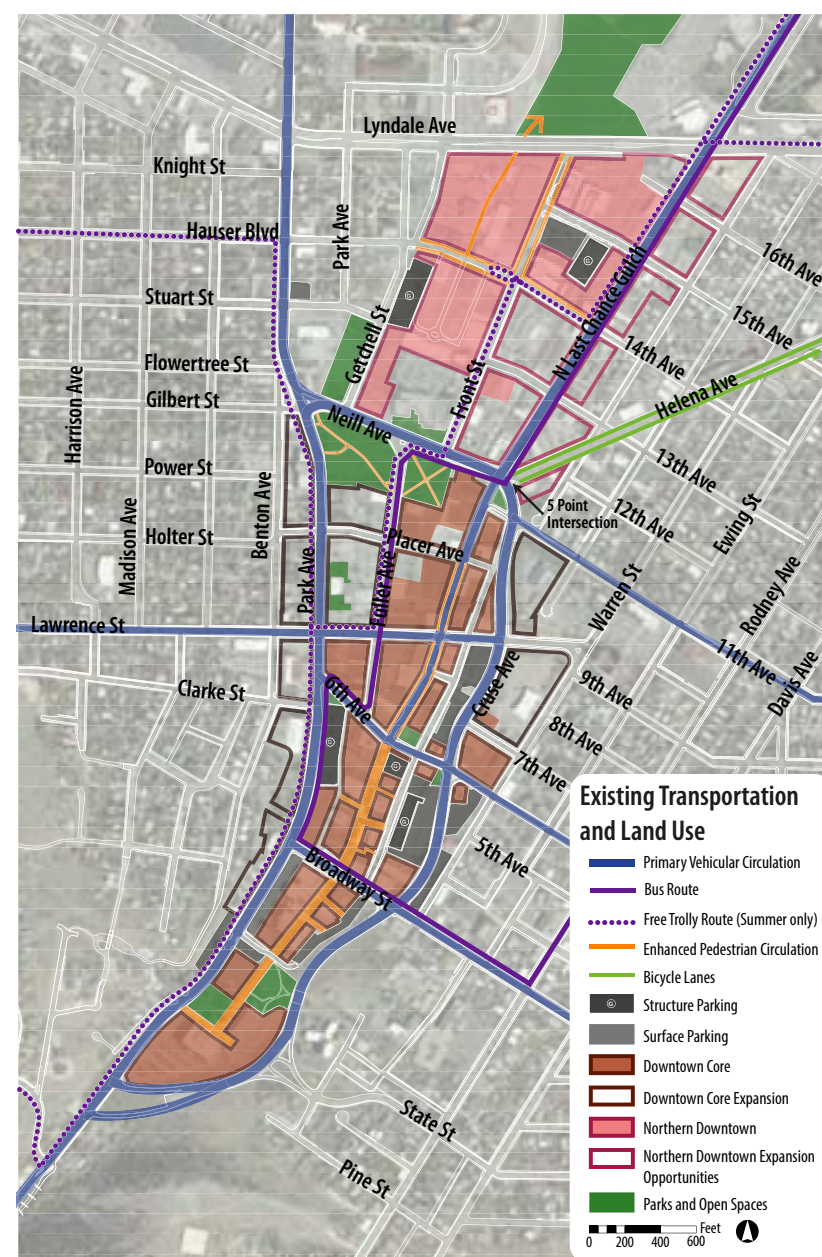


Figure 6: Summary of existing conditions.

Source: City of Helena GIS

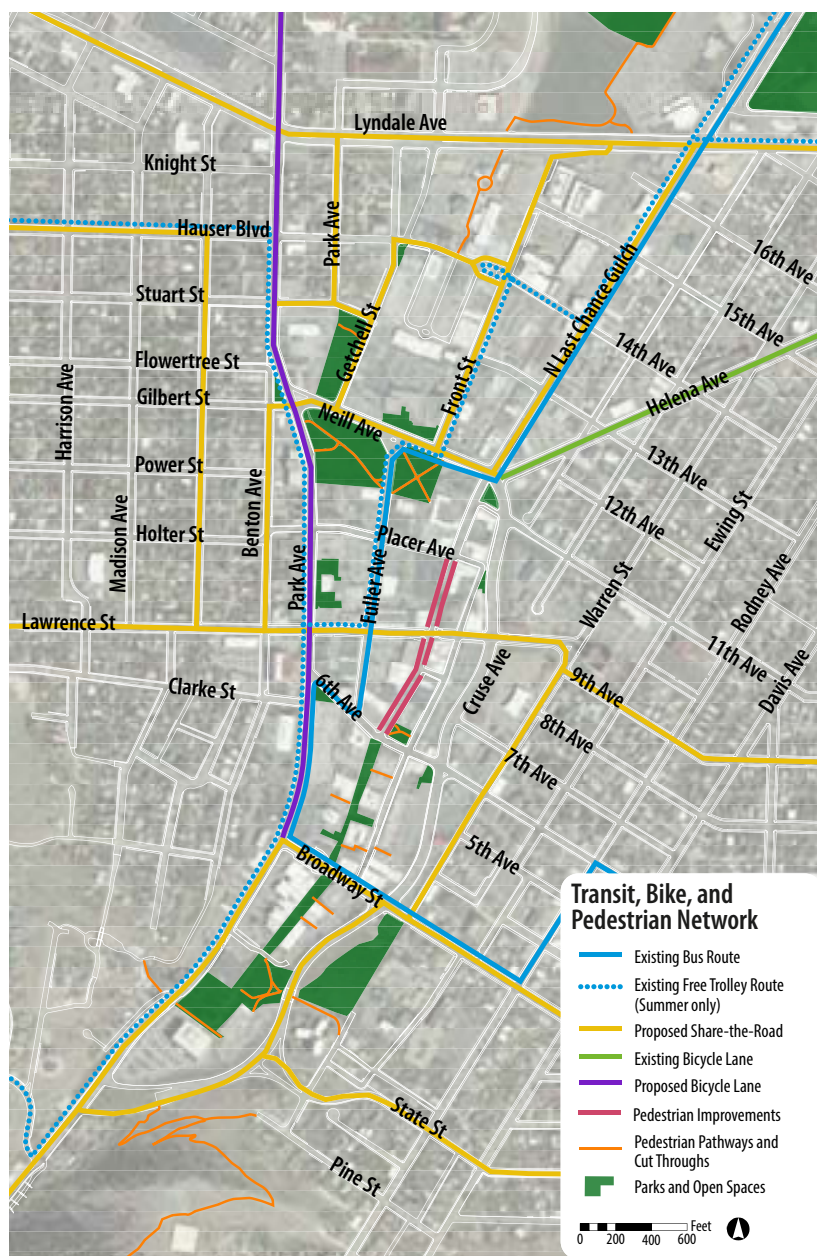


Figure 7: Existing and planned transit, bike, and pedestrian network.
Source: City of Helena GIS

TRANSIT, BICYCLE, AND PEDESTRIAN NETWORK

Recent planning efforts for the study area have focused on improvements for bicyclists and pedestrians. For example, the 2004 Greater Helena Transportation Plan includes a Non-Motorized Transportation Plan that deals exclusively with bicycle and pedestrian routes and facility types and identifies priority projects. The plan primarily calls for share-the-road routes⁵ within and around the study area. One bicycle lane is proposed within the surrounding area of Last Chance Gulch, along Park Avenue. Bike lanes have been added to Helena Avenue since 2004 though the street is designated as a share-the-road route in the Transportation Plan. Non-motorized priority routes include either a bike lane or a share-the-road route along Last Chance Gulch north of the five-point intersection and extending to the airport. The plan also recommends the option to open the downtown pedestrian mall to bicycle traffic.

Public transit in the city is provided by a year-round city bus route and summer shuttle route that run parallel to, across, and along portions of Last Chance Gulch, Fuller Avenue, and Front Street. The year-round bus has a single route that loops through downtown, nearby neighborhoods, and commercial sites to the north and east, with stops at major retailers and employers, hospitals, schools, government buildings, and senior housing. The summer shuttle route has a north loop and an east/west loop, connecting larger areas of the city together. This shuttle focuses on youth activities, stopping at schools, parks, recreation sites, and a few commercial sites.

Figure 7 illustrates these multimodal modes as an existing and planned transit, bicycle, and pedestrian network map. As noted earlier, there are many opportunities for expanding transit, pedestrian, and bicycle networks to improve access and safety and to increase the range of transportation options.

⁵ In a share-the-road route, bicycles and vehicles share the same lane space for circulation. Share-the-road routes are different from sharrows. Share-the-road routes do not physically or visually demark bicycle routes as they have no signs or pavement markings, and they are not always designated as bikeways. They are typically located “on low volume residential streets, rural streets, or on urban streets that have wide outside (curb) lanes.” (Robert Peccia & Associates. Greater Helena Area Transportation Plan - 2004 Update, page 6.2. City of Helena, Montana. 2004.)

TOPOGRAPHY AND STORM DRAINAGE

Figure 8 depicts the topography of the study area. Nearly all of the stormwater runoff in this area is captured in an underground stormwater system. There is little above-ground landscaping or other pervious infrastructure to slow stormwater flows, capture pollutants, or infiltrate stormwater. Many of the streets in the study area are at the low point of the surrounding urban watershed and may experience considerable flows from upstream sources. The former creek, which now exists as an underground piped system, has a strong historic and cultural meaning that is not currently reflected in the built environment of downtown. Segments of the creek could be daylighted where feasible, which would involve uncovering the creek from underground pipes and culverts and restoring it to the surface. New green infrastructure elements could be designed to both improve water quality and recognize the historic landscape and ecosystem.



Figure 8: Topography and storm drainage.

Source: City of Helena GIS

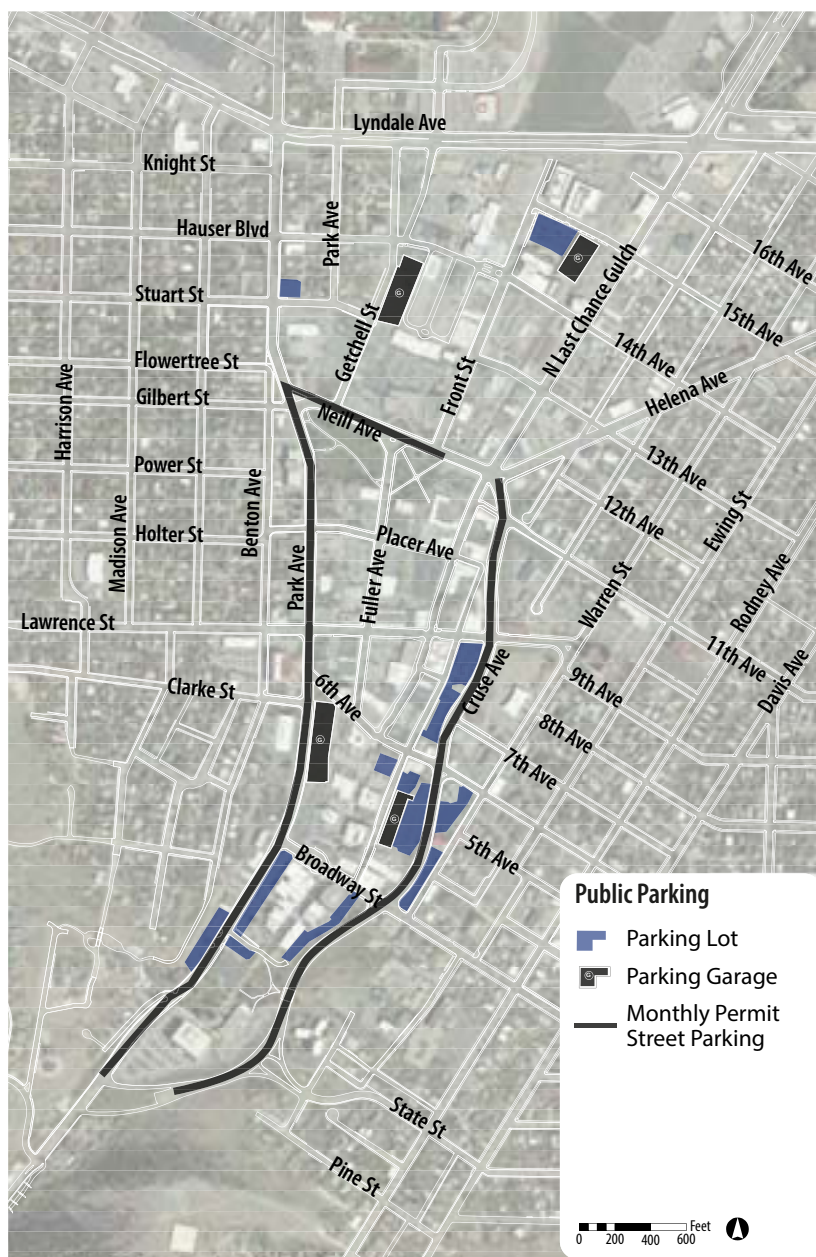


Figure 9: Existing public parking.
 Source: City of Helena GIS, downtown parking map

PARKING

As in most downtowns, parking is a major concern for some business and property owners. Downtown Helena has a large supply of off-street public parking in both surface lots and parking structures, as well as on-street permit, timed, and metered parking throughout the downtown (Figure 9). However, parking can be inconvenient, especially during peak hours when on-street parking stalls are often filled. The Helena Parking Commission is considering changing time limits to discourage use of on-street parking by downtown employees.

