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City of Fort Collins

STRATEGIC TRAILS PLAN

A

APPENDIX A:

Community Engagement Summaries & Results

CITY OF FORT COLLINS STRATEGIC TRAILS PLAN

COMMUNITY ENGAGEMENT SUMMARY

PHASE 1 | MARCH - JUNE 2024

OVERVIEW

This summary presents key constituent and community engagement strategies and results that took place from March through June 2024. This stage of outreach included a series of engagement opportunities that engaged approximately 1,826 Fort Collins constituents and community members at the time of this report.

The STP Project Management Team and planning consultants (the project team) utilized a variety of engagement tools to gather valuable feedback from the community regarding their experiences, challenges, opportunities, and values related to Fort Collins paved trails. The purpose of these conversations was to:

- Introduce the project and stimulate community-wide awareness of the planning effort
- Solicit candid feedback from a broad cross-section of the Fort Collins community
- Identify key themes, opportunities, local values, preferences, and needs related to paved trails in Fort Collins

This section is organized into four parts:

1. Summary of Phase 1 events and engagement opportunities
2. Methodology: event format or outreach strategy
3. Results Summary: key themes and takeaways from each engagement
4. Appendix: complete engagement results

PHASE 1 EVENTS

Date	Event	Location	Number of Attendees/ Respondents
3/4/24	Community Working Group Meeting # 1	215 N. Mason St.	13
4/1-6/1/24	Our City STP Webpage Hits	Virtual	2.3k Aware Visitors
4/1/24 – 5/1/2024	Online Interactive Map Commenting #1	Virtual	400
4/1 – 5/1/2024	Questionnaire (qualitative)	Virtual	947
4/1 – 4/30/2024	Meetings with various trail user group Executive Directors	Hybrid	4
4/15/24	Community-wide Public Meeting #1	Northside Atzlan Community Center	77
4/18/24	City Council Memorandum	Virtual	7
4/22/24	CSU Earth Day Pop-up Engagement	Lory Student Center	114
4/24/24	Parks and Recreation Advisory Board Meeting #1	Parks Dept. offices	9
4/28/24	Kids in the Park Pop-up Engagement	Twin Silo Park	
5/8/24	Power Trail and Harmony Underpass Open House	Kruse Elementary	200

Date	Event	Location	Number of Attendees/ Respondents
5/16/24	Disability Advisory Board Meeting #1	Virtual	12
5/20/24	Active Modes Advisory Board Meeting #1	281 North College	Sent Memo
5/20/24	Neighborhood Meeting #1 of 7: Skyview North and South	Skyview North Park	12
5/29/24 & 6/11/24	Community Working Group Meetings #2 & #3	215 N. Mason St.	16
6/10/24	Super Issues Board Meeting	Lincoln Center	15
		TOTAL ENGAGED	**1,826**

RESULTS SUMMARY

Over a 12-week period from March through June, the project team engaged Fort Collins constituents and community members through a variety of methods including in-person and online engagement opportunities. Each engagement strategy, as well as a high-level summary of the key points and takeaways from each engagement event are provided below. Key themes that emerged consistently across all engagement opportunities are highlighted on the right side of each page below. For additional details, see the complete engagement results at the end of this document.

Community Working Group Meeting #1

To guide the direction and development of the STP, the STP project manager convened a Community Working Group (CWG) comprised of representatives from pertinent local organizations and City boards.

The first CWG meeting was held on March 4, 2024 at the Park Planning and Development office with representatives from the cycling community, CSU transportation, CSU Geospatial Centroid, Parks and Recreation Advisory Board, Chichas end Bicicleta, Larimer County Department of Natural Resources, and the North Front Range Metropolitan Planning Organization. A member of the Active Modes Advisory Board will be selected to participate on the CWG at the May 20th AMAB meeting. The CWG reviewed the STP project charter, community engagement plan, and identified project risks, opportunities, and draft project goals.

