

Procter Hermantown Munger Trail Spur

MASTER PLAN

DECEMBER 2015





Procter Hermantown Munger Trail Spur

MASTER PLAN

Acknowledgments



Project Partners

City of Hermantown

City of Proctor

Minnesota Department of Natural Resources (DNR)

Collaborators/Stakeholders

City of Duluth

Duluth-Superior Metropolitan Interstate Council (MIC)

Minnesota Power

Consultants

Hoisington Koegler Group Inc. (HKGi)

- Project lead, trail planning and design, community participation

MSA Professional Services

- Sub-consultant, trail feasibility and preliminary engineering



Hoisington Koegler Group Inc.
Planning • Landscape Architecture • Urban Design



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Chapter 1: Master Plan Vision & Approach



NEED FOR A REGIONAL TRAIL CONNECTION

Above the Ridgeline Connector Trail

The communities of Proctor and Hermantown are located very near the Munger State Trail, a 70-mile multi-use recreational trail between Duluth and Hinckley, but do not have a trail connection to this unique regional recreational amenity. Located directly west of Duluth, the two communities are also located above the Lake Superior ridgeline (elevation approximately 1,400 feet) while the Munger State Trail terminates down at Duluth's waterfront (elevation approximately 600 feet). Traversing down the ridge presents challenges including steep slopes and crossings of creeks, roadways, and rail lines. While the network of paved trails in Duluth, below the ridge, continues to expand, there are currently no paved trails above the ridgeline.

A regional trail connection between Proctor and Hermantown and down to the Munger State Trail is called for in the 2007 Proctor Master Trail Plan and the 2010 Hermantown Trails Master Plan. In addition, this regional trail provides an opportunity to connect to Duluth's Lakewalk, Cross City Trail, and Duluth Traverse (mountain biking trail), as well as the Superior Hiking Trail (a 300-mile trail along the Lake Superior ridgeline).

With Proctor's population of 3,100 and Hermantown's population of approximately 9,600, this regional trail connection will directly serve the needs of approximately 13,000 residents. In addition to Proctor and Hermantown residents, this trail will serve the needs of businesses and employees, as well as the greater Duluth-Superior metropolitan region.

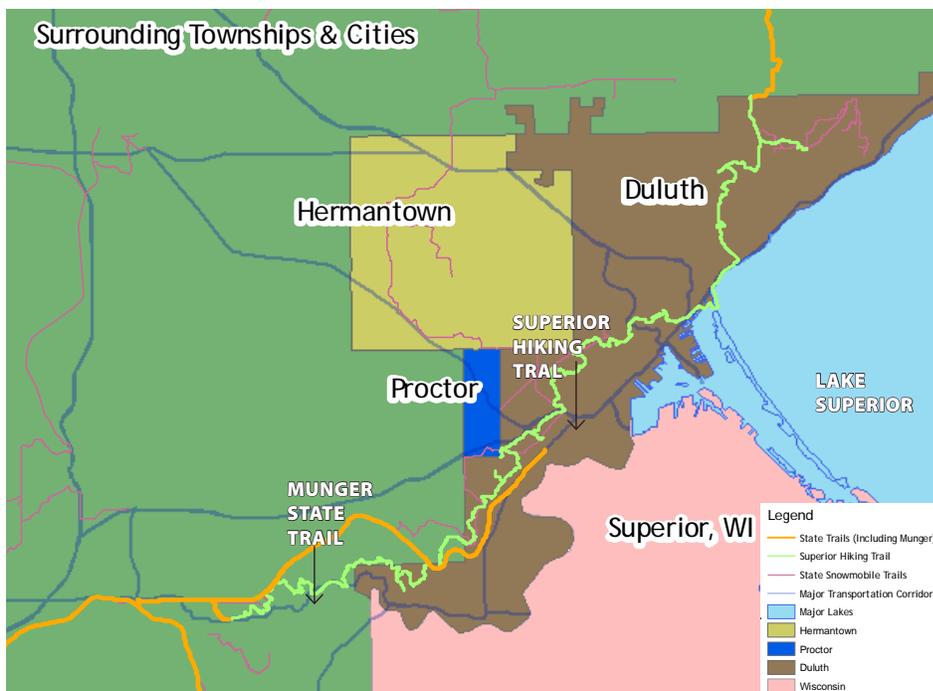


FIGURE 1-1: REGIONAL CONTEXT MAP

The Willard Munger State Trail is a 70-mile multi-use recreational paved trail that connects Duluth and Hinckley. The Superior Hiking Trail is a 300-mile natural surface hiking trail that travels near Proctor and Hermantown. Snowmobile trails travel through both communities.

VISION

The Proctor-Hermantown Munger Trail Spur will be a regional destination trail linking the communities of Proctor and Hermantown above the ridge line to the Munger State Trail and Duluth's growing trail network below the ridge line. This 16-mile, 10-foot wide paved trail will be a unique regional recreational resource as there are no paved trails above the ridge line in this area today. The trail will connect numerous regional and local recreation destinations and activity centers within the communities of Proctor, Hermantown, and Duluth, including schools, parks, natural resource areas, city halls/community centers, and downtown business areas. In addition to the Munger State Trail, it will connect to the Spirit Mountain Recreation Area, 300-mile Superior Hiking Trail, Duluth's Lakewalk, Cross City, and Duluth Traverse trails, creating a variety of recreational loop opportunities. The trail route will highlight the communities' natural features, including four creeks, northern hardwood forests, wetland areas, and a variety of natural and active parks.

Guiding Principles

The Proctor-Hermantown Munger Trail Spur will be a regional destination recreational trail that accommodates multiple non-motorized uses including walking, jogging, hiking, bicycling, inline skating, and cross-country skiing. There are many public trail opportunities in Duluth, but there is a gap above the ridgeline in Hermantown, Proctor, and connecting communities.

The trail will be designed as a 10-foot wide paved regional trail that meets the **Trail Planning, Design, and Development Guidelines** of the Minnesota Department of Natural Resources (MN DNR). The trail will provide a high-quality experience as a primarily

off-road recreational corridor through diverse landscapes, including natural, rural, and urban. As a continuous trail that will be approximately 16 miles in length, it is intended to function as both a regional destination trail and a local connector trail.

The trail will be designed as a fully accessible ADA-compliant regional trail for people of all ages and with physical limitations.

The trail will enhance connectivity and safety for trail users to get from Hermantown and Proctor to parks, schools, commercial areas, and natural areas. Currently, non-motorized trail access between Hermantown

Master Plan Process Goals

- Engage the communities of Proctor and Hermantown, as well as Duluth and other agencies, in a collaborative effort to identify the needs and preferences for developing a regional trail corridor above the ridgeline
- Create a trail that is a true community amenity providing connections to key destinations in Proctor and Hermantown from neighborhoods and residential hubs
- Explore and evaluate alternative route options between Proctor and Hermantown and down to the Munger State Trail, including the planned Proctor Connector Trail identified in the 2007 Proctor Master Trail Plan

- Conduct a physical and cost feasibility analysis of potential challenges for connecting from above the ridgeline in Hermantown and Proctor down to the Duluth waterfront, including steep slopes, wetlands, creeks, road/rail crossings, property access,
- Select a preferred route for a regional 10-foot wide paved multi-use trail that will provide a high quality non-motorized recreational experience
- Identify preliminary engineering design concepts and cost estimates for complex segments of the preferred trail route
- Identify trailheads and local access points that allow the trail to be accessed by a regional population



and Proctor and Duluth is limited to unprotected sidewalks and shared bike routes along steep, high traffic roads.

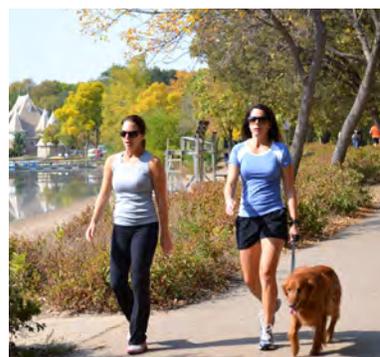
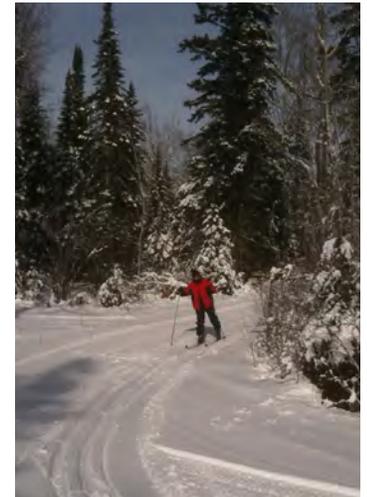
The trail will connect Hermantown and Proctor residents and visitors to regional trail and tourist destinations, including the Munger State Trail, Spirit Mountain Recreation Area, Superior Hiking Trail, Cross City Trail, Lakewalk, Traverse, and Duluth parks and open spaces.

Keep the location of the trail primarily in natural corridors in order to enhance the recreation experience with natural landscape views, quiet surroundings, and access to adjacent recreational opportunities.

Wherever feasible, the trail will be located in off-road trail corridors that are separated from vehicular traffic. The trail will be continuous with minimal road crossings and grade separations where necessary.

Trailheads will be provided for parking and wayfinding for the convenience of both local users and visitors. The trail will be accessible where it crosses through parks, school grounds, and urban areas.

Examples of regional recreational trails and intended non-motorized uses



TRENDS

Demographic Trends

The Duluth-Superior metropolitan area's long-range transportation plan, which is called Connections 2040, was updated in 2014 by the Duluth-Superior Metropolitan Interstate Council (MIC). This long-range plan looks out to the year 2040 to guide public investments in multi-modal transportation infrastructure in the metropolitan area, including the cities of Hermantown and Proctor. This plan includes updated 2010 demographics, historic trends, and projections to 2040 for the metro area overall, as well as for the individual cities and townships. The plan's demographic analysis identifies that the metro area's growth has been occurring in the cities and townships outside of Duluth and Superior, particularly along the Highway 53 corridor through Hermantown. In fact, Hermantown experienced the greatest population growth from 2000 to 2010 by far with a 26% increase, while Proctor had a 7% increase. Between 2010 and 2040, Hermantown is projected to increase in population in the range of 35-44% and Proctor is projected to increase by 7-11%. The overall Duluth-Superior metro area is projected to grow by 7-17% by 2040, which means the metro area's 2010 population of 148,000 could grow to 173,000 by 2040.

Non-Motorized Transportation and Recreation Trends

The Duluth-Superior metro area is experiencing increased demand for non-motorized transportation options. From 2004 to 2013, use of public transit grew by 20% according to the Duluth Transit Authority (DTA). Since each DTA bus has a bike rack attached to its front, the DTA has also been able to monitor how many bikes use these bike racks. From 2006 to 2012, DTA saw the annual number of bikes brought on buses increase by 14,000, which equates to a 14% increase annually over the six-year period.

The Millennial generation's travel behaviors have shown an increasing demand for public transit, ridesharing, and non-motorized travel modes such as biking and walking. As the Baby Boomer generation moves into its senior years, they are expected to demand environments that are more supportive of walking, biking, and transit options. In the Duluth-Superior metro area, the percentage of seniors is projected to increase from 7% of the population in 2010 to 19% in 2040.

The cities of Hermantown, Proctor, and Duluth each have adopted city-wide trail master plans that guide future development of an extensive trail network in the metro area.

In 2010, the Advance Hermantown initiative was established to gain community consensus around Hermantown's desired future destiny. One of the goals of this initiative is to "refine, communicate and begin implementing a community-wide recreation system plan for parks, recreation fields and trails development around current activity centers in Hermantown."

In 2010, the City of Duluth adopted a Complete Streets policy that incorporates both motorized and non-motorized transportation in the planning of new and reconstructed city streets.

In 2011, Duluth set a vision to be the premier trail city in North America with its Trail & Bikeway Plan. This trail plan envisions an extensive trail network within Duluth as well as trail corridors that connect up into Hermantown and Proctor.

Over the past four years, the Duluth-Superior MIC has partnered with the Healthy Duluth Area Coalition to conduct bike and pedestrian counts each spring and fall in order to monitor the level of bike and pedestrian traffic and identify potential infrastructure improvement needs.

Public Health Initiatives

The City of Hermantown, Hermantown School District, Essentia Health, and Duluth Area Family YMCA are partnering to improve the health and wellness of southern St. Louis County with plans to build the Essentia Health Regional Wellness Center. This new health and recreational facility will be located in Hermantown directly adjacent to the planned Hermantown-Proctor Munger Trail Spur.

Started in 2009, the Healthy Duluth Area Coalition currently consists of 17 organization members including nonprofits, foundations, community groups, and public and private entities. The Coalition's mission is to change the community's policies, systems and environments to encourage active living and improve residents' access to healthy foods. Some of the Coalition's initiatives include creating robust and equitable active recreational opportunities –and- a balanced and diverse community transportation system.

Economic Development and Tourism Opportunities

There are a number of opportunities for economic development and tourism related to the planned Hermantown-Proctor Munger Trail Spur, including the following:

- Hockey tournaments at the ice arenas in Hermantown, Proctor, and Duluth;
- Spirit Mountain's variety of recreational facilities and events, particularly skiing and mountain biking;
- Events at the South St. Louis County Fairgrounds in Proctor;
- Munger State Trail; and
- Duluth's Lakewalk Trail, including the planned Cross City Trail extension that will link it to the existing Munger State Trail and planned Munger Trail Spur.

PLANNING PROCESS

The planning process was led by Hoisington Koezler Group Inc. (HKGi) planning and landscape architecture consultants. Engineering consultants from MSA Professional Services Inc. (MSA) also attended all meetings. The project began in October 2014 with kick-off meetings with the Project Staff Team and citizen-based Advisory Committee. The planning process was completed in April 2015. The final trail plan and feasibility study report was completed in July 2015.

Identifying & Analyzing Alternatives

The planning process consisted of five primary tasks:

- Task 1: Data Collection and Preliminary Analysis
- Task 2: Route Planning in Hermantown
- Task 3: Route Verification in Proctor
- Task 4: Feasibility Analysis
- Task 5: Preliminary Project Design

As a result of early community input as well as feedback to the initial set of alternative trail routes, it became apparent that both communities placed as much value in this trail providing a desirable connection between Proctor and Hermantown - an "above the ridgeline trail" - as a connection down the ridge to the Munger State Trail. Consequently, the planning process involved exploring trail route options between and through both Hermantown and Proctor. The process involved a trail feasibility analysis to address physical, ownership, and cost challenges associated with each of the route options. In addition, preliminary engineering design concepts were identified for complex trail segments.

Collaborating with Community Stakeholders

The planning process was a collaborative effort between the cities of Proctor and Hermantown, as well as Duluth, Minnesota Dept. of Natural Resources (MN DNR), Duluth-Superior Metropolitan Interstate Council (MIC), and Minnesota Power. A citizen-based Project Advisory Committee was formed consisting of interested citizens from Proctor and Hermantown. The project's consultant team facilitated meetings throughout the planning process with the Project Staff Team and the Project Advisory Committee.

Gaining Public Input

Three public meetings were held during the planning process in November 2014, January 2015, and April 2015. The goals of the public meetings were as follows:

November 20, 2014 - provided an orientation to the overall project, shared information about existing and planned trails, identified general route options for the Munger Trail Spur, and gained community feedback on alternative routes as well as people's general preferences for this regional trail.

January 14, 2015 - more defined trail route options were presented, including the consultants' comparative evaluation of the options, and attendees were asked to identify their preferred route preference.

April 21, 2015 - presented the preferred trail route, trailhead/access locations, and preliminary engineering design concepts for complex segments, such as crossings of wetlands, creeks, roadways, rail lines, and steep slopes. Attendees were invited to provide feedback.

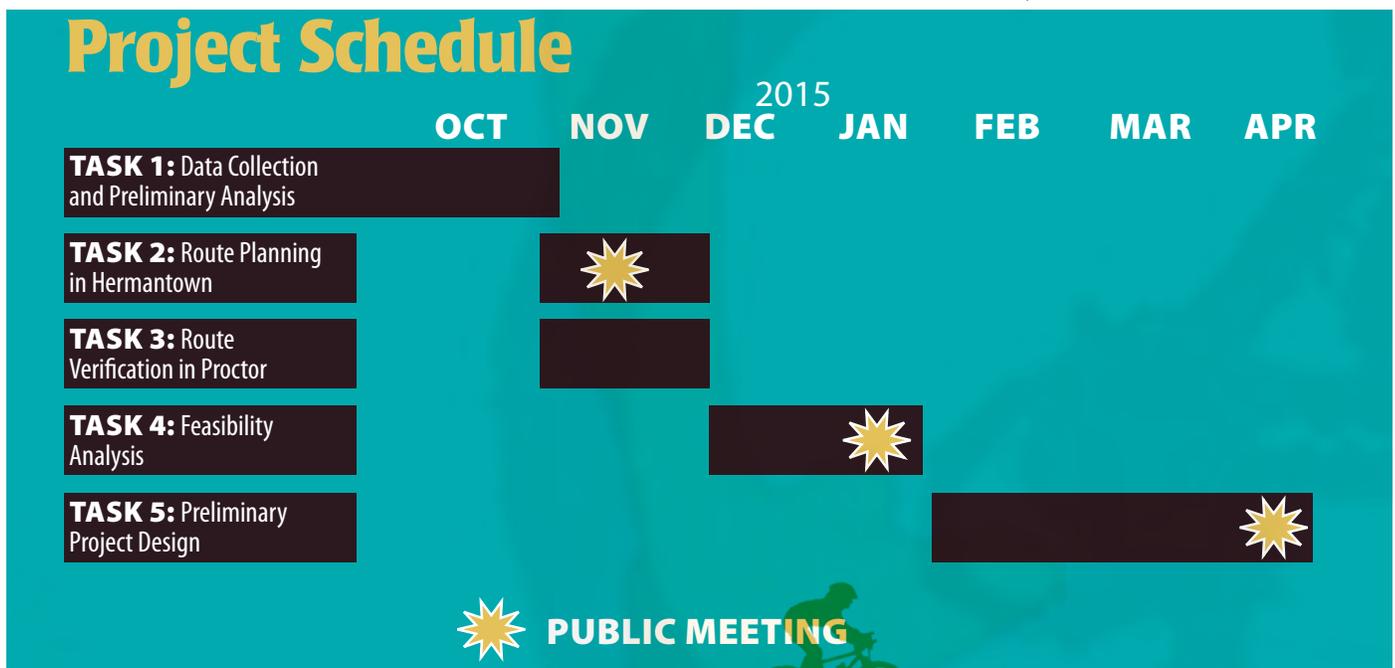
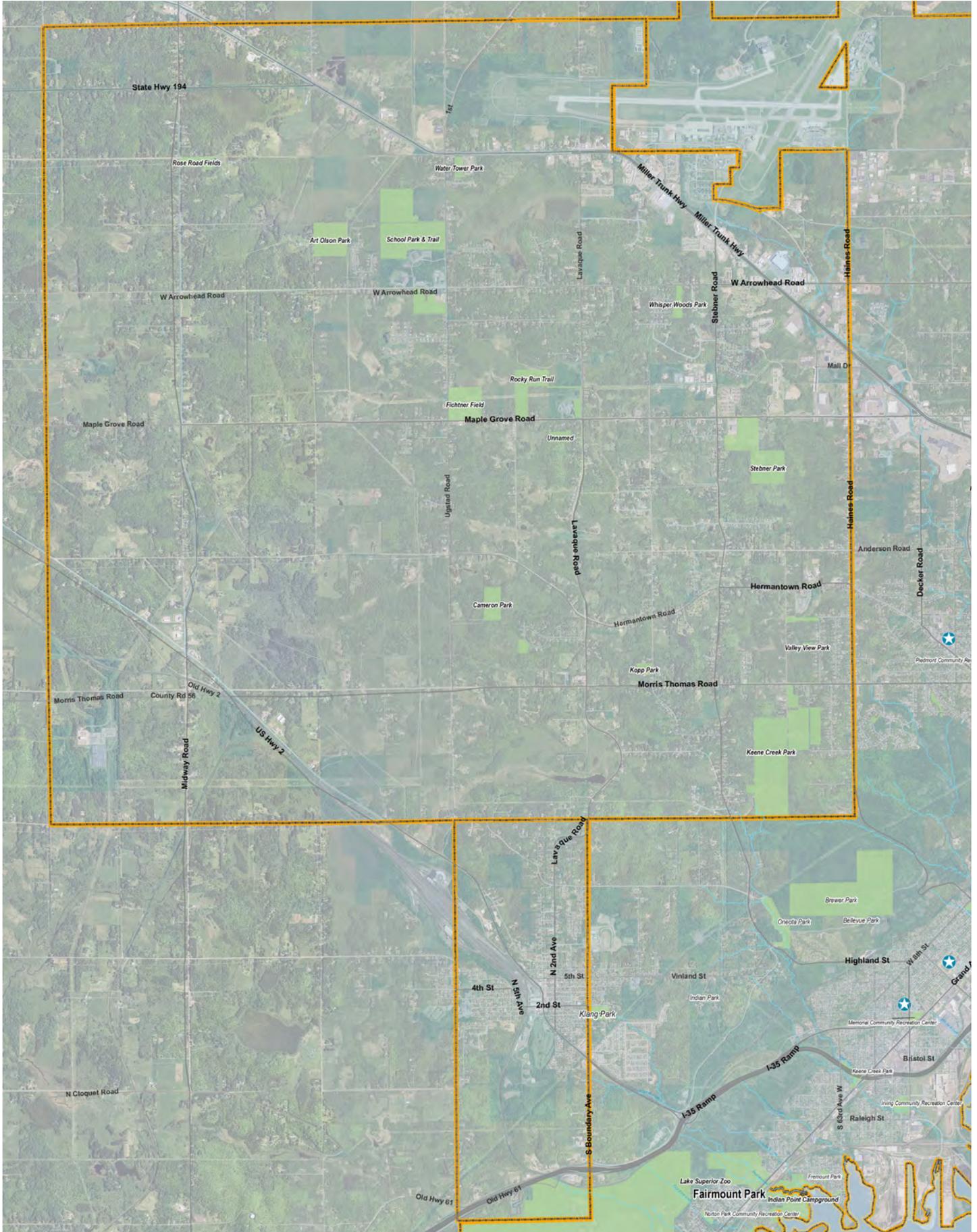


FIGURE 1-2: HERMANTOWN AND PROCTOR CITY BOUNDARIES



Chapter 2: Existing Conditions



EXISTING RECREATIONAL INFRASTRUCTURE

The planning process for the Munger Trail Spur Master Plan was intended to build upon the communities' existing recreational infrastructure of public trails, sidewalks, parks, and open spaces. In addition, the project considered existing environmental features, utility corridors, and roadway infrastructure that may serve as potential connections or barriers for a regional trail corridor within the two communities, as well as Duluth. Figure 2-1 shows existing trails, sidewalks, and bike routes.

Parks & Open Spaces

Hermantown has a number of recreational parks, including Keene Creek Park, Stebner Park, Hermantown Community Park, Fichtner Field Complex, and Rose Road Field. Proctor's recreational facilities include Egerdahl Field and the Proctor Municipal Golf Course. Nearby parks and recreation areas in Duluth include Klang Park, Bay View School Forest, Spirit Mountain Recreation Area, Fairmount Park, and Brewer Park.

In addition, there are recreational facilities at both the Proctor Schools campus, just west of downtown Proctor, and the Hermantown Schools campus in the north central area of Hermantown.

Trails

Hermantown and Proctor have existing informal and unofficial trails throughout the communities. These trails primarily consist of natural surface paths for walking/hiking, and potentially mountain biking, through park areas. Keene Creek Park is the only city park with an existing trail system. Located near Hermantown City Hall are the Minter Trail and the Rocky Run Trail. There are no paved trails in Hermantown and Proctor. In Duluth, the only major paved trails are the Munger State Trail and the Lakewalk. Other non-paved trail destinations close to Proctor and Hermantown are the Superior Hiking Trail, Piedmont Mountain Bike Trails, Spirit Mountain ski and bike trails, and Western Waterfront Trail in Duluth.

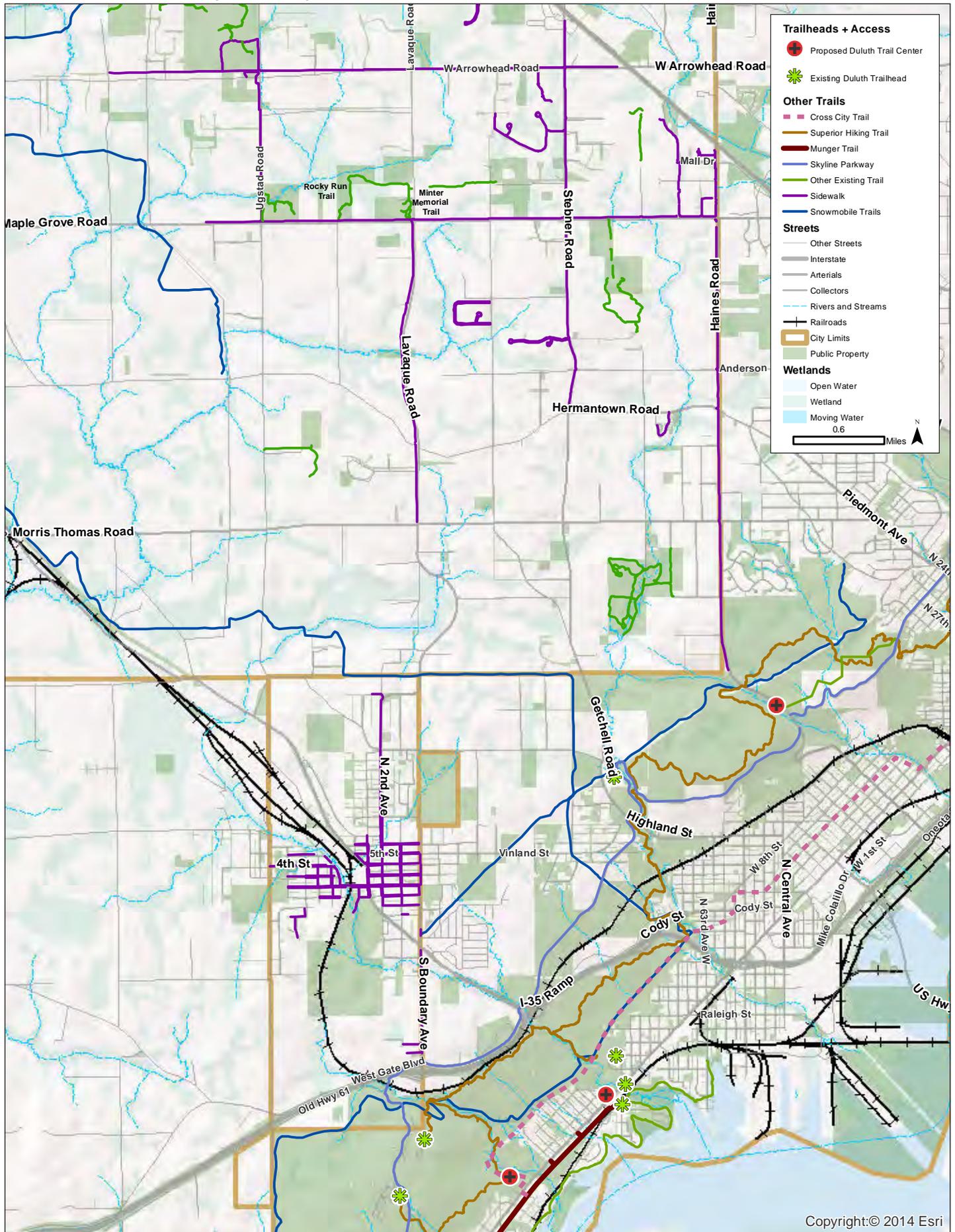
Sidewalks

Both Hermantown and Proctor have sidewalks on some streets. The majority of downtown/central Proctor has sidewalks along one or both sides of streets. These sidewalks are typically 5 feet in width and vary in condition. Sidewalks are less common in Hermantown, though do exist on one side along many major roadways, including Ugstad Road, Maple Grove Road, Arrowhead Road, Lavaque Road, Stebner Road, and Haines Road.

On-Street Bike Routes

Several roadways have been identified as bicycle routes through the planning efforts of the Duluth Superior Metropolitan Interstate Council (MIC). Within the cities of Hermantown and Proctor, the MIC has identified several signed bike routes along roadways. These routes were identified as on-street signed routes, however no specific facilities dedicated for bicycle use have been provided thus far.

FIGURE 2-1. EXISTING TRAILS, SIDEWALKS, AND ON-ROAD BIKE ROUTES



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Hermantown On-Road Bike Routes	Proctor On-Road Bike Routes
• Stebner Road	• Boundary Avenue
• Maple Grove Road	• Westgate Boulevard
• Morris Thomas Road	• Ugstad Road
• Hermantown Road/Piedmont Avenue	• 2nd Street
• Ugstad Road	
• Haines Road	

LAND USE & ENVIRONMENTAL FEATURES

Land Use and Land Cover

The landscape along the planned trail corridor consists of wooded, rural residential areas in Hermantown and more highly developed, urban residential and mixed use areas in Proctor. In Duluth, the trail corridor traverses through public land that is mostly wooded. Many wetlands are present above the bluff in Hermantown and Proctor, while many streams meander down the bluff through Duluth toward the St. Louis River and Lake Superior.

The Minnesota DNR's (MNDNR) land cover data, Minnesota Land Cover Classification System (MLCCS), does not cover the area touching the planned trail corridor. The MNDNR's Native Plant Communities data includes identification of some landscape features at the southern end of the planned trail in Proctor and Duluth. These areas are shown on Figure 2-2. Some of these native plant communities are identified by the Minnesota County Biological Survey (MCBS) as high quality native plant communities with rare plants, rare animals, and/or animal aggregations. A biodiversity significance rank is assigned on the basis of the number of rare species, the quality of the native plant communities, size of the site, and context within the landscape. All areas outside MCBS Sites are lands where native plant communities have been seriously altered or destroyed by human activities such as farming, recent logging, draining, and development. The southern end of the preferred trail route, which is just south of I-35 in Proctor, travels through an outstanding significant area of biodiversity consisting of Mesic Hardwood Forest and Wet Forest Systems.

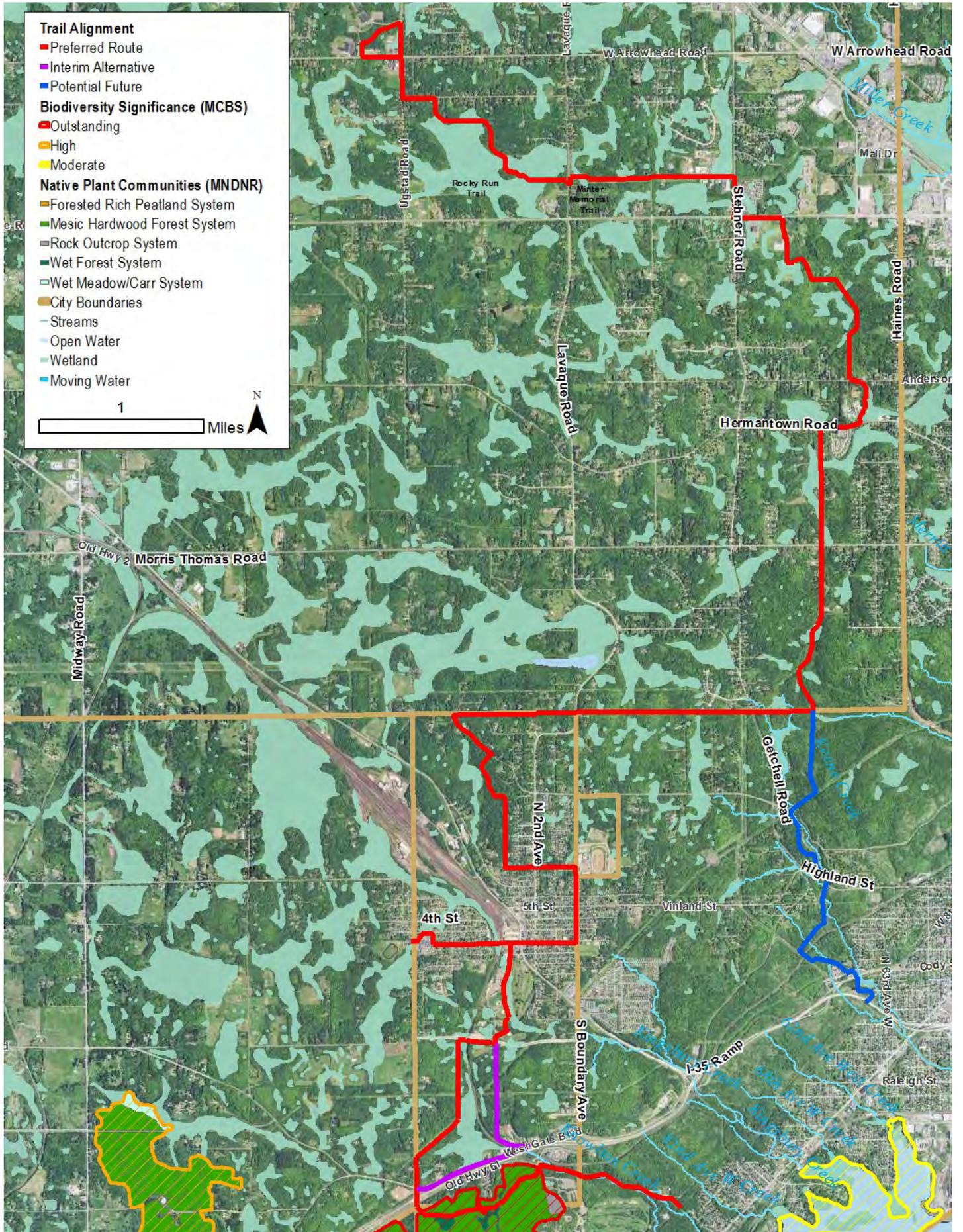
Creeks and Wetlands

Multiple creeks and wetlands are present throughout Hermantown and Proctor. Creeks include Keene, Knowlton, and Kingsbury, as well as the Midway River and its branch, the Rocky Run. All of these stream courses are identified as trout streams by the Minnesota DNR. In addition, wetlands of various sizes exist throughout the area and areas of high concentration can be identified from aerial photography and the National Wetlands Inventory (NWI).

Keene Creek, Kingsbury Creek, Knowlton Creek, and Rocky Run all flow in the vicinity of the preferred trail location. In several locations, the proposed trail will require crossing the creeks or their tributaries. These crossings can be made with two standard options, either culvert crossings or pedestrian bridges. Multiple styles of culverts are possible, including round, elliptical, box-culverts or open-bottom culverts. DNR and US Army Corps of Engineers permitting will be required for these crossings. Open bottom culverts or bridges are the favored options of those agencies but are generally more costly to install than other options. In some places, the proposed trail may be able to utilize existing crossings, but evaluations of those structures will need to be performed.

Wetlands throughout the area are pronounced and of various quality. The wetlands included in the NWI and limited field investigation have been identified within this report. The wetlands shown are not the only wetlands that will exist throughout the alignment. Once a final trail alignment is selected, a formal wetland delineation by a wetland professional will be necessary for any future trail construction. Trail construction work within wetlands will be required, though should be minimized as impacts will require the purchase of wetland credits or other offsetting measures. Purchase of wetland credits is on a square foot basis and can add significant costs to the project.

FIGURE 2-2. EXISTING LAND COVER AND ENVIRONMENTAL FEATURES



Bedrock & Soil Conditions

Throughout the area, existing soil conditions create one of the most challenging environmental factors that will need to be addressed. Soil conditions will vary, ranging from silty clays and peats to bedrock formations. Some soil conditions will present challenges and will need different treatments. Construction within bedrock will require blasting or other rock excavation methods. Organic soils, such as peat present in wetland areas, will require boardwalk construction or a floating structure. The costs to deal with the different soil strata can add significant cost to the project.

UTILITY & TRANSPORTATION INFRASTRUCTURE

Roadways

The preferred Munger Trail Spur route, which will be approximately 16 miles in length, will need to cross a number of existing roadways, including state, county, and local roadways.