Improvements to the quality of the pedestrian environment and to signage could make it easier for customers to find and take advantage of the current parking options in downtown. The existing parking supply could be maximized through a range of parking management strategies such as parking pricing, improved wayfinding signs, coordinated transportation demand management for downtown employees, and other techniques that could be further developed through a comprehensive parking management study.

GREENING LAST CHANCE GULCH FOCUS SITES

The design team identified opportunities for change and investment that include improving multimodal circulation throughout the area; adding landscaping and green stormwater infrastructure; and improving the image of the downtown and surrounding areas to support the city's economic development, land use, and other community goals for downtown.

NORTH LAST CHANCE GULCH NORTH OF NEILL AVENUE

The street design attributes of this area facilitate higher travel speeds for cars but do little to accommodate pedestrians and bicyclists. However, the existing conditions provide extensive opportunities for green infrastructure as well as safe and efficient transportation alternatives. Adding street trees, landscaping, and bike lanes and widening sidewalks could work together to support the city's land use and economic goals for this area of the downtown.

FULLER AVENUE/NEILL AVENUE/FRONT STREET AREA

Both Fuller Avenue and Front Street end at Neill Avenue, creating an offset jog between the two intersections and framing Women's Park. This offset, the wide pedestrian crossings, and the lack of walk signals for pedestrians make it difficult to cross Neill Avenue and connect to the historic downtown core to the south and the revitalizing extension of downtown to the north (Figure 10). Workshop participants identified this north-south route as a major connection path for pedestrians and bicyclists. While the previous city study of the five-point intersection did look at realigning the Fuller and Neill Avenue intersections and reconfiguring parking along Neill Avenue, it did not address the issue of unsafe pedestrian crossings on Neill Avenue or the importance of Front Street as a pedestrian and bicycle linkage from the Great Northern Town Center to the downtown core.



Figure 10: The Fuller/Neill/Front area presents a challenge for cyclists and pedestrians attempting to cross between areas to the north and south.

The project team identified design opportunities for this area, including:

- Providing improved pedestrian and bicycle crossings at Neill Avenue.
- Realigning the Neill and Fuller intersections.
- Providing bicycling improvements along Neill Avenue.
- Improving the sidewalks and streetscape character and creating landscaped buffers between pedestrians and vehicles along Neill Avenue.
- Integrating green street elements.
- Making other improvements to increase the interconnectivity and safety of the area.



Figure 11: Recent curb extensions on Last Chance Gulch that reduce pedestrian crossing distances.



Figure 12: The Last Chance Gulch pedestrian mall allows for walking as well as shared automobile traffic between 6th Avenue and the parking garage (to the right of the photo).

SOUTH LAST CHANCE GULCH FROM NEILL AVENUE TO THE PEDESTRIAN MALL

The city recently made streetscape improvements between Placer Avenue and 6th Avenue, which have set the stage for further investment in this stretch of Last Chance Gulch (Figure 11). Curb extensions, colored concrete and/or pervious paving, and stormwater planters could be initial improvements to support a full redesign of the street for green infrastructure. The intersection of Last Chance Gulch and 6th Avenue also functions as a gateway to the pedestrian mall and provides a prime opportunity for new design concepts that emphasize access and safety for walking, biking, and driving.

Stakeholders shared a range of concerns and ideas about this section of the project area. Business owners expressed concern about maintaining parking in front of shops, loading for delivery trucks and customers, and possible changes to the current one-way southbound design to allow two-way traffic. Some businesses would like to increase outdoor seating along the sidewalk during the warmer times of the year. The bicycle community would like to improve bicycle access along the Gulch to the downtown and to the surrounding hills for mountain biking.

SOUTH LAST CHANCE GULCH AND 6TH AVENUE INTERSECTION

This location is the transition point from the “main street” to the pedestrian mall portions of Last Chance Gulch. The north side of the Last Chance Gulch and 6th Avenue intersection has curb extensions, a newly widened sidewalk, and street tree improvements. The south side of the intersection is the northern end of the pedestrian mall, a large plaza space with brick and stamped concrete paving, small areas of accent planting, and mature trees. The plaza area allows pedestrian circulation and is the entry point for cars to access the public parking garage (Figure 12). Further into the pedestrian mall, the combination of paving materials, landscaping, seating, space for live performances, and other amenities create an inviting and walkable environment, especially during warmer months when tourist activity increases.

Some of the business owners that the design team met during the site visit recognized the benefits of the pedestrian mall as a public space. Yet, this main entry point is a challenge because of the lack of delineation between vehicular and pedestrian areas, and the lack of signage or other clear markers directing cars to slow down and defer to pedestrians. Opportunities to explore in developing design concepts for this intersection include:

- Finding the appropriate balance and emphasis between pedestrians, bicyclists, and vehicles at this transition point.
- Highlighting this area as the gateway and main entry into the pedestrian mall from the rest of downtown to the north.
- Extending some of the pedestrian-friendly features of the mall to other parts of Last Chance Gulch.

FIVE-POINT INTERSECTION

The five-point intersection of Neill Avenue/Helena Avenue/Cruse Avenue/Last Chance Gulch and the adjacent 11th Avenue/Cruse Avenue intersection is a major factor in the physical and psychological separation between downtown to the north and south of Neill Avenue (Figure 13). Known colloquially as “Mini Malfunction Junction,” the five-point intersection was identified as an area for improvement in the 2004 Greater Helena Transportation Plan and the focus of a comprehensive study completed in January 2012 by the city. The transportation plan proposed two alternatives: Alternative 1B, a roundabout design, and Alternative 6, a modified five-way intersection for further study. The redesign of this intersection would improve pedestrian, bicycle, and vehicle circulation and safety to varying degrees depending on the alternative the city chooses.



Figure 13: The five-point intersection has been the focus of previous study to improve safety and circulation for all modes of travel.

III. DESIGN WORKSHOP

DESIGN WORKSHOP SUMMARY

During the three-day Greening Last Chance Gulch design workshop, the project team presented its analysis of the study area and initial design concepts to the public. The team worked with project stakeholders to refine the design concepts based on feedback from the public, input from city staff, and other technical experts and local stakeholders. The project team then presented the refined design concepts to the public and community leaders on the final evening of the workshop.

The local newspaper, the *Helena Independent Record*, covered the public meetings and focus group sessions and provided an additional forum for public comment.

KEY DIRECTION FROM STAKEHOLDERS

Project stakeholders provided strong feedback to the project team during the workshop, and these priority issues have informed the design concepts and next steps that are described in the remainder of this report.

Importance of Neill Avenue improvements: The design concept that provides a safe pedestrian crossing at the intersection of Neill Avenue and Front Street had universal appeal. Numerous stakeholders mentioned that they use the intersection to walk between the north and south areas of downtown. Although it is legal to cross at an intersection without a marked crosswalk, many residents referred to crossing here as jaywalking, which may reflect that it does not feel safe to cross this wide street with high traffic speeds. Similarly, many people use the informal alley and parking lots to the south to walk from Neill Avenue along Women's Park to Placer Avenue.

Further study of the five-point intersection: Stakeholders raised many concerns about the functionality and impacts of many of the conceptual design elements for the five-point intersection, such as impacts on parking and loading, signal timing, and bicyclist safety. These concerns cannot be fully addressed without further technical analysis and design of the intersection. The larger community does not agree on any of the design alternatives previously presented by the city or on new options provided through this process. Further study may help answer lingering questions and concerns from stakeholders.

Opportunistic implementation: The potential for linking Front Street and Neill Avenue intersection improvements with a funded stormwater improvement project along Front Street highlighted the opportunity to more efficiently implement green infrastructure and complete streets concepts in parallel with other projects. Green and complete streets elements could also help projects compete for limited infrastructure improvement funding from the city, state, or federal government. Green and complete streets elements can be easily integrated with other street improvements and support sustainable and multimodal concepts emphasized by many funding entities.

Incremental steps to improve Last Chance Gulch: Before the workshop, the design team prepared several design concepts for Last Chance Gulch between Neill Avenue and the pedestrian mall to illustrate alternatives for providing green infrastructure; improving bicycle circulation; and addressing parking, loading, and traffic flow concerns. The team proposed options for:

- Improving combinations of various vehicle circulation options (e.g., two-way traffic, two-lane and one-lane one-way traffic configurations).
- Improving bicycle circulation (e.g., one-way bicycle lane paired with a lane on Fuller Avenue and a shared multiuse path).

FOCUS GROUPS SUMMARY

Business and Economic Development: Much of this discussion focused on customer and service access, improvements to the amount and accessibility of parking, the tradeoffs between one-way and two-way traffic on Last Chance Gulch, the potential to improve vitality by better linking the northern and southern areas of downtown, and the particular constraints of some downtown areas.

Green Infrastructure and Landscape: Participants highlighted several issues that the design options should address, including snow and ice management, arid summers, and long-term maintenance. Participants noted that there will be a major stormwater pipe replacement project on Front Street in the coming year, which provides an opportunity for including green infrastructure improvements.

Multimodal Transportation and Circulation: Stakeholders identified design concept preferences for most of the focus sites. Favored design options emphasized improving the connection along Front Street and across Neill Avenue to Women's Park, linking these areas of downtown and narrowing the number of lanes on Neill Avenue. No consensus was achieved on preferred bicycle network improvements or on one-way versus two-way alternatives for Last Chance Gulch.

- Increasing landscaping, and including green infrastructure with rain gardens, pervious paving, and other features.
- Adding parallel or diagonal parking.

While there was no consensus on any one design concept, it became clear that a decision between two-way and one-way traffic will be key to resolving the issue of street design. There are significant tradeoffs between vehicular access and loading, because loading effectively limits the flow of traffic in that lane. In addition, bicycle lanes may or may not be needed to accommodate bicyclists of varying skill levels. The city staff and stakeholders agreed that a pilot project to test a conversion of Last Chance Gulch from one-way to two-way traffic could be achieved at relatively low cost. Such a project would allow

Social Services/Public Health: A range of service providers discussed street improvements desired in downtown to improve wheelchair access and pedestrian safety, reduce pedestrian waiting times at intersections, and provide fire staging areas in the streets. The participants preferred design concepts that integrate ramps, reduce street crossing widths, and improve access.

Historic Preservation, Art, and Culture: Participants discussed options for integrating art and recognizing the area's history in public spaces and downtown streets. The group identified ways to achieve this by using locally significant materials, integrating a historic walk, and maintaining views of the surrounding hills and historic resources in downtown.

Implementation: Funding was key to the implementation discussion, especially the need to leverage resources related to stormwater, transportation, public health, history and culture, art, business, and housing. Participants favored making incremental improvements that build on each other and adding to projects that already have funding or will have funding in the future. The group also discussed using pilot projects (e.g., parklets, restriping Last Chance Gulch to experiment with a two-way street) to build interest and show near-term results.

business owners and the public to see how two-way traffic would function and whether using sharrows for bicycle access improvements, along with slower traffic speeds, would achieve the accessibility desired for cyclists. The city could also pilot other design concepts on Last Chance Gulch and elsewhere in the downtown to gauge community interest and acceptance and to illustrate the benefits of the improvements to potential funders.

Reduce and manage speeds in downtown: Stakeholders expressed concerns about the high speed of traffic along some downtown streets, particularly along Neill Avenue, Cruse Avenue, and Last Chance Gulch between Neill and Lyndale Avenues. The project team refined the design concepts to support lower traffic speeds on these key streets.

IV. DESIGN CONCEPTS

This chapter discusses and illustrates the design concepts and strategies the design team generated with input from the community for the study area and focus sites along Last Chance Gulch. These concepts and strategies respond to the community's stated goals to improve access and safety for bicyclists and pedestrians, provide for stormwater management, and improve water quality.

LAST CHANCE GULCH BETWEEN 13TH AND 14TH AVENUES

During the public meeting, stakeholders stressed the need for left turn access, on-street parking, slower traffic speeds to make bicycling and walking safer, and increased landscaping and street trees to enhance the character of the street and help reduce speeds. In response, the project team developed a design concept that retains some on-street parking, uses stormwater curb extensions to capture runoff, and adds a mid-block pedestrian crossing with marked crosswalks. Both the mid-block crossing and stormwater curb extensions shorten the crossing distance for pedestrians and increase space for green infrastructure (Figures 14-18).

This design option widens sidewalks to make walking easier and adds pervious paving to capture stormwater runoff. The street retains its two travel lanes, but on-street parking is removed at the intersections to maintain a center lane to allow for left turns. On-street bike lanes provide for safe, interconnected, and convenient bicycle circulation. Landscaped stormwater curb extensions, street trees, and other landscaping features buffer pedestrians from traffic, provide shade during the summer to reduce the heat island effect, and enhance air and water quality. The use of pervious paving in parking lanes allows for the capture of stormwater. Some on-street parking could be used for short-term snow storage.