Emerging Theme

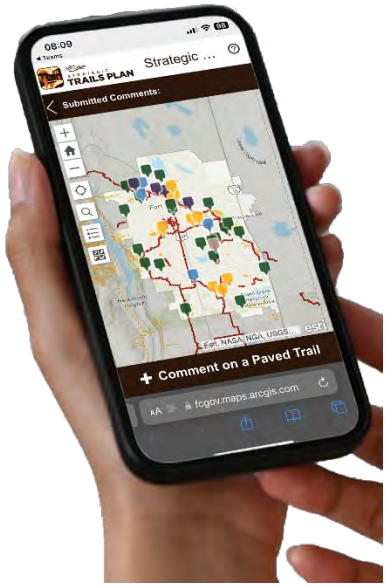
TRAILS FOR ALL. Everyone should have access to trail opportunities and the planning and design of trails should account for the great variation in abilities, cultural backgrounds, modes of movement, and diversity of the community.

- Utilize Safe Routes to School as a gap analysis that identifies routes that require students to be driven to school because they are not safe for walking or biking
- Emphasize that the Plan includes diverse user groups (e.g. equestrian, disability) and not just bikes, with priority projects that benefit both commuters and recreators
- Ensure that community outreach includes Spanish speakers and CSU student involvement
- Identify the best investment and make the choice easy for Council and/or grant funders rather than pitting projects against one another
- Ditches, a potential bike park that is also open to youths, and trail categories are likely challenges for planning
- Assess if the paved trail system is meeting the needs of the community and determine opportunities and challenges
- Develop a shared community vision for how the paved trail system can be maintained and expanded to address the current and future needs of an ever-changing and growing community
- Be transparent about guidelines, standards, and processes for trail funding, planning, design, and construction

- Explore and develop new policies that improve the safety, expansion, efficiency, funding, and connectivity of the paved trail system

Online Interactive Map

From April 1-May 1, 2024, an online interactive map allowed participants to identify the location of existing trail maintenance deficiencies, safety issues, personal security concerns, as well as preferred locations for new connections and amenities by dropping a geo-located pin on the map. In total, 349 pins and comments were placed on the map with 158 replies to the comments and 1,053 "likes."



Results

- Total number of unique comments: 349
  - Maintenance comments: 33
  - New trail connection comments: 159
  - Trail amenity comments: 17
  - Other observation comments: 24
  - Personal security comments: 7
  - Safety comments: 109
- Total number of replies: 158
- Total number of votes/hearts/likes: 1,053
- Top five most "liked" comments:
  - *"Need access to trail system from the growing number of neighborhoods in the Northeast part of Fort Collins.*" (Location: Country Club Road and Turnberry intersection; 54 "likes" or votes)
  - *"Prioritize building underpass below Harmony Rd so Power Trail can be connected in this part of town. People have died going around on McMurry!"* (Location: Harmony Road and Union Pacific Railroad intersection; 47 "likes" or votes)
  - *"Either a new trail or heavily protected bike lanes along overland to connect the Poudre trail to the fossil creek trail. There are no trail connections running N/S on the West side of town."* (Location: near Overland Trail and W. Magnolia Street intersection; 24 "likes" or votes)
  - *"Please prioritize the trail connecting the Poudre Trail and Spring Creek trail between Overland Trail Rd and the Horsetooth Reservoir."* (Location: near Overland Trail and Cottonwood Glen/Spring Canyon Community Park; 22 "likes" or votes)
  - *"Please create a path or truly protected bike lane along Mason St in Old Town connecting the Mason Trail to the Poudre Trail from Laurel St to Cherry St."* (Location: intersection of Laurel St. and Mason Trail; 21 "likes" or votes)

- The majority of comment pins appear to be placed north of Drake Road.
- The Poudre River and Spring Creek Trails received a higher concentration of comments than other major paved trails maintained by Park Planning and Development. The Mason Trail also received a significant number of comments, although it is managed by the City's Transportation Department.
- Comments in the northeast quadrant of the City were strongly focused on identifying new connections in existing and planned neighborhoods north of Mulberry.
- Comments in the northwest quadrant of the City identified desired trails along canals and ditches, and underscored the importance of a trail or active transportation solution along the Overland Road corridor.
- In the southeast quadrant, comments were concentrated along Spring Creek Trail and identified the need for improvements and maintenance in many locations. Several commentors specifically identified the Pleasant Valley and Lake Canal corridor as a desirable trail location.
- Comments in the southeast quadrant were concentrated along the Power Trail and many identified the need for an east-west connection between the Power Trail and College Ave. corridor or Mason Trail. Harmony and Trilby Road were identified by participants as urgent needs for safe grade separated crossings and trail facilities along these corridors.
- To review all comments, visit the interactive map at this link.