State Roadways	County Roadways	Local Roadways
<ul style="list-style-type: none"> Interstate 35 	<ul style="list-style-type: none"> Arrowhead Road 	City of Hermantown
<ul style="list-style-type: none"> U.S. Highway 2 	<ul style="list-style-type: none"> Ugstad Road 	<ul style="list-style-type: none"> Lavaque Junction Road
	<ul style="list-style-type: none"> Lavaque Road 	<ul style="list-style-type: none"> Stebner Road
	<ul style="list-style-type: none"> Getchell Road 	<ul style="list-style-type: none"> Tamarack Road
	<ul style="list-style-type: none"> Maple Grove Road 	<ul style="list-style-type: none"> Anderson Road
	<ul style="list-style-type: none"> Morris Thomas Road 	<ul style="list-style-type: none"> Hermantown Road
	<ul style="list-style-type: none"> Boundary Avenue 	<ul style="list-style-type: none"> Okerstrom Road
	<ul style="list-style-type: none"> Mountain Drive 	City of Proctor
		<ul style="list-style-type: none"> St. Louis River Road
		<ul style="list-style-type: none"> Downtown Streets
		<ul style="list-style-type: none"> Kirkus Street
		City of Duluth
		<ul style="list-style-type: none"> Skyline Parkway

All proposed crossings of County roadways will need coordination, permitting, and approval from St. Louis County Public Works. The at-grade crossing of U.S. Highway 2 and underpass crossing of Interstate 35 will present the largest challenges to the preferred route and will require coordination, permitting, and approval of MN DOT.

Rail Line Corridor

The preferred trail route crosses the Canadian National (CN) rail line twice in Proctor. Crossing the rail line will be a sensitive issue and best done at grade-separated crossings. In central Proctor, a grade-separated crossing is not practical, so an at-grade crossing at 2nd Street would be the most logical crossing. It is recommended that the second crossing use the existing bridge for Kirkus Street or Westgate Boulevard, which both cross over the rail line.

Trunk Sewer Line

The City of Hermantown has an existing trunk sewer line easement that extends through the city from Keene Creek Park in the southeast up to Arrowhead Road in the north central area of the city. The City of Hermantown's 2010 Trails Master Plan identified this existing utility easement corridor as a key opportunity for developing a future off-road pedestrian and bike trail.

Minnesota Power

Minnesota Power has several powerline corridors that criss-cross Hermantown, Proctor, and Duluth. These wide utility right-of-way corridors provide continuous, connected areas across private land that could be beneficial for providing a future trail connection. Minnesota Power owns some of its utility corridors and has utility easements on other corridors. If the future trail was to be constructed in a powerline corridor, an additional trail easement would need to be obtained in coordination with Minnesota Power and private landowners. Any trail work within an existing powerline corridor will need the review and approval of Minnesota Power. Given the sensitive nature of powerline corridors, additional federal review may also be necessary. While the overhead powerlines within these corridors may be undesirable visual distractions, the off-road, forested corridor environment would be more enjoyable to traverse than an on-road trail.

The City of Hermantown's 2010 Trails Master Plan identified the existing powerline easement corridor along the City's southern municipal boundary, between Haines Road and Lindahl Road, as a key opportunity for developing a future off-road pedestrian and bike trail.



CURRENT TRAIL PLANS

The Munger Trail Spur will travel through the communities of Hermantown, Proctor, and Duluth. Other governing bodies and organizations affect the trail corridor, including St. Louis County, Minnesota DNR, and the Duluth-Superior Metropolitan Interstate Council (MIC). Several existing trail plans guide and support the development of the Munger Trail Spur. They are described below.

Proctor Master Trail Plan (2007)

The plan's goal is to develop a network of multi-use trails that connect neighborhoods, schools, parks, natural areas, businesses, and regional destinations for non-motorized uses, including walking, bicycling, and inline skating. The City's intent is for the trail network to serve recreational uses, but also provide convenient connections for everyday tasks without using a car. The planned trail network encompasses approximately 22 miles of trails throughout Proctor with both east-west and north-south connections. In addition to identifying a trail network within Proctor, the plan identifies potential trail connections to and within adjacent communities, primarily Duluth, that provide connections to regional destinations. The majority of the off-road trails are proposed as natural surface trails (approximately 7 miles), and on-road trail connections are proposed as sidewalks and shared on-road bike routes (approximately 10 miles). The only trails proposed to be paved (approximately 5 miles) are the Proctor Connector Trail, Old Hwy 61 Trail (between Hwy 2 and 68th Ave in Duluth), Western Proctor Trail, and potentially the North Proctor Trail.

A focus of the trail plan is the proposed Proctor to Munger State Trail connection called the Proctor Connector Trail. This trail is proposed as a minimum 10-foot wide paved trail connecting the Proctor Community Center to the Munger State Trail trailhead at Grand Ave & 75th Ave in Duluth. The Munger Trail Spur project was charged with analyzing the feasibility of the Proctor Connector Trail, as proposed in the Proctor Master Trail Plan, and proposing potential alternative routes to navigate the ridge between Proctor/Hermantown and the Munger State Trail trailhead in Duluth.

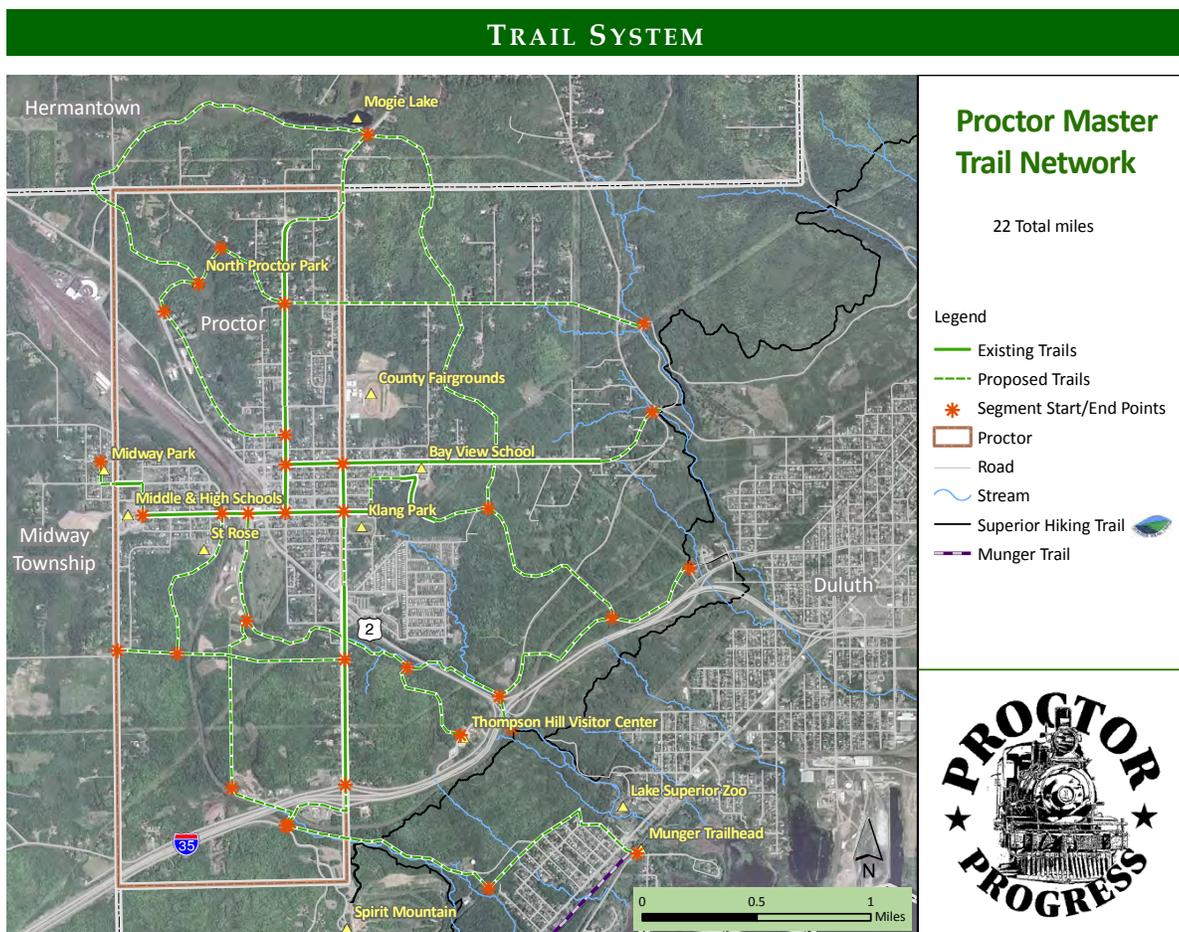


FIGURE 2-3. CURRENT PROCTOR TRAIL PLAN (2007)
This city-wide trail plan recommends a complete network of trail routes, including the Proctor Connector Trail as a link to the Munger State Trail.

Hermantown Trails Master Plan (2010)

The goal of the Hermantown Trails Master Plan is to develop bike paths, sidewalks, and special purpose trails that link residential neighborhoods to local activity centers. The plan also identifies the need for connecting Hermantown residents to popular regional trails, including the Munger State Trail, Duluth's Lakewalk and Western Waterfront Trails, the Superior Hiking Trail, and the growing number of mountain biking trails in Duluth. The plan also refers to Proctor's trail plan, including the Proctor Connector Trail and the proposed connection to Hermantown near Mogie Lake via Lavaque Road.

The trail plan identifies opportunities for adding new trails within City parks, specifically Keene Creek Park, Stebner Park, and Fichtner Park. For more extensive off-road trails, the plan proposes using existing utility easements, including the City's trunk sewer line easement and Minnesota Power transmission line easements.

The trail plan also addresses sidewalks and bike routes. While most County roadways do have a sidewalk on one side, most City roadways do not have sidewalks. The plan identifies major sidewalk gaps that should be addressed. Finally, the trail plan addresses bike routes. The existing bike route system is more extensive than the sidewalk system. However, there are safety issues since the bike routes are all on-road routes that are often located on high volume, high speed traffic roadways.

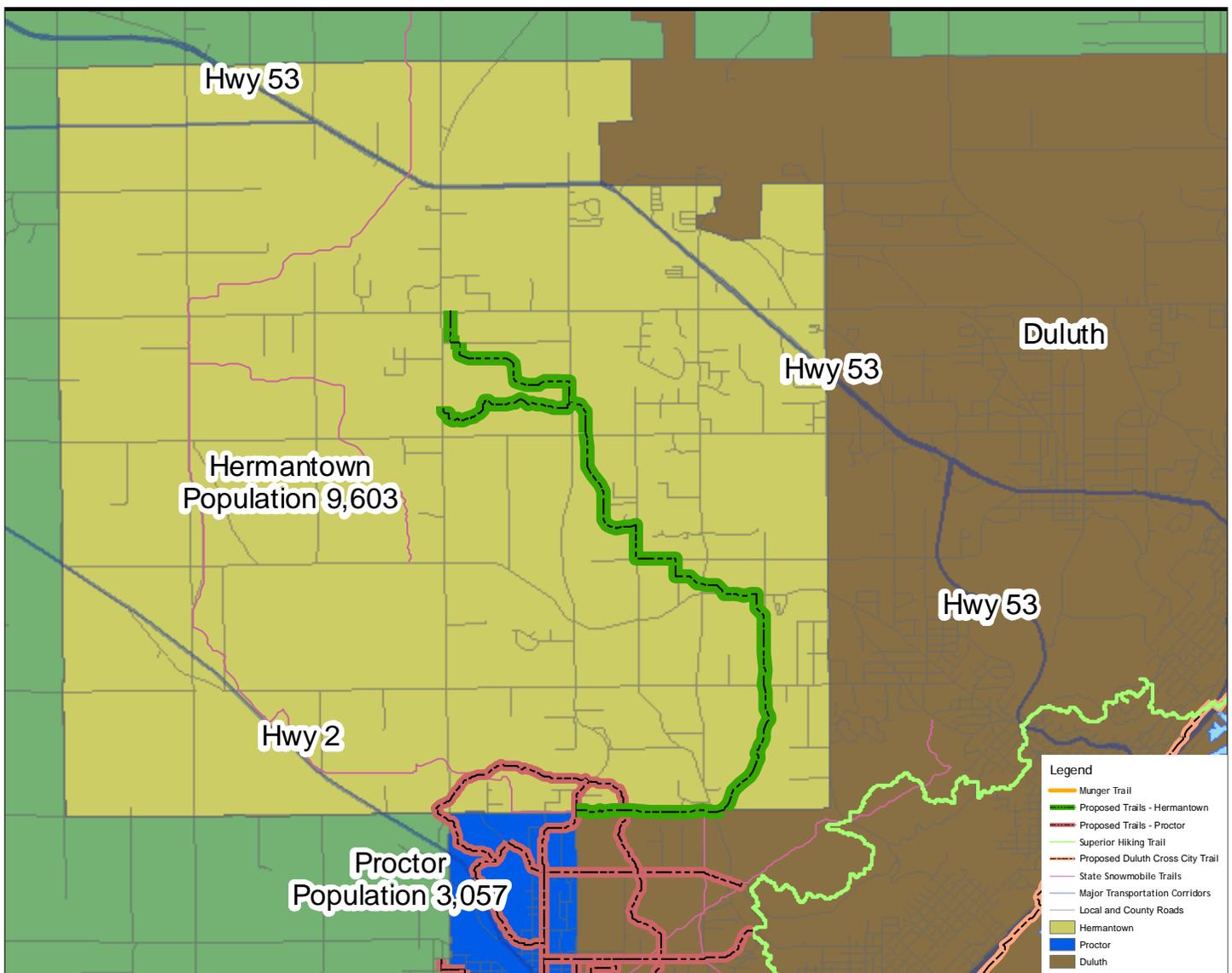


FIGURE 2-4. CURRENT HERMANTOWN TRAIL PLAN (2010)

The map above shows the City's current trail plan which is focused on a potential trail route that primarily utilizes two existing utility easements - Hermantown's trunk sewer line and Minnesota Power's transmission line.

Duluth Trail and Bikeway Plan (2011)

Duluth's vision is to be the premier trail city in North America. Duluth's plan recommends completing a system of Across the City Trails as well as Up & Down Trails. The highlights of Duluth's plan are:

- Four (4) unique Across the City Trails that cater to different trail user types, including the Munger-Lakewalk multi-use trail (paved), Superior Hiking Trail (natural surface), a more pedestrian and bicycle friendly Skyline Parkway, and the Duluth Traverse (multi-use natural surface trail)
- Improving and adding Up & Down Trail corridors to provide critical links between the waterfront and the ridgetop
- New trails in underserved areas of the City, including West Duluth, the Duluth Heights neighborhood, and the Miller Hill Mall area
- Converting the abandoned and city-owned Duluth Winnipeg & Pacific (DWP) rail corridor to a formal multi-use corridor
- New on-road bike lanes, bike boulevards and bike routes
- New trailheads and way-finding signage

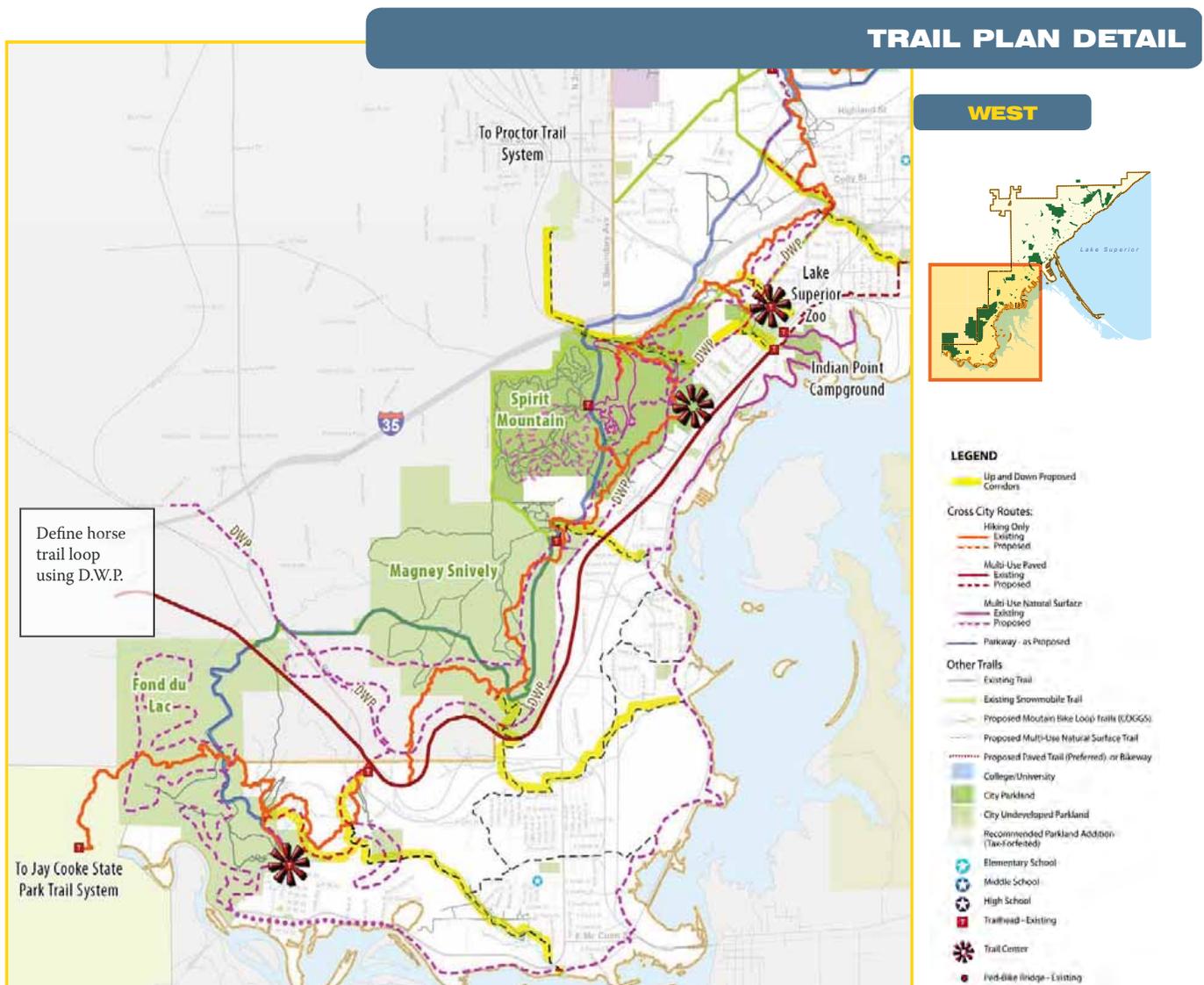


FIGURE 2-5. CURRENT DULUTH TRAIL AND BIKEWAY PLAN (2011)

The map above shows Duluth's current trail plan for the western portion of the City, including planned Across the City Trails and Up & Down Trails that will provide opportunities for connections to Proctor and Hermantown.

Munger Trail to Lakewalk Connector (2007) / Duluth Cross City Trail (2014)

Also known as the Cross City Trail, this proposed multi-use trail will extend the Lakewalk into West Duluth and connect to the Munger State Trail. The plan for this trail has been evolving since completion of the 2007 plan with minor alignment adjustments. In 2014, the City selected the former DWP corridor as the trail route from 63rd Ave west to the Spirit Mountain Lower Chalet RR and the Munger State Trail. The current planned alignment is shown below.

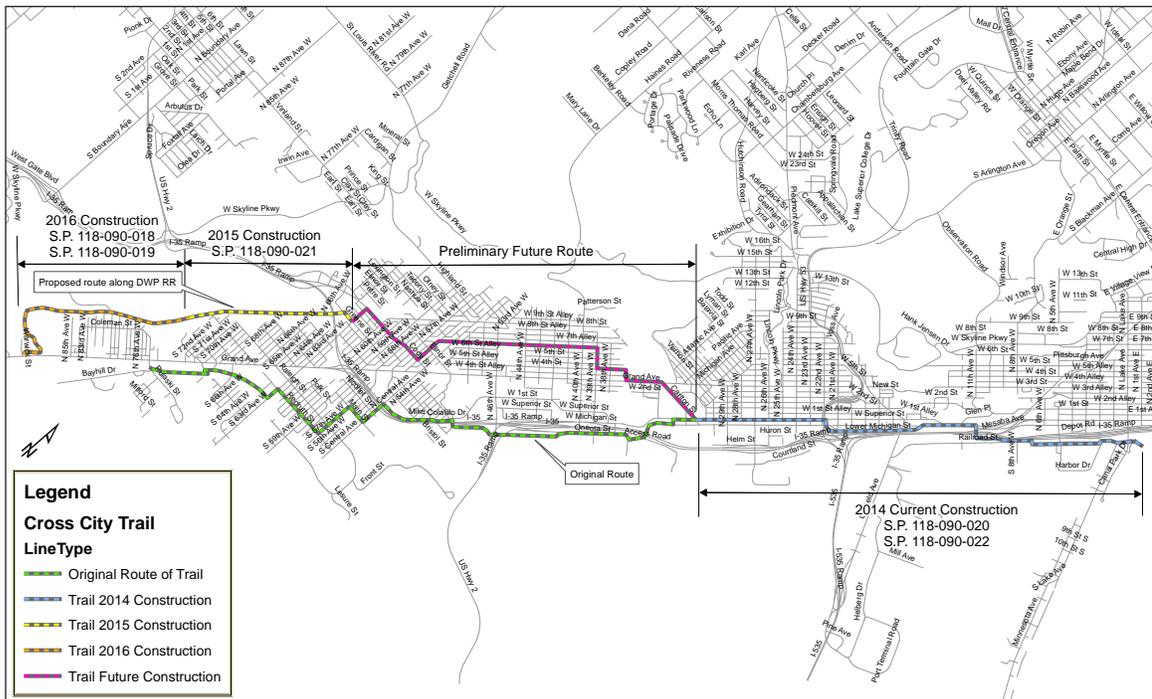


FIGURE 2-6. DULUTH CROSS CITY TRAIL PLAN (2014)

This map shows the planned extension of Duluth's Lakewalk into West Duluth using the DWP corridor and connecting to the Munger State Trail.

Duluth Bikeway System Plan (2013)

The Duluth-Superior Metropolitan Interstate Council (MIC) recently completed the Duluth Bikeway System Plan, which identifies several on-road bike route connections to Hermantown and Proctor. These routes could supplement the Munger Trail Spur and provide connections to local destinations that are not within the planned trail corridor.

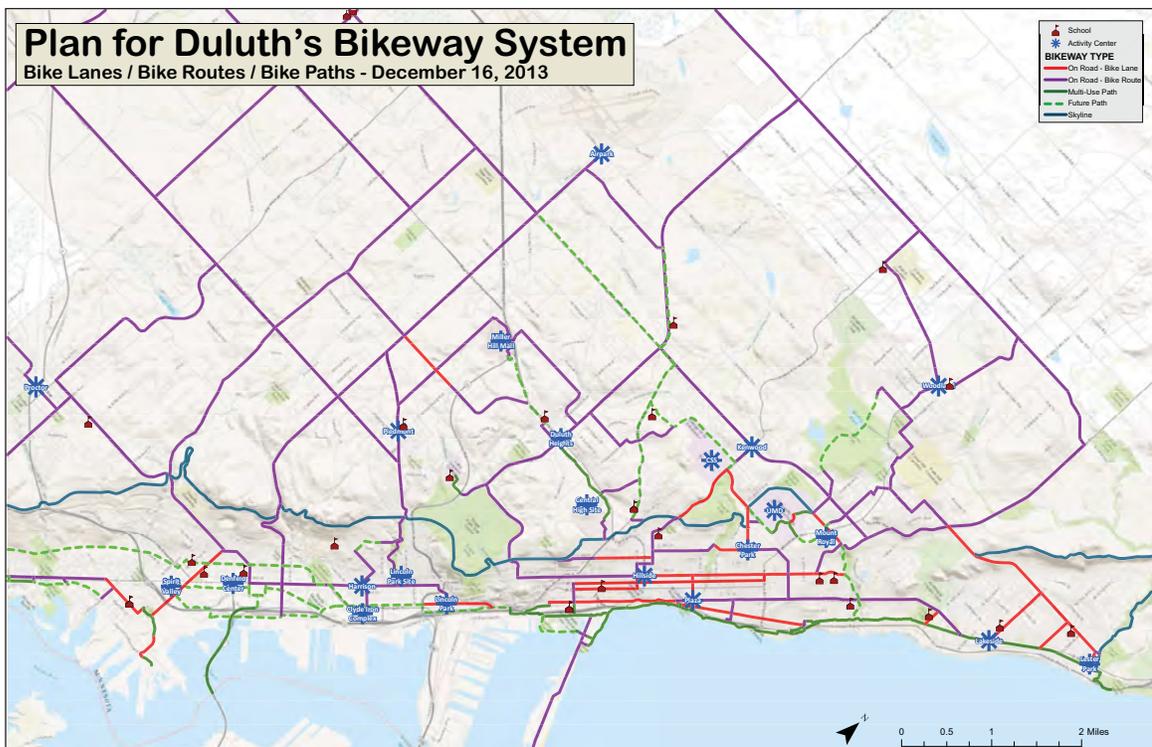


FIGURE 2-7. DULUTH BIKEWAY SYSTEM PLAN (2013)

This map shows the current system of on-road bike routes that extend from Duluth into Proctor and Hermantown.

Chapter 3: Trail Route Options Explored



EXPLORATION PROCESS

The trail route planning process for the Munger Trail Spur was designed around the identification of multiple trail route options that could be evaluated based upon general technical feasibility and each community's preferences related to trail connectivity and experience. This process began in October 2014 with the project consultant team collaborating with the project's Advisory Committee and Staff Team to confirm existing/planned trails and identify goals and ideas for the future trail. These initial meetings involved discussions about big picture ideas, anticipated trail users, potential destinations, key challenges and opportunities. The project consultant team synthesized this community input with an analysis of the physical landscape, existing trails and recreation areas, and planned trails of the Proctor, Hermantown, and Duluth area. Physical landscape characteristics included wetlands, creek crossings, steep grades, natural/park areas, overhead power line corridors, and road/rail crossings.

In November 2014, four primary trail route options were proposed to the communities. These four options included routes from western, central, and eastern Hermantown, as well as north-south versus east-west routes in Proctor, with all routes connecting to the Munger State Trail in Duluth. Within each of these primary trail route options, some alternative segments were identified in an attempt to represent as many feasible options as possible. See Figure 3-1, Munger Trail Spur Connection – Route Options. The project consultant team also identified preliminary challenges and opportunities for each of the primary trail route options.

FOUR PRIMARY ROUTE OPTIONS

The four primary trail route options can generally be described as:

- A. Hermantown Schools trailhead + west side of Hermantown + north-south through central Proctor + Proctor Connector Trail (as planned in 2007 Proctor Trail Plan);
- B. Hermantown City Hall trailhead + Lavaque Road through Hermantown + east side of Proctor + east-west connector through Duluth;
- C. Hermantown Schools trailhead + sewer trunk line easement through Hermantown and Keene Creek Park + power line corridor through Duluth;
- D. Hermantown Marketplace trailhead + Haines Road through Hermantown + Keene Creek corridor through Duluth.

In November 2014, these four proposed trail route options were presented to the Proctor and Hermantown Staff Team, Advisory Committee, and at a public open house for feedback. Based on the input received from November's public open house, these four options were defined in more detail and presented to the communities in a second public open house in January 2015 for a second round of community input.

FIGURE 3-1. MUNGER TRAIL SPUR CONNECTION – ROUTE OPTIONS

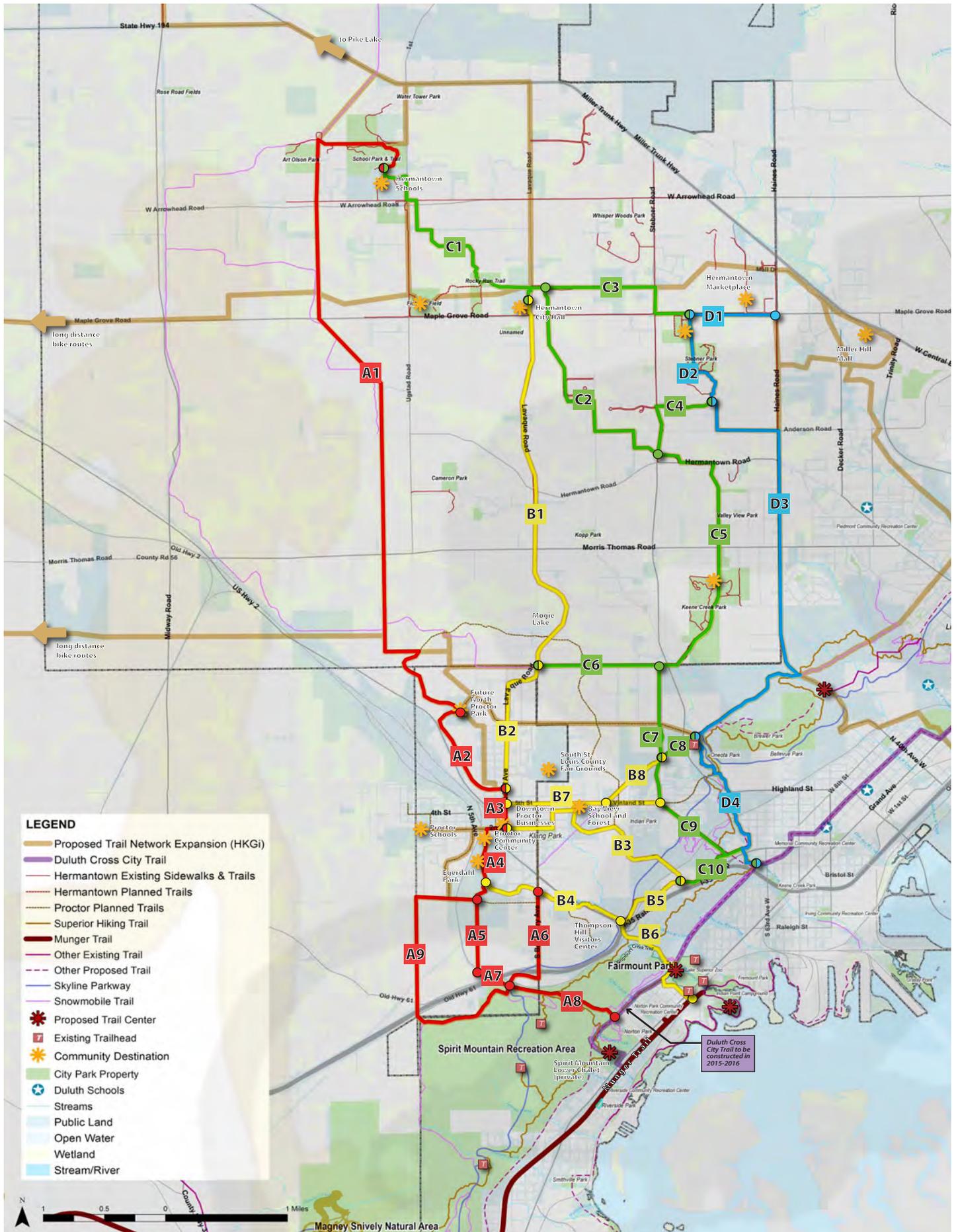
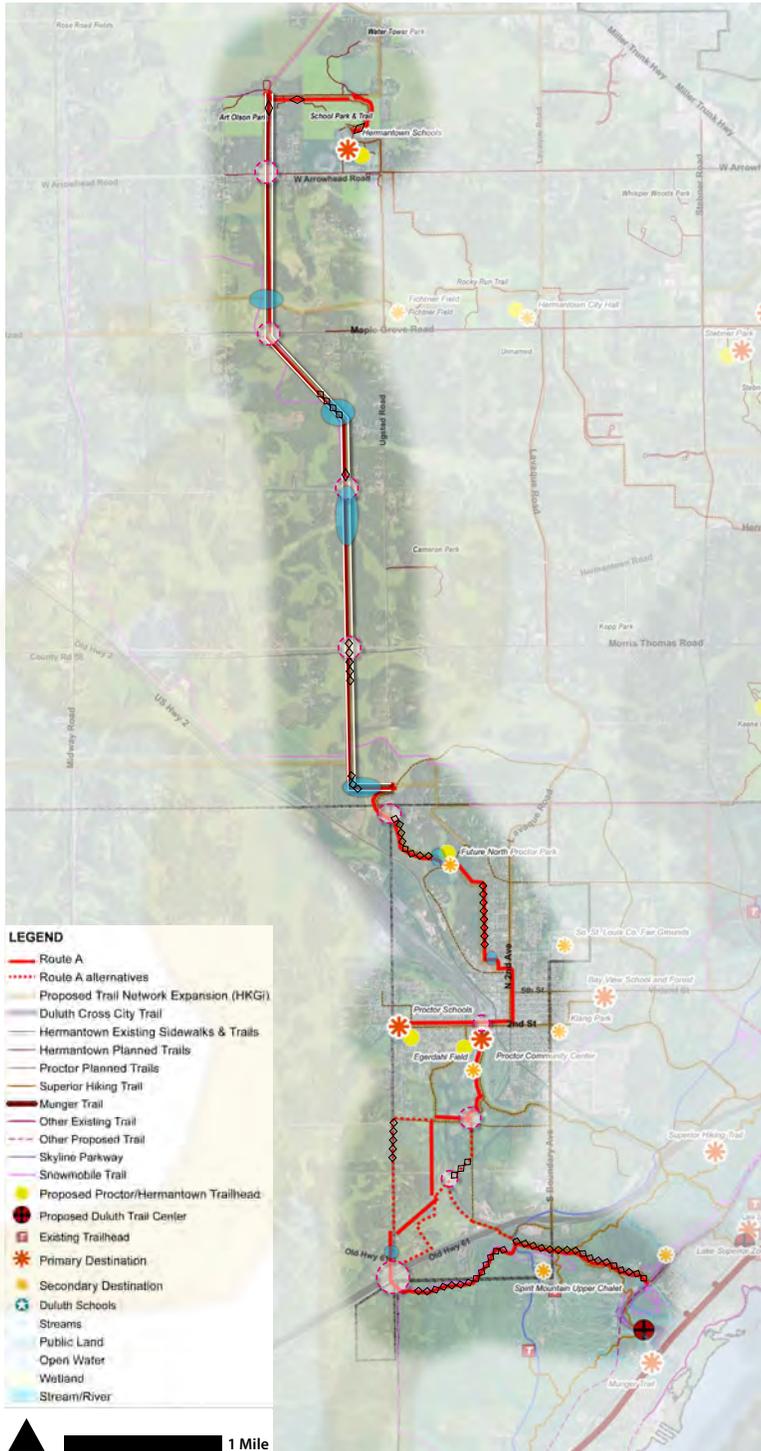


FIGURE 3-2. ALTERNATIVE ROUTE A

Route A



LEGEND

- Route A
- Route A alternatives
- Proposed Trail Network Expansion (HKG)
- Duluth Cross City Trail
- Hermantown Existing Sidewalks & Trails
- Hermantown Planned Trails
- Proctor Planned Trails
- Superior Hiking Trail
- Munger Trail
- Other Existing Trail
- Other Proposed Trail
- Skyline Parkway
- Snowmobile Trail
- Proposed Proctor/Hermantown Trailhead
- Proposed Duluth Trail Center
- Existing Trailhead
- Primary Destination
- Secondary Destination
- Duluth Schools
- Streams
- Public Land
- Open Water
- Wetland
- Stream/River

North 1 Mile

- Powerline corridor (overhead lines)
- Steep slopes
- Wetland/Stream crossings
- Road/Railroad crossings