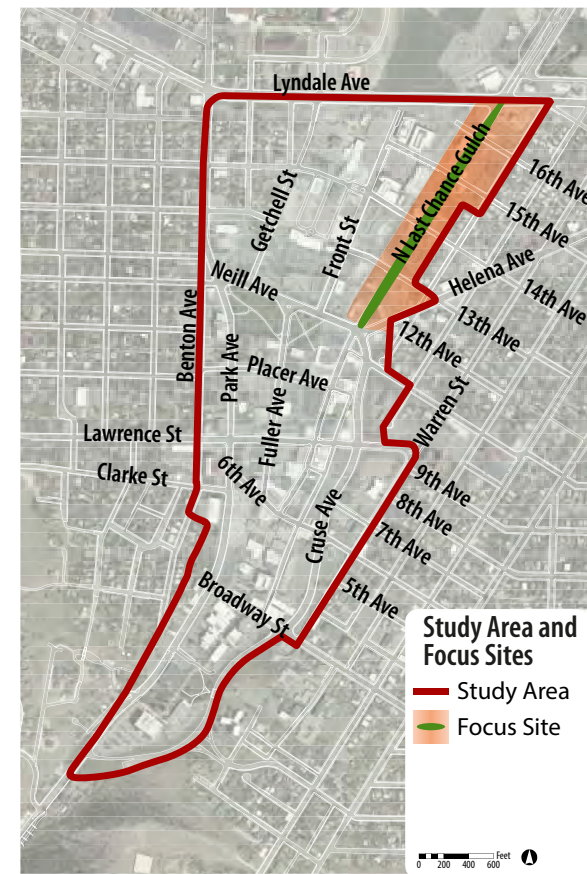


Figure 14: Last Chance Gulch between 13th and 14th Avenues focus sites.

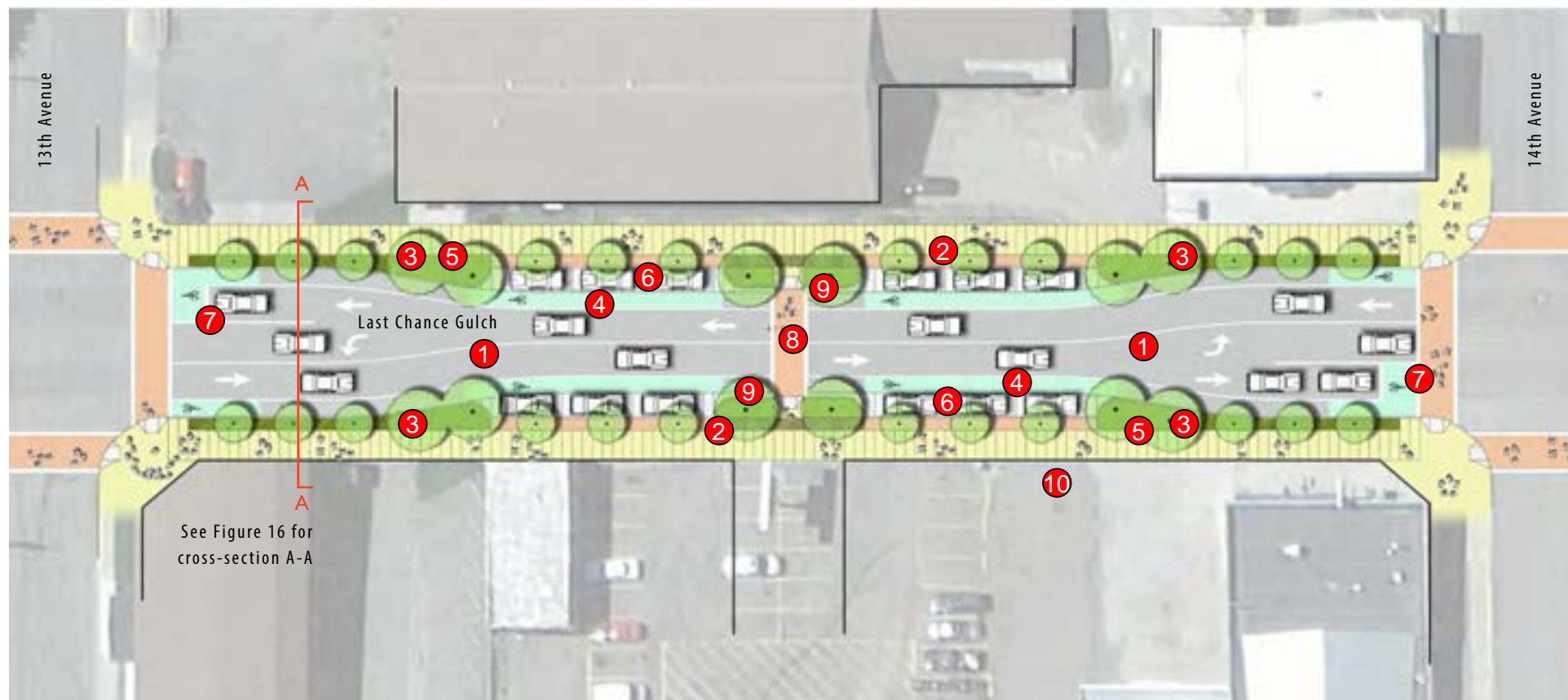
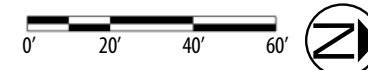


Figure 15: This conceptual plan view of Last Chance Gulch between 13th and 14th Avenues includes two travel lanes, bike lanes, and a new left turn lane configuration.



- ① Last Chance Gulch could be reduced to 2 travel lanes and accommodates left turn pockets when needed at key intersections.
- ② Sidewalks could be widened at on-street parking locations to 14 feet wide and the addition of a pervious paving strip to enhance the pedestrian realm and capture stormwater runoff.
- ③ The sidewalk zones at the 13th and 14th Avenue intersections could be extended to 9 feet wide which provides a shorter crossing distance while landscaped stormwater swales buffer pedestrians from traffic.
- ④ On-street bike lanes could be located alongside both travel lanes to provide for safe, interconnected, and convenient bicycle circulation.
- ⑤ Street trees and landscaping would provide shade during the summer to reduce the heat island effect, provide comfort to pedestrians, and enhance air and water quality.
- ⑥ Parking zones could be designed with pervious paving to allow for the capture of stormwater and some portion of the on-street parking could be used for short-term snow storage following storms in the winter months.
- ⑦ Bike boxes at intersections could provide additional visibility between motorists and cyclists.
- ⑧ Mid-block crosswalk would allow pedestrians to cross the long blocks along Last Chance Gulch more easily.
- ⑨ Stormwater curb extensions at mid-block crossings can capture street runoff.
- ⑩ Future potential redevelopment of private property might include mixed-use buildings along Last Chance Gulch that help activate the sidewalk zones.

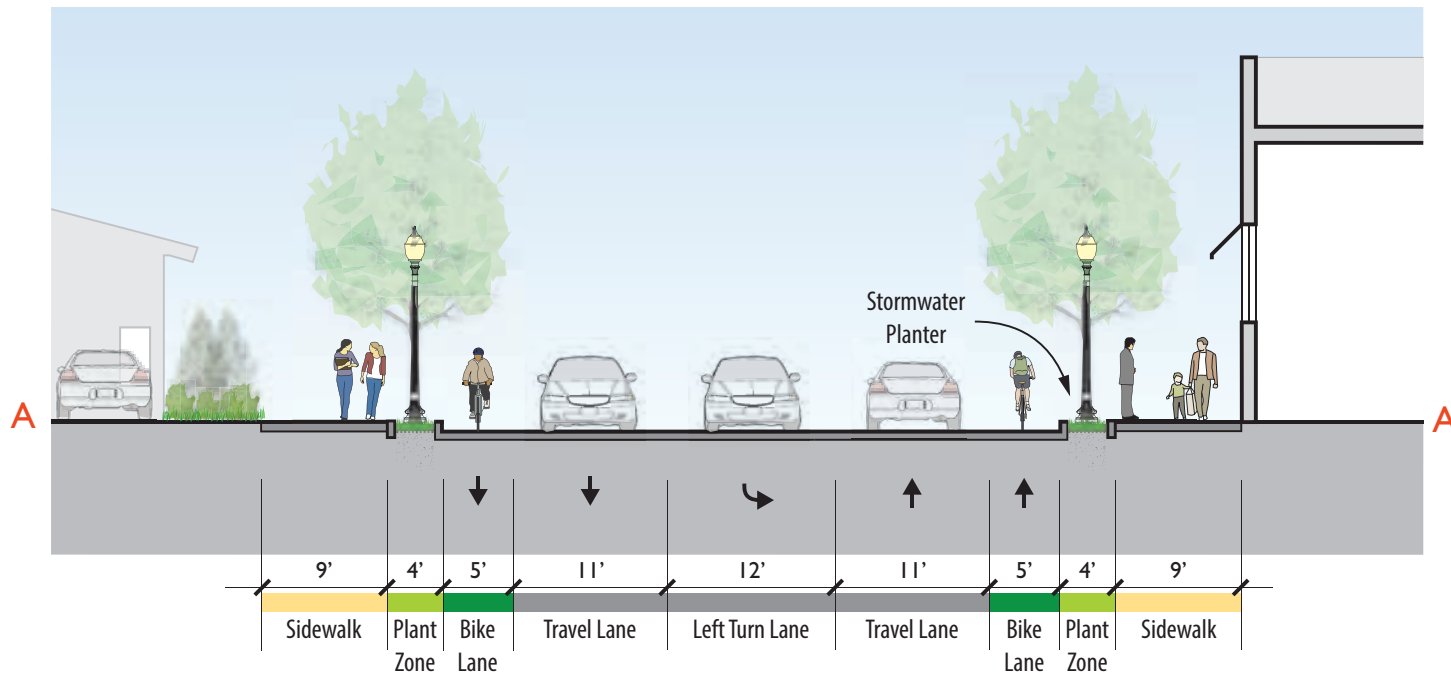


Figure 17: Existing view of Last Chance Gulch at 13th Avenue. The high vehicular speeds, wide width, lack of visible crosswalks, and few street trees make it an uninviting space for walking.





Figure 18: This perspective view of Last Chance Gulch at 13th Avenue depicts possible planters, bike boxes and bike lanes, left turn lane, improved pedestrian crosswalk, and pedestrian lighting. The bulb-outs and mid-block crossings would shorten pedestrian walk distances and crossing times, while landscaping and pedestrian lighting would provide a more inviting place to walk.

NEILL AVENUE AND FRONT/FULLER INTERSECTIONS

The concept plan for Neill Avenue includes improving pedestrian crossings at Front Street, widening sidewalks, consolidating existing travel lanes to create shorter pedestrian crossing distances, and incorporating marked crosswalks. These improvements reflect this location's importance for people walking between the Great Northern Town Center and the historic Last Chance Gulch business district and the need for better and safer pedestrian crossings (Figure 19). Neill Avenue would become a two-lane street with left turn pockets alternating with a center landscape median (Figures 20-23). The design concept retains some existing parking on the same side of the street as the Women's Park, provides for a median with an intermittent turn lane, and plant zones and pervious paving along the street's edge. Striped bike lanes on both sides of the travel lanes provide safe and improved bicycle access.

Redesign of the intersection at Front Street and Neill Avenue features a "raised" intersection that brings the grade of the pedestrian crossings and street right of way up to the sidewalk elevation. This raised intersection could include colored pavement, a textured roadway, or other markings within the intersection to alert motorists that this is a busy pedestrian zone and they should slow down (Figures 24-25). The raised intersection could be designed with gradual slopes from adjacent street segments to ensure that large trucks or emergency vehicles from the nearby fire station can safely drive through the intersection. The slope should also be designed so it does not interfere with snow plowing.

Front Street also intersects Neill Avenue and serves as a major pedestrian zone for people walking between downtown destinations. Front Street improvements could include colored concrete or pavers, wider sidewalks, and sharrows to provide for safer multimodal access, greater flexibility to use the sidewalk space, and an improved appearance.

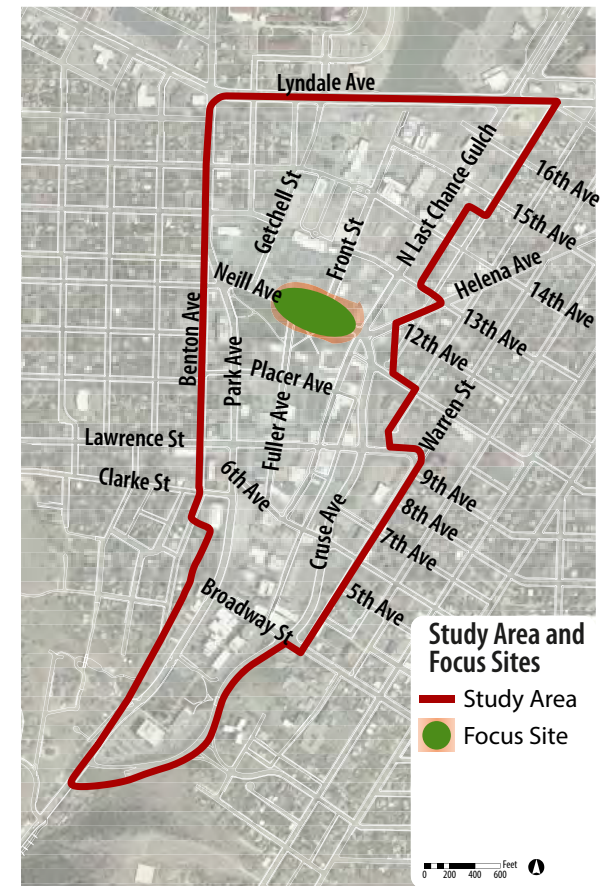


Figure 19: Neill Avenue/Front Street/Fuller Avenue intersection focus site.