Online Questionnaire #1

The first community-wide online questionnaire launched on April 1 and collected responses through May 1, 2024. The questionnaire was structured to gauge community satisfaction, attitudes, and perceptions, identify barriers to trail use, understand mode type and frequency of use, and understand what factors may increase trail use. A total of 947 responses were collected. Full results are presented here. Staff synthesized results and summarized key themes below.

Results

When asked to identify ways to better balance the needs of various types of trail users, the community responded with suggestions that have been broken out into seven different key themes.

1. **New Amenity**
    - Investments in the addition of new amenities to the trail system could help curb some of the challenges experienced on the trails. Community members suggested the inclusion of more trees and benches on the trails to enhance the user experience with an emphasis on more lighting in certain areas throughout town. The most common amenity requested was increased signage to help communicate wayfinding, speed limits, and overall trail etiquette suggestions.

      Sample response: "More signage/education about keeping right and passing on the left. Information about where drinking water and bathrooms are available."

2. **Connectivity & Expansion**
    - With the increase in density and population growth, the desire for better connectivity and more trails appeared as a common response. Reasons for an expanded system included safer mobility access, missing neighborhood connections, and accommodating the overall increase in population and users on the trail system.

      Sample response: "Continue to build more trails, more connectivity so users can disperse and access close to home, schools, and for commuting. Add more connected, peripheral trails that increase recreation access close to more neighborhoods around the city,

including soft-surface trails which can be used by those riding bikes, running, and more..."

3. **Infrastructure Replacement/Improvement**
    - While many of the questionnaire responses expressed a desire for overall expansion of the trail system, there was also a clear focus on identifying and addressing existing areas of trail infrastructure in need of improvement, rehabilitation, or replacement. Many community members suggested replacing or improving intersections to reduce the interactions between trail users and vehicles. Many responses also indicated the addition of a painted center line, or dedicated lanes could help reduce user conflicts.

      Sample response: "Create separate lanes on the paved trails for pedestrians and cyclists."

4. **Maintenance**
    - Overall maintenance and condition of the trail system was indicated as an opportunity for improvement to help with the overall usage of the trail system. Focusing on trash pickup and tree/plant care adjacent to the trails could help to address concerns with blind and tight corners. Many community members reported concerts with the upkeep of the overall trail surfaces leading to poor drainage, cracks in the concrete, and poor bridge transitions.

      Sample response: "Clear foliage around blind curves to increase visibility..."

5. **Multi-User Interactions**
    - With the increase in various user types on the trails, many residents expressed the desire for education for trail use etiquette with a significant focus on bike and pedestrian interactions. The convergence of different speeds of travel on the trail was a significant concerns and many responses suggested a focus on speed as a way to alleviate potential points of conflict between different user types.

      Sample response: "More education on trail etiquette. Too many people do not use audible signals with passing or take up the whole trail without paying attention to their surroundings."

6. **Trail Widening & Adjacent Soft Surfaces**
    - With the increase in density and the growth in population, many community members urged the inclusion of more adjacent soft surface trails, wider trail standards, and the widening of existing trails.

      Sample response: "If the trails were a bit wider, it would be easier to pass and be passed. Additionally, having more dedicated gravel paths alongside the trails would help runners enjoy the trails, and to keep them clearer!"

7. **E-Bikes/Micro Mobility Devices**
    - The use of E-Bikes and other micro mobility devices was mentioned as having a significant impact on the multi-use interaction on the trail system. While the initial feedback gathered by this questionnaire spoke to E-Bikes, a more focused survey will be taking place in partnership with the Active Modes Department to address how best to accommodate these new forms of micro mobility on the trail system.