A		
CRITERIA	MEASUREMENT UNIT/DESCRIPTOR	DESCRIPTION
<p>General Description</p> <p>Route follows powerline corridor in western Hermantown, connects to Proctor Community Center and Egerdahl Park, over rail line, under I-35, heads east down the ridge through Spirit Mountain Recreation Area along Knowlton Creek to DWP/Cross City Trail</p>		
ACCESS/CONNECTIVITY		
Households served (generally within 3/4 mile of the trail corridor)	number of households	4 3,220 residential parcels within a 3/4 mile buffer area of the proposed trail route (Zenith Terrace mobile home park is within 1/2 mile of Route A)
Connectivity to destinations	number of destinations (primary and secondary)	3 5 primary; 4 secondary; 9 total
Total trail length	length in miles	4 12.84 miles
Distance/directness - above the ridge, Proctor to Hermantown	length in miles from H Schools to P Schools	1 8.48 miles
Distance/directness - to Munger Trail, single/double issue	length in miles from P Comm Cntr to DWP	4 3.85 miles
FEASIBILITY		
Environmental - soils, wetlands, creek shorelands, potential disturbance to natural systems	number or length of route crossing wetlands or other environmental impact areas	2 9 wetland/stream crossings
Topography	number or length of route in steep slope areas -- differentiate between somewhat steep, moderate, and very steep	3 25 areas of steep topography (2 very steep grade areas; 14 steep grade areas; 9 moderately steep areas)
Land use/ownership: private	length in miles and % of total on private land	1 1.28 miles, 10.0%
Land use/ownership: public	length in miles and % of total on public land	3 6.51 miles, 50.7%
Land use/ownership: Road Easement	length in miles and % of total in apparent road easement	4 0.08 miles, 0.6%
Land use/ownership: Utility owned	length in miles and % of total in utility owned land	4 .36 miles, 2.8%
Land use/ownership: private land with utility easement	length in miles and % of total on private land with utility easement	1 4.61 miles, 35.9%
In Road Corridor	length of trail within road corridor	1 2.24 miles, 17.4%
Out of Road Corridor	length of trail not in road corridor	1 10.60 miles, 82.6%
Existing trail status/surface	Is it an existing trail corridor? If so, what is the surface? (ie. gravel, grass, paved) What use does it serve currently? (ie. snowmobile, skiing, hiking)	3 portion of trail through Hermantown is former snowmobile trail; sidewalks along 2nd St. and 2nd Ave. in Proctor; existing gravel trail through Egerdahl Field; existing gravel trail along Knowlton Creek
Community support (weigh higher)	open house survey responses	4 3rd choice: On the Nov. 20th Open House forms, Route A got the third most votes for best option
State/County/Busy local road crossings (ADT over 1,000)	number of crossings	2 7 crossings (Maple Grove Rd, Morris Thomas Rd, 2nd St, Hwy 2, 2nd Ave, I-35, West Skyline Pkwy)
Small/local road crossings (ADT under 1,000)	number of crossings	3 9 crossings (Arrowhead Rd, Ugstad Rd, 3rd Ave, 7th St, 5th St, Kirkus St, Old Hwy 61, Ugstad Rd in Proctor, Thompson Hill Rd)
Uncontrolled / sight issue intersection crossings	number of crossings	2 6 - Arrowhead Rd, Maple Grove Rd, Hermantown Rd, Morris Thomas Rd, Ugstad Rd, Thompson Hill Rd
Grade-separated crossings	number of crossings (existing and proposed)	3 recommended grade separated crossing of Arrowhead Rd, Maple Grove Rd, Morris Thomas Rd; existing underpass at I-35 on Ugstad Rd
Railroad crossings	number of crossings	1 1 crossing - grade-separated rail crossing on Kirkus Street
EXPERIENCE		
Physical setting (e.g. through natural area, within power line corridor, adjacent to road, adjacent to residential lots, diversity of settings)	length in miles of each physical setting	2 along wooded powerline corridor through Hermantown (4.9 miles); through wooded land (1.1 miles); on road through northern and downtown Proctor (1.7 miles); along wooded powerline/park corridors through southern Proctor (1.6 miles); along Ugstad Rd (1.3 miles); wooded trail through upper Spirit Mountain land (1.0 mile); follows Knowlton Creek down to DWP (0.9 mile)
Ability/need to accommodate other user groups in the same alignment (ie. horse, single track bicycle, snowmobile, ATV)	length in miles of trail shared with motorized/equestrian users	2 potential to share powerline corridor through Hermantown with snowmobiles
Scenic and natural features (such as parks, open spaces, and water bodies)	number	2 Hermantown High and Middle Schools; Future North Proctor Park; Egerdahl Field; Knowlton Creek

***TOTAL: 60**

- 1 best option
- 2 2nd best option
- 3 3rd best option
- 4 worst option

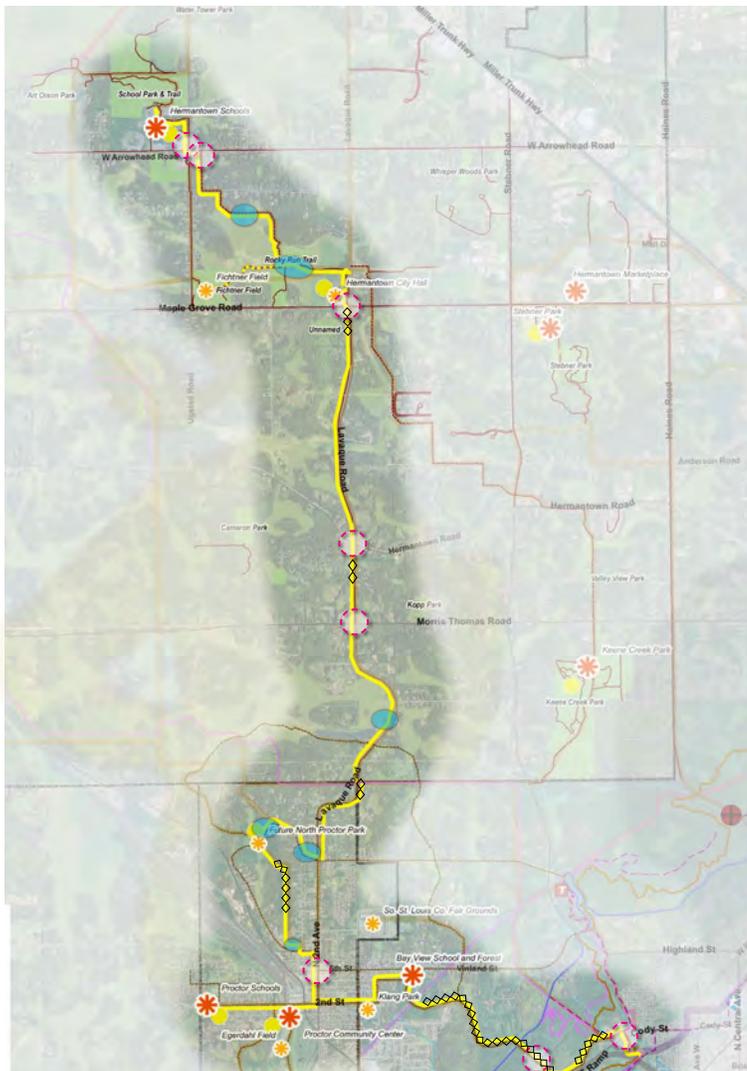


Corridor ownership

- Trail located on public land
- Trail located on private land but within a road or utility easement
- Trail located on private land

FIGURE 3-3. ALTERNATIVE ROUTE B

Route B



- LEGEND**
- Route B
 - Route B alternatives
 - Proposed Trail Network Expansion (HKG)
 - Duluth Cross City Trail
 - Hermantown Existing Sidewalks & Trails
 - Hermantown Planned Trails
 - Proctor Planned Trails
 - Superior Hiking Trail
 - Munger Trail
 - Other Existing Trail
 - Other Proposed Trail
 - Skyline Parkway
 - Snowmobile Trail
 - Proposed Proctor/Hermantown Trailhead
 - Proposed Duluth Trail Center
 - Existing Trailhead
 - Primary Destination
 - Secondary Destination
 - Duluth Schools
 - Streams
 - Public Land
 - Open Water
 - Wetland
 - Stream/River

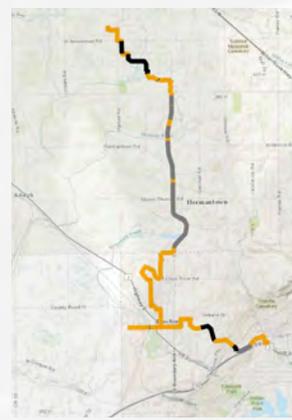
- Powerline corridor (overhead lines)
- Steep slopes
- Wetland/Stream crossings
- Road/Railroad crossings

North
1 Mile

		B	
CRITERIA	MEASUREMENT UNIT/DESCRIPTOR		
<i>General Description</i>		Route follows Lavaque Road through Hermantown, connects to Proctor Community Center, and heads east down the ridge to connect to the DWP/Cross City Trail and cross under I-35	
ACCESS/CONNECTIVITY			
Households served (generally within 3/4 mile of the trail corridor)	number of households	3	4,090 residential parcels within 3/4 mile buffer area of the proposed trail route (Zenith Terrace mobile home park is within 1/3 mile of Route B)
Connectivity to destinations	number of destinations (primary and secondary)	2	6 primary; 4 secondary; 10 total
Total trail length	length in miles	2	11.71 miles
Distance/directness - above the ridge, Proctor to Hermantown	length in miles from H Schools to P Schools	2	8.66 miles
Distance/directness - to Munger Trail, single/double spur	length in miles from P Comm Cntr to DWP	1	3.04 miles
FEASIBILITY			
Environmental - soils, wetlands, creek shorelands, potential disturbance to natural systems	number or length of route crossing wetlands or other environmental impact areas	1	4 wetland/stream crossings
Topography	number or length of route in steep slope areas -- differentiate between somewhat steep, moderate, and very steep	2	18 areas of steep topography (2 very steep grade areas; 10 steep grade areas; 3 moderately steep areas; 3 areas of very steep side slopes)
Land use/ownership: private	length in miles and % of total on private land	3	1.47 miles, 12.6%
Land use/ownership: public	length in miles and % of total on public land	2	6.74 miles, 57.6%
Land use/ownership: Road Easement	length in miles and % of total in apparent road easement	1	3.16 miles, 27.0%
Land use/ownership: Utility owned	length in miles and % of total in utility owned land	3	0.34 miles, 2.9%
Land use/ownership: private land with utility easement	length in miles and % of total on private land with utility easement	4	none
In Road Corridor	length of trail within road corridor	4	7.26 miles, 62.0%
Out of Road Corridor	length of trail not in road corridor	4	4.45 miles, 38.0%
Existing trail status/surface	Is it an existing trail corridor? If so, what is the surface? (ie. gravel, grass, paved) What use does it serve currently? (ie. snowmobile, skiing, hiking)	4	soft surface trail through Bay View School Forest; sidewalks along 2nd St. and 2nd Ave. in Proctor
Community support (weigh higher)	open house survey responses	2	2nd choice: On the Nov. 20th Open House forms, Route B got the second most votes for best option
State/County/Busy local road crossings (ADT over 1,000)	number of crossings	1	5 crossings (Maple Grove Rd, 2nd St, Hwy 2, 2nd Ave, Boundary Ave)
Small/local road crossings (ADT under 1,000)	number of crossings	1	7 crossings (Arrowhead Rd, Ugstad Rd, 3rd Ave, 7th St, 5th St, West Skyline Pkwy, Cody St)
Uncontrolled / sight issue intersection crossings	number of crossings	1	2 - Ugstad Rd, Arrowhead Rd
Grade-separated crossings	number of crossings (existing and proposed)	1	none
Railroad crossings	number of crossings	1	1 crossing - at grade crossing
EXPERIENCE			
Physical setting (e.g. through natural area, within power line corridor, adjacent to road, adjacent to residential lots, diversity of settings)	length in miles of each physical setting	3	along wooded sewer easement from Hermantown Schools to City Hall (1.9 miles); along road to downtown Proctor (6.5 miles); along wooded corridor down to DWP (2.8 miles)
Ability/need to accommodate other user groups in the same alignment (ie. horse, single track bicycle, snowmobile, ATV)	length in miles of trail shared with motorized/equestrian users	3	Lavaque Rd corridor has limited ROW width which likely prevents horse/motorized trail users
Scenic and natural features (such as parks, open spaces, and water bodies)	number	1	Hermantown High and Middle Schools; Rocky Run Trail; Mogie Lake; Future North Proctor Park; Klang Park; Bay View School Forest

***TOTAL: 52**

- 1 best option
- 2 2nd best option
- 3 3rd best option
- 4 worst option

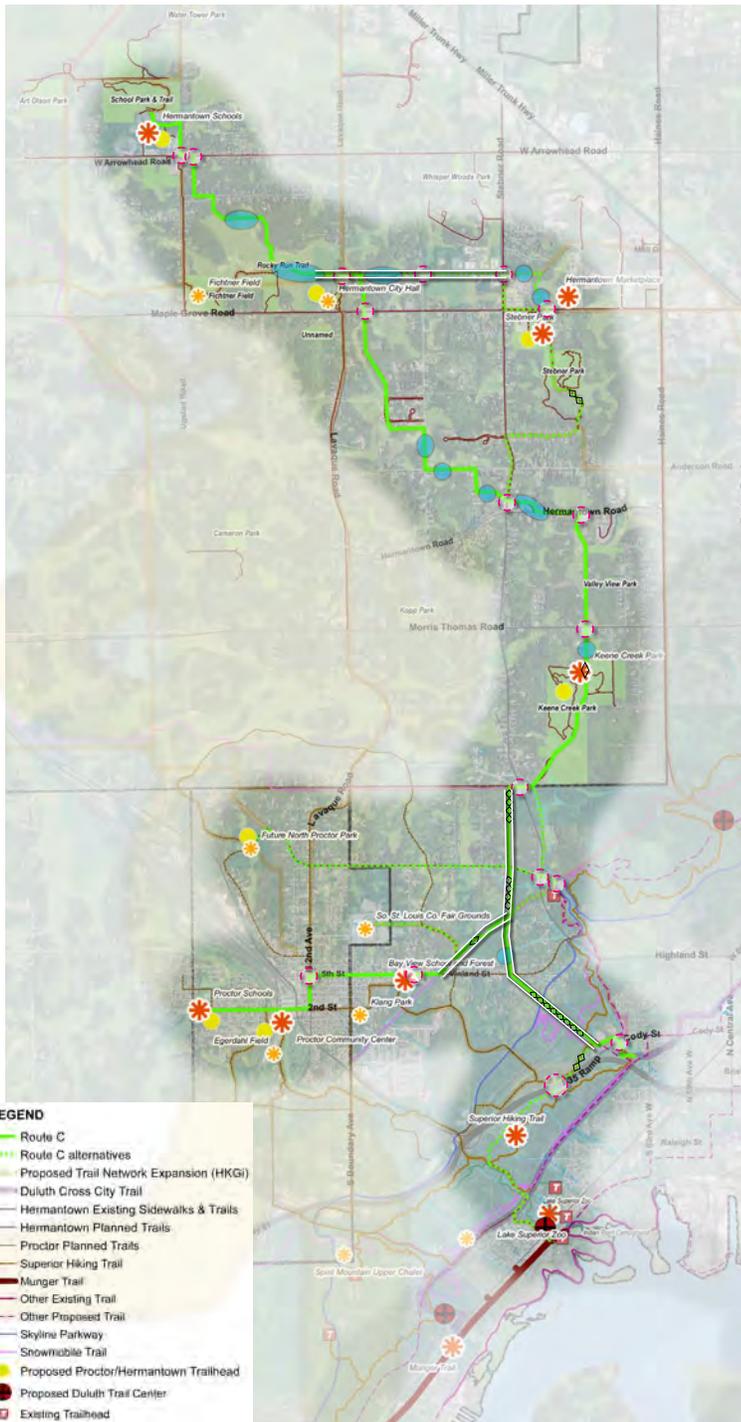


- Corridor ownership**
- Trail located on public land
 - Trail located on private land but within a road or utility easement
 - Trail located on private land



FIGURE 3-4. ALTERNATIVE ROUTE C

Route C



LEGEND

- Route C
- Route C alternatives
- Proposed Trail Network Expansion (HKG)
- Duluth Cross City Trail
- Hermantown Existing Sidewalks & Trails
- Hermantown Planned Trails
- Proctor Planned Trails
- Superior Hiking Trail
- Munger Trail
- Other Existing Trail
- Other Proposed Trail
- Skyline Parkway
- Snowmobile Trail
- Proposed Proctor/Hermantown Trailhead
- Proposed Duluth Trail Center
- Existing Trailhead
- Primary Destination
- Secondary Destination
- Duluth Schools
- Streams
- Public Land
- Open Water
- Wetland
- Stream/River

- Powerline corridor (overhead lines)
- Steep slopes
- Wetland/Stream crossings
- Road/Railroad crossings



		C	
CRITERIA	MEASUREMENT UNIT/DESCRIPTOR		
General Description			
Route follows sewer easement through Hermantown, through Keene Creek Park and follows a powerline corridor down the ridge to the DWP/Cross City Trail and cross under I-35; connection to Proctor would be an east-west spur trail along Vinland St and powerline corridor			
ACCESS/CONNECTIVITY			
Households served (generally within 3/4 mile of the trail corridor)	number of households	2	4,460 residential parcels within 3/4 mile buffer area of the proposed trail route
Connectivity to destinations	number of destinations (primary and secondary)	1	7 primary; 2 secondary; 9 total
Total trail length	length in miles	1	11.45 miles
Distance/directness - above the ridge, Proctor to Hermantown	length in miles from H Schools to P Schools	3	9.97 miles
Distance/directness - to Munger Trail, single/double spur	length in miles from P Comm Cntr to DWP	2	3.16 miles
FEASIBILITY			
Environmental - soils, wetlands, creek shorelands, potential disturbance to natural systems	number or length of route crossing wetlands or other environmental impact areas	4	12 wetland/stream crossings
Topography	number or length of route in steep slope areas -- differentiate between somewhat steep, moderate, and very steep	1	15 areas of steep topography (2 very steep grade areas; 10 steep grade areas; 3 moderately steep areas)
Land use/ownership: private	length in miles and % of total on private land	2	1.24 miles, 10.8%
Land use/ownership: public	length in miles and % of total on public land	4	5.33 miles, 46.6%
Land use/ownership: Road Easement	length in miles and % of total in apparent road easement	2	1.25 miles, 10.9%
Land use/ownership: Utility owned	length in miles and % of total in utility owned land	1	1.71 miles, 14.9%
Land use/ownership: private land with utility easement	length in miles and % of total on private land with utility easement	2	1.92 miles, 16.8%
In Road Corridor	length of trail within road corridor	2	5.01 miles, 43.8%
Out of Road Corridor	length of trail not in road corridor	2	6.44 miles, 56.2%
Existing trail status/surface	Is it an existing trail corridor? If so, what is the surface? (ie. gravel, grass, paved) What use does it serve currently? (ie. snowmobile, skiing, hiking)	2	soft surface trail exists through Keene Creek Park; snowmobile trail from Hermantown border to DWP (1.8 miles)
Community support (weigh higher)	open house survey responses	0	1st choice: On the Nov. 20th Open House forms, Route C got the most votes for Best option
State/County/Busy local road crossings (ADT over 1,000)	number of crossings	2	7 crossings (Lavaque Rd, Maple Grove Rd, Morris Thomas Rd, Getchell Rd, 2nd Ave, Hwy 2, 2nd St)
Small/local road crossings (ADT under 1,000)	number of crossings	4	11 crossings (Arrowhead Rd, Ugstad Rd, Stebner Rd, Hermantown Rd, St. Louis River Rd, Vinland St, N 77th Ave W, West Skyline Pkwy, West Gate Blvd, Cody St, Vinland/5th St)
Uncontrolled / sight issue intersection crossings	number of crossings	4	9 - Ugstad Rd, Arrowhead Rd, Lavaque Rd, Maple Grove Rd, Stebner Rd, Hermantown Rd, Morris Thomas Rd, Stebner Rd, St. Louis River Rd
Grade-separated crossings	number of crossings (existing and proposed)	2	recommended grade-separated crossing of Maple Grove Rd
Railroad crossings	number of crossings	1	1 crossing - at grade crossing
EXPERIENCE			
Physical setting (e.g. through natural area, within powerline corridor, adjacent to road, adjacent to residential lots, diversity of settings)	length in miles of each physical setting	1	along wooded sewer easement from Hermantown Schools to Keene Creek Park; along wooded powerline corridor to DWP trail; along road into Proctor
Ability/need to accommodate other user groups in the same alignment (ie. horse, single track bicycle, snowmobile, ATV)	length in miles of trail shared with motorized/equestrian users	1	most of Route C is within utility easements which may provide plenty of space for shared trail uses
Scenic and natural features (such as parks, open spaces, and water bodies)	number	3	Hermantown High and Middle Schools; Rocky Run Trail; Keene Creek Park

*TOTAL: 49

- 1 best option
- 2 2nd best option
- 3 3rd best option
- 4 worst option

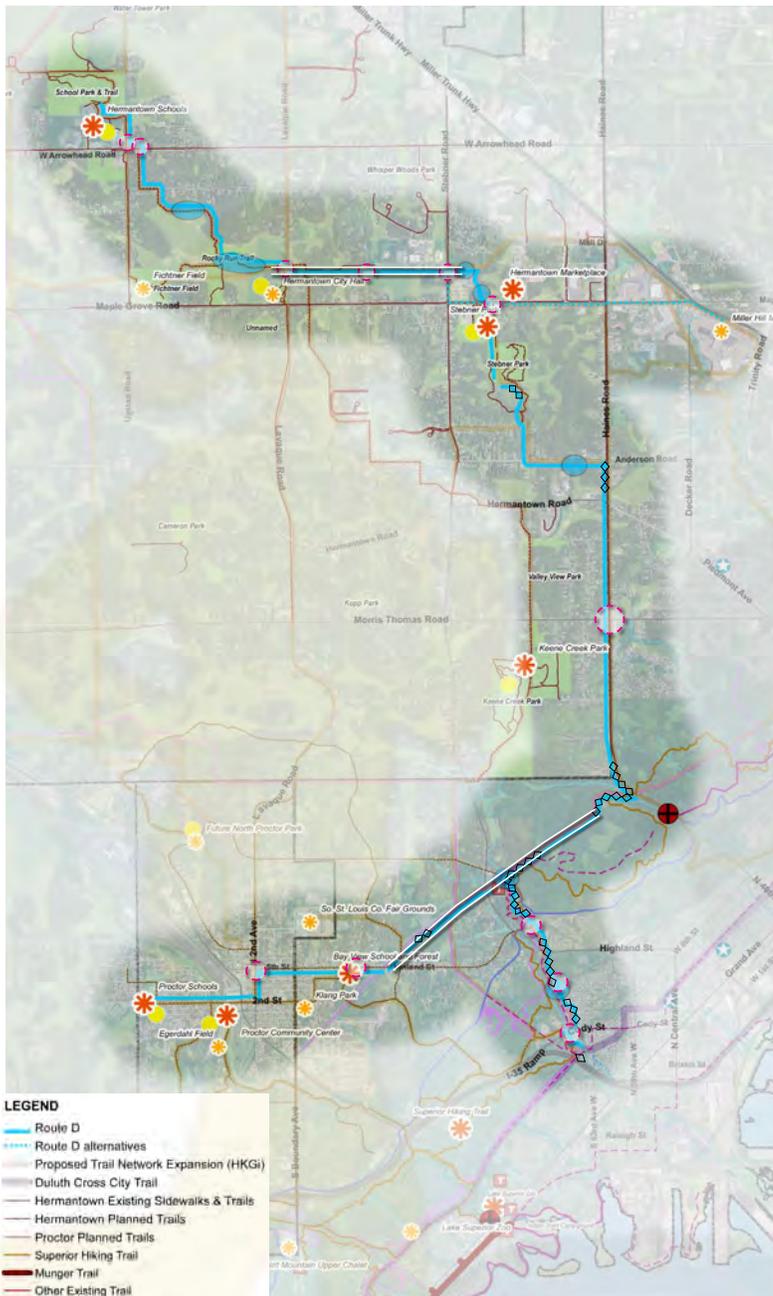


Corridor ownership

- Trail located on public land
- Trail located on private land but within a road or utility easement
- Trail located on private land

FIGURE 3-5. ALTERNATIVE ROUTE D

Route D



- LEGEND**
- Route D
 - Route D alternatives
 - Proposed Trail Network Expansion (HKG)
 - Duluth Cross City Trail
 - Hermantown Existing Sidewalks & Trails
 - Hermantown Planned Trails
 - Proctor Planned Trails
 - Superior Hiking Trail
 - Munger Trail
 - Other Existing Trail
 - Other Proposed Trail
 - Skyline Parkway
 - Snowmobile Trail
 - Proposed Proctor/Hermantown Trailhead
 - Proposed Duluth Trail Center
 - Existing Trailhead
 - Primary Destination
 - Secondary Destination
 - Duluth Schools
 - Streams
 - Public Land
 - Open Water
 - Wetland
 - Stream/River

- Powerline corridor (overhead lines)
- Steep slopes
- Wetland/Stream crossings
- Road/Railroad crossings



		D	
CRITERIA	MEASUREMENT UNIT/DESCRIPTOR		
General Description			
Route follows sewer easement and powerline corridor to Hermantown Marketplace and Stebner Park, follows Keene Creek, then along Anderson Rd and Haines Rd through Hermantown, into Duluth to follow powerline easement to follow Keene Creek down to DWP/Cross City Trail; connection to Proctor would be an east-west spur trail along Vinland St and powerline corridor			
ACCESS/CONNECTIVITY			
Households served (generally within 3/4 mile of the trail corridor)	number of households	1	4,367 residential parcels within 3/4 mile buffer area of the proposed trail route (several high density housing units in the Hermantown Marketplace area add to the number of people who live within walking distance of Route D)
Connectivity to destinations	number of destinations (primary and secondary)	1	7 primary; 2 secondary; 9 total
Total trail length	length in miles	3	12.68 miles
Distance/directness - above the ridge, Proctor to Hermantown	length in miles from H Schools to P Schools	4	11.12 miles
Distance/directness - to Munger Trail, single/double spur	length in miles from P Comm Cntr to DWP	3	3.43 miles
FEASIBILITY			
Environmental - soils, wetlands, creek shorelands, potential disturbance to natural systems	number or length of route crossing wetlands or other environmental impact areas	3	11 wetland/stream crossings
Topography	number or length of route in steep slope areas - differentiate between somewhat steep, moderate, and very steep	4	29 areas of steep topography (7 very steep grade areas; 12 steep grade areas; 6 moderately steep areas; 4 areas of very steep side slopes)
Land use/ownership: private	length in miles and % of total on private land	2	1.37 miles, 10.8%
Land use/ownership: public	length in miles and % of total on public land	1	7.88 miles, 62.1%
Land use/ownership: Road Easement	length in miles and % of total in apparent road easement	3	1.10 miles, 8.7%
Land use/ownership: Utility owned	length in miles and % of total in utility owned land	2	1.83 miles, 14.4%
Land use/ownership: private land with utility easement	length in miles and % of total on private land with utility easement	3	0.50 miles, 3.9%
In Road Corridor	length of trail within road corridor	3	6.91 miles, 54.5%
Out of Road Corridor	length of trail not in road corridor	3	5.77 miles, 45.5%
Existing trail status/surface	Is it an existing trail corridor? If so, what is the surface? (ie. gravel, grass, paved) What uses does it serve currently? (ie. snowmobile, skiing, hiking)	1	sidewalk along Haines Road, snowmobile trail along the bluff in Duluth; gravel hiking trail along Keene Creek to DWP
Community support (weigh higher)	open house survey responses	6	Last choice: On the Nov. 20th Open House forms, Route D got the most votes for worst option
State/County/Busy local road crossings (ADT over 1,000)	number of crossings	2	7 crossings (Lavaque Rd, Maple Grove Rd, Highland St, Getchell Rd, 2nd Ave, Hwy 2, 2nd St)
Small/local road crossings (ADT under 1,000)	number of crossings	2	8 crossings (Arrowhead Rd, Ugstad Rd, Stebner Rd, Anderson Rd, West Skyline Pkwy, West Gate Blvd, Cody St, Vinland/5th St)
Uncontrolled / sight issue intersection crossings	number of crossings	3	7 - Ugstad Rd, Arrowhead Rd, Lavaque Rd, Getchell Rd, Maple Grove Rd, West Skyline Pkwy, Cody St
Grade-separated crossings	number of crossings (existing and proposed)	1	none
Railroad crossings	number of crossings	1	1 crossing - at grade crossing
EXPERIENCE			
Physical setting (e.g. through natural area, within power line corridor, adjacent to road, adjacent to residential lots, diversity of settings)	length in miles of each physical setting	4	along sewer easement to Hermantown City Hall; along powerline corridor to Maple Grove Rd; through Stebner Park; along Haines Rd; along powerline corridor/snowmobile trail; along Keene Creek to DWP trail
Ability/need to accommodate other user groups in the same alignment (ie. horse, single track bicycle, snowmobile, ATV)	length in miles of trail shared with motorized/equestrian users	4	Haines Rd corridor has limited width which likely prevents horse/motorized trail users
Scenic and natural features (such as parks, open spaces, and water bodies)	number	2	Hermantown High and Middle Schools; Rocky Run Trail; Stebner Park; Keene Creek

- *TOTAL: 65**
- 1 best option
 - 2 2nd best option
 - 3 3rd best option
 - 4 worst option



- Corridor ownership**
- Trail located on public land
 - Trail located on private land but within a road or utility easement
 - Trail located on private land



WHAT WE HEARD FROM THE COMMUNITIES

Preferred Spur Trail Route by number of votes

Most preferred	2nd preferred	3rd preferred	Least preferred
Route C	Route B	Route A	Route D

Comments regarding the trail routes from November 2014 Community Open House:

Route C

- Combination of segments from routes C, B and A would serve the best purpose for both Hermantown and Proctor
- Route C needs to integrate with route B when it enters Proctor
- Route C provides access to the highest number of residents and destinations and ties into Keene Creek Park
- Route C connects school and city hall
- Biggest desire is to connect to Hermantown Schools and stay in the woods
- Trails mostly off road
- Route C provides a better user experience with more off road trails
- More connections to existing destinations
- Connect to most residential neighborhoods
- Use Duluth's planned Cross City Trail to cross I-35
- Route C is the best balanced as far as utilizing off road trails, being accessible to residential areas and to other trails/parks
- Final route could be a combination of routes to find connection to the Munger Trail
- Inside routes work the best but could connect small segments of outer route to connect to the mall and schools
- Like the connection to the parks, not along roads
- Prefer to see this trail utilized for recreation and exploring our wilderness areas rather than walking down a street
- Like trails that are cut through the woods rather than following a road
- Want trails to connect to the various developments in both communities
- Needs to connect to all sports complexes if possible in both communities

- Route C goes through Hermantown population areas
- Need a spur to the mall area and Haines Road (major bike route now), Haines Road could be temporary connection to Cross City Trail in Duluth
- I envision a nice, safe hiking/biking trail that stays off of the road and spotlights Hermantown's wilderness
- Consider using Becks Road to connect to the Munger Trail

Route B

- Route B connects a lot of destinations including Hermantown, City Hall, Proctor downtown, schools, parks
- Important to connect to Bayview School
- Like the idea of connecting to the zoo
- Main concern is that trail be multi-purpose including equestrian
- Final route could be a combination of routes to find connection to the Munger Trail
- Inside routes work the best but could connect small segments of outer route to connect to the mall and schools
- Route B is most convenient to Proctor residents

Route A

- Route A disturbs fewest residents, safe route for traffic concerns, will draw more attention to a part of our city that is invisible, quiet and away from noise of city
- Prefer Plan A because I would love for there to be horses allowed on all or part of this new trail system
- Route A is the best connection to Pike Lake area
- Routes A and D are both too far out and don't really meet objective of connecting Hermantown and Proctor
- Route A doesn't serve any Hermantown neighborhoods

Route D

- Route C or D but interfere as little as possible with trails thru Keene Creek Park
- Don't like the idea of running the trail along Haines Road due to high traffic and lack of scenery; if the trail were to be alongside a road, I would prefer Lavaque Road over Haines Road
- Hate using Keene Creek Park as a thru way, since it is a delightful private trail there where many people enjoy the stream, ponds, trails and natural beauty, walk dogs, and just enjoy a quiet visit
- Routes A and D are both too far out and don't really meet objective of connecting Hermantown and Proctor

ROUTE EVALUATION

The project consultant team conducted an evaluation of the four defined route options based on access/connectivity, construction feasibility, and trail environment or experience. Key criteria and measures were developed within these three general categories. This evaluation was intended to provide a relative comparison between the four route options with a ranking of 1 to 4 for each criteria, where 1 = best and 4 = worst among the four options. This evaluation resulted in route C ranked highest, followed by B, then A and D. See Figure 3-6 below for details regarding the route evaluation results.

FIGURE 3-6. ROUTE EVALUATION CRITERIA

		A	B	C	D
CRITERIA	MEASUREMENT UNIT/DESCRIPTOR				
General Description		Route follows powerline corridor in western Hermantown, connects to Proctor Community Center and Egerdahl Park, over rail line, under I-35, heads east down the ridge through Spirit Mountain Recreation Area along Knowlton Creek to DWP/Cross City Trail	Route follows Lavaque Road through Hermantown, connects to Proctor Community Center, and heads east down the ridge to connect to the DWP/Cross City Trail and cross under I-35	Route follows sewer easement through Hermantown, through Keene Creek Park and follows a powerline corridor down the ridge to the DWP/Cross City Trail and cross under I-35; connection to Proctor would be an east-west spur trail along Vinland St and powerline corridor	Route follows sewer easement and powerline corridor to Hermantown Marketplace and Stebner Park, follows Keene Creek, then along Anderson Rd and Haines Rd through Hermantown, into Duluth to follow powerline easement to follow Keene Creek down to DWP/Cross City Trail; connection to Proctor would be an east-west spur trail along Vinland St and powerline corridor
ACCESS/CONNECTIVITY					
Households served (generally within 3/4 mile of the trail corridor)	number of households	4	3	2	1
Connectivity to destinations	number of destinations (primary and secondary)	3	2	1	1
Total trail length	length in miles	4	2	1	3
Distance/directness above the ridge, Proctor to Hermantown	length in miles from H Schools to P Schools	1	2	3	4
Distance/directness - to Munger Trail, single/double spur	length in miles from P Comm Cntr to DWP	4	1	2	3
FEASIBILITY					
Environmental - soils, wetlands, creek shorelands, potential disturbance to natural systems	number or length of route crossing wetlands or other environmental impact areas	2	1	4	3
Topography	number or length of route in steep slope areas - differentiate between somewhat steep, moderate, and very steep	3	2	1	4
Land use/ownership: private	length in miles and % of total on private land	1	3	2	2
Land use/ownership: public	length in miles and % of total on public land	3	2	4	1
Land use/ownership: Road Easement	length in miles and % of total in apparent road easement	4	1	2	3
Land use/ownership: Utility owned	length in miles and % of total in utility owned land	4	3	1	2
Land use/ownership: private land with utility easement	length in miles and % of total on private land with utility easement	1	4	2	3
In Road Corridor	length of trail within road corridor	1	4	2	3
Out of Road Corridor	length of trail not in road corridor	1	4	2	3
Existing trail status/surface	Is it an existing trail corridor? If so, what is the surface? (ie. gravel, grass, paved) What use does it serve currently? (ie. snowmobile, skiing, hiking)	3	4	2	1
Community support (weigh higher)	open house survey responses	4	2	0	6
State/County/Busy local road crossings (ADT over 1,000)	number of crossings	2	1	2	2
Small/local road crossings (ADT under 1,000)	number of crossings	3	1	4	2
Uncontrolled / sight issue intersection crossings	number of crossings	2	1	4	3
Grade-separated crossings	number of crossings (existing and proposed)	3	1	2	1
Railroad crossings	number of crossings	1	1	1	1
EXPERIENCE					
Physical setting (e.g. through natural area, within power line corridor, adjacent to residential lots, diversity of settings)	length in miles of each physical setting	2	3	1	4
Ability /need to accommodate other user groups in the same alignment (ie. horse, single track bicycle, snowmobile, ATV)	length in miles of trail shared with motorized/equestrian users	2	3	1	4
Scenic and natural features (such as parks, open spaces, and water bodies)	number	2	1	3	2

*TOTAL: 60

52

49

65

- 1 best option
- 2 2nd best option
- 3 3rd best option
- 4 worst option

***Lowest total number is the best option overall**

Chapter 4: Preferred Trail Route Plan



THE PLAN CHAPTER

includes the following information:

- The **Preferred Trail Route Plan** identifies the generally recommended alignment of the future trail.
- **Primary Trail Users** identifies the non-motorized activities that are targeted for this regional trail.
- **Trail Corridor Design and Features** describes the destinations, access points, and environment/experience of the preferred trail corridor.
- **General Trail Design Guidelines & Engineering Specifications** describes pavement width, clearance zones, drainage, steep slopes/grades, water (creek/wetland) crossings, and road/rail crossings.
- **Trail Corridor Segments** identifies the key features of each of the trail segments of the preferred alignment.

OVERVIEW

The Proctor-Hermantown Munger Trail Spur will be a regional destination trail linking the communities of Proctor and Hermantown to the Munger State Trail and Duluth's trail system. This 16-mile, 10-foot wide paved trail will be a unique regional recreational resource as there are no paved trails above the ridge line today. The trail will connect numerous recreation destinations and activity centers within the communities of Proctor, Hermantown, and Duluth, including schools, parks, city halls/community centers, and downtown

business areas. In addition to the Munger State Trail, the trail will connect to the Spirit Mountain Recreation Area, 300-mile Superior Hiking Trail, Duluth's Lakewalk, Cross City, and Duluth Traverse trails, creating a variety of recreational loop opportunities. The trail route will highlight the communities' natural features, including four creeks, northern hardwood forests, wetland areas, and a variety of natural and active parks.

This chapter describes the features of the recommended trail route in terms of general trail alignment, trail users, trail corridor features (destinations, access points, trail corridor environment/experience), general trail design guidelines, and general engineering specifications.