Figure 20: Conceptual plan view of Neill Avenue, Fuller Avenue, and Front Street intersection reconfiguration.

- 1 Raised intersection and colored paving would allow for enhanced pedestrian crossing at Front Street and Neill Avenue.
- 2 Expanded sidewalk and plaza space could allow for easier wayfinding and transition with various pedestrian routes and intersection.
- 3 Front Street could be designated as a two-way pedestrian and bike street with sharrows, colored paving diagonal parking, sidewalk widening on west side, and stormwater facilities on both sides of the street.
- 4 North-side of street could have marked on-street bike lanes and stormwater swales with street trees.
- 5 Possible center landscape medians with left turn pockets at intersections.
- 6 South-side of street could have a marked on-street bike lane, and at this location, parallel parking and a series of stormwater planters.
- 7 The existing lawn landscape at the Federal Reserve could potentially be converted into a rain garden to manage stormwater runoff from surrounding areas.
- 8 Boardwalk would allow stormwater to run underneath sidewalk zone.
- 9 Mid-block crosswalk also has a pedestrian landscape island refuge that would help aid the pedestrian crossing Neill Avenue.
- 10 Realignment of Fuller Street would allow for expanded sidewalk zones and stormwater planters.
- 11 Fuller Street could be reconfigured from a Y to a standard T intersection to greatly shorten pedestrian crossing distances, create pedestrian plaza spaces, and incorporate green infrastructure landscaping.

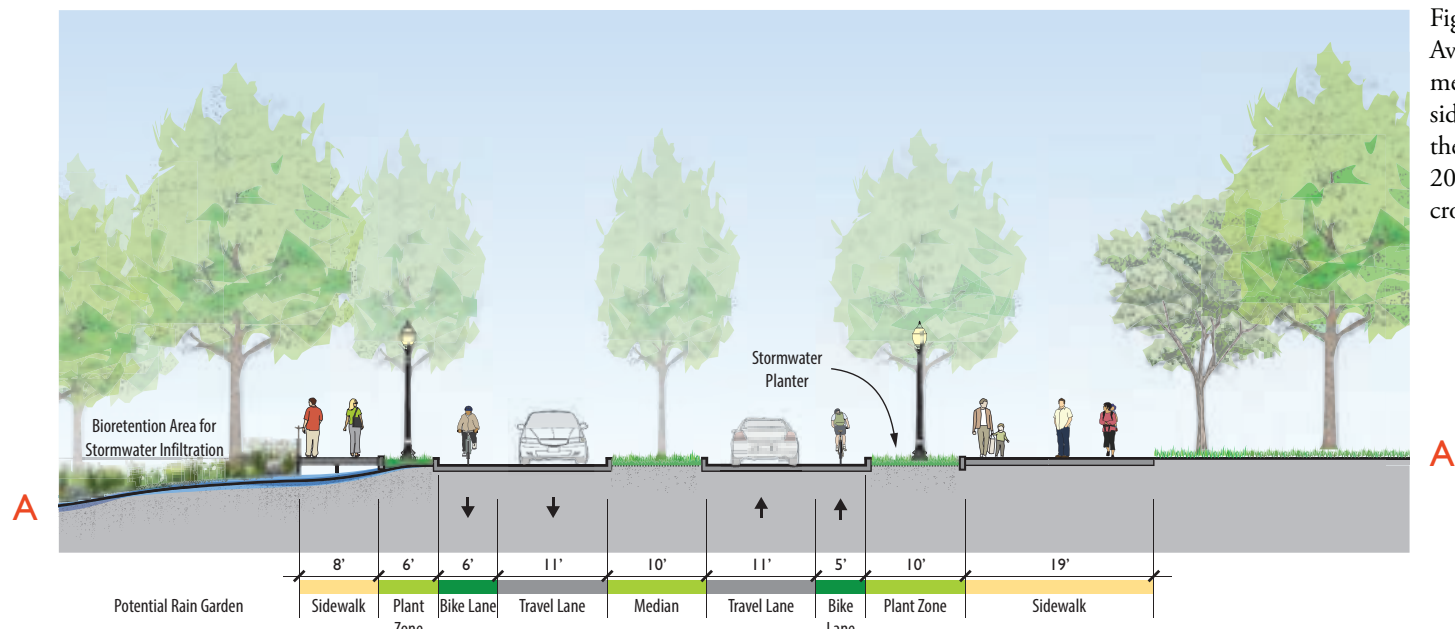


Figure 21: Section A-A, view of Neill Avenue depicting an intermittent median, bike lanes, planters, widened sidewalk, and possible rain garden on the Federal Reserve site. See Figure 20 for the specific location of this cross section along Neill Avenue.

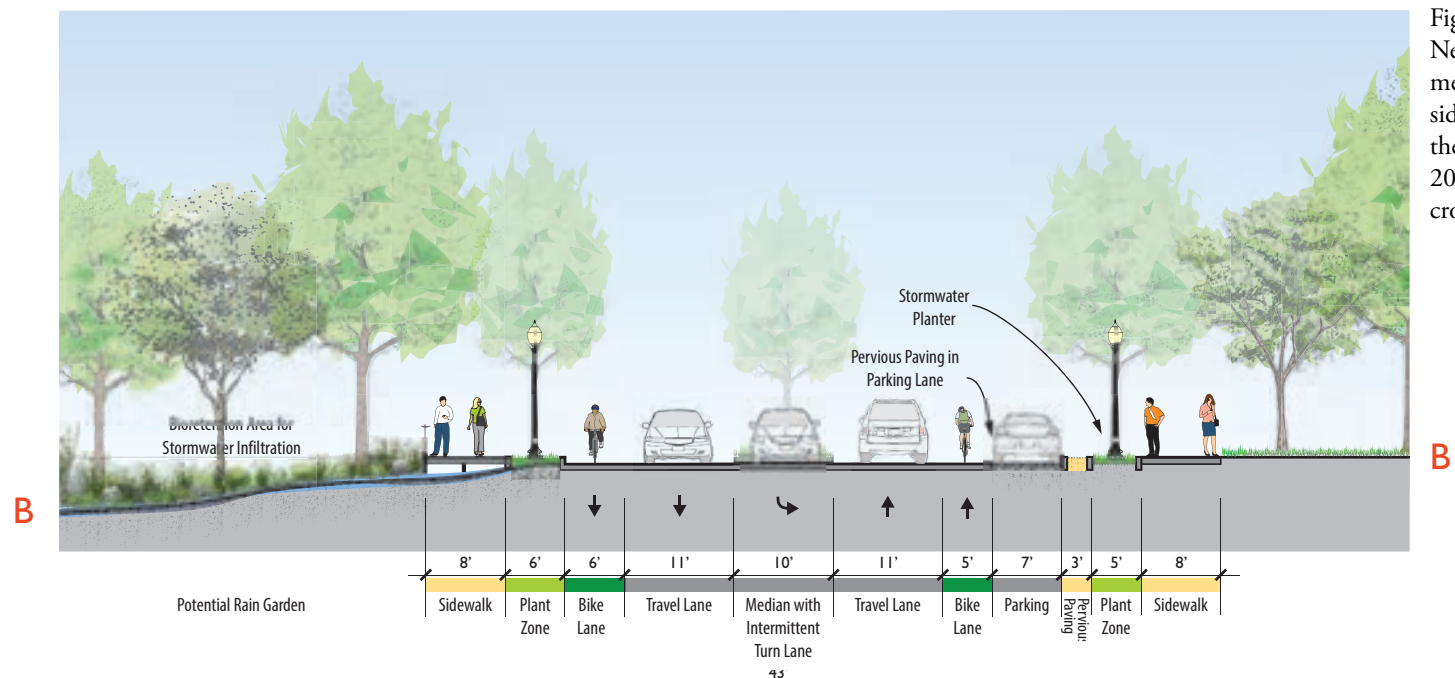


Figure 22: Section B-B, view of Neill Avenue depicting intermittent median, bike lanes, planters, widened sidewalk, and possible rain garden on the Federal Reserve site. See Figure 20 for the specific location of this cross section along Neill Avenue.

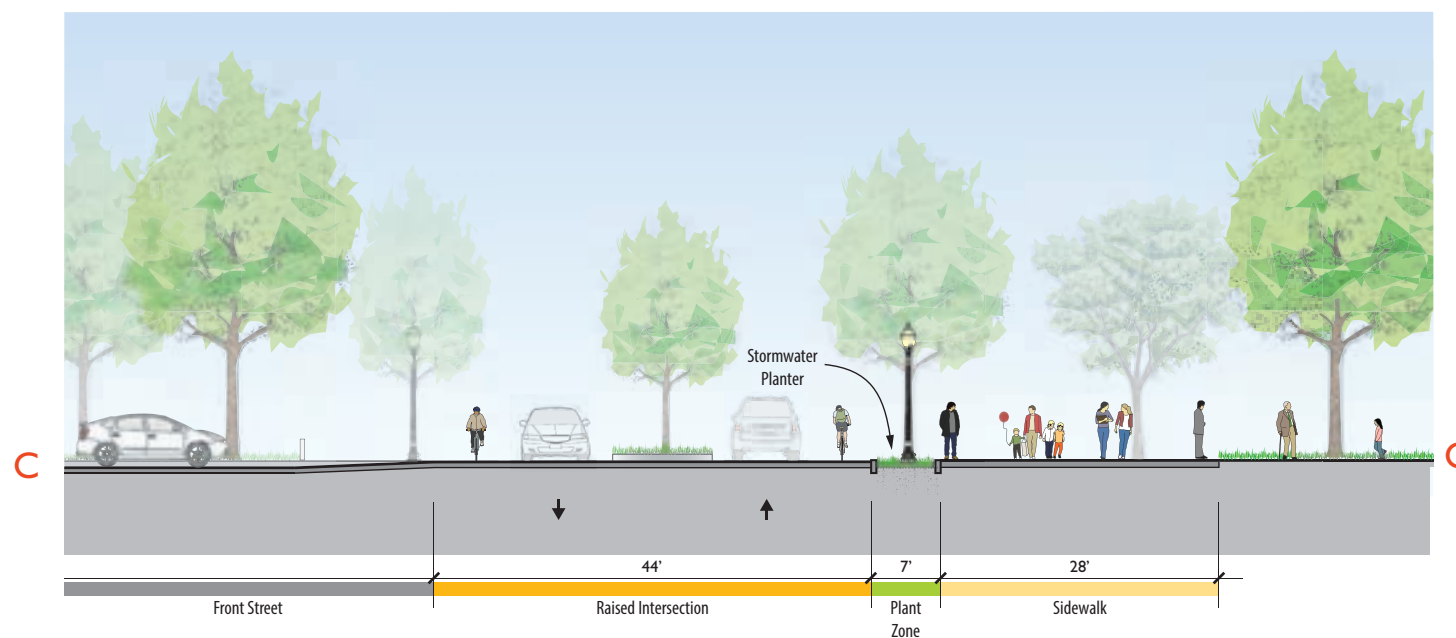


Figure 23: Section C-C, view of Neill Avenue depicting a raised intersection, an intermittent median, and bike lanes. See Figure 20 for the specific location of this cross section along Neill Avenue.

The existing 'Y' intersection at Fuller Street and Neill Avenue requires the pedestrian traveling along the Neill Avenue sidewalk to walk 185 feet to cross Fuller Avenue with cars entering and exiting the intersection at odd angles. Not only is this alignment dangerous for pedestrians, much of the intersection is impervious, contributing to stormwater runoff. The Fuller Street intersection has been redesigned in this concept as a standard 'T' intersection instead of the existing 'Y' configuration, which reduces the width of the pedestrian crossing and improves safety by slowing traffic. This new intersection design could create better view angles for vehicles turning from Fuller onto Neill, allows for more landscaping and parking, and reduces the impervious surface area.

New green infrastructure strategies along Neill Avenue could not only manage stormwater runoff, but could help provide a buffer between cars and pedestrians and improve conditions for walking and biking. The design option for Neill Avenue adds a significant amount of landscaped area and street

trees in the form of medians and planters along the edge of the street. Landscaped areas alongside on-street parking could be designed with a variety of green infrastructure features, such as stormwater swales, stormwater curb extensions, rain gardens, and stormwater planters. In addition, pervious paving under on-street parking spaces could capture stormwater. All of these strategies help reduce the amount of runoff that enters the public system, removes pollutants from runoff, and recharges groundwater. The area along Neill Avenue between Women's Park and the Federal Reserve Building is a low point in the project watershed where there is an opportunity to collect and manage a large amount of stormwater runoff from downtown Helena, thereby making it an ideal place for bioretention and other green infrastructure elements.