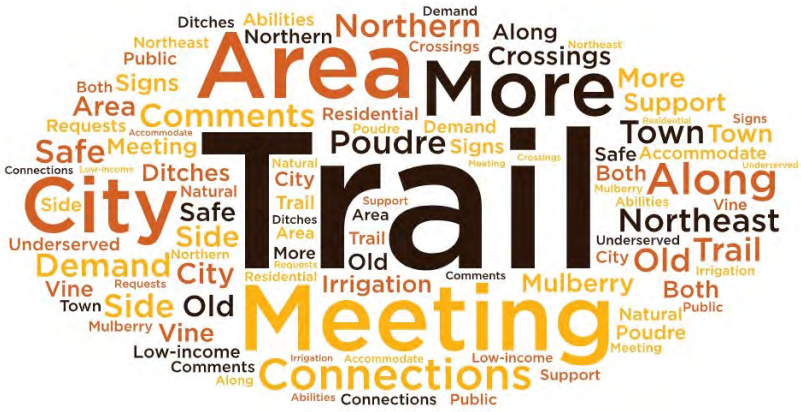
Community Open House #1

The first of four planned public events for the STP was held on April 15, 2024 to provide a formal in-person opportunity for the community to be introduced to the planning process and provide input on needs, preferences, challenges, and satisfaction with paved trails. The open house included multiple

informational posters with pertinent plan information and write-in questions, and a large 6x8ft. floor map that allowed attendees to use sticky notes and yarn to identify locations for new trails. Translated materials and Spanish interpretation services were also provided. Seventy-seven community members attended the open house.

- The meeting was held in the northern part of the City, therefore comments were representative of this area signifying a demand for more trails and connections on the northeast side of the City, including connections to Old Town, the Poudre Trail, and more safe crossings and trails along Mulberry at I-25 and Vine St.
- Support for trails along irrigation ditches

- Desire for trail signs in both Spanish and English
- Ensure that there are trails that can accommodate all abilities
- Provide trails in underserved and low-income residential areas as well as trails in natural areas
- Requests for engagement through a variety of methods, including open houses, emails, hybrid meetings, surveys, and public meetings



Pop-up Engagement

Throughout the spring, the project team capitalized on opportunities for "pop-up" table engagement at already-occurring events with interactive engagement activities to increase awareness of the planning process and solicit feedback and input on key concepts and ideas. Events included:

- Colorado State University Earth Day (4/22/24)
- Kids in the Park (4/28/24)
- Power Trail & Harmony Underpass Open House (5/8/24)

City Boards

The project team presented to the Parks and Recreation Advisory Board (4/24/24) and Disability Advisory (5/16/24) Board, at their regularly scheduled meetings in April and May. The presentation addressed the STP scope of work, goals, objectives, and discussed the overall future vision for paved trails.

Emerging Theme

COMMUNITY CONNECTIONS. Priority connections for the community include schools, parks, Natural Areas, and linkages to *other* trails.

Emerging Theme

INTERCONNECTED NETWORK. Trails are key component of the City's system of facilities for active transportation and recreation and should be considered congruently with those facilities to provide a seamless and safe user experience.

Neighborhood Meeting #1: Skyview

The project team held its first neighborhood meeting in the Skyview neighborhoods on May 20, 2024. The on-site meeting was attended by residents of the area, Council Member Potyondy, and a representative from Fort Collins Natural Areas to discuss the potential for a connection from Skyview to the Fossil Creek Trail.

Outreach to Fort Collins Trail User Groups and Advocates

In April 2024, The City's project manager met individually with the executive directors of several local trail user advocacy groups including Bike Fort Collins, Your Group Ride, Overland Mountain Bicycle Association, and the Wolfpack youth mountain-biking program. The meetings introduced the STP project, an invitation for each organization to involve their membership in the STP engagement opportunities and collaborate on future engagement events.

Community Working Group Meetings #2 & #3

The Community Working Group met twice in late Spring to review preliminary analysis of opportunities and challenges to trail development, evaluate connectivity needs, known gaps, and potential new alignments. The CWG received an update on the results of community engagement and provided feedback on proposed trails through mapping activities. The May 29, 2024 meeting focused on proposed trails in the northern half of the City and the June 11, 2024 meeting focused on trails in the southern half.