Due to the significant length of the planned trail corridor, the approximately 16-mile trail corridor is also defined as seven (7) segments:

Segment 1: Central Hermantown - Hermantown Schools to Stebner Park/Hermantown Marketplace

Segment 2: Southeastern Hermantown - Stebner Park/Hermantown Marketplace to Keene Creek Park

Segment 3: Northern Proctor - Keene Creek Park to 9th Street

Segment 4: Downtown Proctor - 9th Street to Kirkus Street

Segment 4a: Proctor School Connector - Along 2nd Street

Segment 5: Southern Proctor - Kirkus Street to I-35

Segment 6: Spirit Mountain Recreation Area - I-35 to Cross City Trail

Segment 7: Keene Creek Corridor - Keene Creek Park to Cross City Trail

PREFERRED TRAIL ALIGNMENT

Overall

The preferred trail route generally travels from central Hermantown, starting at the Hermantown Schools campus, through the southeast residential, commercial, and industrial areas of Hermantown, then north-south through the entire community of Proctor, crossing under I-35 at Ugstad Road, and then traversing down the ridge through the Spirit Mountain Recreation Area to connect to Duluth's planned Cross City Trail and the existing Munger State Trail.

Hermantown

In central Hermantown, the preferred trail alignment connects from the Hermantown Schools campus and future Arrowhead Regional Health and Wellness Center east to the Hermantown City Hall area, Lightning Drive industrial area, then Stebner Park and Hermantown Marketplace. From there, the trail alignment travels south to Keene Creek Park and then west along the Hermantown/Proctor municipal border to St. Louis River Road.

Proctor

In Proctor, the trail alignment heads south to the future North Proctor Park, then south to Downtown Proctor, the Proctor Schools, and Proctor Community Center. From there, the trail goes through south Proctor to Spirit Mountain via the Kirkus Street bridge over the rail line and the Ugstad Road underpass of I-35, then down the ridge through the Spirit Mountain Recreation Area to Duluth's Cross City Trail and the Munger State Trail.

An interim alternative route has been identified in the South Proctor segment that utilizes existing City of Proctor easements on private land and the Westgate Boulevard bridge over the rail line.

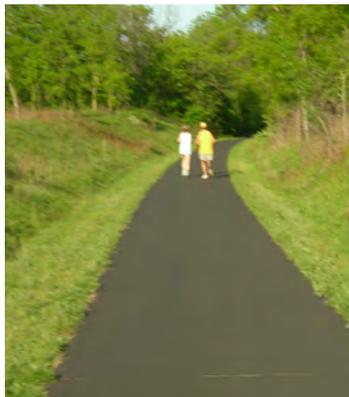
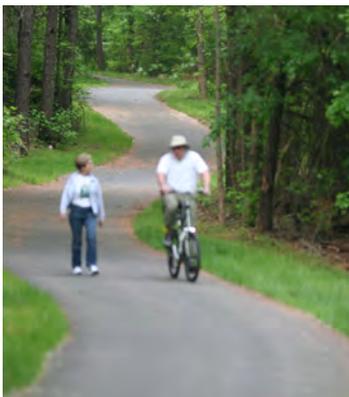
Duluth

In addition, a potential future trail connection between Keene Creek Park and the Cross City Trail, generally running along Keene Creek, would provide a more direct trail connection down the ridge between Hermantown and Duluth's trail system.

PRIMARY TRAIL USERS

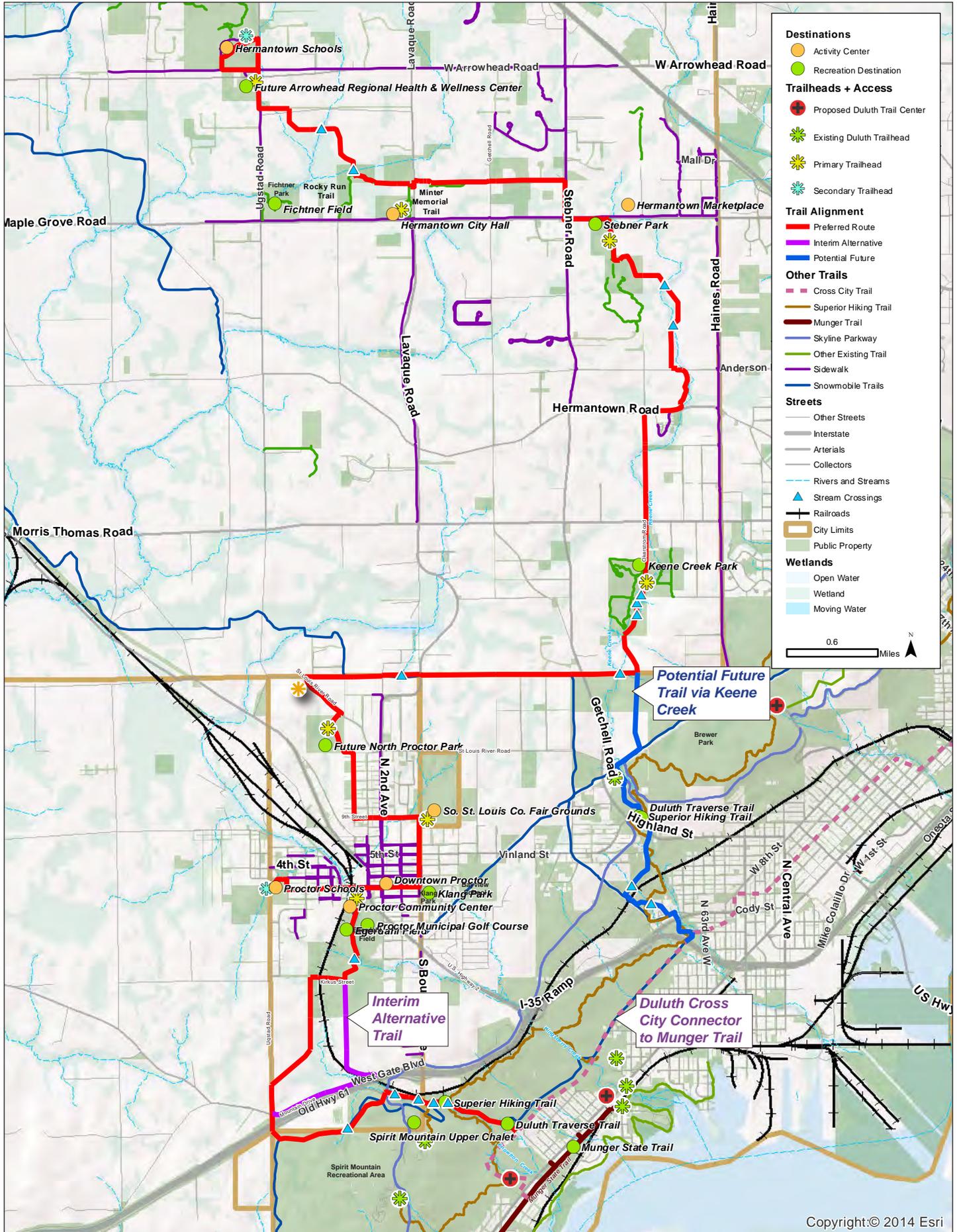
The Proctor-Hermantown Munger Trail Spur will be designed as a recreational trail for non-motorized users including walkers, hikers, runners, recreational and commuter bicyclists, rollerbladers, and cross-country skiers. The preferred trail corridor is intended to offer a high quality natural, scenic, and non-motorized trail experience. Where the preferred trail alignment is located within existing trail corridors for other types of trail users, the trails will be separated as much as possible to accommodate the unique needs of the various trail users.

This regional trail will be designed as a fully accessible ADA-compliant trail. The paved trail corridor and all trail access points are located and planned for universal accessibility to provide all trail users with a meaningful experience. In addition, this planned trail corridor provides a prime opportunity to improve non-motorized ADA access to the Spirit Mountain Recreation Area, as well as other recreation destinations and activity centers along the corridor.



Examples of multi-use paved trails in different contexts

FIGURE 4-1. PROCTOR HERMANTOWN MUNGER TRAIL SPUR PREFERRED ALIGNMENT



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TRAIL CORRIDOR DESIGN AND FEATURES

The design and features of the trail corridor encompass a broad range of considerations, including: the actual trail surface; the relationship of the trail to the larger natural or street corridor; the ability to connect to recreation destinations and activity centers; crossings of water and roadways and rail lines; trailheads and supporting amenities; other trail access points; and wayfinding signage. High quality and consistent design of the trail corridor will enhance users' trail experiences above that of a utilitarian trail to one of a first class regional recreation destination.

Trail Surface

This regional trail will be a continuous multi-purpose, 10-foot wide bituminous trail designed in accordance with the *Trail Planning, Design, and Development Guidelines* of the Minnesota Department of Natural Resources (MN DNR). The trail will have a horizontal clear zone of at least three (3) feet on each side, consisting of two (2) foot shoulders plus an additional one (1) foot clearance beyond the shoulder. Where the trail is located adjacent to a roadway, there will be a minimum separation between the trail and the roadway that will vary depending upon the roadway's design (curb vs. no curb) and speed limit.

Trail Destinations

Inherent to a regional destination trail is its ability to link to recreation destinations and activity centers. The preferred alignment of the Munger Trail Spur will serve as the connector trail between the communities of Proctor and Hermantown, and West Duluth. In addition, it will connect to most of the major destinations within these communities, including the following:

Recreation Destinations

- Keene Creek Park and Stebner Park in Hermantown;
- Future North Proctor Park, South St. Louis County Fairgrounds, Egerdahl Field, and Klang Park in Proctor;
- Spirit Mountain and the Lake Superior/St. Louis River waterfront in Duluth.

Activity Centers

- Hermantown Schools campus, future Arrowhead Regional Health and Wellness Center, Hermantown City Hall, Hermantown Marketplace;
- Downtown Proctor, Proctor Schools, Proctor Community Center.



The Munger Trail Spur will travel through natural areas and parks as much as possible, but some segments will travel alongside roadways.

Trail Access

The main access points for the Munger Trail Spur will be the primary trailheads. These sites will typically be located at community destinations, where existing facilities can be shared with the trailhead. Primary trailheads should minimally include the following amenities:

- motor vehicle parking
- bicycle parking
- wayfinding signage, such as a kiosk with multiple sign panels

The following additional amenities should be included as opportunities exist:

- public restrooms
- water fountain
- benches
- lighting
- picnic area and picnic tables
- interpretive artwork
- food vendors
- shelter
- local and regional trail connections

At community destinations where space is limited or if located close (within a half to one mile) to a primary trailhead, secondary trailheads will provide some of the above amenities.

Trailhead Locations

Primary Trailheads will include the following:

- Future Arrowhead Regional Health & Wellness Center
- Hermantown City Hall
- Stebner Park
- Keene Creek Park
- Future North Proctor Park
- South St. Louis County Fairgrounds
- Proctor Community Center

Secondary trailheads will include:

- Hermantown Schools campus
- Proctor Schools campus

Other Public Access Points

Intersections with existing roads and other trails will provide locations where bikers and walkers can access the Munger Trail Spur. These locations will include directional signage identifying the trail.



Examples of some primary trailhead amenities

Connecting Trails

- Hermantown Schools campus trails
- Rocky Run Trail at Hermantown City Hall
- Stebner Park planned trails
- Keene Park Creek trails
- Munger State Trail
- Duluth Cross City Trail
- Superior Hiking Trail
- Duluth Traverse Trail
- Designated On-Road Bike Routes, including Ugstad Rd, Arrowhead Rd, Maple Grove Rd (portion), Stebner Rd, Getchell Rd, Highland St, Anderson Rd (portion), Morris Thomas Rd, Haines Rd, Lavaque Rd/2nd Ave (portion), Boundary Ave, 5th St/Vinland St, and 2nd St



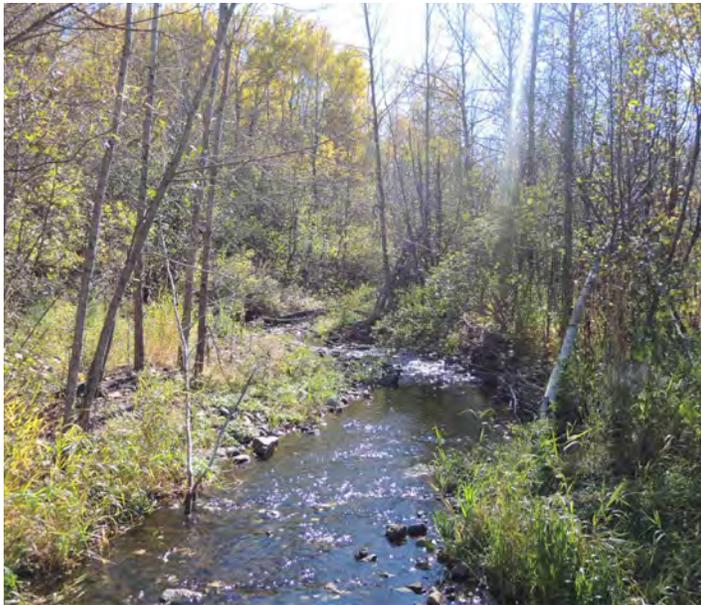
Trail Corridor Environment

Natural Segments

The preferred alignment of the Munger Trail Spur is intended to provide a high quality regional recreational trail within a natural environment as much as possible. Key natural areas of the trail corridor are the Rocky Run branch of the Midway River and a major wetland area, Keene Creek, Keene Creek Park, future North Proctor Park, Kingsbury Creek, Knowlton Creek, Spirit Mountain Recreation Area, and wooded power line corridors.

Roadway Segments

Where it will be prohibitively challenging to acquire public access to property, the trail alignment travels along roadways. These trail segments will be sufficiently separated from the adjacent roadway. Roadway segments include Ugstad Rd (at Hermantown Schools and at I-35), Lavaque Junction Road, Lightning Drive, Stebner Rd, Maple Grove Rd, Anderson Rd, Hermantown Rd, Okerstrom Rd, St. Louis River Rd, Pionk Drive, Kirkus Street, and downtown Proctor streets. Many of these road segments are fairly short in length.



Hermantown

Within Hermantown, the trail corridor environment will consist of a large wetlands area near the City's northernmost trailhead, which is actually part of the Rocky Run branch of the Midway River; the Keene Creek corridor; two City parks - Keene Creek Park and Stebner Park; wooded power line corridors; and along roadways.

Proctor

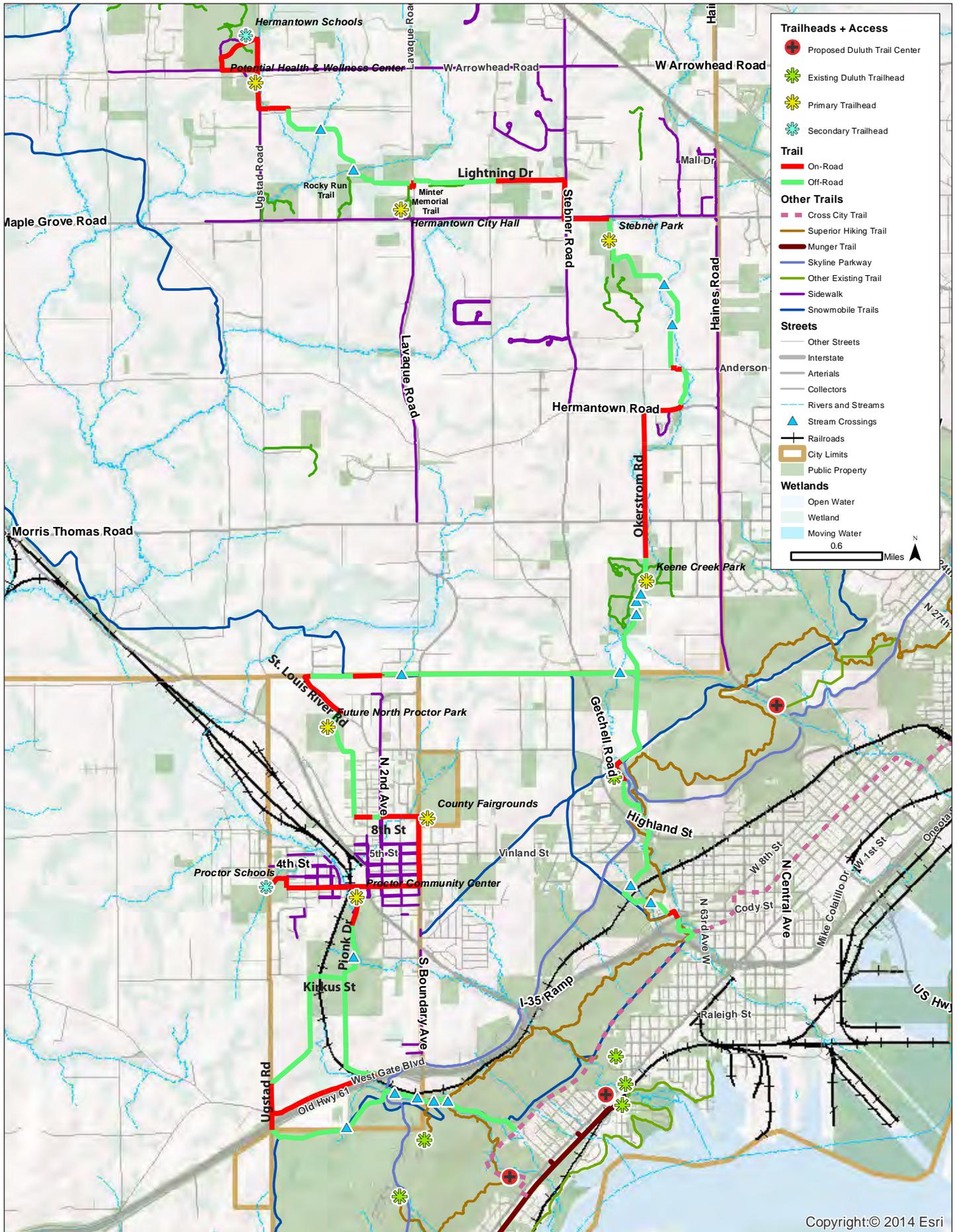
Within Proctor, the trail corridor environment will include wooded areas on public land (owned and easements), including the future North Proctor Park; wooded power line corridors; the City's Community Center and outdoor recreation area - Egerdahl Field and the municipal golf course; small portion of the Kingsbury Creek corridor; the Spirit Mountain Recreation Area and Knowlton Creek corridor; and along roadways, both rural and downtown Proctor.

Duluth

Within Duluth, the preferred alignment will travel through the Spirit Mountain Recreation Area and Knowlton Creek corridor. The future potential trail segment that would connect Hermantown and Duluth will travel along the Keene Creek corridor.



FIGURE 4-2. ON-ROAD OR OFF-ROAD TRAIL ALIGNMENT



GENERAL TRAIL DESIGN GUIDELINES & ENGINEERING SPECIFICATIONS

Trail geometrics depend greatly on the expectations of the users. A trail meant as a primary bicycle facility with bicycles traveling at higher speeds will need to be on a generally flat terrain with gradual changes in grade and large sweeping curves. There will also be much larger site distance requirements in order to give the bicycle users time to stop or avoid collisions. A mixed use trail which accommodates both bicycle and pedestrian users will have an expectation of lower speed traffic and therefore may allow for more rolling terrain and tighter curves.

Pavement Width

The width of the path will play a role in the type of user that can be accommodated by the facility. A satisfactory width will allow for both bicycle and pedestrian traffic to safely use the facility. See Figure 4-3. The width must take into consideration factors from the geometrics of the trail, volumes of users, types of users, and potential conflicts. The standard pavement width of a shared use trail is 10 feet. Additional width may need to be added at sections where geometrics or hazards require additional space for safety concerns. It also may be necessary in certain conditions to provide a separation between bicycle and pedestrian traffic which would require additional width.

The surfaces of paths can be made up of bituminous asphaltic pavement, concrete pavement, or an aggregate structural surface. Typically paths are paved with an asphaltic pavement. Asphalt can provide a smooth riding surface for users. The depth of asphalt will depend on a number of factors including; use of the trail and the type of soils in the area that the trail will be constructed. It may be necessary at times for heavy equipment to access the trail in order to maintain it. This would require larger pavement sections to prevent damage from the vehicle traffic.

The typical recommended pavement section for an asphalt trail is a 3-inch course of asphalt underlain with a minimum of 4-inch depth of aggregate. See Figure 4-4. In areas of poor soils and heavier traffic loads, these thicknesses should be increased. The asphalt and aggregates should be specified to Minnesota DOT standards.

In addition to the 10-foot width of the trail which would be paved, it is recommended that the trail would have 2-foot shoulders made up of aggregate. The shoulders could also be made of compacted turf or concrete. These shoulders provide an added measure of safety for the user should they lose control and leave the path. It allows them an area to recover and safely maneuver back onto the path.

Clear and Recovery Zones

A clear zone is the space which lies just adjacent to the sides of the trail. This space should be free from any obstructions or hazards. All permanent objects should be removed from the clear zone to allow safe use of the trail. A clear zone also extends above the trail to allow for safe travel. It is recommended that a 10-foot clear zone be maintained above the trail. A horizontal clear zone of at least 3-feet is recommended for trails. The 3-foot clear zone is usually comprised of a 2-foot shoulder with 1-foot of additional clearance beyond the shoulder. Signage along the path should also be kept outside of the 3-foot clear zone with a maximum distance off of the path of 6-feet. If an obstruction cannot be avoided within the clear zone, it should be clearly marked with signage, warning the user of the hazard.

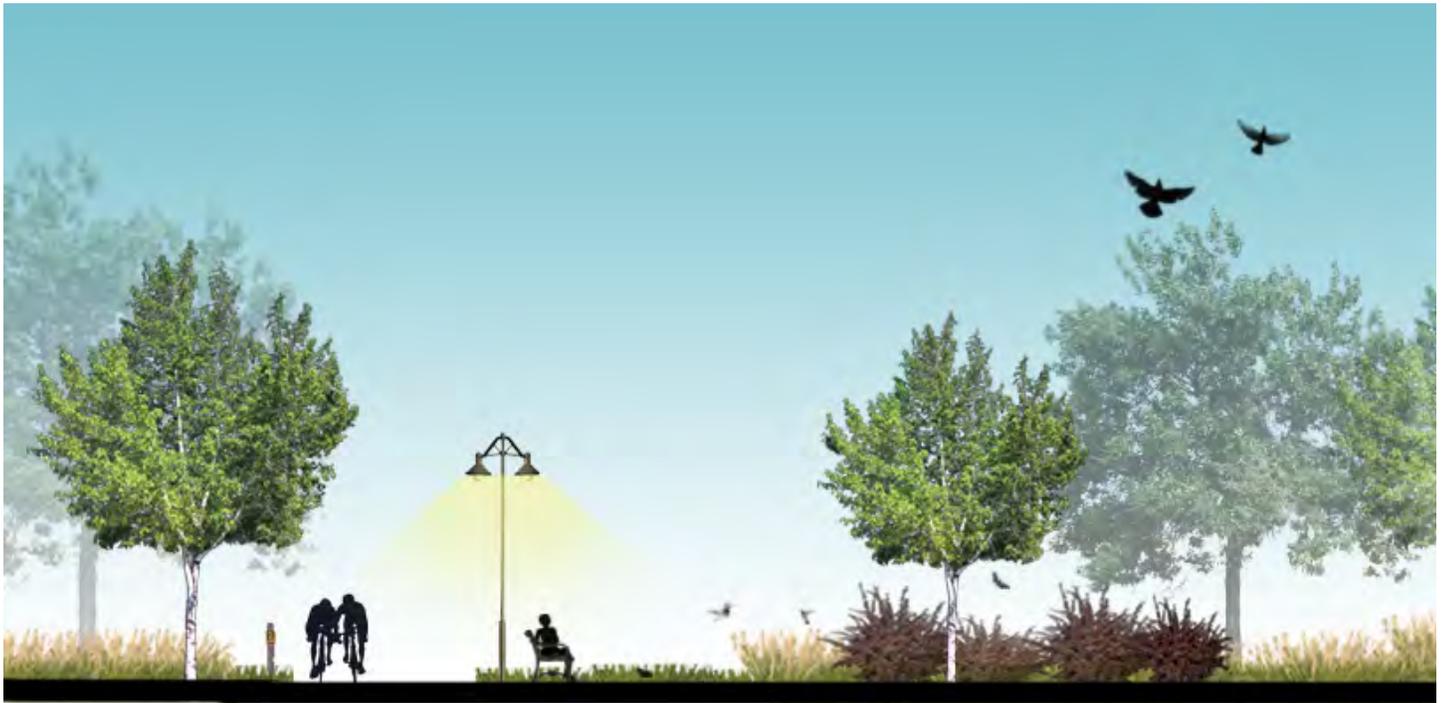
The area off of the shoulder of the trail is considered the recovery zone. A steep recovery zone can be considered a hazard. Adequate recovery zones allow users to regain control if they were to accidentally leave the trail area. If an adequate recovery zone cannot be achieved than the trail should have a barrier with which to prevent the user from leaving the trail area. The Clear Zone diagram, Figure 4-5, is provided in the Minnesota DOT Bikeway Facility Design Manual.

Drainage

Drainage is another important aspect of the trail. Proper drainage allows rainwater to flow away from the trail facility. Inadequate drainage can cause safety concerns for the user and allow for damage to the trail facility. Typically trails are sloped at a 2% grade in one direction across the trail to allow for water to flow across the trail and away. Additional measures, including; culverts, ditches, storm sewer basins, and bridges may need to be installed in and around the trail facility to allow for proper drainage.



FIGURE 4-3. TYPICAL TRAIL ENVIRONMENT



Natural area / open space

10' wide paved multi-use trail

Lighting, benches, and other amenities at key locations

Natural area / open space

FIGURE 4-4. TYPICAL TRAIL SURFACE SECTIONS

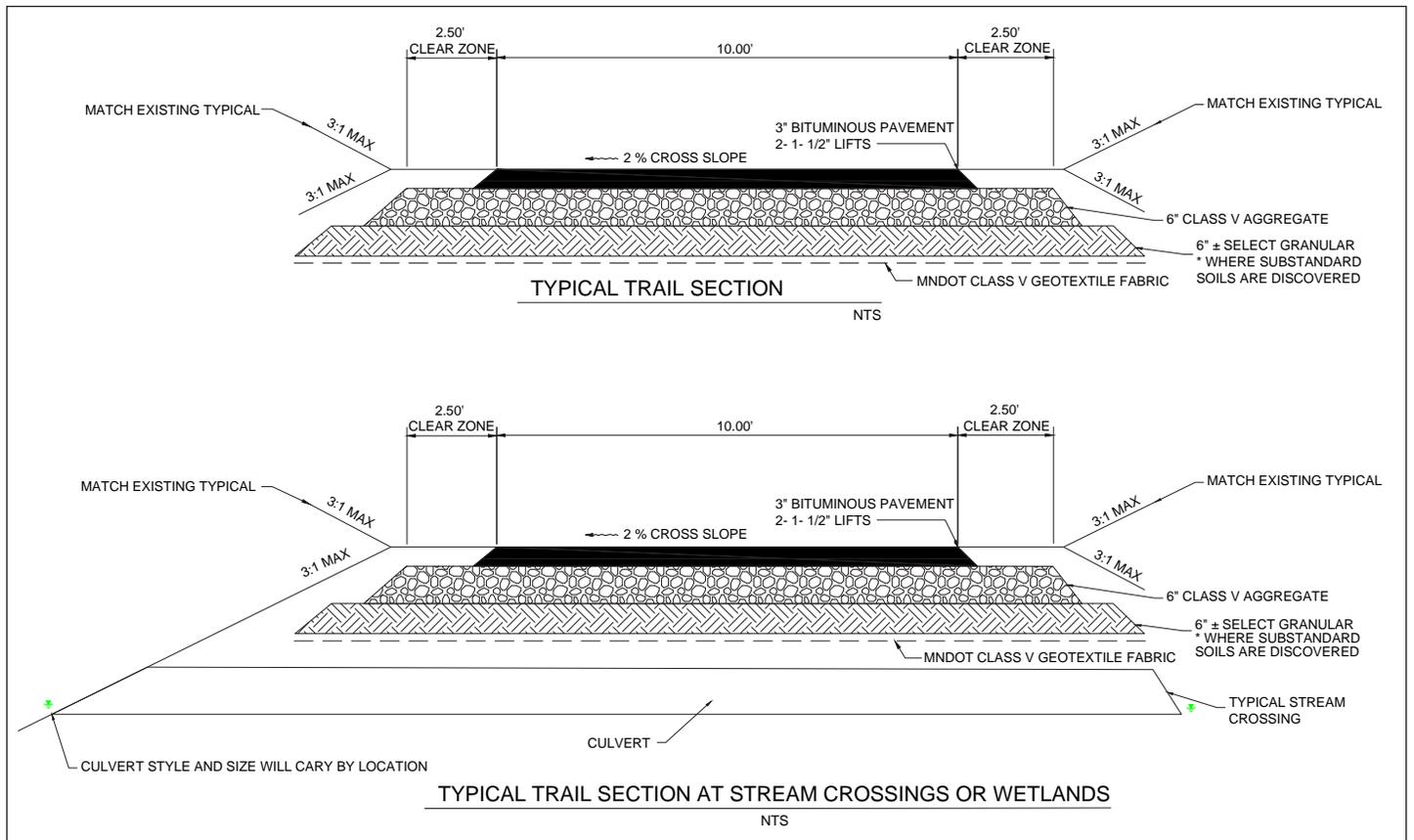
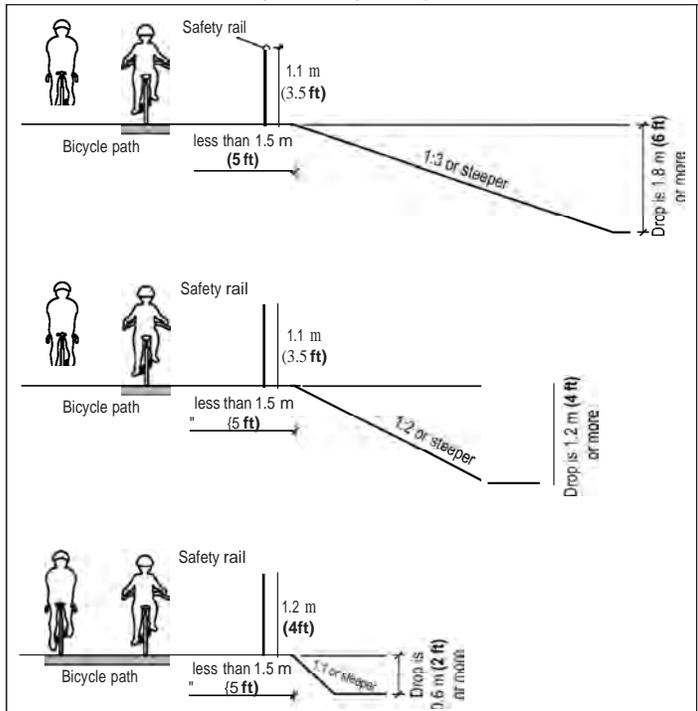


FIGURE 4-5. TRAIL CLEAR ZONE

Source: MNDOT Bikeways Facility Design Manual



Examples of trails on steep grades



Steep Grades

The grades or steepness of the trail will also play a part in trail use. Trail grades which are very steep or long grades with no resting areas will discourage use of the trails. A trail with shallow grades or with grades which are not overly long, and allow for resting, will have much more appeal to a wider range of users. The Minnesota Department of Natural Resources (DNR) and the Minnesota Department of Transportation (DOT) recommend the following guidelines regarding trail grades and the maximum length a certain grade can be held without interruption:

- 7 percent for up to 400 feet
- 8 percent for up to 300 feet
- 9 percent for up to 200 feet
- 10 percent for up to 100 feet
- Grades between 10 and 12 percent are only practical for distances under 100 feet
- Grades above 12 percent are strongly discouraged

Sometimes steeper than desirable grades cannot be avoided while maintaining reasonable costs of trail construction. Some options that are recommended by the DNR and DOT are:

- Widening the trail to allow riders to pass walkers
- Providing signage to alert users of upcoming steeper grades
- Extending stopping distances
- Eliminate hazards before and after the steep grades
- Provide a series of short switchbacks to contain speeds of bicyclists

Water Crossings (Creeks & Wetlands)

There are a number of areas along the proposed trail alignment where there are ditches, streams, and wetlands. There are several methods with which the trail can pass through these areas. The first method would be to extend an existing culvert, if it exists, at the location. At some small streams and ditches the existing culvert pipe could be extended and fill added to the area to accommodate the trail. An example of a place where a trail could be accommodated by extension of the existing culverts is shown in the photo on top of page 35. This method would most likely be the most economical and preferred method. However, this method will not work in all areas.

The next method would be to construct a boardwalk. Boardwalks are used to elevate trails above wetland areas. These areas typically do not have streams or navigable waterways. A boardwalk is not considered a bridge structure unless a portion of it spans (distance between supports)



more than 20 feet or is above the ground more than 10 feet. Boardwalk costs can vary greatly depending on the types of soils they are built on and the types of loads that the boardwalks are designed for. Boardwalks may be designed to handle pedestrian and bicycle loads only or may need to be designed for loading from emergency or maintenance vehicles. See Figure 4-7 for general engineering specifications for a typical boardwalk.

The final method would be to construct a bridge structure. Bridges are typically the most expensive method of crossing an obstruction. Bridges are utilized when there is no other alternative left to cross an obstruction and there is no vehicular bridge which can be retrofitted. Examples of obstructions would be; rivers/streams, freeways, railroads and very large ravines or grade changes. Bridges should have a minimum width of 12 feet to provide for the standard 10-foot width with a 1-foot clear zone. Bridges should also incorporate a barrier for safety. Barriers can be a railing or fence and are recommended to be 54 inches tall. A bridge over a roadway or railway should incorporate screening or fencing to prevent any object from being thrown from the bridge. The materials that the bridge can be constructed of can vary depending on the types of loading that will be expected. Some bridges may be designed for only bicycle and pedestrian traffic while others may have to accommodate maintenance and emergency vehicles. This can have an effect on the cost of the bridge. See Figure 4-6 for general engineering specifications for a typical creek bridge.

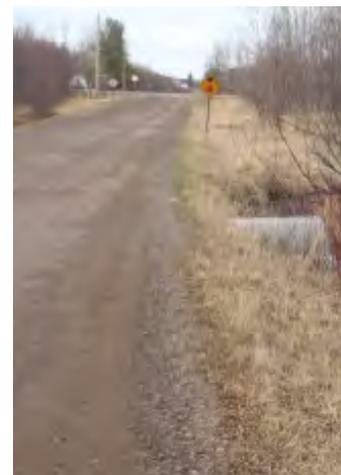
Existing Bridge Crossings

At areas of extreme grade changes or stream crossings it may be necessary to utilize an existing bridge to accommodate the trail facility. However, certain bridge features may make it difficult and more costly to retrofit to accommodate the trail facility. There are a wide variety of design considerations to consider when attempting to retrofit a bridge to accommodate a trail. Below are several options which are suggested by the Minnesota DOT.

The trail can be on only one side of the bridge. This would be accomplished only if the bridge had adequate width or could be achieved by re-striping the traffic lanes crossing the bridge. Separation should be provided between the trail and vehicular traffic. This separation is usually accomplished with a shoulder and concrete barrier.

The trail could also be carried across the bridge with only re-striping of the lanes and no physical separation. This type of facility would only be for bicycle traffic, however, and separate accommodations would need to be made for pedestrian traffic.