Figure 24: Existing view of Neill Avenue at Front Street. Workshop attendees indicated that this was a location for informal pedestrian crossings as a means to avoid the five-point intersection. Note the lack of crosswalks.



Figure 25: This perspective view of Neill Avenue at Front Street depicts a possible raised intersection configuration with intermittent medians and stormwater planters to facilitate safer and more convenient pedestrian crossings.

LAST CHANCE GULCH FROM NEILL AVENUE TO 6TH AVENUE

Building on the focus group discussion, community input, and the design team's analysis of the constrained right of way, the design concept for Last Chance Gulch from Neill Avenue to 6th Avenue (Figure 26) aims to improve the street's recent curb extension, landscaping, and sidewalk-widening improvements and provide greater flexibility to the street design. The design concept also uses sharrows.

Sharrows could improve bicycle circulation and safety while maintaining the existing two-lane, one-way configuration of Last Chance Gulch and the on-street parallel parking (Figure 28). As an alternative configuration, the city could consider redesigning Last Chance Gulch as a two-way street. A two-way alternative was discussed in both the focus groups and during the public meetings (Figures 27-29), and stakeholders agreed that a pilot reconfiguration would be a good first step before making permanent changes. A pilot two-way street would require new street signs, sharrows in the north-bound lane, and either redesign of the signal at the intersection with Lawrence Street or replacement of the signal with stop signs.

Green infrastructure strategies for this option could include conventional landscaping and street trees, stormwater curb extensions, and stormwater planters. A regionally appropriate selection of plants is identified in the Appendix section of this report. In addition, on-street parking areas could include pervious paving to capture stormwater runoff. These green infrastructure strategies could provide shade in the summer, reduce runoff that enters the public stormwater system, and improve the walking environment of downtown streets.

Local business owners raised concerns about how this design option might reduce on-street parking. This concern could be mitigated by developing a downtown parking strategy that uses existing parking supply in nearby garages more effectively. Business owners are also concerned about the ability of delivery trucks to load and unload directly in front of stores. Currently,

delivery trucks can double park in one of the two one-way lanes along Last Chance Gulch. The proposed two-way redesign would preclude double parking. To address this concern, the city could create dedicated loading zones in on-street parking spaces and restrict delivery times to specific morning or evening hours. The city could also provide loading zones on nearby streets that cross Last Chance Gulch. Businesses located on the pedestrian mall already rely on loading from nearby streets, and this practice could be an example for other parts of downtown.

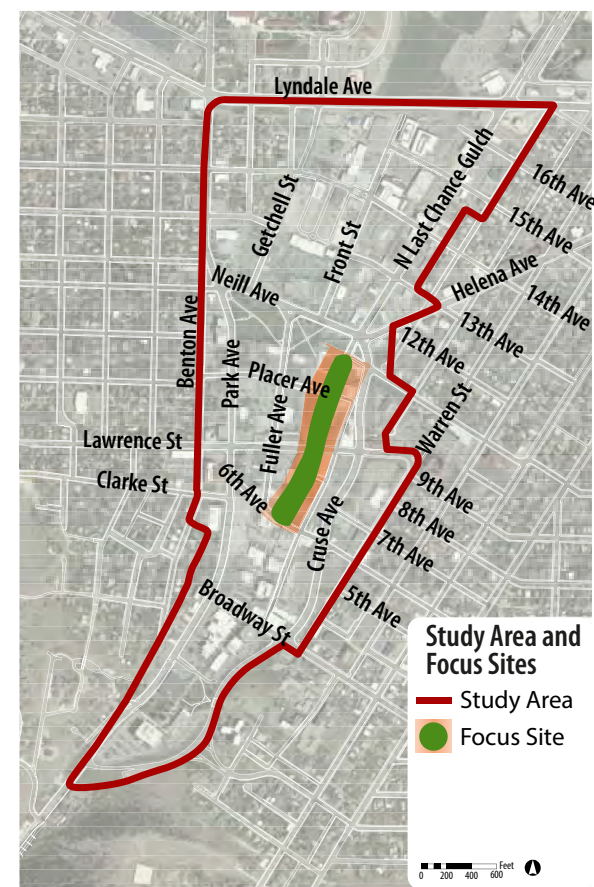


Figure 26: South Last Chance Gulch focus site.

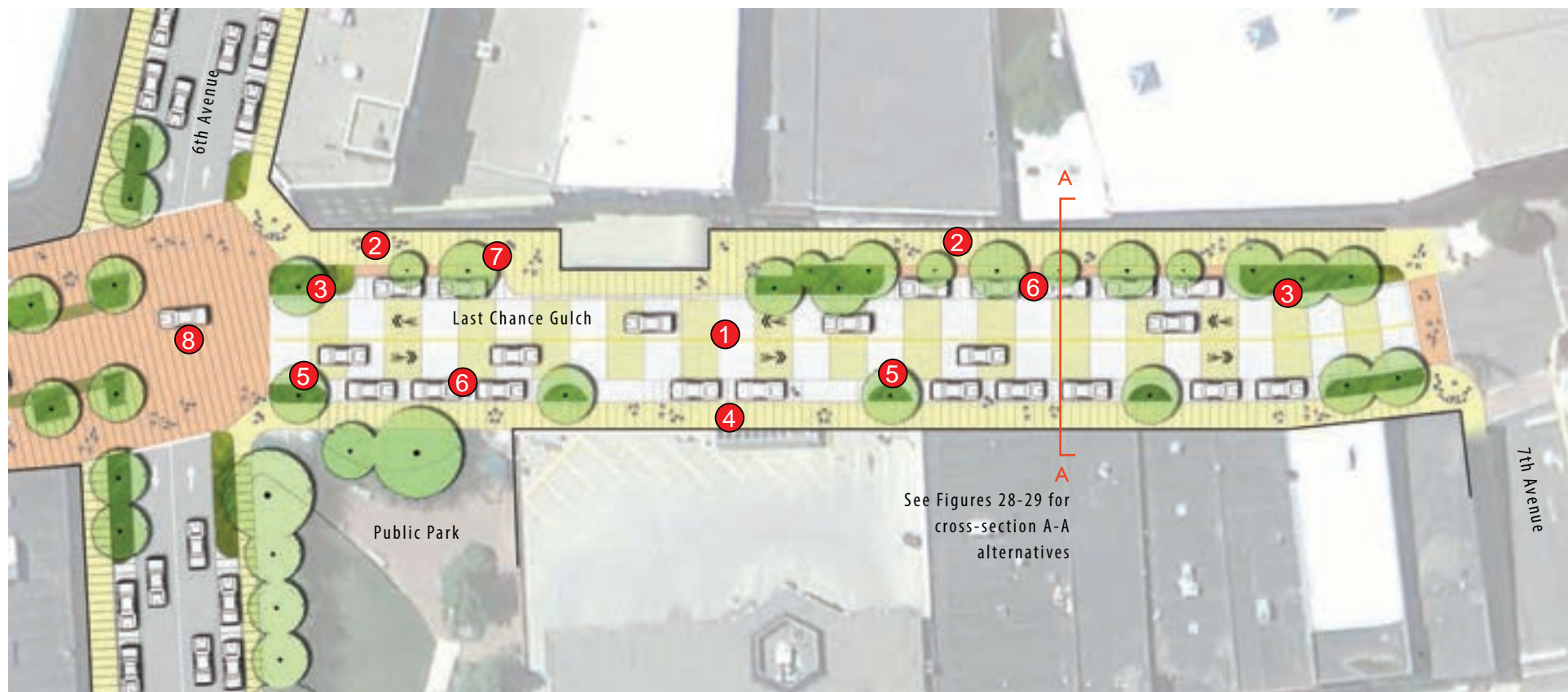


Figure 27: This conceptual plan view of Last Chance Gulch between 6th and 7th Avenues depicts two-way traffic with sharrows, on-street parking, and green infrastructure. Another option is a one-way configuration of the street.



- ① Last Chance Gulch with two-way traffic and using painted bike sharrows would indicate to drivers that lanes are to be shared by bicycles and automobiles. This plan also shows the option of using colored concrete to help delineate Last Chance Gulch as a unique downtown business street.
- ② Sidewalk zones along the north-side of the street could be expanded and include a pervious paving strip to accept stormwater runoff from the sidewalk.
- ③ Large stormwater curb extensions along the north-side of the street would capture street runoff and could also provide pockets of pedestrian seating.
- ④ South-side sidewalk zone remains as existing.
- ⑤ A series of smaller stormwater curb extensions on the south-side could capture stormwater runoff and would be outside of existing vault locations.
- ⑥ South-side of street could be marked with sharrows and at this location, parallel parking and a series of stormwater planters.
- ⑦ Many existing street trees along Last Chance Gulch could be preserved as well as possible new trees planted.
- ⑧ Raised intersection and colored paving could allow for enhanced an pedestrian crossing at Last Chance Gulch and 6th Avenue.

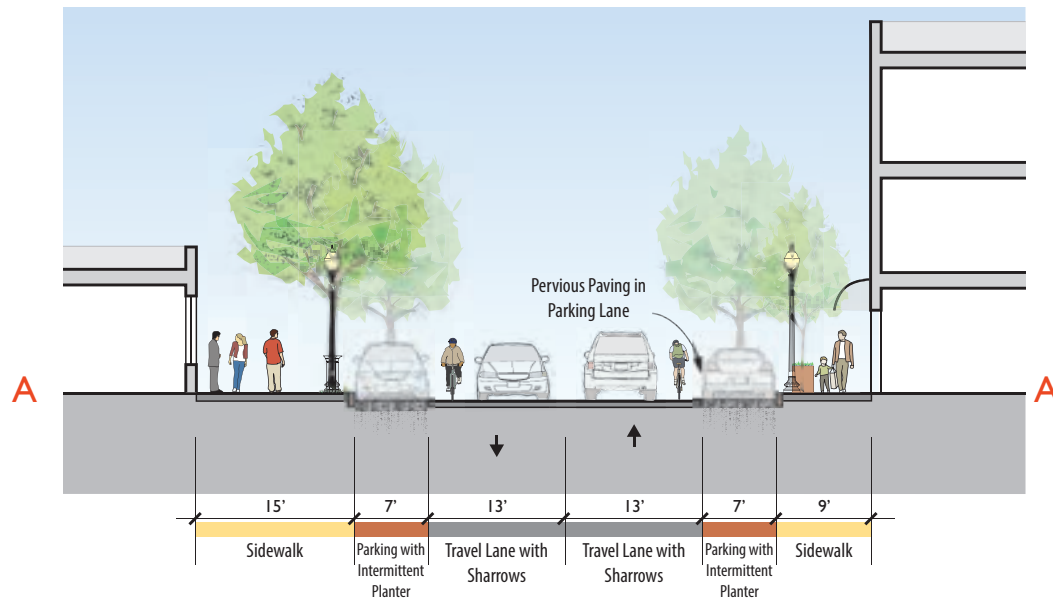


Figure 28: Section A-A, view of two-way configuration. See Figure 27 for the specific location of this cross section.

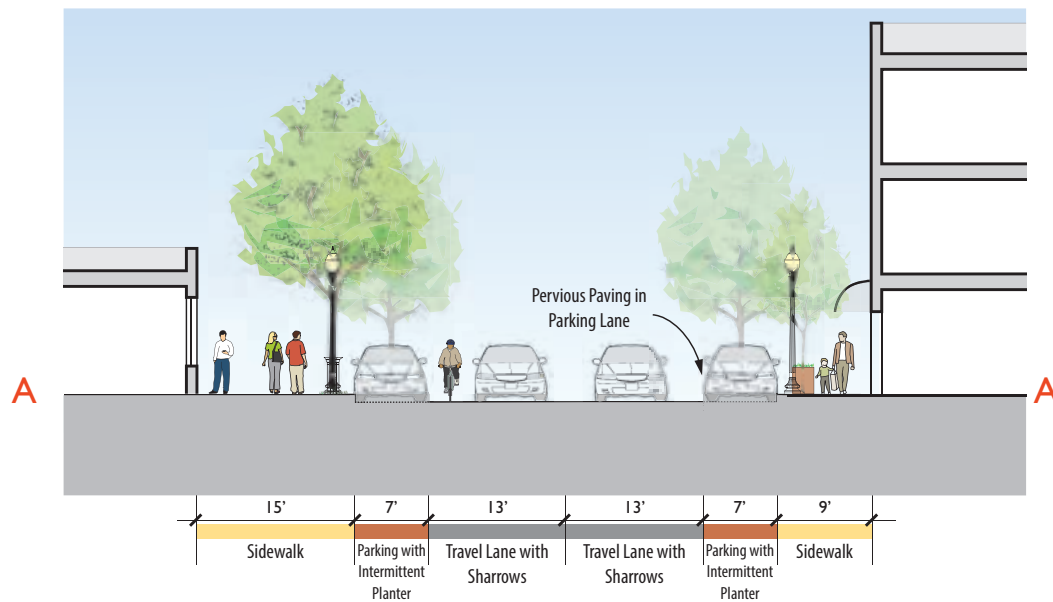


Figure 29: Section A-A, view of one-way configuration. See Figure 27 for the specific location of this cross section.