Examples of bridges and culverts



Examples of boardwalks



Existing bridge crossing



FIGURE 4-6. GENERAL ENGINEERING SPECIFICATIONS – TYPICAL CREEK BRIDGE

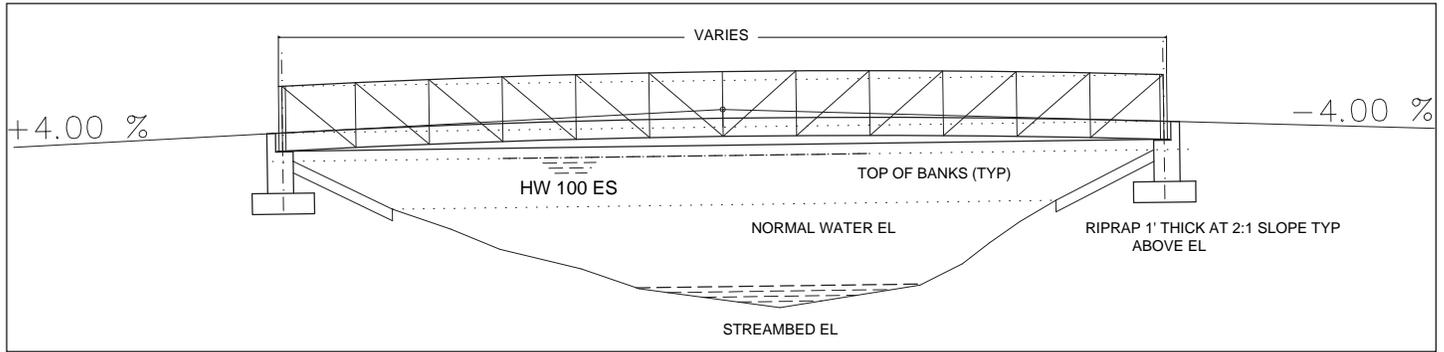
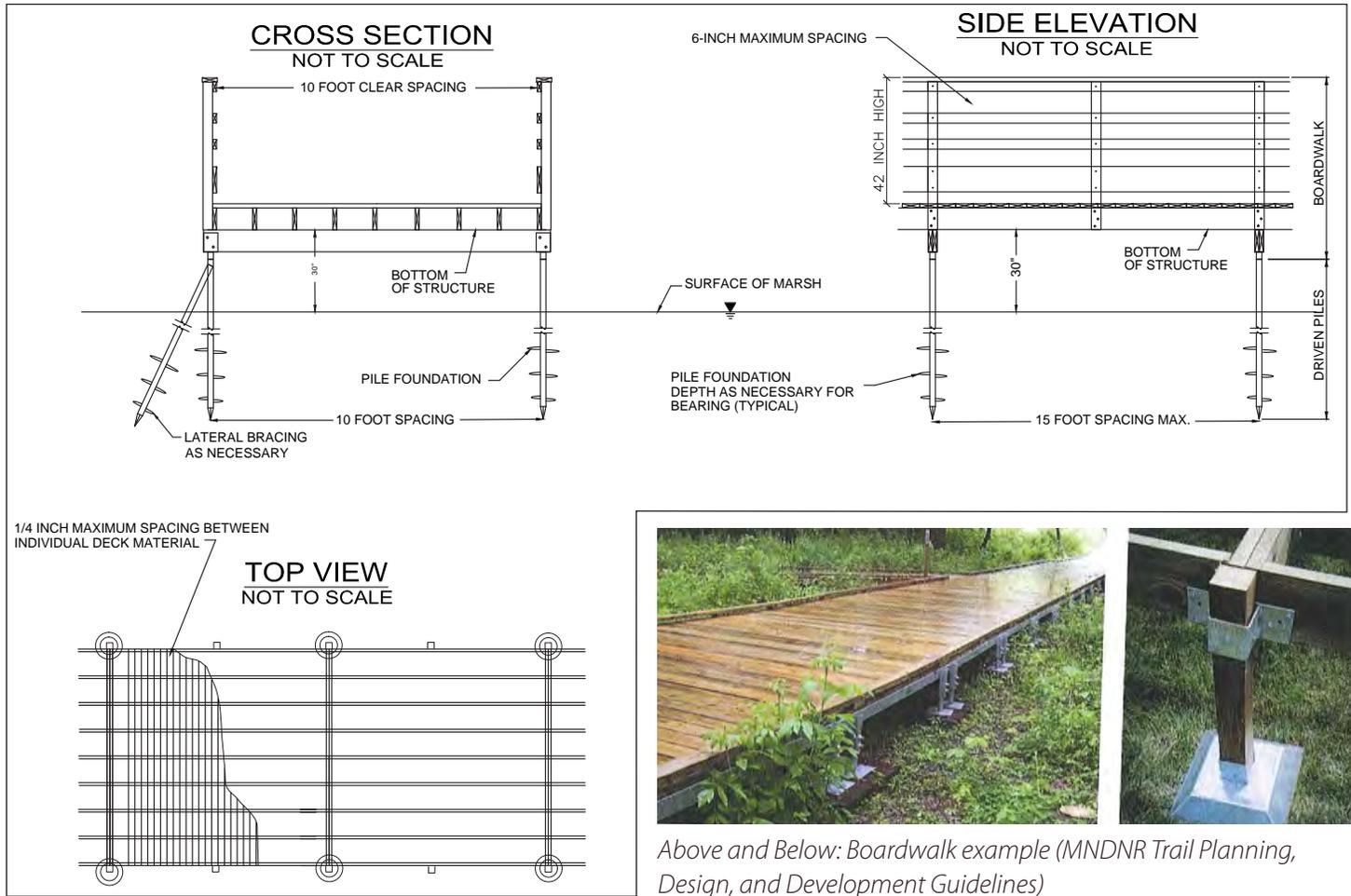
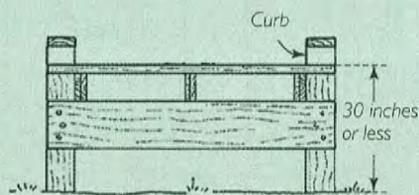


FIGURE 4-7. GENERAL ENGINEERING SPECIFICATIONS – TYPICAL BOARDWALK

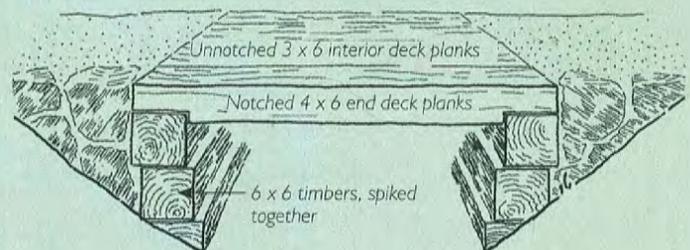


Above and Below: Boardwalk example (MNDNR Trail Planning, Design, and Development Guidelines)

The following images are from *Wetland Trail Design and Construction*, part of the *Forest Service Trails Reports 2004* collection of reports (www.fhwa.dot.gov/environment/recreails/trailpub.htm). Refer to this publication for additional information related to each the techniques shown, as well as information on a variety of other techniques and common tools.



As a general rule, a handrail is required whenever the deck height of a boardwalk or footbridge exceeds 30". A curb can also be added to alert users of the edge of the deck and add character.

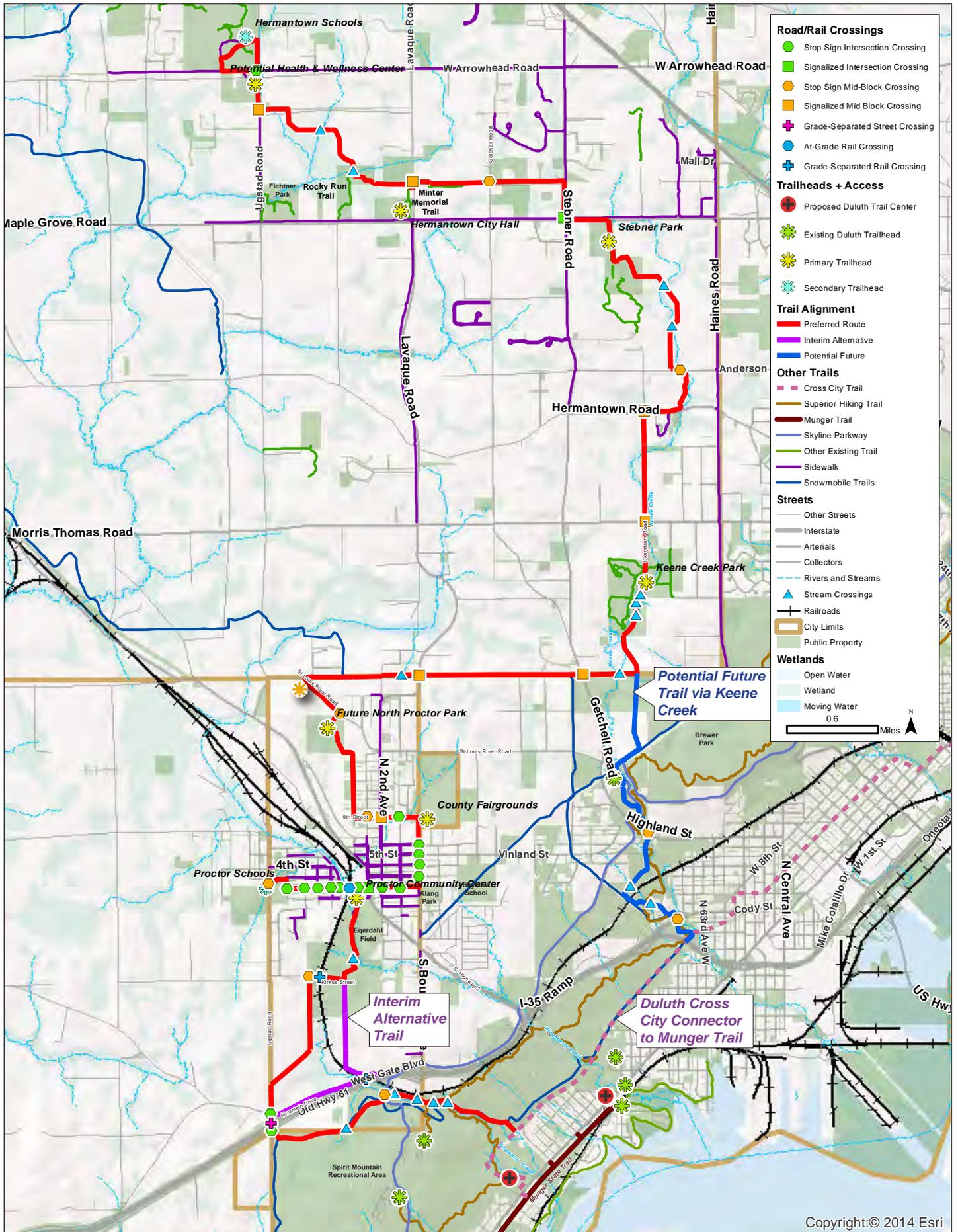


Treated timbers are occasionally used for culverts along natural surfaced trails. Notching the deck planks on both ends helps to brace the walls. Two planks with notches are adequate for a wall up to 24 inches high.

TABLE 4-1. RECOMMENDATIONS FOR ROAD CROSSINGS OF THE TRAIL

Road Crossing	Recommendations for Road Crossing Type
State Roadways	
• Interstate 35	Grade-separated, Ugstad Rd underpass
• U.S. Highway 2	Signalized Standard Intersection Crossing with Bike/Ped Warning Signs
County Roadways	
• Arrowhead Road	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• Ugstad Road North	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• Ugstad Road South	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• Lavaque Road North	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• Lavaque Road South	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• Getchell Road North	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• Getchell Road South	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• Maple Grove Road	Signalized Standard Intersection Crossing with Bike/Ped Warning Signs
• Morris Thomas Road	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• Mountain Drive	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
Local Roadways	
<i>City of Hermantown</i>	
• Stebner Road	Signalized Standard Intersection Crossing with Bike/Ped Warning Signs
• Anderson Road	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• Hermantown Road	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• Okerstrom Road	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
<i>City of Proctor</i>	
• St. Louis River Road	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• 9th Street & 2nd Ave	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• 9th Street & 1st Ave	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• 6th Street & Boundary Ave	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• 5th Street & Boundary Ave	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• 4th Street & Boundary Ave	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• 3rd Street & Boundary Ave	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• 2nd Street & 1st Ave	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• 2nd Street & 2nd Ave	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• 2nd Street & Pionk Drive	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• 2nd Street & 5th Ave	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• 2nd Street & 6th Ave	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• 2nd Street & 7th Ave	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• 2nd Street & 8th Ave	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• 2nd Street & 9th Ave	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
• Kirkus Street	Mid-Block Crossing with User Activated Enhanced Warning Light Signs
• Westgate Blvd/Old Hwy 61	Stop Sign Standard Intersection Crossing with Bike/Ped Warning Signs
<i>City of Duluth</i>	
• Skyline Parkway	Mid-Block Crossing with User Activated Enhanced Warning Light Signs

FIGURE 4-8. AT-GRADE AND GRADE-SEPARATED ROAD/RAIL CROSSINGS



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If there are existing sidewalks on the bridge, they could be utilized for bicycle and pedestrian traffic. Typically this is discouraged as it may cause a higher incidence of conflict between bicycle and pedestrian traffic. The minimum recommended width for these sidewalks is 8 feet.

At-Grade Road/Rail Crossings

At-grade roadway crossings pose potential safety hazards due to trail conflicts of bicycles and pedestrians with motor vehicles. These hazards can be reduced by following these general design standards at crossings as outlined in the MnDOT Bikeway Facility Design Manual:

- Shared-use trail should cross road at a 90-degree angle;
- Increase trail width at intersections to reduce conflicts between users;
- Provide good sight lines for both motorists and trail users;
- Provide signage to alert motorists of the shared-use trail crossing;
- Provide a visible crosswalk across the intersection to increase trail use and motorist awareness;
- Trail and roadway signage should clearly indicate whether motorists or trail users have the right of way;
- Curb ramps for the disabled and detectable warnings are required to alert path users with vision impairments of the street crossing.

In addition to the standards listed above, the posted speed, traffic volume, and width of the roadway being crossed are used to determine the proper intersection design for each situation. Unique situations may require engineering judgement and unique designs outside the standard designs shown below. Figure 4-8 shows all anticipated road/rail crossings and the recommended design for each crossing.

Standard Intersection Crossing (Stopped Condition)

This is the most commonly used intersection crossing. It utilizes a 10 foot wide painted crosswalk across the intersection, stop signs for trail users, and ADA curb ramps with detectable warnings. It is recommended at most existing stopped condition intersections.

Standard Mid-Block Crossing (Crosswalk)

This type of crossing treatment is nearly identical to the Standard Intersection Crossing in its use of a 10 foot wide painted crosswalk across the intersection, stop signs for trail users, and ADA curb ramps with detectable warnings. It is critical that good sight distance is maintained for both the motorist and the trail user since motorized traffic does not stop at the intersection. This crossing is used on low volume low speed streets where a crossing at an existing roadway intersection is not feasible or desirable.

Mid-Block Crossing (Crosswalk with Median Refuge Island)

This type of crossing treatment is nearly identical to the Standard Mid-Block crossing with the addition of a Median Island for trail users to stop at if needed. This design is utilized on street crossings with more than 2 lanes of traffic to cross and/or higher volume and higher speed road crossings.

Mid-Block Crossing (Traffic Signals/Enhanced Warning Signs)

This type of crossing adds Traffic Signals or Enhanced Warning Light Signs to the Standard Mid-block Crossing. This design is utilized on street crossings with higher traffic volumes and speeds to increase motorist attention to pedestrian and bicycle traffic crossing the roadway.

General design recommendations for specific roadway crossings are identified in Table 4-1 and described in detail in the Appendix of the this report. Further updates to roadway crossings may be required in the future depending on actual trail use numbers and future increases in vehicle volume. Some possible future upgrades include median refuge islands, pedestrian hybrid beacons (see photo at right), or grade separated crossings such as a bridge or tunnel.

A few intersections, due to expected school children use along with 40 MPH speed limits, could incorporate pedestrian hybrid beacons at initial construction or shortly after. The following intersections are recommended for further engineering analysis at time of project design to look at the possibility of incorporating these pedestrian signal devices: Lavaque Road (north of Maple Grove Road), Okerstrom Road & Hermantown Road, Okerstrom Road & Morris Thomas Road, and Getchell Road.

Rail Crossing

The preferred trail alignment includes one at-grade crossing of a rail line, which is 2nd Street in downtown Proctor.

Grade-Separated Roadway/Rail Crossings

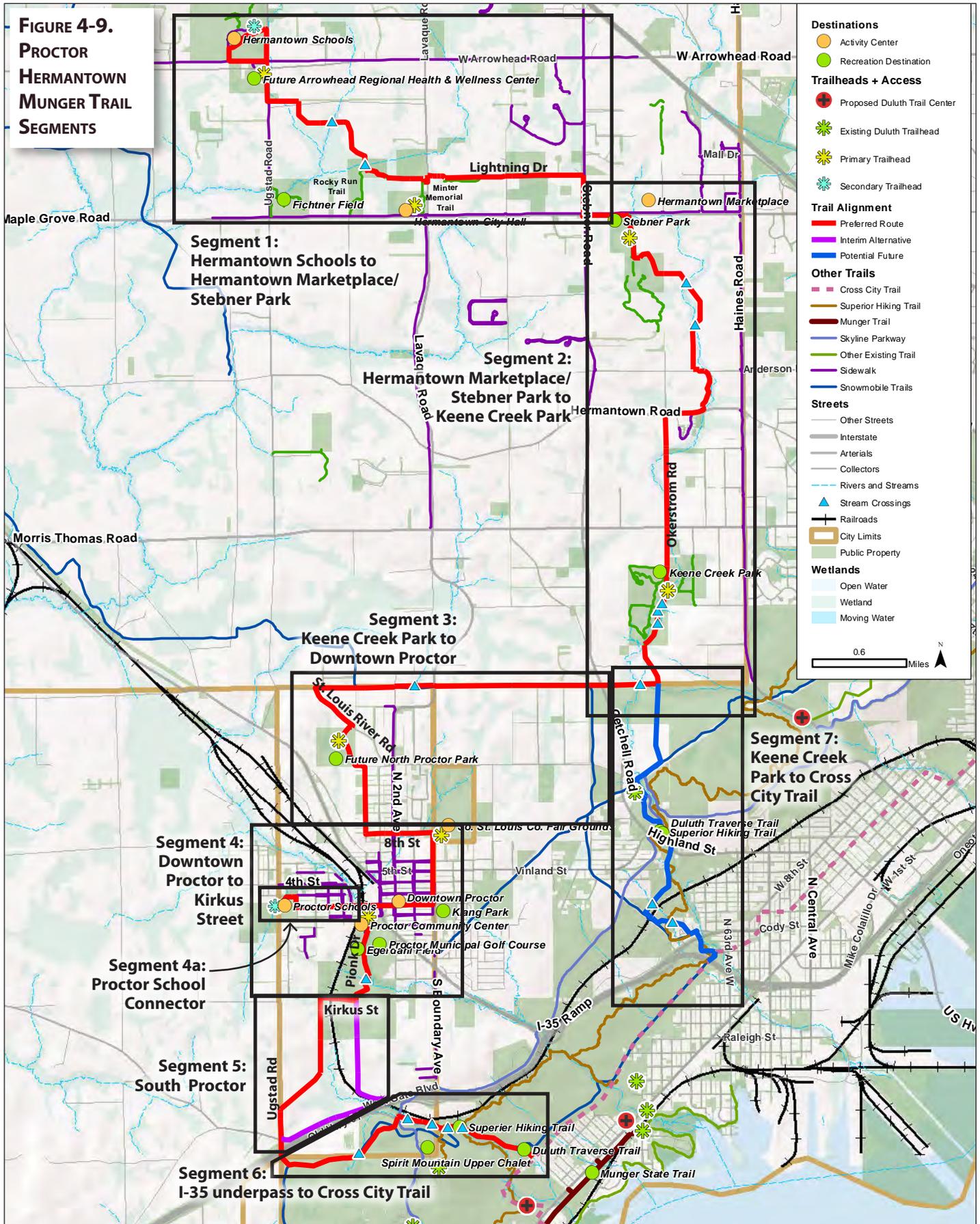
The preferred trail alignment includes two existing grade-separated crossings, which are the Kirkus Street bridge over the rail line and the Ugstad Rd underpass of I-35, both located in south Proctor.

At-Grade Roadway/Rail Crossings



TRAIL CORRIDOR SEGMENTS

This section summarizes the trail corridor's key features by segment, including recreation destinations, activity centers, primary trailheads, other access points, roadside trail segments, steep grade areas, water crossings (creeks and wetlands, and road/rail crossings. There are seven trail segments, including the potential future trail via Keene Creek between Hermantown and Duluth.



TRAIL CORRIDOR SEGMENT 1

Hermantown Schools to Hermantown Marketplace/Stebner Park

FIGURE 4-10. SEGMENT 1 TRAIL MAP

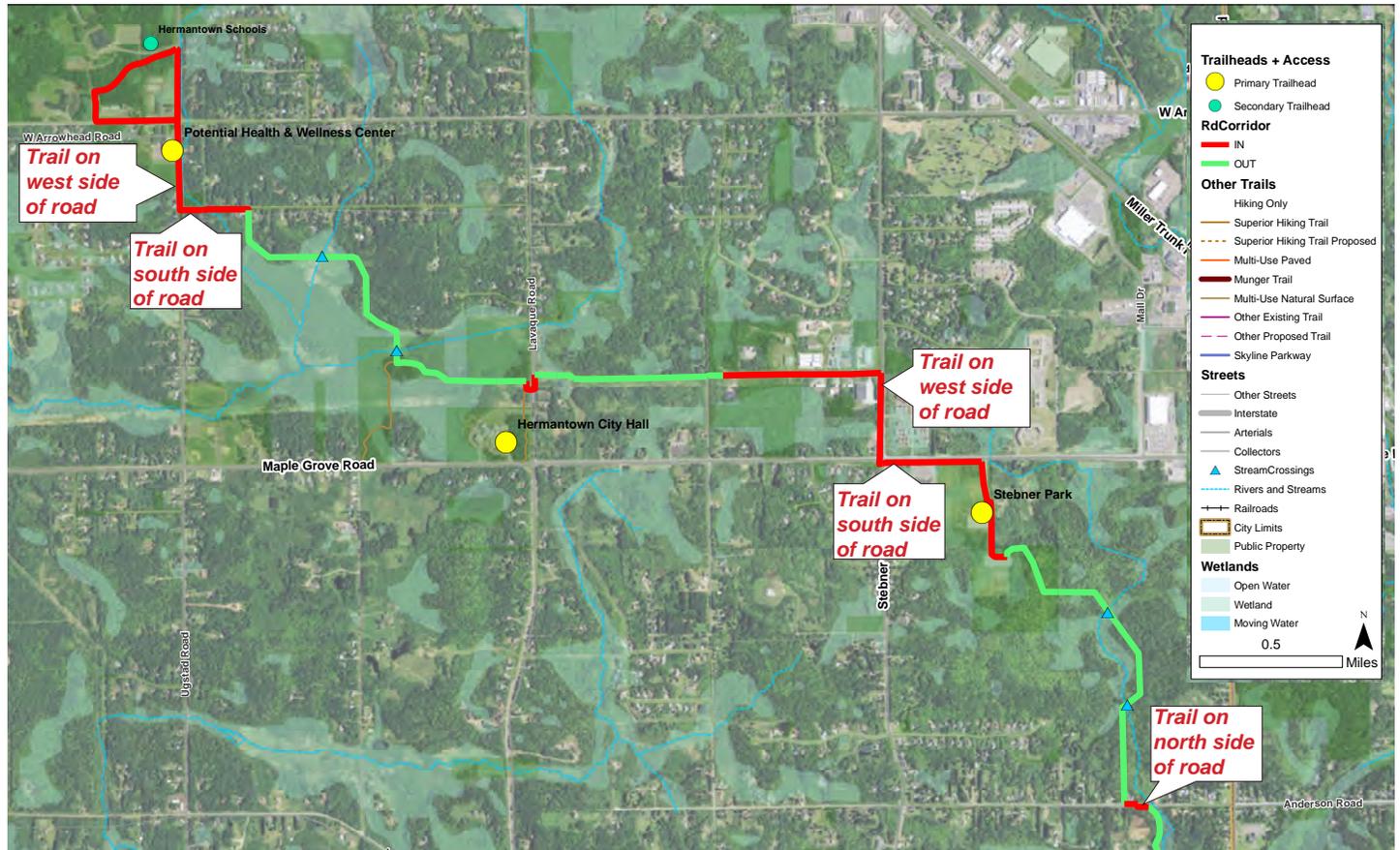
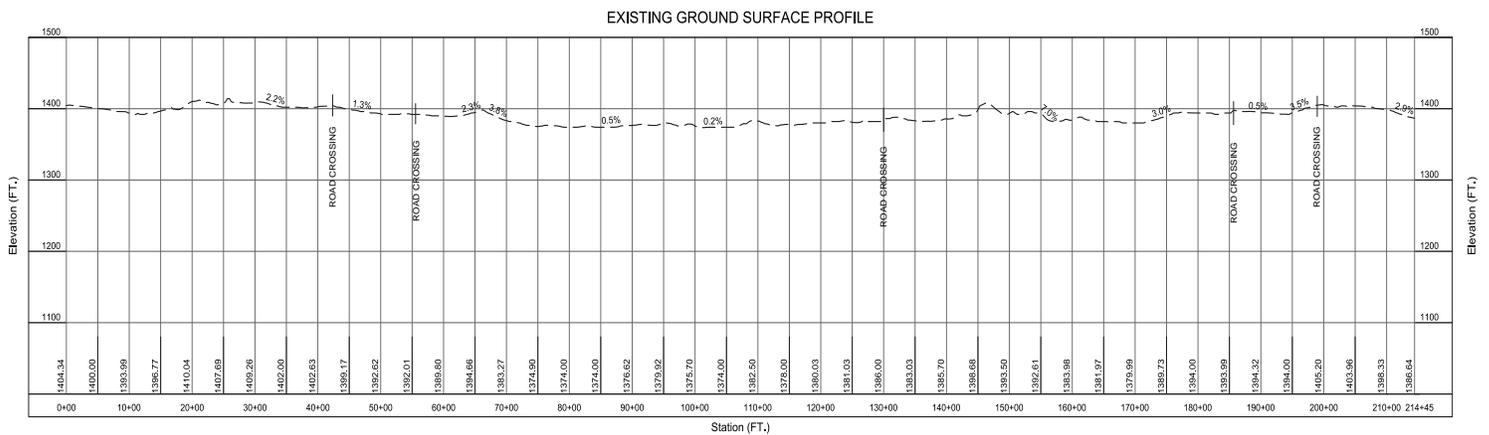


FIGURE 4-11. SEGMENT 1 TRAIL TOPOGRAPHIC PROFILE



VERTICAL EXAGGERATION 10X

Segment 1

Recreation Destinations

- Stebner Park
- Fichtner Park

Activity Centers

- Hermantown Schools campus
- Future Arrowhead Regional Health & Wellness Center
- Hermantown City Hall
- Hermantown Marketplace (adjacent to Miller Hill Mall)

Primary Trailheads

- Future Arrowhead Regional Health & Wellness Center
- Hermantown City Hall
- Stebner Park

Other Access Points

- Hermantown Schools campus
- Arrowhead Rd (on-road bike route and sidewalk)
- Ugstad Rd (on-road bike route)
- Maple Grove Rd (on-road bike route and sidewalk)
- Stebner Rd (on-road bike route and sidewalk)
- Rocky Run Trail

Roadside Trail Segments

- Ugstad Rd, just south of Arrowhead Rd
- Lavaque Junction Rd
- Lightning Drive
- Stebner Road
- Maple Grove Road

Steep Grade Areas

- None in this segment

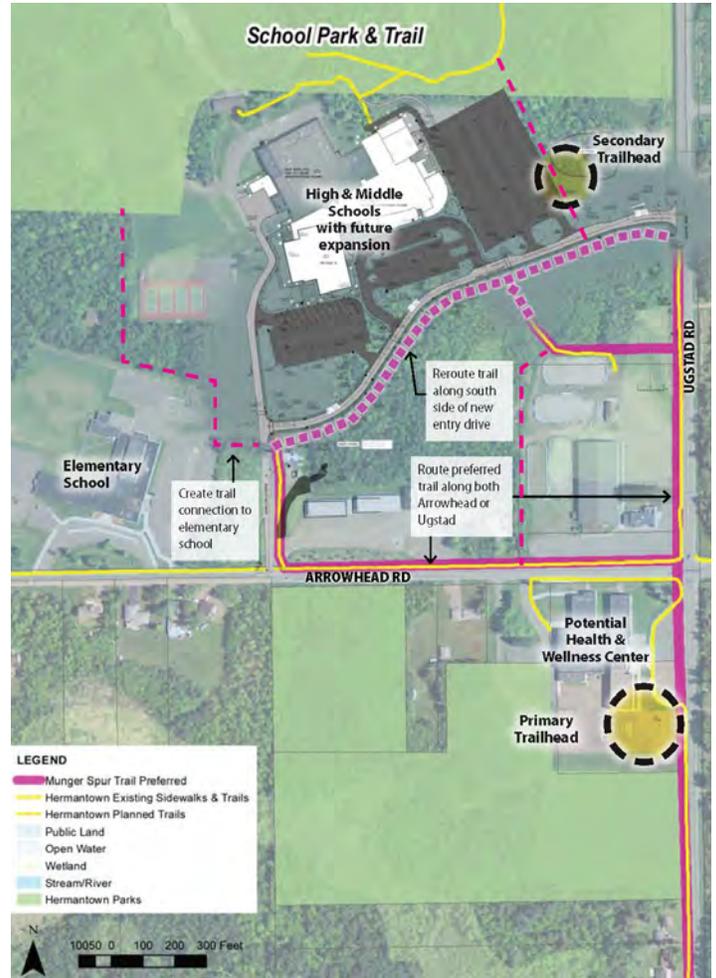
Water Crossings (Creeks & Wetlands)

- Rocky Run branch of Midway River and large wetlands complex

Road/Rail Crossings

- West Arrowhead Road & Ugstad Road
- Lavaque Junction Road & Ugstad Road
- Lavaque Road
- Getchell Road
- Maple Grove Road & Stebner Road

FIGURE 4-12. TRAILS CONCEPT FOR HERMANTOWN SCHOOLS CAMPUS AND FUTURE ARROWHEAD REGIONAL HEALTH & WELNESS CENTER



TRAIL CORRIDOR SEGMENT 2

Southeastern Hermantown - Hermantown Marketplace/Stebner Park to Keene Creek Park

FIGURE 4-13. SEGMENT 2 TRAIL MAP

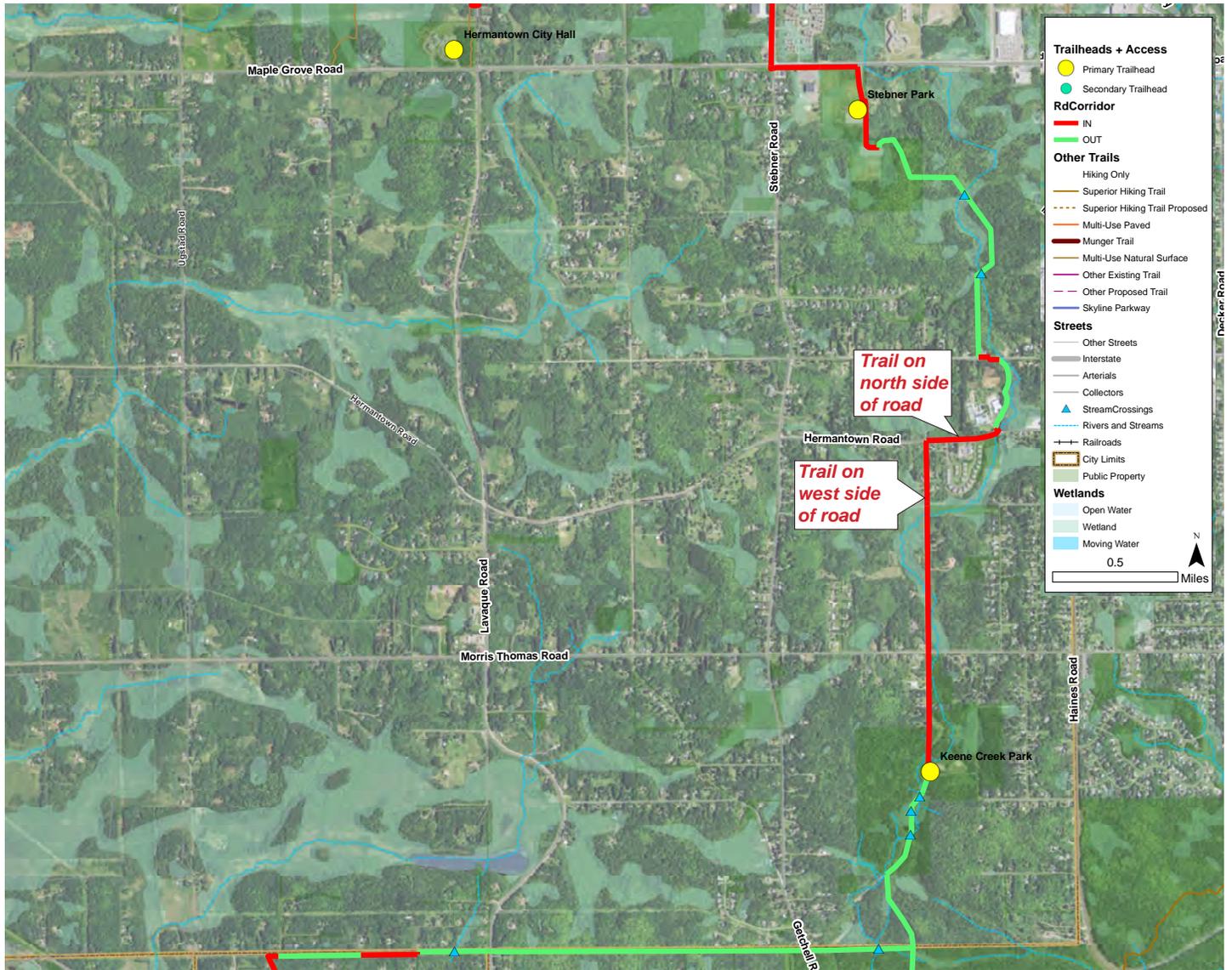
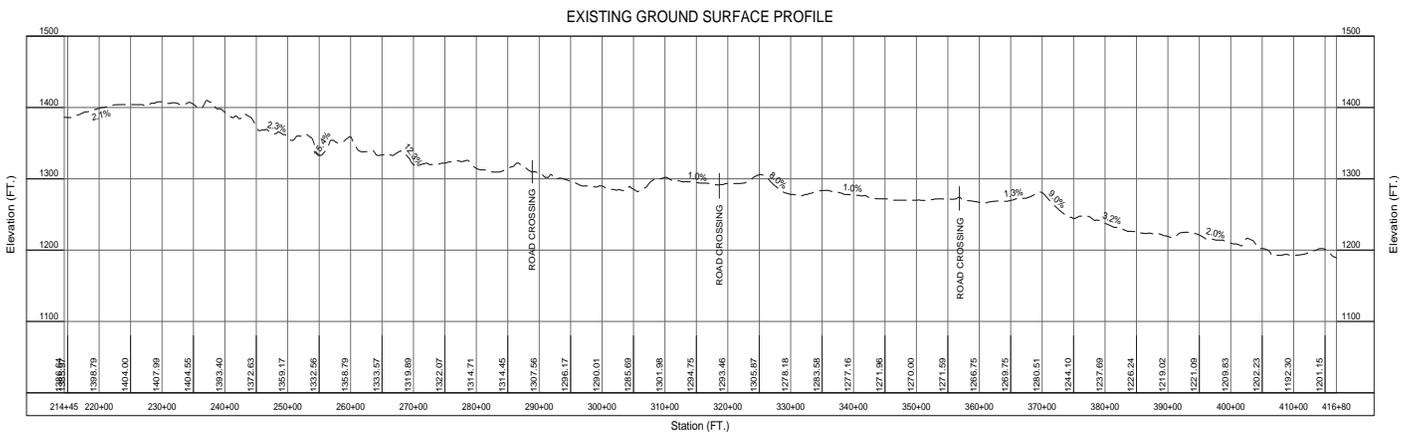


FIGURE 4-14. SEGMENT 2 TRAIL TOPOGRAPHIC PROFILE



Segment 2

Recreation Destinations

- Stebner Park
- Keene Creek Park

Activity Centers

- Hermantown Marketplace (adjacent to Miller Hill Mall)

Primary Trailheads

- Stebner Park
- Keene Creek Park

Other Access Points

- Maple Grove Rd (on-road bike route and sidewalk)
- Stebner Rd (on-road bike route and sidewalk)
- Anderson Rd (on-road bike route)
- Morris Thomas Rd (on-road bike route)
- Keene Creek Park trails

Roadside Trail Segments

- Anderson Rd
- Hermantown Rd
- Okerstrom Rd

Steep Grade Areas

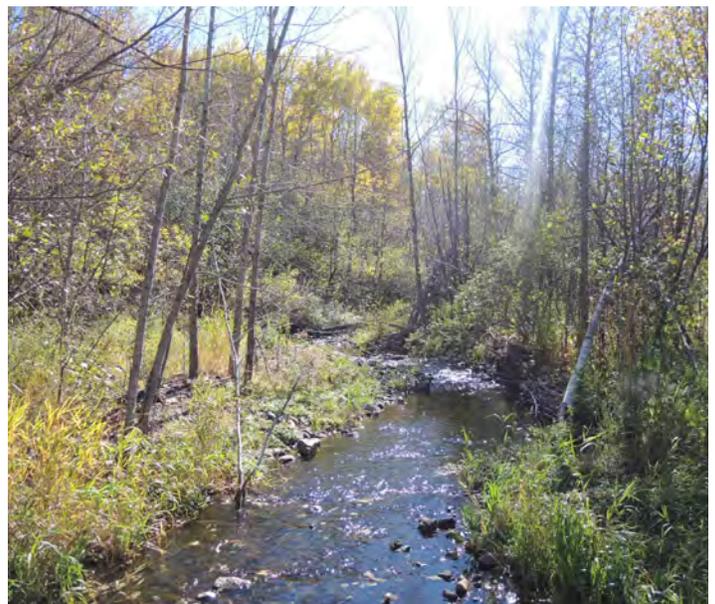
- Some within Keene Creek Park
- Potentially south of Stebner Park

Water Crossings (Creeks & Wetlands)

- Keene Creek, within Keene Creek Park and between Stebner Park and Anderson Rd, multiple crossings

Road/Rail Crossings

- Anderson Road
- Okerstrom Road & Hermantown Road
- Okerstrom Road & Morris Thomas Road



TRAIL CORRIDOR SEGMENT 3

Northern Proctor - Keene Creek Park to Downtown Proctor

FIGURE 4-15. SEGMENT 3 TRAIL MAP

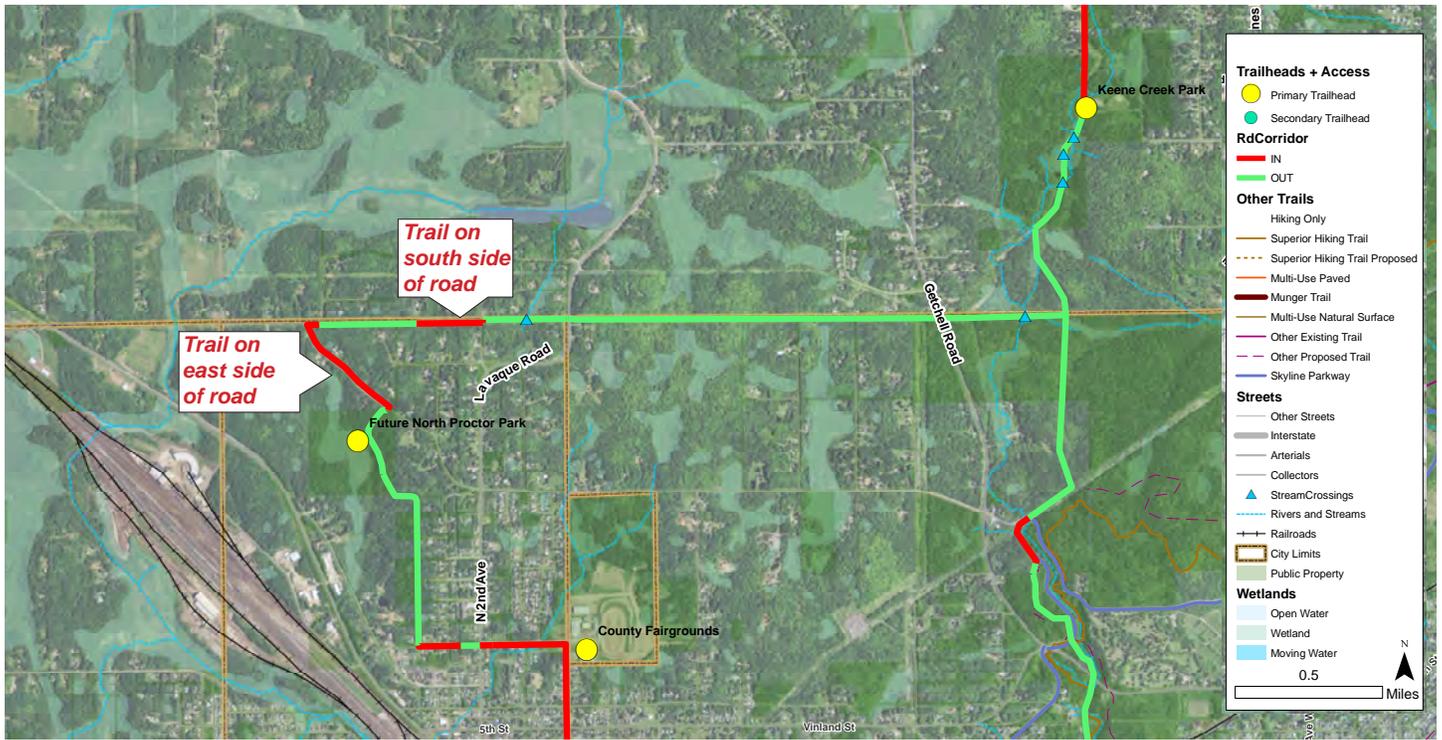
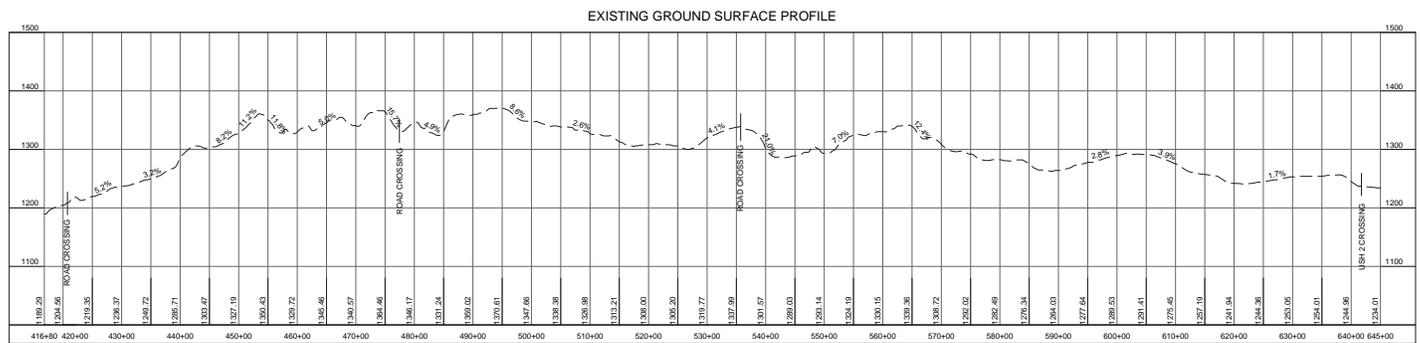


FIGURE 4-16. SEGMENT 3 TRAIL TOPOGRAPHIC PROFILE



Segment 3

Recreation Destinations

- Keene Creek Park
- North Proctor Park

Activity Centers

- Downtown Proctor

Primary Trailheads

- Keene Creek Park
- North Proctor Park

Other Access Points

- Getchell Rd (on-road bike route)
- Lavaque Rd (on-road bike route)

Roadside Trail Segments

- St. Louis River Rd

Steep Grades Areas

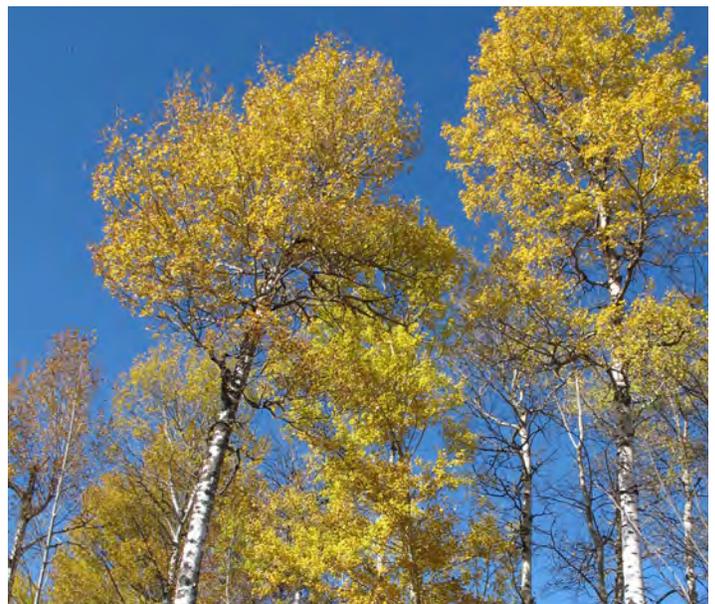
- Future North Proctor Park, including north and south of the park

Water Crossings (Creeks & Wetlands)

- Kingsbury Creek branch, near Lavaque Rd

Road/Rail Crossings

- Getchell Road
- Lavaque Road
- St. Louis River Road



TRAIL CORRIDOR SEGMENT 4

Downtown Proctor - 9th Street to Kirkus Street

FIGURE 4-17. SEGMENT 4 & 4A TRAIL MAP

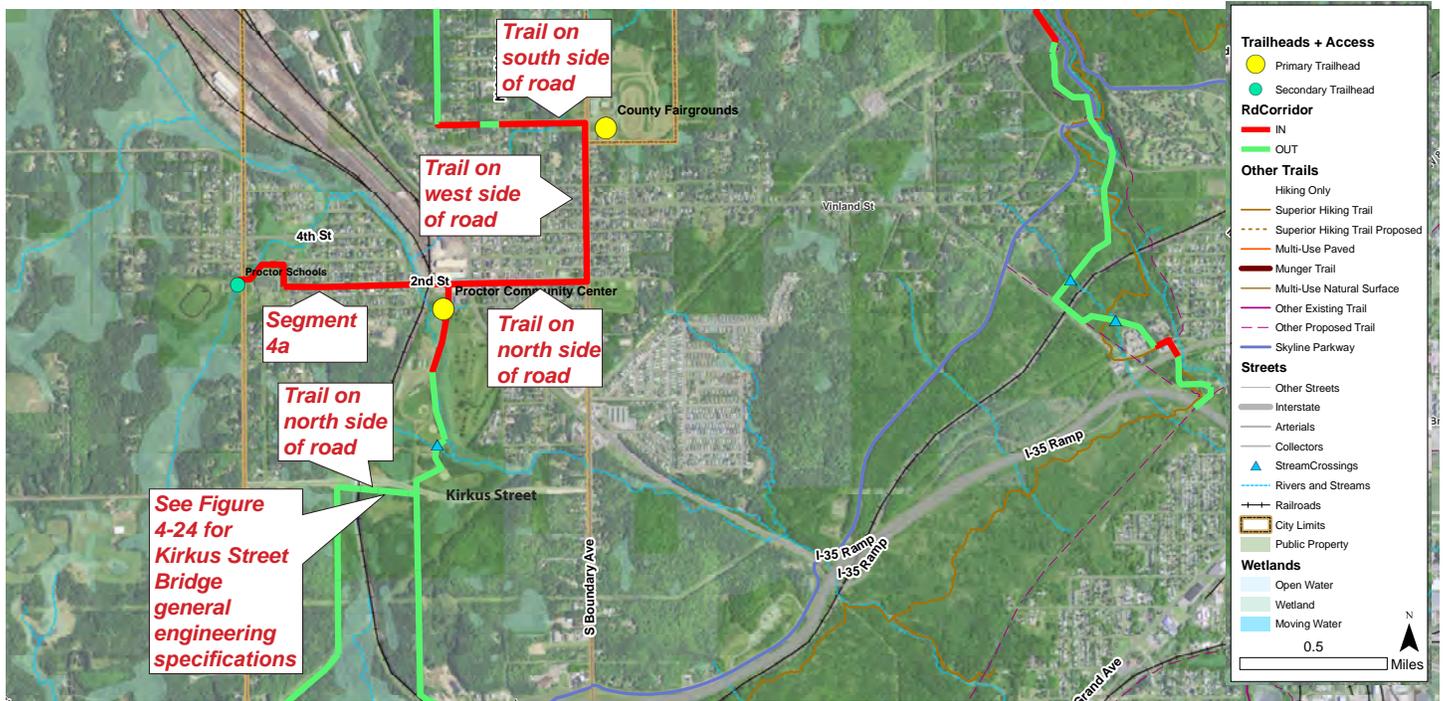


FIGURE 4-18. SEGMENT 4 TRAIL TOPOGRAPHIC PROFILE

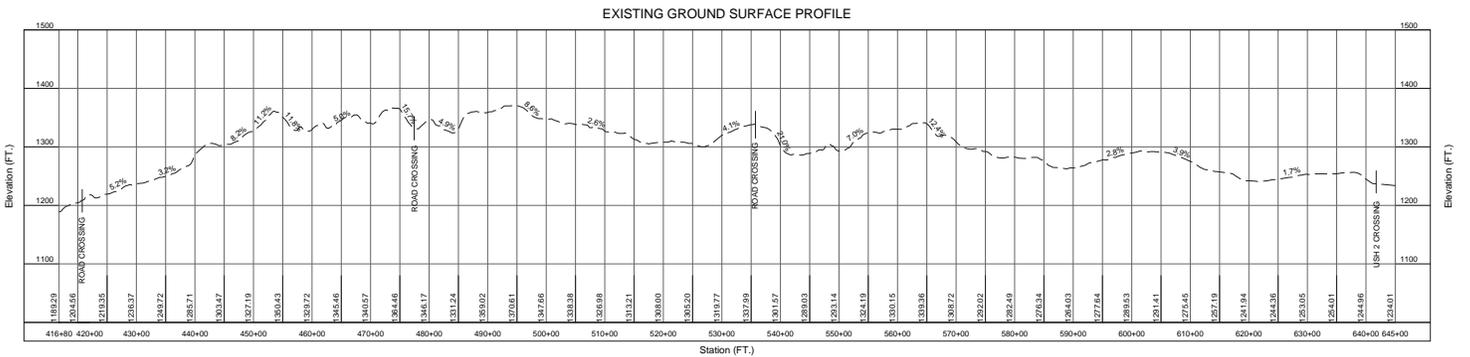
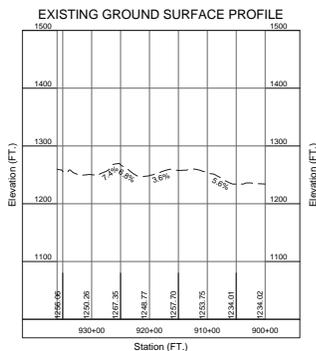


FIGURE 4-19. SEGMENT 4A TRAIL TOPOGRAPHIC PROFILE



Segment 4

Recreation Destinations

- Klang Park
- Egerdahl Field
- Proctor Municipal Golf Course

Activity Centers

- Proctor Community Center
- Downtown Proctor
- South St. Louis County Fairgrounds

Primary Trailheads

- Proctor Community Center
- South St. Louis County Fairgrounds

Other Access Points

- 2nd Ave (on-road bike route and sidewalk)
- Boundary Ave (on-road bike route and sidewalk)
- 5th St/Vinland St (on-road bike route and sidewalk)
- 2nd St (on-road bike route and sidewalk)
- Downtown Proctor sidewalks

Roadside Trail Segments

- 9th Street
- Boundary Ave
- 2nd Street
- Pionk Drive

Steep Grades Areas

- None in this segment

Water Crossings (Creeks & Wetlands)

- Kingsbury Creek branch, near Lavaque Rd

Road/Rail Crossings

- 9th Street & 3rd Ave
- 9th Street & 2nd Ave
- 9th Street & 1st Ave
- 6th Street & Boundary Ave
- 5th Street & Boundary Ave
- 4th Street & Boundary Ave
- 3rd Street & Boundary Ave
- 2nd Street & 1st Ave
- 2nd Street & 2nd Ave
- 2nd Street & U.S. Hwy 2
- 2nd Street & Pionk Drive

FIGURE 4-20. TRAILS CONCEPT FOR PROCTOR SCHOOLS CAMPUS



FIGURE 4-21. DOWNTOWN PROCTOR BOUNDARY VISUALIZATION

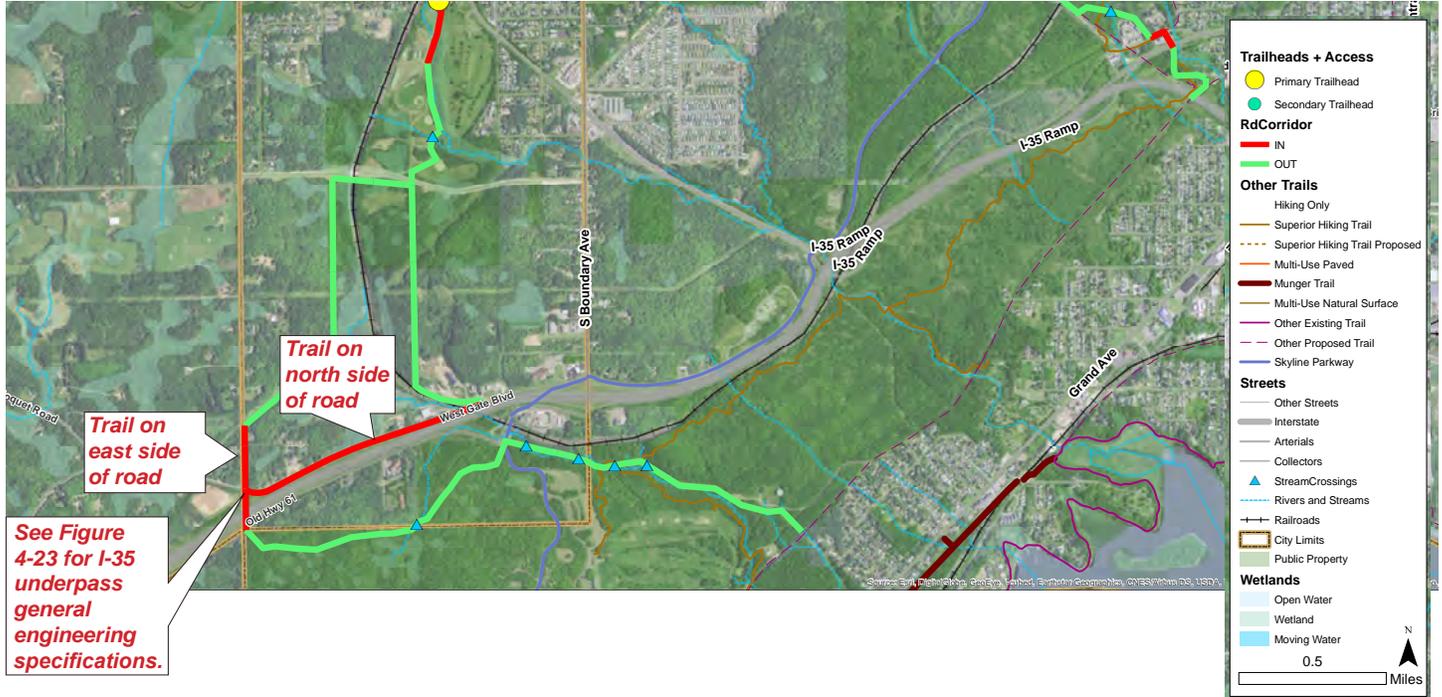


TRAIL CORRIDOR SEGMENTS 5 & 6

Segment 5: Southern Proctor - Kirkus Street to I-35

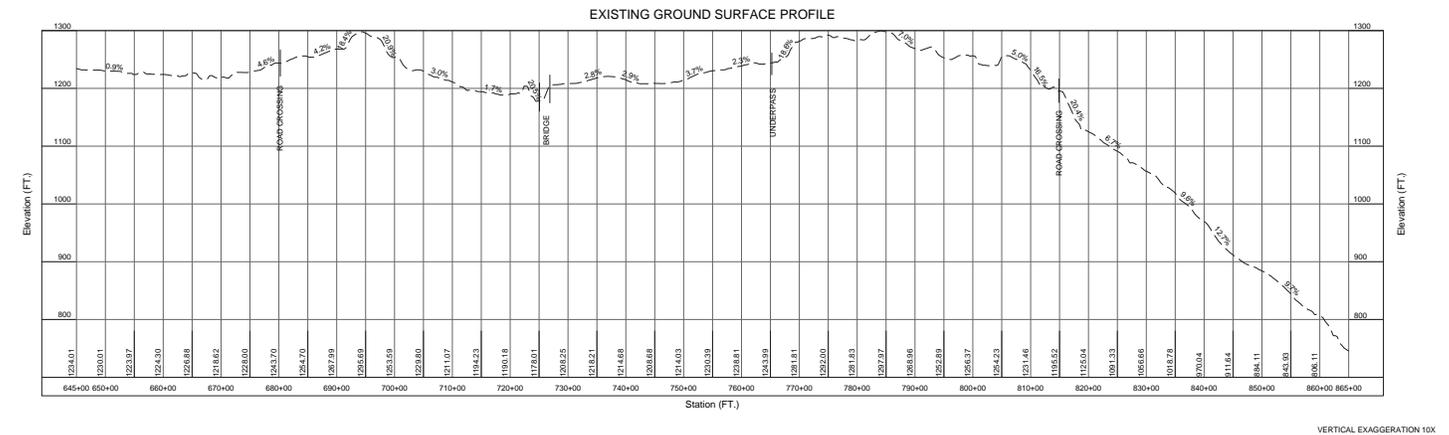
Segment 6: Spirit Mountain Recreation Area - I-35 to Cross City Trail

FIGURE 4-22. SEGMENTS 5 & 6 TRAIL MAP



See Figure 4-23 for I-35 underpass general engineering specifications.

FIGURE 4-23. SEGMENTS 5 & 6 TRAIL TOPOGRAPHIC PROFILE



Segment 5

Recreation Destinations

- Spirit Mountain Recreation Area

Activity Centers

- None in this segment

Primary Trailheads

- Spirit Mountain Recreation Area

Other Access Points

- West Skyline Parkway

Roadside Trail Segments

- Kirkus Street
- Ugstad Road

Steep Grades Areas

- None in this segment

Water Crossings (Creeks & Wetlands)

- Knowlton Creek, multiple crossings

Road/Rail Crossings

- Kirkus Street
- Old Hwy 61 & Ugstad Road
- Mountain Drive & Ugstad Road
- Mountain Drive & Skyline Pkwy
- I-35



Segment 6

Recreation Destinations

- Spirit Mountain Recreation Area
- Munger State Trail
- Duluth Cross City Trail/Lakewalk

Activity Centers

- None in this segment

Primary Trailheads

- Munger State Trail
- Duluth Cross City Trail

Other Access Points

- Superior Hiking Trail
- Duluth Traverse Trail

Roadside Trail Segments

- None in this segment

Steep Grades Areas

- Significant portion of this segment

Water Crossings (Creeks & Wetlands)

- Knowlton Creek, multiple crossings

Road/Rail Crossings

- No crossings in this segment.

FIGURE 4-24. GENERAL ENGINEERING SPECIFICATIONS – I-35 AND UGSTAD ROAD UNDERPASS

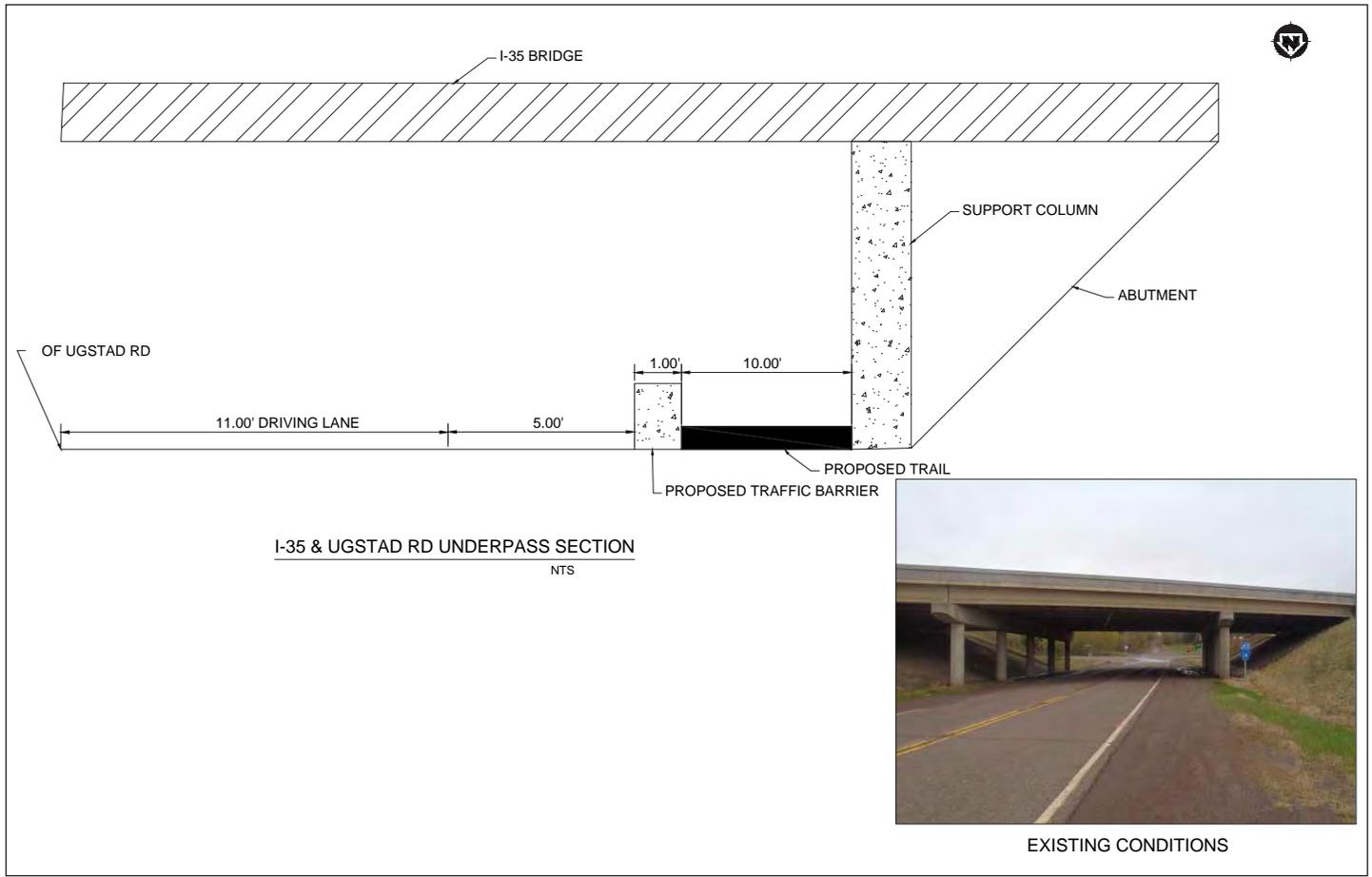
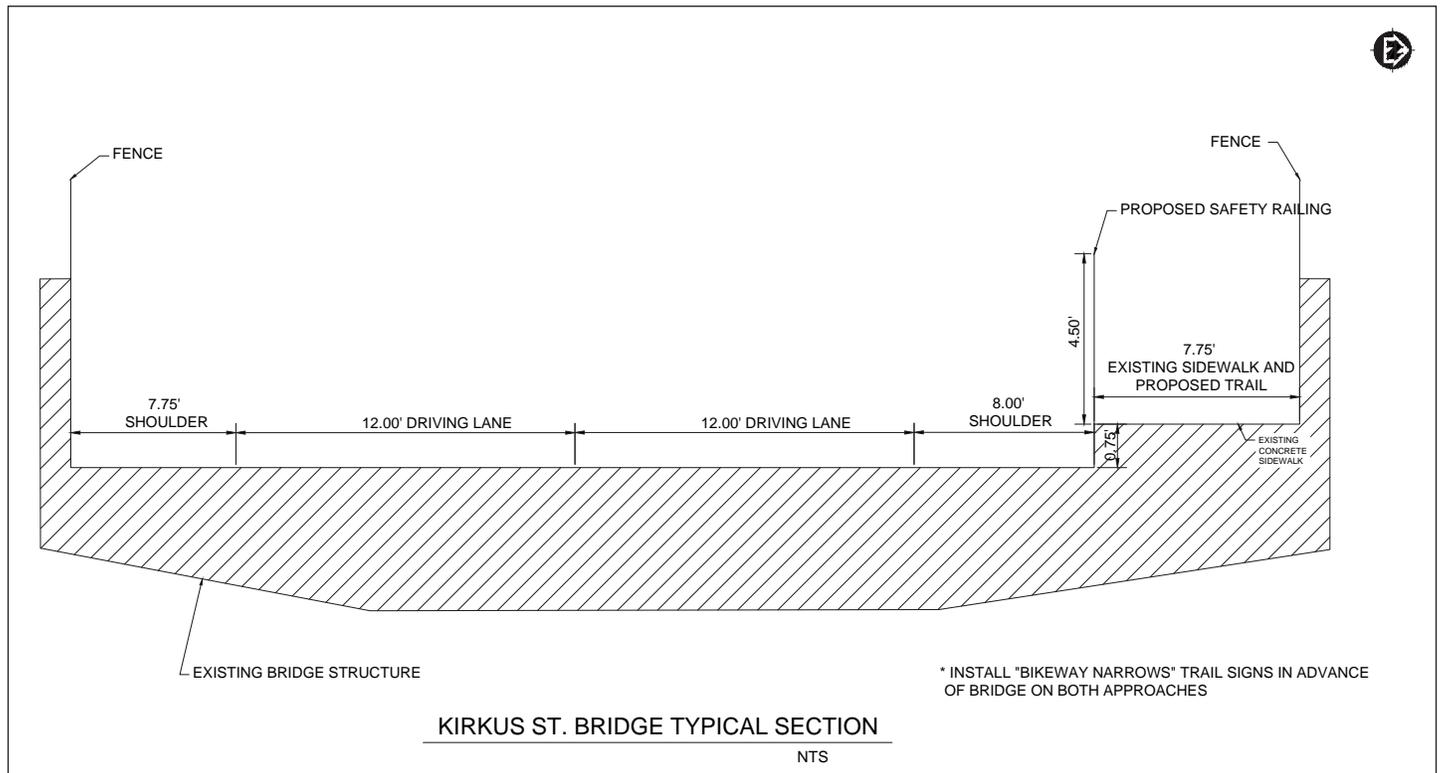


FIGURE 4-25. GENERAL ENGINEERING SPECIFICATIONS – KIRKUS STREET BRIDGE



Chapter 5: Implementation



THE IMPLEMENTATION CHAPTER

includes the following information:

- **Land Protection** identifies the private land on which trail easements or ownership are necessary to secure a continuous corridor.
- **Stewardship of Ecological and Land Resources** describes strategies and goals for maintaining and enhancing natural resources along the trail.
- **Project Phasing** identifies the priority levels for constructing various trail segments in order to complete the trail in the most efficient way possible.
- **Management and Operations** describes the general responsibilities for managing and operating the trail.
- **Research Plan** states the intent of the trail managers to participate in future research regarding the trail use.
- **Preliminary Cost Estimates** list the detailed costs estimated to construct, maintain, and rebuild the trail in the future.
- **Funding** describes the strategies and methods for gaining the funding necessary to build the trail and associated amenities.

OVERVIEW

The Implementation chapter focuses on the strategies and methods necessary to acquire the land for the 16-foot wide trail corridor and build the regional trail and physical enhancements. This master plan is a long-range vision, which will require collaboration between the cities of Hermantown and Proctor as well as coordination with the City of Duluth, St. Louis County, MNDOT, and other agencies in order to fully realize as described in this document. Responsibilities for land acquisition, construction, stewardship, operations and maintenance will primarily be the responsibility of the city in which the trail segment is located, but potential agreements for sharing of resources and responsibilities is also a possibility that will be explored as various trail segments are secured, designed, and constructed.

LAND PROTECTION

It is essential that Proctor and Hermantown secure the land needed for the minimum 16-foot wide trail alignment and trailhead areas. Current land ownership of the preferred Munger Trail Spur corridor is shown on Figure 5-1. Three (3) general categories of land ownership are shown: publicly owned land, privately owned land with existing utility or roadway easements, and privately owned land without easements. Public land ownership includes the cities (Proctor, Hermantown, and Duluth), County, State, Proctor School District, and Hermantown School District. For land owned by other public agencies, Proctor and Hermantown will need to permanently protect the trail corridor and trailheads for regional trail use with easements or joint powers agreements. For land that is privately owned with existing utility or roadway easements, Proctor and Hermantown will need to acquire public recreational easements for the trail corridor by working with the property owner and the existing utility/roadway easement holder. For land that is privately owned without easements, Proctor and Hermantown will need to acquire public access rights for the trail corridor. Land protection strategies include: park dedication, direct purchase with resale of land not required for the trail, permanent easements, land donation, bargain sale, life estate, and negotiations with cities and developers.

Segments of privately owned land with existing utility or roadway easements include the following:

- Hermantown sewer utility easement (between Lavaque Junction Road and Hermantown City Hall)
- Hermantown roadway easements (Stebner Rd, Anderson Rd, Hermantown Rd, Okerstrom Rd)
- Proctor roadway easement (Westgate Blvd)
- County roadway easement (Maple Grove Rd, St. Louis River Rd)
- Minnesota Power electric utility easement (east of Lavaque Rd/Hermantown City Hall, east of Lavaque Rd/Hermantown-Proctor border)

Segments of private land owned by Minnesota Power include the following:

- West of Lavaque Rd/north of Hermantown City Hall
- East of intersection of Ugstad Rd & I-35

Along the entire 16 mile trail alignment there are 58 private parcels with existing utility or roadway easements and seven (7) private parcels with no existing easements on which to coordinate land protection (not including the potential future Duluth segment and the interim alignment in south Proctor). In addition, there are three (3) railroad crossings (two in Proctor and one in Duluth) that all utilize existing road crossings or underpasses in order to lessen the conflict with the rail uses.

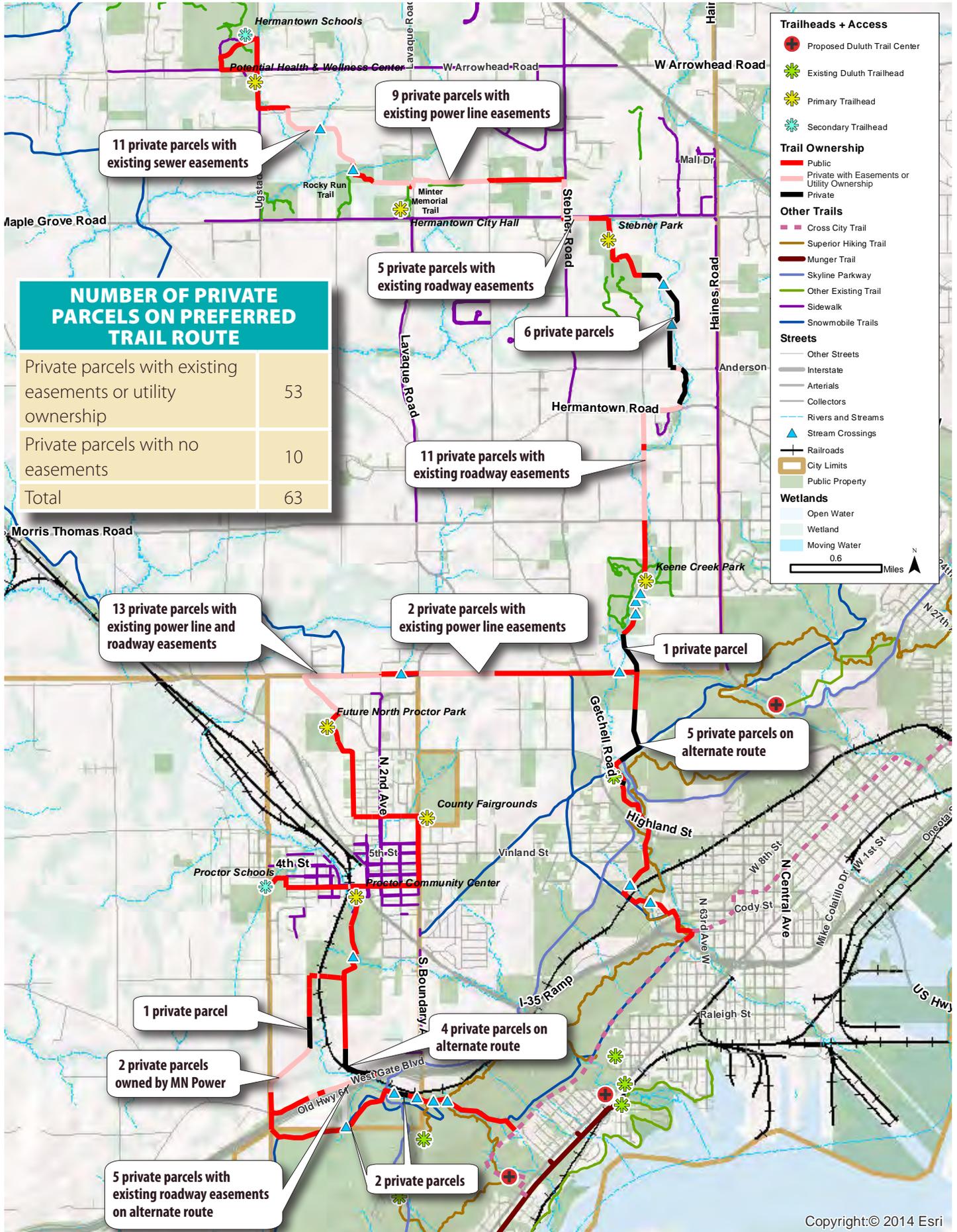
TABLE 5-1. POTENTIAL LAND ACQUISITION/EASEMENT COSTS (FOR 16-FOOT WIDE TRAIL CORRIDOR)

		LN. FEET	ACRES	ESTIMATED COST*
Preferred Alignment	Public land	56,264	20.67	-
	Private land with road easement	12,752	4.68	\$612,120.00
	Private land with utility easement	12,120	4.45	\$581,760.00
	Private land with no existing easement	8,934	3.28	\$428,856.00
	Total for Preferred Alignment:			\$1,622,736.00
Interim Alignment in Proctor	Public land	4,474	1.64	-
	Private land with road easement	1,874	.69	\$89,956.80
	Private land with no existing easement	1,737	.64	\$83,380.80
	Total for Interim Alignment:			\$173,337.60
Potential Future Alignment in Duluth	Public land	10,363	3.81	-
	Private land with no existing easement	2,417	.89	\$116,016.00
	Total for Potential Future Alignment:			\$116,016.00

*Estimated cost is \$3.00 per square foot for an easement on private land based on a minimum 16-foot wide trail corridor. The visionary goal for the trail is to establish a 30-foot wide protected natural corridor composed of native vegetation in public areas and where feasible.