Figures 30-32 provide a pedestrian perspective of the possible one-way and two-way configurations of this section of Last Chance Gulch.



Figure 30: Existing view of Last Chance Gulch at 7th Avenue. There are no bicycle lanes and there is an abundance of on-street parking.

Figure 31: This perspective view of Last Chance Gulch at 7th Avenue depicts a two-way configuration with on-street parking, pervious paving, a delivery truck loading zone, sharrows, and stormwater planters. The addition of pervious paving, trees, and stormwater planters would manage stormwater runoff, improve the walking environment, provide a buffer for pedestrians from adjacent traffic, and create shade to lessen the heat island effect.

Figure 32: This perspective view of Last Chance Gulch at 7th Avenue depicts a one-way configuration with on-street parking, pervious paving, a delivery truck loading zone, sharrows, and stormwater planters. Loading zones with marked loading times for delivery trucks could facilitate automobile traffic and enhance bicycle safety.



SHARROWS

Sharrows are pavement markings that clearly indicate a bicycle route. (Figure 37) They help bicyclists position themselves safely in shared lanes where bicycles travel side by side with traffic, and they alert motor vehicle drivers to the presence of bicyclists. Sharrows also indicate the presence of bike routes to all users and provide for wayfinding.



Figure 33: A sharrow marking indicates the potential presence of bicyclists in a travel lane.

PARKLETS

A parklet is a publicly accessible open space whose intent is to add vitality to the public realm. It repurposes part of the street, commonly a parking stall or lane, into a public space. The city of San Francisco was the first city in the United States to install parklets in 2010, and as of 2013, 72 are either built or under review (Figures 38-40). Many cities nationwide, including a diversity of places such as Chicago, Long Beach, and Los Angeles, are adopting the idea that reclaiming parking spaces can create a hub of vitality along the street.

While a parking space has a width anywhere from 7 to 10 feet, the amount of parking stalls reclaimed can create a significant area for activities and are not limited to outdoor dining. For example, Powell Street Promenade in San Francisco, designed by landscape designer Walter Hood and funded by Audi, is ADA accessible and incorporates benches and cafe tables as part of its design (Figure 39). Other parklets have provided space for public art and local community interactions (Figure 40).



Figure 34: Parklets could accommodate cafe seating and serve existing businesses (image credit: EPA).



Figure 35: Landscape opportunities and seating are another possible parklet configuration (image credit: EPA).



Figure 36: Parklets could showcase public art and encourage community interaction (image credit: EPA).

LAST CHANCE GULCH AND 6TH AVENUE INTERSECTION

This design option would better connect the pedestrian mall with the recent and potential future improvements on the southern portion of Last Chance Gulch (Figure 37). The concept for the intersection of Last Chance Gulch and 6th Avenue extends the existing pedestrian mall character into the intersection (Figure 38). This creates a gateway for the transition between the historic pedestrian mall and the rest of downtown Helena. The intersection would be raised to allow for the elimination of curbs, similar to the design concept for the intersection at Neill Avenue and Front Street. This concept creates visual and physical cues, such as colored pavement, to indicate this space is intended predominantly for pedestrians, that it is shared among all modes of travel, and vehicles should reduce their speeds. Access to the parking garage in the pedestrian mall would be maintained, and drivers would be guided by a series of landscape planting areas to help delineate where cars are allowed to go.

Trees and stormwater planters along both streets and in the pedestrian mall could provide for water quality and other environmental benefits, as well as shade for pedestrians, separation of pedestrians from vehicles, and visual interest along the street.

Figures 39-40 depict the possible raised intersection, continuous paving treatment, and planter designs for the extension of the pedestrian mall character.



Figure 37: Last Chance Gulch and 6th Avenue Intersection focus site.



Figure 38: This conceptual plan view of the Last Chance Gulch and 6th Avenue intersection depicts how the pedestrian mall character could be expanded into the intersection.

- 1 The intersection could be raised to allow for the elimination of curbs. This design would create visual and physical cues that indicate this as a space intended predominantly for pedestrians and that it is a shared space amongst bicycles, automobiles, and pedestrians in which vehicles should reduce their speeds.
- 2 The use of colored pavement could also create a gateway for the transition between the historic pedestrian mall and Last Chance Gulch leading into downtown Helena.
- 3 Shallow stormwater swales would capture stormwater runoff from the pedestrian mall hard surfaces.
- 4 Boardwalks could allow for pedestrians to cross over stormwater swales.
- 5 Many existing mature trees and landscaped areas within the pedestrian mall would be preserved to provide pedestrian comfort such as shade and separation from traffic as well as visual interest along the mall.
- 6 Stormwater curb extensions along 6th Avenue would capture street and sidewalk runoff as well as shorten pedestrian crossing distance.
- 7 Parking zones could be designed with pervious paving to allow for the capture of stormwater and some portion of the on-street parking could be used for short-term snow storage following storms in the winter months.



Figure 39: Existing view of Last Chance Gulch and 6th Avenue intersection looking toward the pedestrian mall. The transition from the existing pedestrian mall and garage entrance is abrupt at 6th Avenue, and does not effectively connect to Last Chance Gulch.



Figure 40: Perspective view of Last Chance Gulch and 6th Avenue Intersection. The continuous paving pattern extends the pedestrian mall character into the intersection, signaling a shared space. The raised intersection would provide physical and visual cues to slow automobile traffic, while landscape planters would help guide vehicles into the parking garage.



Figure 41: Five-point intersection focus site.

FIVE-POINT INTERSECTION

Figure 41 depicts the location of the five-point intersection at Neill Avenue, Helena Avenue, Cruse Avenue, and Last Chance Gulch. As discussed earlier, community members who participated in the design workshop did not prefer any single design concept, although many workshop participants were interested in the new “greenabout” concept proposed during the workshop. Two of the design concepts, the signalized intersection and roundabout, are based on concepts resulting from the previous study undertaken by the city of Helena. For this effort, the design team refined the concepts to provide greater safety and access. For instance, the use of green pavement markings in bicycle lanes leading up to the signalized intersection and bike boxes and other special markings could improve bicycle safety (Figure 42). The roundabout concept could be refined to include wider sidewalks that accommodate pedestrians and bicyclists and a landscaped buffer between sidewalks and traffic lanes (Figure 43). Both concepts could also include landscaped areas that would function as green infrastructure to improve air and water quality.

A third design concept, the greenabout, was developed before the project design workshop to illustrate an alternative that could address safety and circulation concerns while providing larger and more functional open space for the community (Figure 44). This concept did receive some interest from stakeholders because it simplifies the main intersection.

Refinements to the design following the workshop illustrate the potential for the Cruse Avenue and 11th Avenue intersection to function as a standard intersection rather than a roundabout. Stakeholders also like the idea of enlarging Cruse Park to provide a gateway that incorporates green infrastructure and other public open space. The greenabout directs vehicular traffic counter clockwise around Cruse Park, simplifying vehicle and bicycle travel movements and signal functions. The distance for pedestrians to cross the streets is also reduced, increasing pedestrian safety by reducing crossing times, which is especially important for the young, infirm, and elderly (Figures 45-46). In addition, bike boxes and other special markings would improve bicycle safety through these areas.



Figure 42: This concept of a refined signalized intersection retains the existing five-way intersection geometry while incorporating elements to improve bicycle and pedestrian access and safety.

The city could use these design concepts as a starting point for more detailed analysis, design, and public involvement. All scenarios reorganize the intersection to allow for increased intermodal safety and interconnectivity and allow for varying levels of green infrastructure enhancements. The business and property owners in the immediate area expressed strong interest to more fully understand the impacts of the design concepts on parking, loading, and access to their businesses and properties. Participants in the design



Figure 43: This refined roundabout concept builds on the existing study conducted by the city of Helena to improve bicycle and pedestrian access and safety.

workshop also noted that it is difficult for large vehicles to turn in this space and that there may be impacts on emergency response time, given the fire station location to the north of the intersection off of Neill Avenue. These items could be evaluated and resolved in a future study.

- 1 Last Chance Gulch, Neill Avenue, and Cruse Avenue could be reconfigured to a standard 4-way intersection. The greenabout directs vehicular traffic around Cruse Park via three counter clockwise road segments. This simplifies vehicle and bicycle movements and signal functions. It also shortens the distance for pedestrians crossing the streets.
- 2 Traffic is allowed to continue down Last Chance Gulch or can turn onto 11th Avenue.
- 3 Traffic along Neill can move north or south along Last Chance Gulch or around the greenabout.
- 4 The reconfiguration of the intersection could provide for an expanded park space for pedestrians as well as green infrastructure opportunities.
- 5 Cruse Avenue could be reconfigured to one-way travel and has stormwater swales and street trees on both sides of the street. This design feature, along with the expanded park space, could act as a strong gateway into the intersection.
- 6 Helena Avenue is potentially reconfigured to one-way travel with diagonal parking on the east side and parallel parking on the west side.
- 7 Expanded pedestrian crossings provide an easier time for young children, the elderly, and the disabled to cross intersections.
- 8 Marked bike lanes could improve safety.
- 9 Bike boxes and other special markings would provide for improved bicycle safety through surrounding streets



Figure 44: This greenabout concept shows a standard four-way intersection and expanded park space that could incorporate green infrastructure elements.

0' 20' 40' 60'





Figure 45: Existing view of the five-point intersection. Wide distances between sidewalks, long signal waits, and numerous locations for pedestrian/vehicle conflicts create unsafe conditions for walking and bicycling.



Figure 46: This perspective view of the greenabout intersection depicts an expanded Cruse Park with a rain garden, bike boxes, expanded sidewalks, and improved pedestrian crossings. Bike boxes allow cyclists to stop ahead of automobile traffic, shortening intersection crossing times and minimizing vehicle and bicycle conflict. The reconfiguration of Helena Avenue allows this area to become a standard four-way intersection to simplify circulation and reduce pedestrian crossing distances.

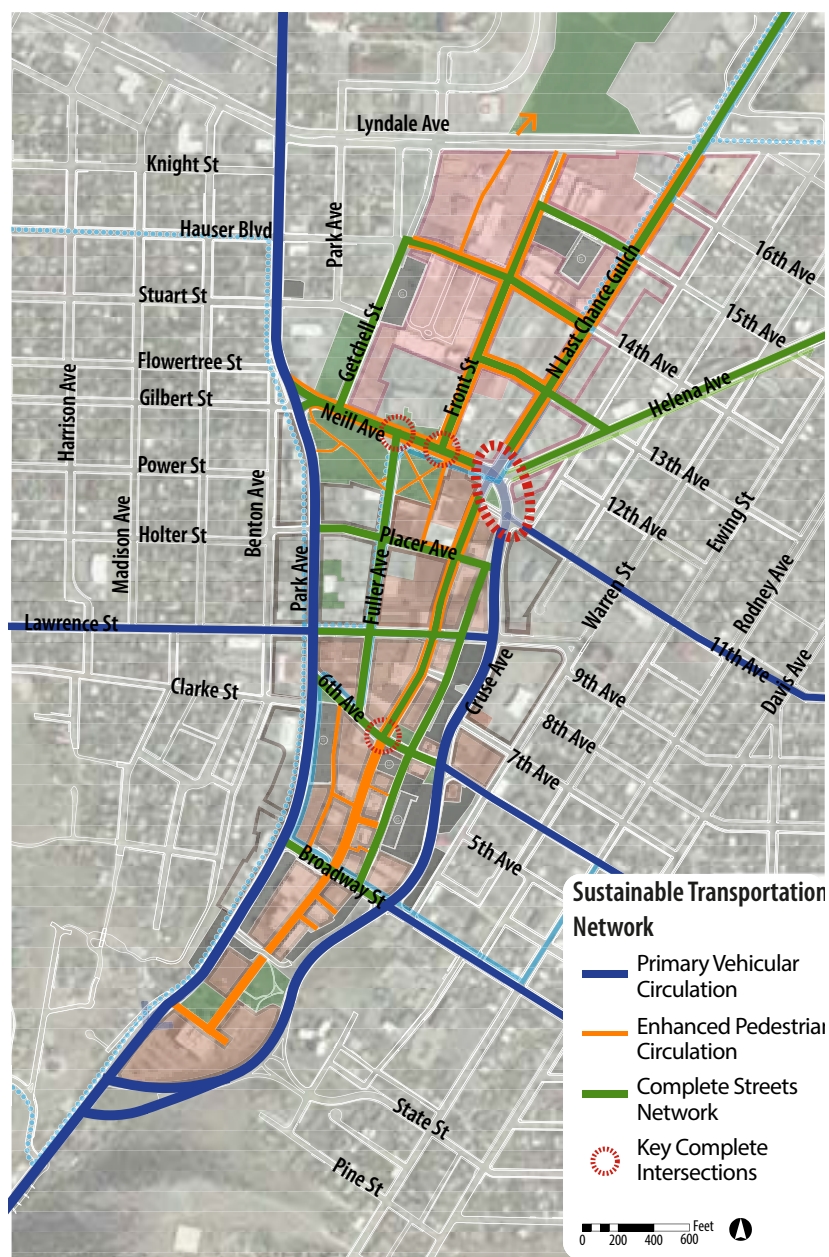


Figure 47: Sustainable Transportation Network.