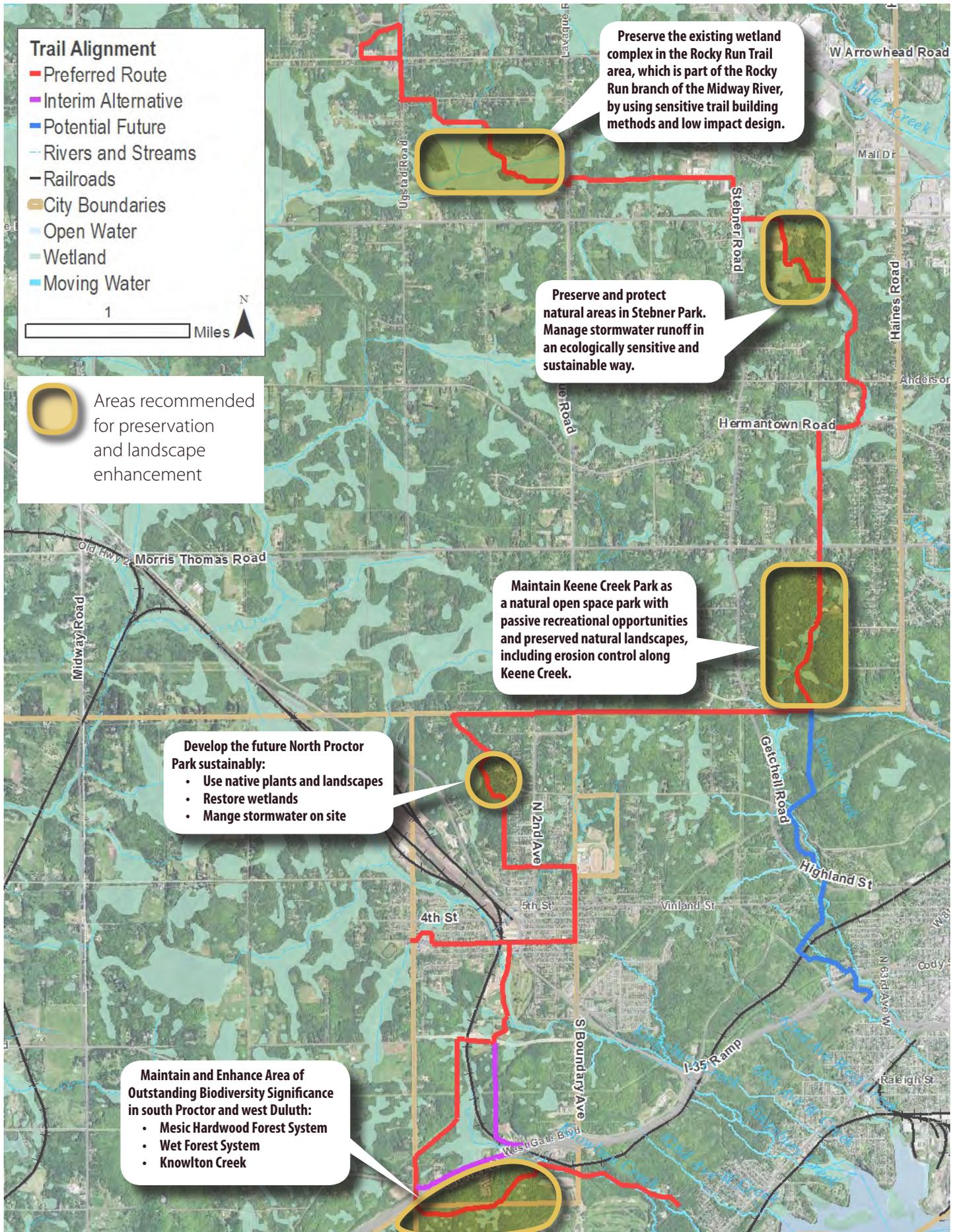


FIGURE 5-1. CURRENT PROPERTY OWNERSHIP



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FIGURE 5-2. ECOLOGICAL AND LAND RESOURCES STEWARDSHIP PLAN



STEWARDSHIP OF ECOLOGICAL AND LAND RESOURCES

Hermantown and Proctor have several large areas of existing natural landscapes along the planned trail route. Development of the Munger Spur Trail will seek to limit environmental impacts wherever possible, utilize sustainable construction methods, and preserve surrounding and adjacent natural resources by undertaking partner projects to the trail construction where applicable. Figure 5-2 shows areas recommended for preservation and landscape enhancement along the trail.

Hermantown Stewardship Goals and Policies

Consistent with the following land use concepts established in the Hermantown Comprehensive Plan, the Munger Spur Trail will provide avenues to advance natural resources protection and preservation:

- Maintain the rural and suburban character of Hermantown;
- Manage residential development to preserve critical natural features and existing, established neighborhoods;
- Maintain large areas of contiguous open space to preserve critical habitat, natural features such as forested and open water wetlands that help protect the surface and groundwater resources of the Community;
- Develop an inventory of public open space that will provide passive and active recreational opportunities for all the residents of Hermantown;
- Reduce the community's reliance on the automobile and connect neighborhoods with public and private activity centers through a system of on and off road bicycle trails and pedestrian paths that would not be accessible to motorized traffic.

PROJECT PHASING

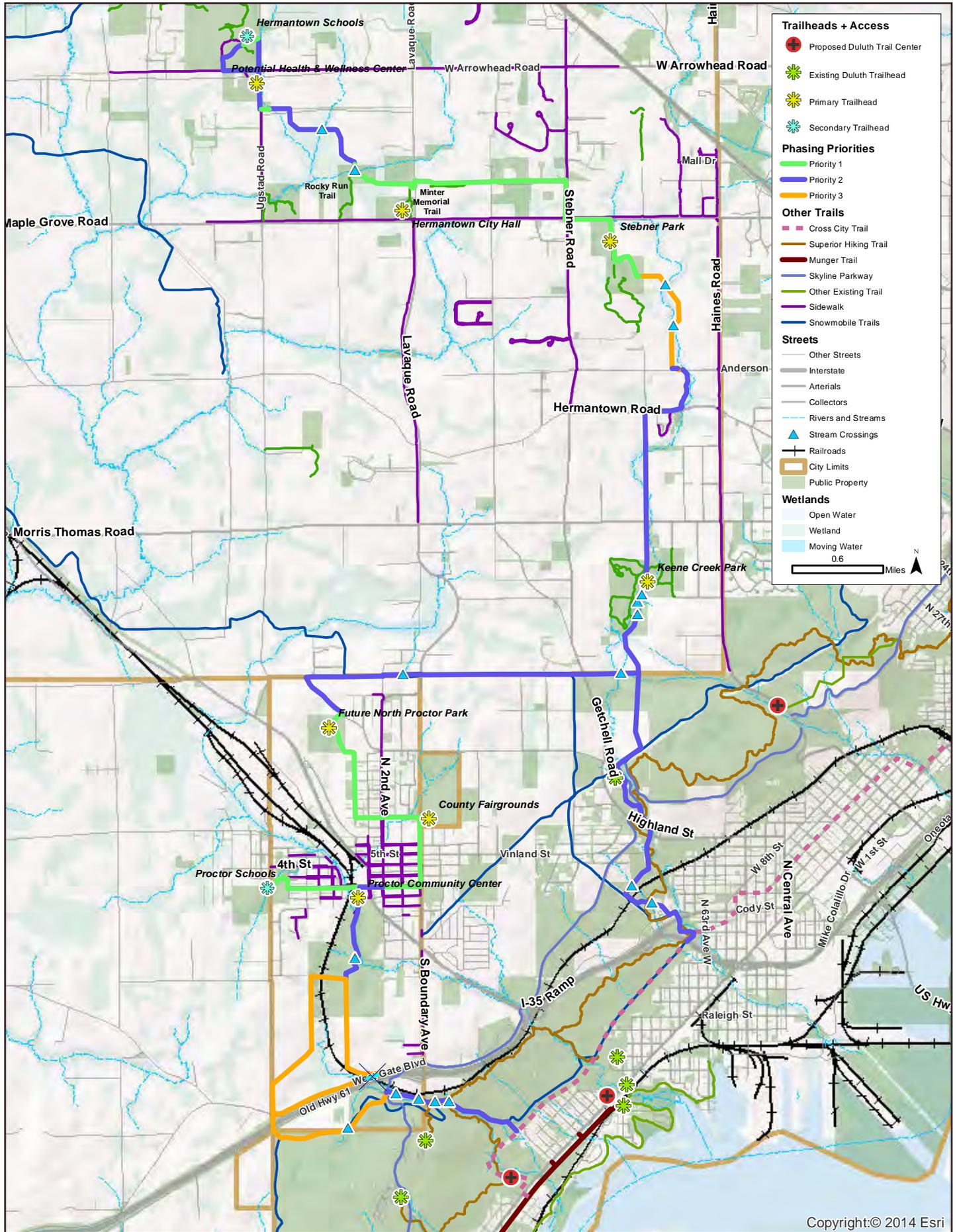
As a significantly long regional trail, more than 16 miles, it will be important to set priorities for phasing protection, design, and construction of the overall trail corridor. Determining the most desirable and feasible phasing should be based on the following priorities:

- Develop an “above the ridgeline” connector trail within Proctor and Hermantown that ultimately connects to the Munger State Trail;
- Preference for the trail to travel through natural areas rather than along roadways;
- Develop connections between logical destinations with good access;
- Create early connections to both high/middle school campuses;
- Leverage segments that already have public land ownership and/or existing roadway/utility easements.

Figure 5-3 shows how the overall trail corridor could be implemented in phases, including priority 1, priority 2, and priority 3 projects. Essentially, priority 1 projects are located in central Proctor and central Hermantown where a majority of the corridor is either publicly owned or utility corridors are under Minnesota Power ownership or easements. Priority 2 projects are likely to take a bit more time due to the need for more land to be protected through trail easements on private land. Priority 3 projects involve the complex segments that will traverse the ridgeline to connect to the Munger State Trail.



FIGURE 5-3. PHASING PRIORITIES



MANAGEMENT AND OPERATIONS

It is envisioned that management and operations will be a collaboration between Hermantown, Proctor, and other partners. Responsibilities will vary by trail segment. Formal joint powers agreements between Hermantown, Proctor, and collaborating agencies will be needed to outline specific agency responsibilities. These agreements will outline who has control of the trail right-of-way as well as who will operate and maintain the trail and how they will do it.

Management

The Hermantown Park Board and Proctor City Council establish policies and goals for their park systems and through an annual budget provide capital and operating funds for parks and trails.

General operations

The Hermantown and Proctor public works staff will be responsible for the operation of the 16-foot regional trail corridor. Where there are opportunities for operational partnerships, the cities will enter a joint powers agreement with partner agencies. When possible, the cities will encourage and advocate for volunteers to assist with outdoor education programs, patrol, park clean-ups and special events. Hermantown and Proctor recognize that as facilities expand, it may need to increase staffing.

Operating hours

The regional trail hours will be open according to Hermantown and Proctor park ordinances or policies.

Maintenance

Regular maintenance activities for the trail will include:

- Mowing
- Sweeping and blowing
- Trash collection
- Tree trimming
- Winter trail clearing
- Trail repair
- Bridge repair
- Sign maintenance
- Trailhead facility repair and maintenance

Pavement Management

Pavement deteriorates as it ages. Regular pavement maintenance can prolong the trail's lifespan in a cost effective manner.

Enforcement and security

Visitors will be informed of park and trail rules and regulations through strategically located kiosks and signs that address specific information about hours, trails, permitted and prohibited activities, and directions. Local law enforcement and public safety agencies will be responsible for emergency and criminal complaints within the trail.

Public awareness

Hermantown and Proctor will promote use of the trail through their websites, wayfinding signage, direct mail, and public events and meetings. Partnerships with local institutions, such as schools, the planned Essentia Health Regional Wellness Center in Hermantown, and the Healthy Duluth Area Coalition will encourage local residents to engage in healthy activities by using the trail.



Conflicts

The selection of the preferred trail alignment primarily within existing utility and roadway easements creates a mutually beneficial situation in an already used corridor. The surrounding land uses of residential, park land, downtown business district, and institutional land, are all compatible with a non-motorized recreational trail. Overall, there was broad support of the planned trail corridor by public meeting attendees. Minor conflicts will occasionally arise from private property owners' or neighboring residents' sensitivity to trail recreation or maintenance uses. Hermantown and Proctor will work with individual landowners to resolve these issues case by case as the trail is developed and constructed. The City of Proctor will work with MNDOT on the trail crossing under Interstate 35.

Public Services

No significant new public services will be needed to accommodate the greenway. Proposed trailheads and neighborhood gateways are served by the existing road network. If utilities are not accessible at gateways and trailheads, options such as solar powered lighting, self-composting toilets or wells will be considered. Stormwater will be treated on site. Accommodations for later installation of continuous trail lighting will be considered at initial trail construction.

Programming

Generally the Munger Spur Trail will be a passive recreational amenity allowing users to choose where to access the trail, when to access the trail, and for how long users recreate on the trail. Potential programming of the trail and portions of the trail include the following:

- Fun runs/walks
- Distance races
- Senior walking groups
- Nature walks
- Athletic group practices and events

In order to fully realize the above programming options, in addition to the cities of Hermantown and Proctor providing programming, the cities will seek to partner with the following groups:

- Hermantown Public Schools
- Proctor Public Schools
- MN DNR
- South St. Louis County Fairgrounds
- Healthy Duluth Area Coalition
- Essentia Health Regional Wellness Center
- City of Duluth
- St. Louis County
- Spirit Mountain
- Hermantown Youth Soccer
- COGGS (Cyclists of Gitchee Gumees Shores)
- Duluth Cross Country Ski Club

RESEARCH PLAN

Hermantown and Proctor will participate in the Greater Minnesota Regional Parks and Trails Commission's research initiatives, such as visitation counts, use profiles, recreation demands, and trends surveys.

PRELIMINARY COST ESTIMATES

The preliminary cost estimate for this trail project was developed based on the preferred alignment determined by the Cities of Hermantown, Proctor, Duluth, and the residents of those communities with the assistance of professional planners and engineers at HKGi and MSA respectively. Satellite imagery, LIDAR, local maps, and limited physical site inspections were utilized to determine the existing conditions of the proposed trail route. No site surveys were conducted and no in depth analysis was done as a result to determine an approximately exact amount of materials needed. This will be done during the actual design stage of the project at a future undetermined date. As a result, there will be changes to quantities of materials shown in the cost estimates because we do not know the exact site conditions at all locations without an actual survey of the route. The following is a list of items and explanations pertaining to the cost estimates of each segment:

- **Trail:** This item includes everything involved in building the typical cross section of a trail including common excavation, geotextile separation fabric, granular fill, aggregate base, bituminous pavement, and topsoil and seeding.
- **Road Crossing:** This item includes everything involved in constructing a typical road crossing for a trail including common excavation, geotextile separation fabric, granular fill, aggregate base, concrete sidewalk pavement, ADA accessible ramps with truncated domes, pavement markings, and trail and roadway signage.
- **Clearing and Grubbing:** This item includes clearing and grubbing of vegetation necessary to make way for trail construction.
- **Trail Signage:** This item includes any necessary signing for trail users outside that of intersections such as hill and curve signs.
- **Pedestrian Crosswalk Flasher System:** This item includes everything necessary to install a pedestrian crosswalk flasher system on a roadway intended for at-grade mid-block crossings on moderate speed roadways or roadways with moderate traffic volume close to schools.
- **Culverts and Culvert Extensions:** This item includes culverts and culvert extensions necessary to bridge streams and wet areas. Not all small water crossings were determined as this would require extensive survey of the trail alignment, therefore, it can be expected that additional culverts may be required to construct the trail.
- **Boardwalk:** This item includes everything necessary to construct a boardwalk system across wetlands including precast concrete piers, the boardwalk panels, and railings.
- **Pavement Markings:** This item includes trail pavement markings outside of intersections.

- **Borrow Fill:** This item includes fill required for trail construction beyond that available from onsite excavation.
- **Erosion Control:** This item includes everything required to protect local waterways from erosion sediment related to construction activities.
- **Regrade Ditches:** Because the trail follows along roadway right of ways in many areas, where roads currently have a ditch system the ditch will need to be regraded or moved to accommodate the trail. This item includes the relocation of driveway culverts where needed.
- **Stormwater Treatment:** This item includes everything required to protect local waters from stormwater runoff. A filter strip parallel to the trail on one side is envisioned as an easy way to treat runoff from the trail pavement.
- **Wetland Mitigation:** This item includes the cost of buying wetland credits if wetland is going to be removed to build the trail in areas that are not effective for boardwalk construction.
- **Retaining Wall:** This item includes the cost of retaining wall height and length in areas requiring stabilization due to steep side slopes.
- **Chain Link Fence:** The item includes the cost of chain link fence that may be required for some areas that are near private property, restricted areas, or near steep drop-offs.
- **Contractor Mobilization and Overhead:** This item includes the costs for the contractor's moving of equipment, set-up, traffic control, and other costs not directly related to the physical construction of the trail.
- **Preliminary Design Phase Contingency:** This item includes a factor of the overall estimated cost to account for unknowns in the estimate for both quantity of the items and their related costs. This contingency can be lowered at the next more detailed design phase when more precise information is known.
- **Engineering:** This item includes the cost of engineering design and construction for the trail.

Because the proposed trail follows areas of private land and areas needing additional easements or right of way, Right of Way Acquisition will be necessary in a number of locations. The cost of Right of Way Acquisition was not considered as part of the preliminary cost estimates but needs to be considered before designing the trail and seeking funding. The prices for each item are based on multiple sources and engineering judgement and will vary based on market conditions at the time of project bidding. Based on the preliminary cost estimate, the entire main trail is projected to cost about 11.25 million dollars in today's value. This cost does not include any right of way acquisition costs as previously mentioned. It does not include the construction or improvement of any proposed trailheads. It also does not include any costs necessary to reconstruct any streets to accommodate the trail such as Boundary Avenue. Boundary Avenue is scheduled for reconstruction in the near future and

should be designed to accommodate the trail which may involve the relocation of curb and gutter and storm sewers. Other streets that should be reviewed for reconstruction in coordination with the trail are Okerstrom Road, Lightning Drive, and 2nd Street and 9th Street in Proctor.

TABLE 5-2. PRELIMINARY TRAIL COST SUMMARY

TRAIL SEGMENT	LENGTH (FT)	TOTAL ESTIMATED COST
Segment 1 - Hermantown Schools to Hermantown Marketplace / Stebner Park	21,500	\$2,869,387.50
Segment 2 - Hermantown Marketplace / Stebner Park to Keene Creek Park	20,200	\$3,292,942.50
Segment 3 - Keene Creek Park to North Proctor Park	15,700	\$1,997,340.00
Segment 4 - Central / Downtown Proctor	12,400	\$1,155,645.00
Segment 4a - Proctor School Connector	3,800	\$328,612.50
Segment 5 - South Proctor	3,820	\$1,040,572.50
Segment 6 - I-35 Underpass to Cross City Trail	10,000	\$1,344,795.00
Segment 7 - Keene Creek Park to Cross City Trail (Duluth Option)	12,400	\$1,191,487.50
Total (Not Including Segment 7 Duluth Option)	87,420	\$12,036,345.00

TABLE 5-3. SEGMENT 1 (HERMANTOWN SCHOOLS TO HERMANTOWN MARKETPLACE / STEBNER PARK) PRELIMINARY COST ESTIMATE

ITEM	UNIT	QUANTITY	PRICE	TOTAL
Trail	LF	21,500	\$34.00	\$731,000.00
Road Crossing	EA	5	\$7,265.00	\$36,325.00
Clearing & Grubbing	Acre	4	\$4,500.00	\$18,000.00
Trail Signing (Not at Intersections)	LS	1	\$1,000.00	\$1,000.00
Pedestrian Crosswalk Flasher System	EA	2	\$8,000.00	\$16,000.00
Culverts & Culvert Extensions	LF	500	\$100.00	\$50,000.00
Boardwalk	LF	1,200	\$500.00	\$600,000.00
Pavement Markings	LS	1	\$2,000.00	\$2,000.00
Borrow Fill	CY	500	\$15.00	\$7,500.00
Erosion Control	LF	21,500	\$1.00	\$21,500.00
Regrade Ditches	LF	5,200	\$25.00	\$130,000.00
Stormwater Treatment	LF	21,500	\$10.00	\$215,000.00
Wetland Mitigation	SF	42,300	\$2.00	\$84,600.00
Subtotal Segment 1				\$1,912,925.00
Contractor Mobilization and Overhead	LS	15%		\$286,938.75
Preliminary Design Phase Contingency	LS	20%		\$382,585.00
Engineering	LS	15%		\$286,938.75
Total Segment Cost				\$2,869,387.50

TABLE 5-4. SEGMENT 2 (HERMANTOWN MARKETPLACE / STEBNER PARK TO KEENE CREEK PARK) PRELIMINARY COST ESTIMATE

ITEM	UNIT	QUANTITY	PRICE	TOTAL
Trail	LF	20,200	\$34.00	\$686,800.00
Road Crossing	EA	3	\$7,265.00	\$21,795.00
Retaining Wall	SF	8,000	\$45.00	\$360,000.00
Clearing & Grubbing	Acres	4	\$4,500.00	\$18,000.00
Trail Signing (Not at Intersections)	LS	1	\$1,000.00	\$1,000.00
Pedestrian Crosswalk Flasher System	EA	2	\$8,000.00	\$16,000.00
Culverts & Culvert Extensions	LF	250	\$100.00	\$25,000.00
Chain Link Fence / Safety Rail	LF	2,500	\$45.00	\$112,500.00
Bridge Structure	LF	270	\$1,500.00	\$405,000.00
Pavement Markings	LS	1	\$2,000.00	\$2,000.00
Borrow Fill	CY	2,000	\$15.00	\$30,000.00
Erosion Control	LF	20,200	\$1.00	\$20,200.00
Rock Excavation	CY	1,000	\$100.00	\$100,000.00
Regrade Ditches	LF	7,000	\$25.00	\$175,000.00
Wetland Mitigation	SF	10,000	\$2.00	\$20,000.00
Stormwater Treatment	LF	20,200	\$10.00	\$202,000.00
Subtotal Segment 2				\$2,195,295.00
Contractor Mobilization & Overhead	LS	15%		\$329,294.25
Preliminary Design Phase Contingency	LS	20%		\$439,059.00
Engineering	LS	15%		\$329,294.25
Total Segment Cost				\$3,292,942.50

TABLE 5-5. SEGMENT 3 (KEENE CREEK PARK TO NORTH PROCTOR PARK) PRELIMINARY COST ESTIMATE

ITEM	UNIT	QUANTITY	PRICE	TOTAL
Trail	LF	15,700	\$34.00	\$533,800.00
Road Crossing	EA	4	\$7,265.00	\$29,060.00
Clearing & Grubbing	Acre	3	\$4,500.00	\$13,500.00
Retaining Wall	SF	150	\$50.00	\$7,500.00
Trail Signing (Not at Intersections)	LS	1	\$2,000.00	\$2,000.00
Pedestrian Crosswalk Flasher System	EA	2	\$8,000.00	\$16,000.00
Boardwalk	LF	1,000	\$500.00	\$500,000.00
Pavement Markings	LS	1	\$2,000.00	\$2,000.00
Regrade Ditches	LF	2,200	\$25.00	\$55,000.00
Erosion Control	LF	15,700	\$1.00	\$15,700.00
Stormwater Treatment	LF	15,700	\$10.00	\$157,000.00
Subtotal Segment 3				\$1,331,560.00
Contractor Mobilization & Overhead	LS	15%		\$199,734.00
Preliminary Design Phase Contingency	LS	20%		\$266,312.00
Engineering	LS	15%		\$199,734.00
Total Segment Cost				\$1,997,340.00



TABLE 5-6. SEGMENT 4 (CENTRAL / DOWNTOWN PROCTOR) PRELIMINARY COST ESTIMATE

ITEM	UNIT	QUANTITY	PRICE	TOTAL
Trail	LF	12,400	\$34.00	\$421,600.00
Road Crossing	EA	12	\$7,265.00	\$87,180.00
Retaining Wall	SF	1,750	\$50.00	\$87,500.00
Clearing & Grubbing	Acre	0.5	\$4,500.00	\$2,250.00
Trail Signing (Not at Intersections)	LS	1	\$1,000.00	\$1,000.00
Pedestrian Crosswalk Flasher System	EA	2	\$8,000.00	\$16,000.00
Repave parking areas	SY	850	\$20.00	\$17,000.00
Pavement Markings	LS	1	\$1,500.00	\$1,500.00
Erosion Control	LF	12,400	\$1.00	\$12,400.00
Stormwater Treatment	LF	12,400	\$10.00	\$124,000.00
Subtotal Segment 4				\$770,430.00
Contractor Mobilization & Overhead	LS	15%		\$115,564.50
Preliminary Design Phase Contingency	LS	20%		\$154,086.00
Engineering	LS	15%		\$115,564.50
Total Segment Cost				\$1,155,645.00

TABLE 5-7. SEGMENT 4A (PROCTOR SCHOOL CONNECTOR) PRELIMINARY COST ESTIMATE

ITEM	UNIT	QUANTITY	PRICE	TOTAL
Trail	LF	3,800	\$34.00	\$129,200.00
Road Crossing	EA	5	\$7,265.00	\$36,325.00
Clearing & Grubbing	Acre	0.5	\$4,500.00	\$2,250.00
Pavement Markings	LS	1	\$1,500.00	\$1,500.00
Pedestrian Crosswalk Flasher System	EA	1	\$8,000.00	\$8,000.00
Erosion Control	LF	3,800	\$1.00	\$3,800.00
Stormwater Treatment	LF	3,800	\$10.00	\$38,000.00
Subtotal Segment				\$219,075.00
Contractor Mobilization & Overhead	LS	15%		\$32,861.25
Preliminary Design Phase Contingency	LS	20%		\$43,815.00
Engineering	LS	15%		\$32,861.25
Total Segment Cost				\$328,612.50

TABLE 5-8. SEGMENT 5 (SOUTH PROCTOR) PRELIMINARY COST ESTIMATE

ITEM	UNIT	QUANTITY	PRICE	TOTAL
Trail	LF	3,820	\$34.00	\$129,880.00
Road Crossing	EA	1	\$7,265.00	\$7,265.00
Retaining Wall	SF	3,500	\$45.00	\$157,500.00
Clearing & Grubbing	Acre	1.5	\$4,500.00	\$6,750.00
Boardwalk	LF	400	\$500.00	\$200,000.00
Trail Signing (Not including Intersections)	LS	1	\$2,000.00	\$2,000.00
Chain Link Fence / Safety Rail	LF	800	\$45.00	\$36,000.00
Pavement Markings	LS	1	\$500.00	\$500.00
Erosion Control	LF	3,820	\$1.00	\$3,820.00
Rock Excavation	CY	500	\$100.00	\$50,000.00
Regrade Ditches	LF	1,000	\$25.00	\$25,000.00
Wetland Mitigation	SF	20,000	\$2.00	\$40,000.00
Stormwater Treatment	LF	3,500	\$10.00	\$35,000.00
Subtotal Segment 5				\$693,715.00
Contractor Mobilization & Overhead	LS	15%		\$104,057.25
Preliminary Design Phase Contingency	LS	20%		\$138,743.00
Engineering	LS	15%		\$104,057.25
Total Segment Cost				\$1,040,572.50

TABLE 5-9. SEGMENT 6 (I-35 UNDERPASS TO CROSS CITY TRAIL) PRELIMINARY COST ESTIMATE

ITEM	UNIT	QUANTITY	PRICE	TOTAL
Trail	LF	10,000	\$34.00	\$340,000.00
Road Crossing	EA	2	\$7,265.00	\$14,530.00
Retaining Wall	SF	2,000	\$50.00	\$100,000.00
Clearing & Grubbing	Acre	7	\$4,500.00	\$31,500.00
Trail Signing (Not at Intersections)	LS	1	\$2,000.00	\$2,000.00
Pedestrian Crosswalk Flasher System	EA	1	\$8,000.00	\$8,000.00
Pavement Markings	LS	1	\$1,500.00	\$1,500.00
Borrow Fill	CY	2,000	\$15.00	\$30,000.00
Culvert Extension	LF	10	\$100.00	\$1,000.00
Rock Excavation	CY	1,000	\$100.00	\$100,000.00
Bridge Structure	LF	100	\$1,500.00	\$150,000.00
Wetland Mitigation	SF	4,000	\$2.00	\$8,000.00
Erosion Control	LF	10,000	\$1.00	\$10,000.00
Stormwater Treatment	LF	10,000	\$10.00	\$100,000.00
Subtotal Segment 5				\$896,530.00
Contractor Mobilization & Overhead	LS	15%		\$134,479.50
Preliminary Design Phase Contingency	LS	20%		\$179,306.00
Engineering	LS	15%		\$134,479.50
Total Segment Cost				\$1,344,795.00



TABLE 5-10. SEGMENT 7 (KEENE CREEK PARK TO CROSS CITY TRAIL, DULUTH OPTION) PRELIMINARY COST ESTIMATE

ITEM	UNIT	QUANTITY	PRICE	TOTAL
Trail	LF	12,400	\$34.00	\$421,600.00
Road Crossing	EA	5	\$7,265.00	\$36,325.00
Retaining Wall	SF	2,000	\$50.00	\$100,000.00
Clearing & Grubbing	Acre	3	\$4,500.00	\$13,500.00
Signing / Access under bridge	LS	1	\$10,000.00	\$10,000.00
Pedestrian Crosswalk Flasher System	EA	0	\$8,000.00	
Pedestrian Hybrid Beacon (Signal)	EA	0	\$50,000.00	
Chain Link Fence / Handrail	LF	1,000	\$45.00	\$45,000.00
Pavement Markings	LS	1	\$1,500.00	\$1,500.00
Borrow Fill	CY	2,000	\$15.00	\$30,000.00
Erosion Control	LF	12,400	\$1.00	\$12,400.00
Wetland Mitigation	LS		\$-	\$-
Stormwater Treatment	LF	12,400	\$10.00	\$124,000.00
Subtotal Segment 6				\$794,325.00
Contractor Mobilization & Overhead	LS	15%		\$119,148.75
Preliminary Design Phase Contingency	LS	20%		\$158,865.00
Engineering	LS	15%		\$119,148.75
Total Segment Cost				\$1,191,487.50

Operations and Maintenance Costs

Table 5-11 identifies annual maintenance and operations costs for the 16-foot trail corridor including grade separated crossings for each trail segment. It includes yearly amortization of costs for major capital maintenance or full facility replacement approximately every 25 years for the 16' trail corridor and every 50 years for grade separated crossings. The estimates reflect a high level of maintenance as would be expected for a regional trail. Maintenance responsibilities will include landscaping, habitat management, sign replacement, winter plowing and other activities.

Natural Resources Costs

Natural resource project opportunities beyond the trail corridor are identified on Figure 5-2. Hermantown and Proctor support the restoration of habitat adjacent to the trail and may choose to collaborate with individual landowners and other public agencies where it is to the mutual benefit of both agencies and as funding for restoration and ongoing habitat management allows. It is anticipated that the costs for these projects will be coordinated with other parks and public works projects within each city.

TABLE 5-11. OPERATIONS & MAINTENANCE COST ESTIMATES

			ANNUAL O+M COST		ANNUAL CAPITAL FACILITY REPLACEMENT COST (replacement every 25 years for trails, every 50 years for bridges)		
ITEM	QTY	UNIT	UNIT COST	SUBTOTAL	UNIT COST	SUBTOTAL	TOTAL
Segment 1 Trail	21,500	feet	\$1.50	\$32,250	\$2.50	\$53,750	\$86,000
Segment 2 Trail	20,200	feet	\$1.50	\$30,300	\$2.50	\$50,500	\$80,800
Segment 2 Bridge	1	bridge	\$2,500	\$2,500	\$10,000	\$10,000	\$12,500
Segment 3 Trail	15,700	feet	\$1.50	\$23,550	\$2.50	\$39,250	\$62,800
Segment 4 Trail	12,400	feet	\$1.50	\$18,600	\$2.50	\$31,000	\$49,600
Segment 4a Trail	3,800	feet	\$1.50	\$5,700	\$2.50	\$9,500	\$15,200
Segment 5 Trail	3,820	feet	\$1.50	\$5,730	\$2.50	\$9,550	\$15,280
Segment 6 Trail	10,000	feet	\$1.50	\$15,000	\$2.50	\$25,000	\$40,000
Segment 6 Bridge	1	bridge	\$2,500	\$2,500	\$10,000	\$10,000	\$12,500
Segment 7 Trail	12,400	feet	\$1.50	\$18,600	\$2.50	\$31,000	\$49,600
				\$154,730		\$269,550	\$424,280

FUNDING

Funding for initial capital cost and ongoing operations and maintenance costs is essential for a successful regional trail. Funding will be a collaboration among the cities and other agencies, with an emphasis on seeking outside funding. Cost-share roles will be determined by the strengths of each agency and circumstances of each project. In-kind contributions of land, easement, design, engineering, construction and maintenance and operations are encouraged and will be outlined in joint powers agreements among agencies.

It is anticipated that most future capital projects will be well positioned to secure regional, state and federal funds for recreation, transportation, water and habitat and that these sources will account for a majority of capital construction costs. Examples of outside funding sources include:

- 1/2 and 1/2 Tax (Proctor) from food and beverage
- Park dedication funds (Hermantown)
- Federal transportation grants (MAP 21)
- Minnesota Department of Transportation
- Minnesota Department of Natural Resources
- Clean Water, Land and Legacy Amendment funds
- Foundations and nonprofits
- Statewide Health Improvement Program
- Duluth-Superior Metropolitan Interstate Council

Funding for operating and maintaining the 16-foot regional trail easement and trailheads primarily will be each city's responsibility. Annual operating costs will be funded through Hermantown's and Proctor's annual budget.

Partnerships

In many cases the cities of Hermantown and Proctor will seek to partner with the City of Duluth, the Duluth-Superior Metropolitan Interstate Council (MIC), and St. Louis County, among others, in order to secure funding for the trail. Some of the trail corridor is on land under Minnesota Power ownership or easements for overhead powerlines. The cities would like to partner with MN Power to utilize these existing corridors for trail construction and began this discussion with MN Power during the master planning process.



Proctor Hermantown Munger Trail Spur

MASTER PLAN

DECEMBER
2015



Appendix: Detailed Analysis



This Appendix includes the following items:

- Detailed descriptions of Street Crossing Design Strategies
- Engineering Analysis: Aerial and profile by segment
- Engineering Analysis Maps

Street Crossing Design Strategies

West Arrowhead Road & Ugstad Road

The existing intersection is a 4-way stop near the Hermantown Schools. We recommend utilizing a standard intersection crossing at this location. Stop Ahead and Stop Signs should be installed in both directions on the trail. Combined Bicycle/Pedestrian Warning Signs with Ahead plaques shall be placed on all four approaches to intersection. Combined Bicycle/Pedestrian Warning sign with Downward Diagonal Arrow plaque shall be used at the crossing point for westbound traffic only.