SUSTAINABLE TRANSPORTATION NETWORK CONCEPT

All of the design concepts for street segments and intersections are part of an overall design concept to create a sustainable transportation network for downtown Helena that builds on the concepts of complete streets and green streets (Figure 47). One part of the sustainable transportation network concept is a refinement of the city's planned bicycle improvements in the downtown to meet the needs of riders with a range of experience levels. Workshop participants discussed the need to have options for very cautious riders, who may prefer to bike on sidewalks or in protected lanes, as well as for experienced riders who could easily navigate a bike network that includes sharrows and streets without markings. Any future bicycle infrastructure can also consider connections between streets to provide citywide, district, and local bicycle circulation (Figure 48).

The city could support a sustainable transportation network as part of the upcoming update to the Helena Urban Area Transportation Plan. The resulting Sustainable Transportation Network concept would result in a fully connected and multimodal transportation network that could address economic, environmental, multimodal transportation, and other sustainability goals. The plan would provide a range of transportation choices; efficiently use limited funding for capital projects and maintenance; and maximize the utility of the downtown's parking assets by including public parking structures, surface lots, and on-street parking.

A key element of a successful sustainable transportation network is the need to improve the pedestrian network of downtown streets to support better use of on-street and off-street parking. Streetscape improvements, such as wider sidewalks, improved crosswalks, and increased landscaping, create a more comfortable walking environment that could encourage people to park once and then walk to multiple destinations. For example, downtown office workers could park at work and then walk to services during the day. Similarly, retail employees could park in a space at the edge of downtown and walk to work rather than parking in timed on-street spaces and moving their car throughout the day, which takes away spaces from patrons of downtown businesses. Shoppers could walk to multiple shops and buy lunch before heading back to their car. More detailed designs and a downtown parking demand study could clarify the potential parking impacts of different design options; explore options for improvements to signage for public parking; and balance the amount of on-street parking with other transportation, landscape, and economic and community benefits, such as seasonal outdoor dining.

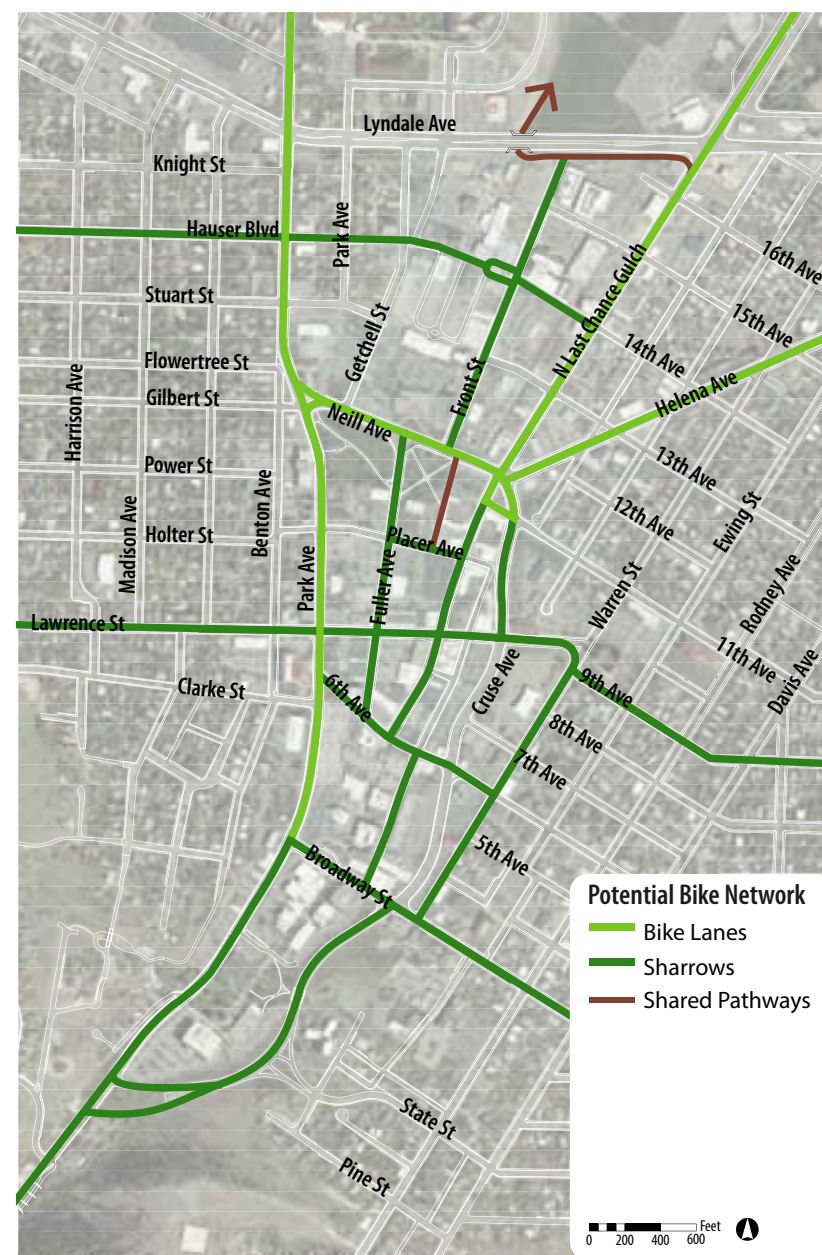


Figure 48: Potential Bike Network.

V. NEXT STEPS AND FUNDING

The design options presented in this report could help the city of Helena make a range of improvements along Last Chance Gulch and throughout the downtown. This section of the report provides options for near-, mid-, and long-term next steps, and other actions that could help downtown Helena's businesses, property owners, other stakeholders, city staff, and the broader Helena community achieve their goals for downtown Helena. This section also describes potential funding sources that were identified and discussed during the design workshop.

NEAR-TERM (NOW TO 2015)

- **Coordinate with planned stormwater improvements to Front Street.** The city could explore the potential to implement green infrastructure and pedestrian improvements as part of the major stormwater improvement project along Front Street from Neill Avenue to the Great Northern Town Center. If additional funding could be identified, this work could include initial improvements to the intersection of Front Street and Neill Avenue to improve pedestrian safety. While the full design concept in this report reduces lanes along Neill Avenue, if full funding could not be identified, initial improvements to the intersection could be designed to accommodate the future narrowing of lanes.
- **Identify and begin to implement projects that link to other funded projects.** As other projects are planned, the city could consider incrementally implementing these design concepts, such as stripping bicycle lanes, adding sharrows, or adding street tree wells or green infrastructure in parking lanes when a street is repaved.
- **Make seasonal use of parking lanes.** Several low-cost pedestrian and bicycle improvements could be implemented in downtown on a seasonal basis as pilot projects. For example, the city could repurpose selected parking stalls for bicycle parking in the summer when

more locals and tourists create downtown bike traffic, and then use the spaces for snow storage in the winter (Figure 49). Parklets (see the sidebar in Section IV) provide another temporary use of parking spaces that can benefit the community and the local economy. For example, a restaurant owner interested in small outdoor seating for patrons could build a platform for seating and planters in one or two adjacent parking stalls. Parklets are being used in a growing number of communities throughout the United States.

- **Plan for and implement the two-way traffic pilot for Last Chance Gulch.** After the design workshop, the Helena Business Improvement District sent a survey to downtown property owners ask-



Figure 49: Example of auto parking lane converted to bicycle parking.

ing about their preferences for improvements to Last Chance Gulch. The city and the BID could review the survey results and decide whether to proceed with a two-way pilot project or begin implementing the one-way option for the segment of Last Chance Gulch between Neill and 6th Avenues.

- **Develop a Downtown Sustainable Streets Network Plan.** Further conceptual development of a sustainable streets network for downtown could be done as part of the upcoming update to the Helena Urban Area Transportation Plan. The plan could include circulation improvements for vehicles, service traffic, buses, pedestrians, and bicyclists of various skill levels; development of a district approach to parking and truck deliveries to commercial and business uses in downtown; definition of priorities for improvements; and a capital improvements and funding plan.
- **Implement improvements to the intersection at Neill Avenue and Front Street.** If funding could be identified, the city could undertake more detailed design and preparation of construction documents to implement improvements. This could include reducing traffic lanes on Neill Avenue and building the raised intersection at Neill Avenue and Front Street while stormwater and sewer improvements to Front Street are going through final design. Implementation of these improvements could occur at the same time or immediately after the storm-sewer improvements. The city or a public-private partnership could also consider the potential of building the proposed rain garden in the landscaped area of the Federal Reserve site.
- **Develop design standards for complete and green streets.** The city could develop design standards for complete and green streets in Helena to facilitate implementation of this report's design concepts and other concepts that will come out from preparing policies and plans, such as a sustainable streets network plan for downtown. Several existing standard and guidance documents could be useful to developing Helena's design standards, which will need to consider the area's arid climate and seasonal freezing. These documents include the ITE's *Designing Walkable Urban Thoroughfares: A Context Sensi-*

tive Approach;⁶ the Washington, DC Department of Transportation's *Draft Low Impact Development and Green Infrastructure Drawing Details, Specifications, and Design Manual* (supplements to *DDOT Standard Drawings, Standard Specifications, and Design and Engineering Manual*);⁷ the *San Mateo County Sustainable Green Streets and Parking Lots Design Guidebook*;⁸ and the Puget Sound Partnership's *Integrating LID into Local Codes: A Guidebook for Local Governments* (pages 137-138).⁹

- **Develop a green streets infrastructure operations and maintenance plan.** Many communities are implementing comprehensive green streets strategies and have recognized the benefits of preparing design standards and an operations and maintenance plan in tandem. The financial realities of the operations and maintenance plan could inform the complexities and details of the design standards to effectively maintain the green streets elements. The following references could help Helena prepare an operations and maintenance plan: the *Philadelphia Maintenance Manual Development Process Plan*;¹⁰ the Philadelphia Water Department's *Green City, Clean Water Implementation and Adaptive Management Plan*, Appendix VII – Analysis of SMP [Stormwater Management Practice] Maintenance Protocols;¹¹ the city of Portland's *Green Steward's Maintenance Guide*;¹² the city of Portland's *Stormwater Management Manual*;¹³ and the Washington DC Department of Environment's *Stormwater Management Guidebook*.¹⁴

5 Available at www.ite.org

6 Located at www.dc.gov/DC/DDOT/Projects+and+Planning/Environment/View+All/ci.Low+Impact+Development.print

7 Found at www.flowstobay.org/ms_sustainable_streets.php

8 Available at www.psp.wa.gov/LID_GLG.php

9 Found at http://www.phillywatersheds.org/what_were_doing/documents_and_data/cso_long_term_control_plan

10 Located at http://www.phillywatersheds.org/what_were_doing/documents_and_data/cso_long_term_control_plan

11 Available at www.portlandoregon.gov/bes/article/319879

12 Located at www.portlandoregon.gov/bes/47952

13 Found at <http://ddoe.dc.gov/publication/stormwater-guidebook>

- **Conduct further design and engineering studies of the five-point intersection.** A significant investment in further design and analysis and a thorough and transparent public process could help the city reach resolution on a preferred design concept for the five-point intersection. The city and the Downtown Business Improvement District could continue to work together to identify funding and define a scope for a new design and engineering process for the intersection and nearby transportation and open space improvements. They should also work to identify the concerns of stakeholders and identify a design solution that the larger community supports.

MID-TERM (2016-2018)

- **Implement the preferred five-point intersection improvements.** Following selection of the preferred design concept for the five-point intersection, the city could choose to move forward with final design and construction. The final design could consider impacts of improvements implemented in the near-term, possibly including the intersection of Front Street and Neill Avenue and a decision on a one-way or two-way street for Last Chance Gulch.
- **Continue to identify and implement projects that link to other funded projects.** City staff and key partners in the downtown can continue to discuss newly identified projects or new funding opportunities that will allow for incremental implementation of selected design options.
- **Implement improvements defined in the downtown sustainable streets network plan.** Other improvements will likely be defined in the downtown sustainable streets network plan, which could be implemented in the mid-term phase.
- **Review and update the operations and maintenance plan.** The operations and maintenance plan should remain current with best practices and be regularly updated with information gathered from staff feedback, community input, and any monitoring of green infrastructure strategies.

- **Develop a downtown parking improvement and management plan.** Given the other planning, design, and construction efforts that could occur during the near-term phase of implementation, the preparation of a downtown parking improvement and management plan could be undertaken in the mid-term phase. The near-term pedestrian improvements and benefits from complete streets in downtown could better inform the development of the Parking Plan.
- **Expand approaches that worked for downtown into other parts of the city.** City staff could work with business owners, residents, and stakeholders in other Helena neighborhoods that would like to see similar projects applied in other parts of the city.