Lavaque Junction Road & Ugstad Road

The existing intersection is a 1-way stop along 30 MPH roadways. We recommend utilizing a Mid-block Type Crossing with User Activated Warning Light Signs at this location. Stop Ahead and Stop Signs should be utilized on the trail on both approaches to intersection. Another, possibly better solution would be to move the trail to the east side of Ugstad Road between West Arrowhead Road and Lavaque Junction Road. This would eliminate the need for a midblock crossing at this location near the Hermantown Schools. In this case we would utilize a Standard Parallel Intersection Crossing.

Lavaque Road

No intersection currently exists. This crossing will be a Mid-block crossing of a 40 MPH rural type road. We recommend utilizing a Mid-block Type Crossing with User Activated Warning Light Signs at this location. The crossing is planned to happen after trail parallels the crossing road for 100 to 300 feet on each approach. This will improve trail user safety and motorist visibility in addition to preventing bicyclists from “darting” across the intersection. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to intersection. A “No Motor Vehicles” sign shall be placed at the beginning of the trail on both sides of the intersection. This trail intersection shall also be lit with overhead lighting.

Getchell Road

No intersection currently exists. This crossing will be a Mid-block crossing of a small low speed and very low volume gravel road. We recommend utilizing a Standard Midblock Type Crossing at this location. Due to poor sight distance at this crossing, we recommend doing some site clearing of trees and brush along with grading down a hill on the east side of the crossing. Exact extents of grading, clearing, and brushing would be determined during the design phase. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used



Existing intersection at West Arrowhead Rd and Ugstad Rd facing south (Trail planned along west side of intersection)



Existing intersection at Lavaque Junction Rd and Ugstad Rd facing southeast (Trail planned along south side of intersection)



Existing intersection at Getchell Rd facing north (Trail planned to cross road here)

on both approaches to trail crossing in addition to Combined Bicycle/Pedestrian Warning signs with Downward Diagonal Arrow plaques at the crossing point. A “No Motor Vehicles” sign shall be placed at the beginning of the trail on both sides of the intersection. This trail intersection shall also be lit with overhead lighting.

Maple Grove Road & Stebner Road

The existing intersection is a signalized 4-way intersection of higher speed and volume roadways. We recommend using the Standard Intersection Crossing for this intersection as it is already a signalized intersection with separate pedestrian controls. As can be seen in the photos adequate ADA accessible ramps and pedestrian signal heads are in place. Little to no rework is

expected to be needed for this intersection. As with most path intersections, Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used on all four approaches to the trail crossing. A “(Bikes) Use Ped Signal” sign should installed on the existing signal posts that house the actuation buttons for pedestrians.

Anderson Road

No existing intersection exists in this location. This crossing will be a Mid-block crossing of 30 MPH road. We recommend utilizing a Standard Mid-block Type Crossing at this location. The crossing is planned to happen after the trail parallels the crossing road for about 150 feet on each approach. This will improve trail user safety and motorist visibility in addition to preventing bicyclists from “darting” across the intersection. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used on both approaches to trail crossing in addition to Combined Bicycle/Pedestrian Warning signs with Downward Diagonal Arrow plaques at the crossing point. This trail intersection shall also be lit with overhead lighting.

Okerstrom Road & Hermantown Road

The existing intersection is a 2-way stop intersection. The trail will be crossing the travel path that does not stop. The roadway being crossed is a 40 MPH Moderate Volume roadway. We recommend utilizing a Mid-block Type Crossing at this location with User Activated Warning Light Signs on the Hermantown Road approaches. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used on the Okerstrom Road Approaches.



Existing intersection at Maple Grove Rd and Stebner Rd facing southeast (Trail planned to cross west and south sides of intersection)



Existing west side of intersection at Maple Grove Rd and Stebner Rd facing south (ADA accessible)



Existing intersection at Okerstrom Rd and Hermantown Rd facing southwest (trail planned to cross east side of intersection)



Existing intersection at Okerstrom rd and morris thomas rd facing south (trail planned to cross east side of intersection)



Existing Intersection at Lavaque Rd facing North (Trail planned to cross roadway here)



Existing intersection at Lavaque Rd facing southwest

Okerstrom Road & Morris Thomas Road

The existing intersection is a 2-way stop intersection. The trail will be crossing the travel path that does not stop. The roadway being crossed is a 40 MPH Moderate Volume roadway. The roadway is 2-lanes with 6 foot paved shoulders. We recommend utilizing a Mid-block Type Crossing with User Activated Warning Light Signs at this location due to the combined moderate speed/volume and the wider roadway crossing. Stop Ahead and Stop Signs shall be utilized on

the trail on both approaches to the intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used on the Okerstrom Road Approaches.

Getchell Road

No intersection currently exists at this location. Getchell Road is a 40 MPH, two-lane road with no shoulders. We recommend utilizing a Mid-block Type Crossing with User Activated Warning Light Signs at this location due to the higher speeds and volumes. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection along with No Motor Vehicle Signs on each trail approach. The intersection shall also be lit with a Street Lamp. Some Minor Tree and Brush clearing may be necessary to achieve adequate sight lines.

Lavaque Road

Currently, this intersection exists as a snowmobile crossing. The crossing also forms the boundary between Hermantown and Proctor. Lavaque road is 2-lanes with 2-12 foot shoulders. We recommend utilizing a Mid-block Type Crossing with User Activated Warning Light Signs at this location due to the wide road crossing and potential higher speeds. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection along with No Motor Vehicle Signs on each trail approach. Accommodations should be made for continued snowmobile access. The intersection shall also be lit with a Street Lamp.

St. Louis River Road

No intersection currently exists at this location. St. Louis River Road is a 30 MPH low volume street. We recommend utilizing a Standard Mid-block Type Crossing at this location. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used on both approaches to the intersection and along with Combined Bicycle/Pedestrian Warning Signs with Downward Diagonal Arrow plaques at the crossing point. A "No Motor Vehicles" sign shall be placed at the beginning of the trail on both sides of the intersection. This trail intersection shall also be lit with overhead lighting.



9th Street & 3rd Ave

This is an existing 2-way stop intersection in a residential neighborhood. The streets are low speed and low volume. We recommend utilizing a Standard Mid-block Type Crossing at this location. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used on both approaches to the intersection on 3rd Avenue along with Combined Bicycle/Pedestrian Warning Signs with Downward Diagonal Arrow plaques at the crossing point.

9th Street & 2nd Ave

This is an existing Tee intersection with 1-way stop in a residential area. 2nd Avenue is a 2-lane road with 2-12 foot shoulders. We recommend utilizing a Mid-block Type Crossing with User Activated Warning Light Signs at this location due to the wide road crossing. A median refuge island would be ideal here but is not recommended until the roadway is reconstructed. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection along with No Motor Vehicle Signs on the west trail approach. Combined Bicycle/Pedestrian Warning Sign with Ahead plaque shall be placed on the 9th Street approach.

9th Street & 1st Ave

This is an existing Tee intersection with 1-way stop in a residential neighborhood. The trail will be crossing the minor road that must stop. We recommend utilizing the Standard Intersection Crossing at this location. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used on all three approaches to the intersection. Combined Bicycle/Pedestrian Warning sign with Downward Diagonal Arrow plaque shall be used at the crossing point for southbound traffic only.

6th Street & Boundary Ave

This is an existing 2-way stop intersection in a residential neighborhood. The trail will be crossing the minor road that must stop. We recommend utilizing the Standard Intersection Crossing at this location. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used on all four approaches to the intersection. Combined Bicycle/Pedestrian Warning sign with Downward Diagonal Arrow plaque shall be used at the crossing point for westbound traffic only.



Existing intersection at 9th St and 2nd Ave facing west (Trail planned to cross on south side of intersection)



*Existing intersection at 5th St and Boundary Ave facing north
(Trail planned to cross west side of intersection)*

5th Street & Boundary Ave

The existing intersection is a 4-way stop in a neighborhood setting. We recommend utilizing a standard intersection crossing at this location. Stop Ahead and Stop Signs should be installed in both directions on the trail. Combined Bicycle/Pedestrian Warning Signs with Ahead plaques shall be placed on all four approaches to intersection. Combined Bicycle/Pedestrian Warning sign with Downward Diagonal Arrow plaque shall be used at the crossing point for westbound traffic only.

4th Street & Boundary Ave

This is an existing 2-way stop intersection in a residential neighborhood. The trail will be crossing the minor road that must stop. We recommend utilizing the Standard Intersection Crossing at this location. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used on all four approaches to the intersection. Combined Bicycle/Pedestrian Warning sign with Downward Diagonal Arrow plaque shall be used at the crossing point for westbound traffic only.

3rd Street & Boundary Ave

This is an existing 2-way stop intersection in a residential neighborhood. The trail will be crossing the minor road that must stop. We recommend utilizing the Standard Intersection Crossing at this location. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used on all four approaches to the intersection. Combined Bicycle/Pedestrian Warning sign with Downward Diagonal Arrow plaque shall be used at the crossing point for westbound traffic only.

2nd Street & 1st Ave

This is an existing 2-way stop intersection in a residential neighborhood. The trail will be crossing the minor road that must stop. We recommend utilizing the Standard Intersection Crossing at this location. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used on all four approaches to the intersection. Combined Bicycle/Pedestrian Warning sign with Downward Diagonal Arrow plaque shall be used at the crossing point for northbound traffic only.

2nd Street & 2nd Ave

The existing intersection is a 4-way stop in a neighborhood setting. We recommend utilizing a standard intersection crossing at this location. Stop Ahead and Stop Signs should



be installed in both directions on the trail. Combined Bicycle/ Pedestrian Warning Signs with Ahead plaques shall be placed on all four approaches to intersection. Combined Bicycle/ Pedestrian Warning sign with Downward Diagonal Arrow plaque shall be used at the crossing point for northbound traffic only.

2nd Street & U.S. Hwy 2

The existing intersection is a signalized 4-way intersection of higher volume low speed roads. We recommend using the Standard Intersection Crossing for this intersection as it is already a signalized intersection with separate pedestrian controls. ADA curb ramp and signal improvements should be made at this intersection. As with most path intersections, Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection. Combined Bicycle/ Pedestrian Warning signs shall be used on all four approaches to the trail crossing. A “(Bikes) Use Ped Signal” sign should be installed on the existing signal posts that house the actuation buttons for pedestrians.

2nd Street & Pionk Drive

This is an existing Tee intersection with 1-way stop in an urban environment. We recommend utilizing a Mid-block Type Crossing with User Activated Warning Light Signs at this location due to the wide road crossing and expected school traffic. A median refuge island would be ideal here but is not recommended until the roadway is reconstructed. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection. Combined Bicycle/ Pedestrian Warning Sign with Ahead plaque shall be placed on the Pionk Drive approach.

Kirkus Street

This is an existing 2-way stop intersection of a low speed and low volume street. We recommend utilizing the Standard Mid-block Intersection Crossing at this location. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection. Combined Bicycle/ Pedestrian Warning signs with Ahead shall be used on the Kirkus Street approaches to the intersection. Combined/ Pedestrian Warning signs with Downward Diagonal Arrow plaques shall be used at the crossing point in both directions on Kirkus Street. A No Motor Vehicles sign shall be installed on both trail approaches.

Old Hwy 61 & Ugstad Road

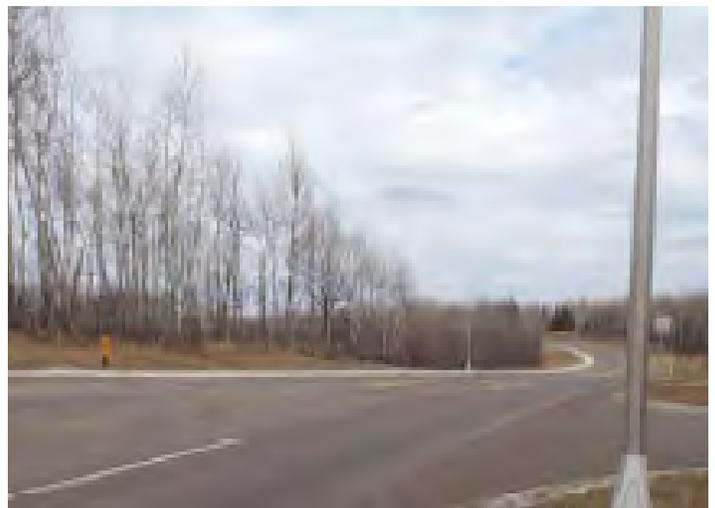
This is an existing 2-way stop intersection. We recommend utilizing a Standard Intersection Type Crossing at this location. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection. Combined Bicycle/ Pedestrian Warning signs with Ahead plaques shall be used



Existing intersection at 2nd St and US Hwy 2 facing west (Trail planned to cross north side of Intersection)



Existing intersection at 2nd St and Pionk Dr facing southwest (Trail planned to cross east side of Intersection, Spur Trail to continue West toward High School on North Side of Street)



Existing intersection at Kirkus St facing east (Trail planned to cross east side of intersection)

on all four approaches to the intersection. Combined Bicycle/Pedestrian Warning sign with Downward Diagonal Arrow plaque shall be used at the crossing point for eastbound traffic only.

Mountain Drive & Ugstad Road

This is an existing 2-way stop intersection with a high speed road (40 to 55 MPH). The speed zone changes from 40 MPH to the east to 55 MPH to the west. We recommend utilizing a Midblock Type Crossing with User Activated Warning Light Signs at this location due to the higher speed road crossing. A median refuge island would be ideal here but is not recommended until the roadway is reconstructed. We also recommend extending the 40 MPH speed zone ¼ mile to the west. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection along with No Motor Vehicle Signs on the southeast trail approach. Combined Bicycle/Pedestrian Warning Signs with Ahead plaques shall be placed on the Ugstad road approaches. Combined Bicycle/Pedestrian Warning Sign with Downward Diagonal Arrow plaque shall be installed at the crossing point for the northbound traffic only.



Existing intersection at Mountain Dr and Ugstad Rd facing south (Trail planned to cross east side of intersection)

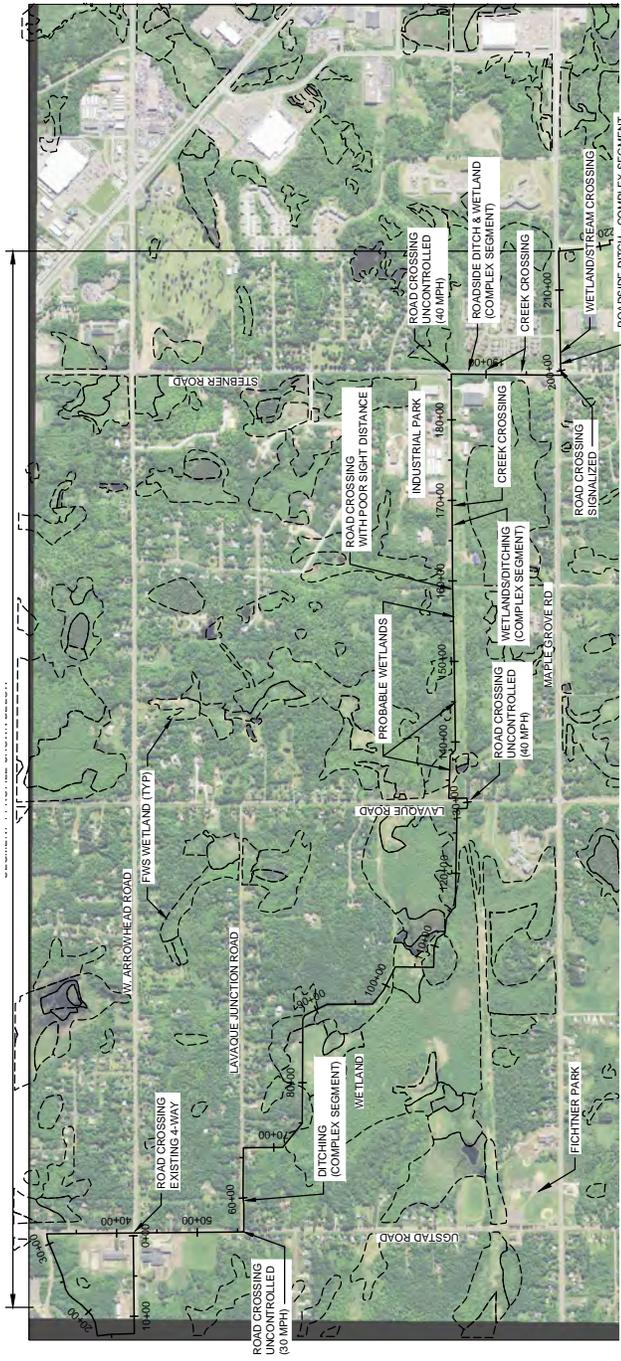
Mountain Drive & Skyline Pkwy

This is an existing Tee intersection and 3-Way stop. We recommend utilizing the Standard Midblock Type Crossing at this location. Stop Ahead and Stop Signs shall be utilized on the trail on both approaches to the intersection. Combined Bicycle/Pedestrian Warning signs with Ahead plaques shall be used on all three approaches to the intersection. Combined Bicycle/Pedestrian Warning sign with downward diagonal arrow plaque shall be used at the crossing point for eastbound traffic only. A No Motor Vehicles sign shall be placed at both trail approaches. The intersection shall also be lit with a street lamp.

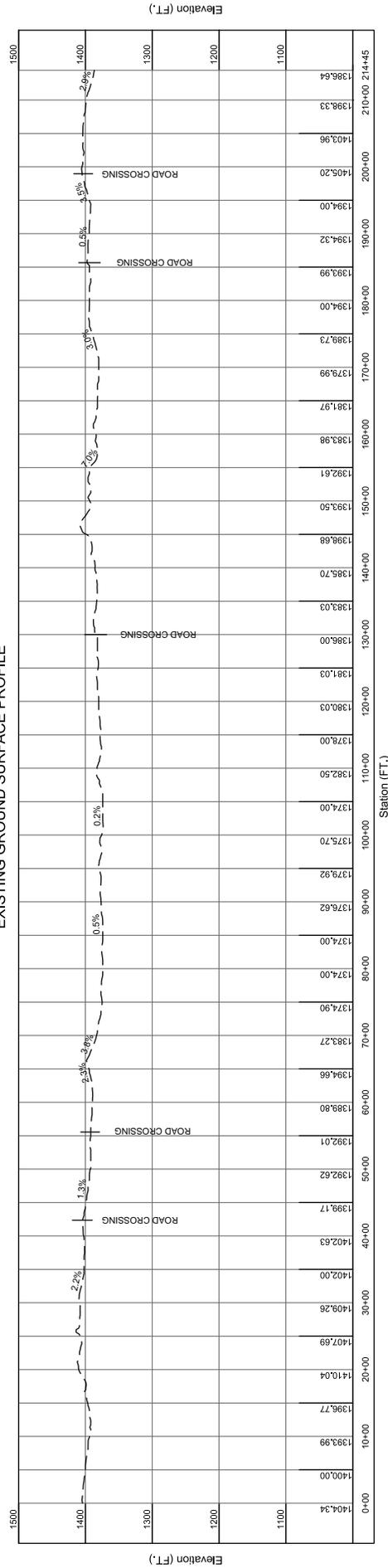


Existing intersection at Mountain Dr and Skyline Pkwy facing southwest (Trail planned to cross southeast side of intersection)

Hermantown Schools to Stebner Park Profile



EXISTING GROUND SURFACE PROFILE



VERTICAL EXAGGERATION 10X

PROJECT NO: 07994001	SCALE: AS SHOWN	NO. DATE	REVISION
PROJECT DATE: 11/15/2017	CHECKED BY: ANE		
PLLOT DATE: 4/16/18			

MSA
MUNICIPALITY SERVICES AND ASSOCIATES

353 W. Superior Street, Duluth, MN 55802
218-722-3915 | 1-888-777-7380 Fax: 218-752-4948
www.msa-engineering.com

SEGMENT 1 PROFILE

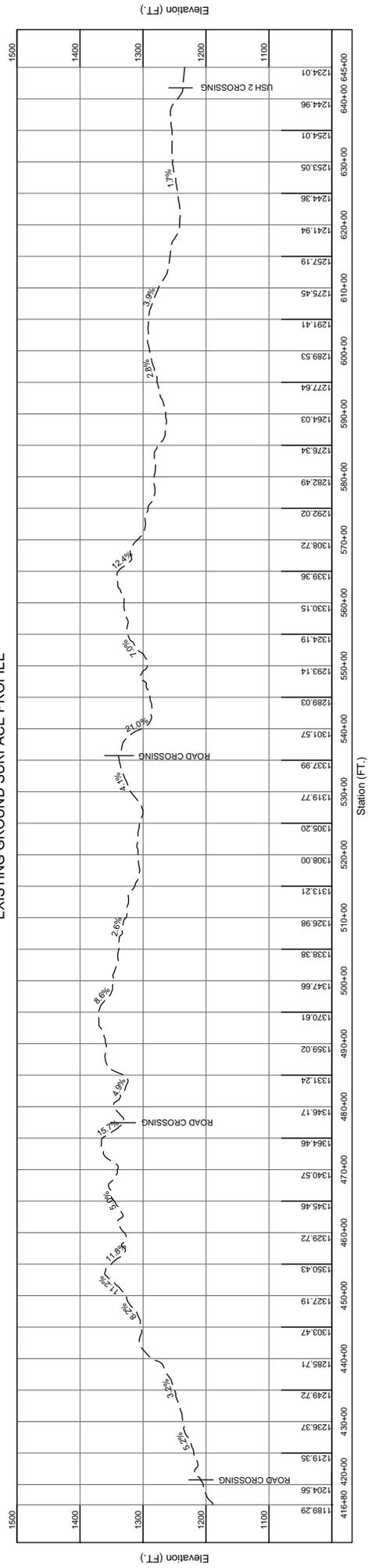
MUNGER TRAIL SPUR CONNECTION
PROCTOR AND HERMANTOWN TO WEST DULUTH
CITIES OF PROCTOR AND HERMANTOWN

REVISION
07994001
P-1

Keene Creek Park to Proctor Community Center Profile



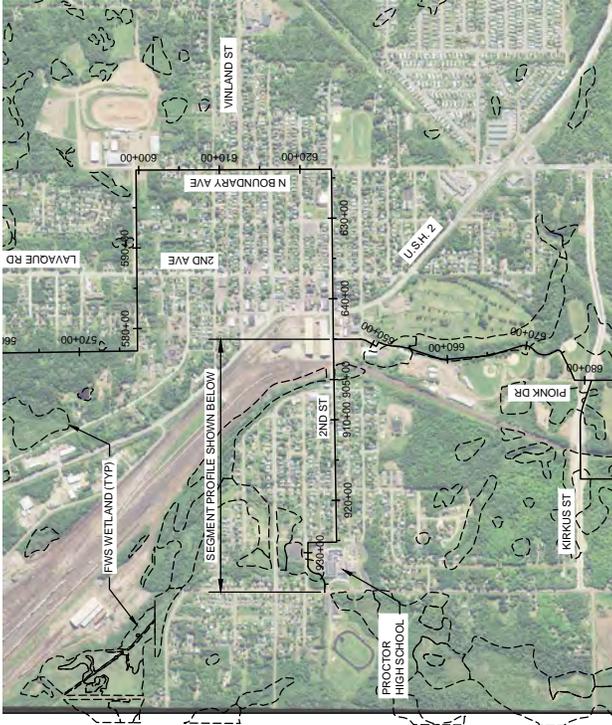
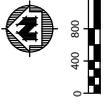
EXISTING GROUND SURFACE PROFILE



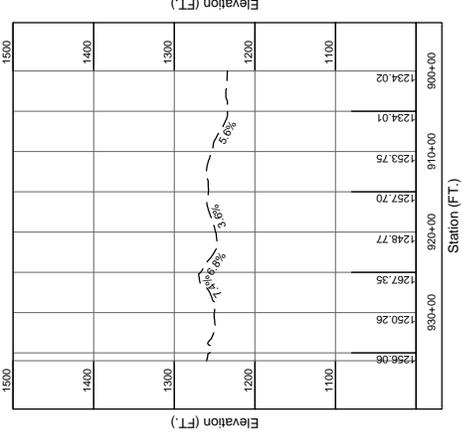
VERTICAL EXAGGERATION 10X

PROJECT NO. 07994001	SCALE AS SHOWN	NO. DATE	REVISION
PROJECT DATE	DRAWN BY: JAS	CHECKED BY: INT	
P.B.			
PROJECT NAME: MUNGER TRAIL SPUR CONNECTION			
	322 W. Superior Street, Duluth, MN 55802 218-724-4448 Web Address: www.msa-pc.com		
	MSA PROJECT NO. 07994001 DATE 02/01/2018		
	MUNGER TRAIL SPUR CONNECTION PROCTOR AND HERMANTOWN TO WEST DULUTH CITIES OF PROCTOR AND HERMANTOWN		
	SEGMENT 3 PROFILE		
	P-3		

Proctor Community Center to Proctor Schools Profile



EXISTING GROUND SURFACE PROFILE

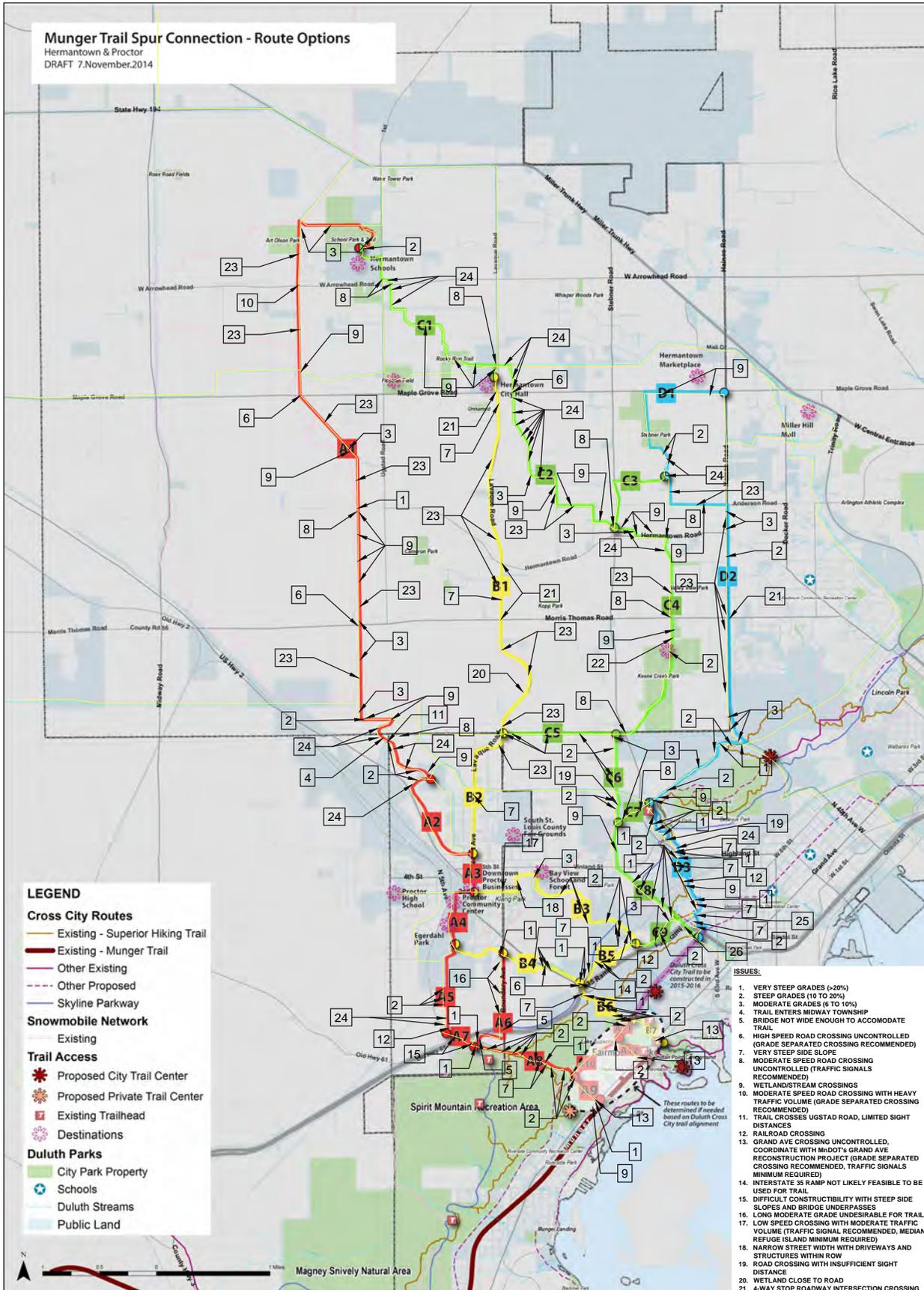


VERTICAL EXAGGERATION 10X

PROJECT NO: 07994001	SCALE: AS SHOWN	NO: .	DATE: .	REVISION: .
PROJECT DATE: .	CHECKED BY: .	DATE: .	DATE: .	DATE: .
PROJECT: HIGH SCHOOL SEGMENT PROFILE				
PROJECT: MUNGER TRAIL SPUR CONNECTION				
PROJECT: PROCTOR AND HERMANTOWN TO WEST DULUTH	MSA CONSULTING & ENGINEERING 343 W. Superior Street, Duluth, MN 55802 218-722-3915 888-777-7380 Fax: 218-722-4948 www.msa-engineering.com			
PROJECT: CITIES OF PROCTOR AND HERMANTOWN	PROJECT: PROCTOR AND HERMANTOWN TO WEST DULUTH CITIES OF PROCTOR AND HERMANTOWN			

ISSUES MAP

Munger Trail Spur Connection - Route Options
 Hermantown & Proctor
 DRAFT 7.November.2014



LEGEND

Cross City Routes

- Existing - Superior Hiking Trail
- Existing - Munger Trail
- Other Existing
- Other Proposed
- Skyline Parkway

Snobmobile Network

- Existing

Trail Access

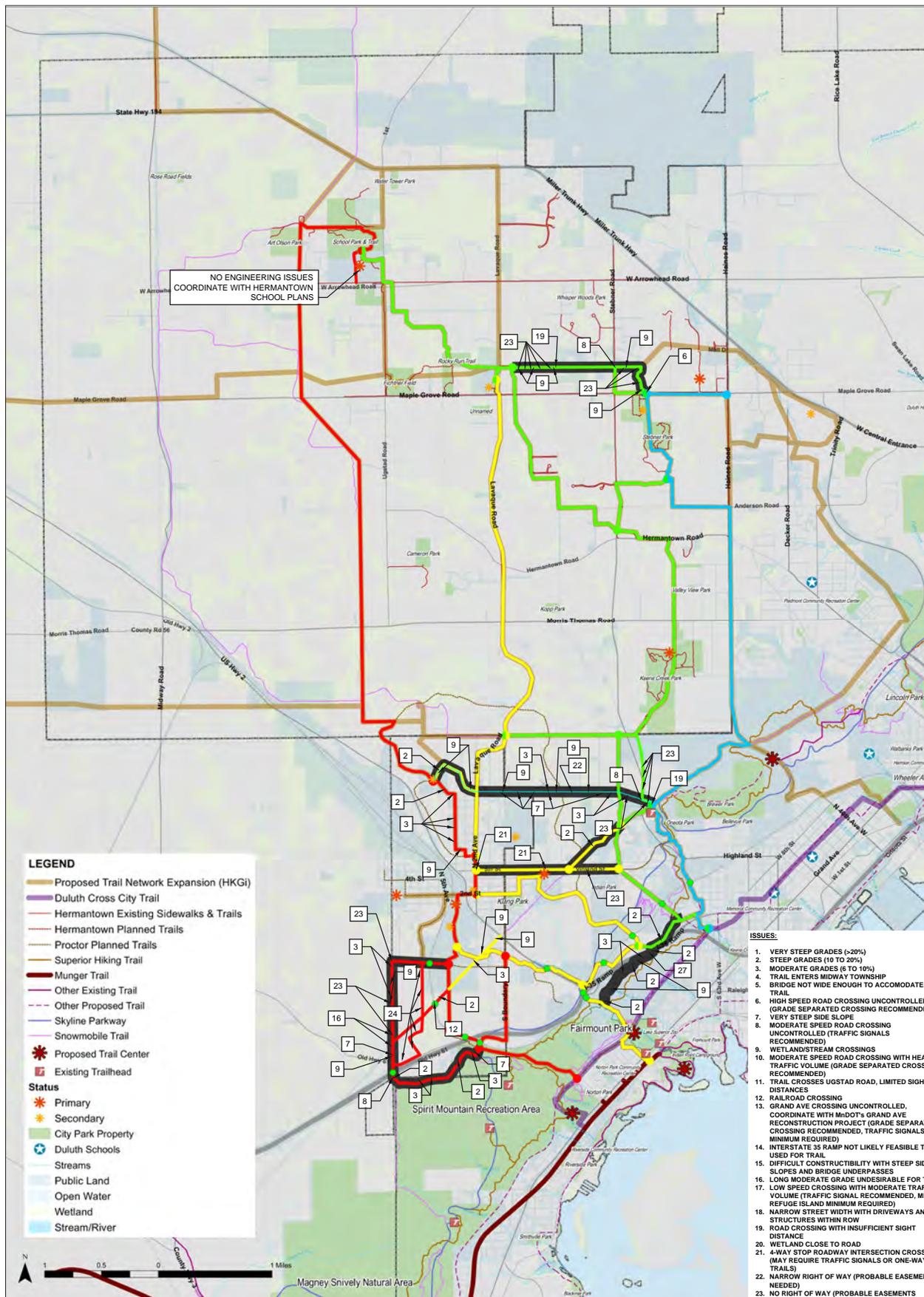
- Proposed City Trail Center
- Proposed Private Trail Center
- Existing Trailhead
- Destinations

Duluth Parks

- City Park Property
- Schools
- Duluth Streams
- Public Land

- ISSUES:**
1. VERY STEEP GRADES (>20%)
 2. STEEP GRADES (10 TO 20%)
 3. MODERATE GRADES (6 TO 10%)
 4. TRAIL ENTERS MIDWAY TOWNSHIP
 5. BRIDGE NOT WIDE ENOUGH TO ACCOMMODATE TRAIL
 6. HIGH SPEED ROAD CROSSING UNCONTROLLED (GRADE SEPARATED CROSSING RECOMMENDED)
 7. VERY STEEP SIDE SLOPE
 8. MODERATE SPEED ROAD CROSSING UNCONTROLLED (TRAFFIC SIGNALS RECOMMENDED)
 9. WETLAND/STREAM CROSSINGS
 10. MODERATE SPEED ROAD CROSSING WITH HEAVY TRAFFIC VOLUME (GRADE SEPARATED CROSSING RECOMMENDED)
 11. TRAIL CROSSES UGSTAD ROAD, LIMITED SIGHT DISTANCES
 12. RAILROAD CROSSING
 13. GRAND AVE CROSSING UNCONTROLLED, COORDINATE WITH MIDOT'S GRAND AVE RECONSTRUCTION PROJECT (GRADE SEPARATED CROSSING RECOMMENDED, TRAFFIC SIGNALS MINIMUM REQUIRED)
 14. INTERSTATE SR RAMP NOT LIKELY FEASIBLE TO BE USED FOR TRAIL
 15. DIFFICULT CONSTRUCTIBILITY WITH STEEP SIDE SLOPES AND BRIDGE UNDERPASSES
 16. LONG MODERATE GRADE UNDESIRABLE FOR TRAIL
 17. LOW SPEED CROSSING WITH MODERATE TRAFFIC VOLUME (TRAFFIC SIGNALS RECOMMENDED, MEDIAN REFUGE ISLAND MINIMUM REQUIRED)
 18. NARROW STREET WIDTH WITH DRIVEWAYS AND STRUCTURES WITHIN ROW
 19. ROAD CROSSING WITH INSUFFICIENT SIGHT DISTANCE
 20. WETLAND CLOSE TO ROAD
 21. 4-WAY STOP ROADWAY INTERSECTION CROSSING (MAY REQUIRE TRAFFIC SIGNALS OR ONE-WAY TRAILS)
 22. NARROW RIGHT OF WAY (PROBABLE EASEMENTS NEEDED)
 23. NO RIGHT OF WAY (PROBABLE EASEMENTS NEEDED)
 24. RIGHT OF WAY ACQUISITION REQUIRED
 25. CODY STREET CROSSING (CENTER ISLAND REFUGE REQUIRED, TRAFFIC SIGNALS RECOMMENDED)
 26. ROUTE INFEASIBLE DUE TO INTERSTATE CROSSINGS AND TERRAIN, REROUTE ALONG WESTGATE BLVD AND CONNECT TO D3 ROUTE







Proctor Hermantown Munger Trail Spur

MASTER PLAN
Appendix

DECEMBER
2015