LONG-TERM (2019 AND BEYOND)

- **Continue near-term and mid-term next steps and other action items.** These include:
 - Identifying and implementing projects that link to other funded projects;
 - Implementing other long-term improvements defined in the sustainable streets network plan;
 - Reviewing and updating the sustainable streets network plan; Reviewing and updating the operations and maintenance plan; and
 - Expanding approaches that worked for downtown into other parts of the city

FUNDING

Participants in the focus group on implementation identified several potential funding sources that the city and its partners could use to advance the design concepts described in this report.

FEDERAL SOURCES

- **EPA's Clean Water Act Section 319 Grants** are directed to demonstration projects that reduce nonpoint source pollution. Green infrastructure elements of the design concepts could be eligible for funding through this program.¹⁵
- **EPA's Brownfields Program** works to protect the environment, promote partnerships, strengthen the marketplace, and facilitating sustainable reuse. EPA's Brownfields grants and technical assistance give communities and other stakeholders resources to prevent, assess, and cleanup properties where the potential presence of a hazardous substance may complicate sustainable reuse. Sites within the project area could be eligible for Brownfields grants and technical assistance.

STATE SOURCES

- Federal Highway Administration (FHWA) funding sources are potentially available through the **Montana Department of Transportation**. The MAP-21 National Highway System includes many parts of the study area, including Last Chance Gulch from Neill Avenue to Lyndale Avenue, Neill Avenue from Park to Last Chance Gulch, and 11th Avenue as it enters the five-point intersection.
- **Montana Main Street Program** provides small grants (\$5,000-10,000) for planning projects in downtowns like Helena's.¹⁶
- **Montana Board of Investments Infrastructure Loan Program** provides funds to local governments to support creation of basic sector jobs with a minimum loan size of \$250,000 and a maximum of \$16,666 per each full time job created. Loans are repaid by business user fees to the local government and businesses could reduce their state income tax liability by the fee amount.¹⁷
- **Montana Department of Natural Resources and Conservation and Montana Urban and Community Forestry Association (MUCFA)** provides matching program grants for innovative urban

forestry projects such as designing and developing green infrastructure analysis, conducting tree inventories, developing urban forest management plans, training staff, and educating the public. Grants of \$2,000 to \$20,000 are available to county, local, and tribal governments.¹⁸

COMMUNITY AND OTHER SOURCES

- The **city of Helena** identified funding in its draft budget for 2014 to make storm sewer improvements along Front Street. It may be possible to build on these planned improvements to address issues and design concepts identified through this project.
- A **special improvement district** could be created for stormwater, landscape and lighting, or other streetscape improvements to help fund capital investments and operations and maintenance of potential improvements. The properties and/or businesses that would contribute to the improvement district will depend upon the specific boundary and improvements of the district.
- The **Business Improvement District** and the **Helena Parking Commission** could consider changing their funding and investment strategies to assist with capital investments and operations and maintenance of potential improvements.
- **Street utility funds** could be directed to non-motorized improvements within the downtown district.
- A range of **regional and national foundations and nonprofit institutes** could fund further planning and design for sustainable streets in downtown Helena through direct grants, trainings, or technical assistance. Examples include the Sonoran Institute's Community Builders Network¹⁹ and the Turner Foundation, Inc.²⁰

¹⁵ See <http://www.deq.mt.gov/wqinfo/nonpoint/319GrantInfo.mcp>

¹⁶ Available at <http://mtmainstreet.mt.gov>

¹⁷ Found at www.investmentmt.com/LoanPrograms/default.mcp

¹⁸ See <http://dnrc.mt.gov/Forestry/Assistance/Urban/Grants.asp>

¹⁹ See www.communitybuilders.net/what-is-the-community-builders-network

²⁰ See <http://www.turnerfoundation.org/>

APPENDIX A: RECOMMENDED LANDSCAPE AND STREETSCAPE MATERIALS LIST

PLANTING MATERIALS

The following list of native and locally adaptive plants could be used for streetscape and green infrastructure improvements. These plants have been selected to withstand the local climate and planting conditions; complement existing plantings; and provide diversity of form, character, and species.

TREES	SIZE: H x W	SUN	SOIL MOISTURE	NOTES
Thinleaved Alder (<i>Alnus incana</i>)	30 x 15 ft.	Full	M-H	Needs abundant moisture
Little Leaf Linden (<i>Tilia cordata</i>)	30 x 20 ft.	Full	M	
Tatarian Maple (<i>Acer tataricum</i>)	30 x 20 ft.	Full	SX	
Autumn Brilliance Serviceberry (<i>Amelanchier x grandiflora</i>)	20 x 15 ft.	Partial	SX-M	Temperature inundation
Engelmann Spruce (<i>Picea engelmannii</i>) N	25 x 100 ft.	Partial	M	
Douglas Fir (<i>Pseudotsuga menziesii</i>) N	80 x 20 ft.	Full-Partial	M	
Japanese Tree Lilac (<i>Syringa reticulata</i>)	25 x 20 ft.	Full	SX	
Limber Pine (<i>Pinus flexilis</i>) N	40 x 25 ft.	Full-Partial	SX-X	
Rocky Mountain Juniper (<i>Juniperus scopulorum</i>) N	15 x 8 ft.	Full	SX-X	
Bur Oak (<i>Quercus macrocarpa</i>) N to eastern MT.	70 x 50 ft.	Full	SX	Temperature inundation
Amur Chokecherry (<i>Prunus maackii</i>)	30 x 20 ft.	Full-Partial	M-SX	Black fruits
Common Chokecherry (<i>Prunus virginiana</i>) N	15 x 15 ft.	Full	M-SX	Suckers/Temperature inundation

SHRUBS	SIZE: H x W	SUN	SOIL MOISTURE	NOTES
Canada Buffaloberry (<i>Shepherdia canadensis</i>) N	5 x 4	Partial-Full	M-SX	
Common Juniper (<i>Juniperus communis</i>) N	6" x 3-6 ft.	Full	X-SX	
Wax Currant (<i>Ribes cereum</i>) N	3 x 2 ft.	Full-Partial	SX	
Red Twig Dogwood (<i>Cornus sericea</i>) N	10 x 8 ft.	Full-Partial	M-SX	Fall color/winter interest
Ninebark (<i>Physocarpus malvaceus</i>) N	4 x 4 ft.	Full-Partial	S-SX	
Wood'S Rose (<i>Rosa woodsii</i>) N	6 x 5 ft.	Full-Partial	M-SX	Suckers
Silver Sagebrush (<i>Artemisia cana</i>) N	3 x 3 ft.	Full	X-SX	Winter interest
Rubber Rabbitbrush (<i>Chrysothamnus nauseosus</i>) N	3 x 3 ft.	Full	X	Late blooming
Western Serviceberry (<i>Amelanchier alnifolia</i>) N	6 x 4	Full-Partial	M-SX	Temperature inundation
Common Snowberry (<i>Symphoricarpos albus</i>) N	3 x 3 ft.	Partial-Shade	SX-M	Temperature inundation
White Spirea (<i>Spiraea betulifolia</i>) N	2 x 2 ft.	Partial-Shade	M	Needs snow cover
Skunkbrush Sumac (<i>Rhus trilobata</i>) N	4 x 3 ft.	Full-Partial	SX-X	Fall color
Silverberry (<i>Elaeagnus commutata</i>)	6 x 4 ft.	Full	SX-X	Native to streambanks
Kinnickinick (<i>Arctostaphylos uva-ursi</i>)	6" x 1 ft.	Full-Partial	S-SX	Evergreen groundcover
Oregon Grape (<i>Berberis repens</i>)	4" x 1 ft.	Partial-Shade	X-M	Evergreen/dry shade
GRASSES				
Alkali Sacaton (<i>Sporobolus airoides</i>)	36" x 1 ft.	Full	X-SX	
Idaho Fescue (<i>Festuca idahoensis</i>) N	15" x 10"	Full	SX	blue-green foliage
Tufted Hairgrass (<i>Deschampsia cespitosa</i>) N	3 x 2 ft.	Sun-Partial	M	temp. inundation
Indian Ricegrass (<i>Achnatherum hymenoides</i>) N	2 x 1 ft.	Full	X	Warm season
Prairie Junegrass (<i>Koeleria macrantha</i>) N	1ft. x 8"	Full-Partial	X	Early to green up in spring
Bluebunch Wheatgrass (<i>Pseudoroegneria spicata</i>) N	3 ft. x 15"	Full-Partial	X	Montana state grass
Basin Wildrye (<i>Leymus cinereus</i>) N	4 x 3 ft.	Full	SX	

GRASSES (continued)	SIZE: h x w	SUN	SOIL MOISTURE	NOTES
Baltic Rush (<i>Juncus balticus</i>) N	3 x 3 ft.	Full	OBL	
Small Winged Sedge (<i>Carex microptera</i>)	1 x 1 ft.	Full	FAC	Bunchgrass
Bebb's Sedge (<i>Carex bebbii</i>)	2 x 1 ft.	Full-Partial	OBL	
WILDFLOWERS/PERENNIALS				
Smooth Aster (<i>Aster laevis</i>) N	2 x 2 ft.	Full	SX	Leggy if too much moisture
Blanket Flower (<i>Gaillardia aristata</i>) N	2 x 2 ft.	Full	X-SX	Long blooming; short lived
Yellow Columbine (<i>Aquilegia flavescens</i>) N	1 x 1 ft.	Partial	M	Delicate flower; short lived
Purple Coneflower (<i>Echinacea angustifolia</i>) N	2 x 2 ft.	Full	X	Drought tolerant
Prairie Coneflower (<i>Ratibida columnifera</i>) N	1.5 x 1 ft.	Full	X	Self seeds
Blue Flax (<i>Linum lewisii</i>) N	1.5 x 1 ft.	Full	X	Self seeds
Showy Fleabane (<i>Erigeron speciosus</i>) N	2 x 2 ft.	Full-partial	X-SX	
Harebell (<i>Campanula rotundifolia</i>) N	15" X 2 ft.	Partial-Full	SX-M	
Rocky Mountain Iris (<i>Iris missouriensis</i>) N	2 x 2 ft.	Full	SX-M	
Nodding Onion (<i>Allium cernuum</i>) N	10" x 1 ft.	Full-partial	SX-M	
Pasqueflower (<i>Anemone patens</i>)	8" x 1 ft.	Partial	SX	Tolerates spring moisture
Pussytoes (<i>Antennaria microphylla</i>) N	5" x 1 ft.	Full-partial	X-SX	Groundcover
Pearly Everlasting (<i>Anaphalis margaritacea</i>) N	15" x 2 ft.	Full-partial	SX	Aggressive
Prairie Smoke (<i>Geum triflorum</i>) N	8" x 1 ft.	Full-partial	SX-M	Pretty seedheads/fall color
Prairie Sage (<i>Artemisia ludoviciana</i>) N	2 x 3 ft.	Full	X-SX	Aromatic
Stemless Sunflower (<i>Hymenoxys acaulis</i>) N	1 x ft.	Full	X	Rock garden

KEY TO SYMBOLS (SOIL MOISTURE)

- H Hydric: Wet, plants periodically or often inundated by water.
M Mesic: Moist, adequate soil moisture retention year round.
SX Sub-xeric: Moist to dry, seasonally moist, periodically dry.
X Xeric: Dry and drought resistant, little moisture retention.

OBL Obligate Wetland: Plant always occurring in wet to saturated soil.

FACW Facultative Wetland: Plant usually occurring in wet but probably not saturated soil

FAC Facultative: Plant often found in wet soil, but found in uplands as well, probably never in saturated soils

STREETSCAPE MATERIALS

Based on the historic and current use of local granite for building materials and landscape features for benches, planters and signage, the continued use of this material would complement existing materials and reinforce Helena's historic character. Granite is locally sourced and a strong and durable material. Granite pavers could delineate planting and walkway zones along the sidewalk, bicycle lanes, or stormwater facilities, and would honor the regional character of Helena (Figure 50). Granite blocks could be used for planters and for seating (Figure 51).

Brick is also a locally important and historic paving and building material. This material could be used for pavement and other surface treatments such as entry columns and bases for signage and site furniture (Figure 50).

Stamped and colored concrete is currently used in the pedestrian mall and along the new improvements of Last Chance Gulch north of the 6th Avenue intersection (Figures 52-53). This material and decorative finishes could be used in the extension of the pedestrian mall character into the 6th Avenue and Last Chance Gulch intersection, further reinforcing the intersection as a multimodal space. Other pavements that support stormwater management and improve water quality, while providing a stable and accessible surface for pedestrians, bicyclists, and vehicles may be utilized. These include pervious concrete and interlocking concrete pervious pavers. In roadway locations outside of the 6th Avenue and Last Chance Gulch intersection, pervious asphalt or concrete could be used to provide additional infiltration of stormwater and snow melt runoff. To lessen the heat island effect, high albedo pavement colors and materials could be used.



Figure 50: Brick and granite paver detail.



Figure 51: Granite bench with granite paver detail.



Figure 52: Stamped concrete detail.



Figure 53: Colored concrete detail.