Super Issue Meeting

On June 10th, 2024 the City held its second triannual Super Issue meeting that convenes all of the City's appointed boards and commissions in a single meeting for the purpose of in engaging in discussion of broader policy issues and matters not specifically identified in the stated function of each board or commission. These "super issue" meetings provide an opportunity for boards and commissions to come together to learn about and discuss key topics or issues. The STP and Natural Areas Strategic Framework Plan combined forces to present each project as well as highlight the overlap between the two and coordination to support City Council's goal of achieving the 15-minute City. Superboard attendees briefly reviewed the proposed trails map and provided feedback.

PHASE 2 | JULY - NOVEMBER 2024

OVERVIEW

This summary presents key constituent and community engagement strategies and results that took place from June through November 2024. This stage of outreach included a series of engagement opportunities that engaged approximately 2,466 Fort Collins constituents and community members at the time of this report.

The STP Project Management Team and planning consultants (the project team) utilized a variety of engagement tools to gather valuable feedback from the community on the proposed trail maps, cross-agency opportunities for partnership and collaboration, and shared regional values related to paved trails. The purpose of these conversations was to:

- Continue to stimulate community-wide awareness of the planning effort
- Solicit specific feedback on the proposed trails map and future connections
- Generate regional collaboration, inspiration, and identify future opportunities for partnerships

This section is organized into four parts:

1. Summary of Phase 2 events and engagement opportunities
2. Methodology: event format or outreach strategy
3. Results Summary: key themes and takeaways from each engagement
4. Appendix: complete engagement results

PHASE 2 EVENTS

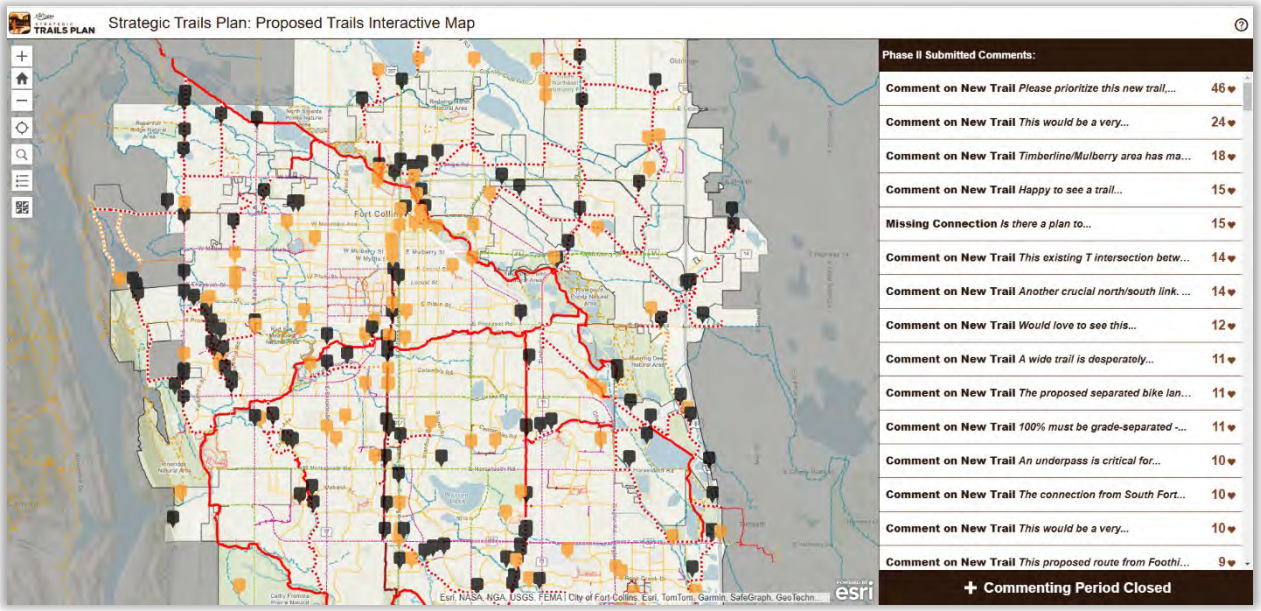
Date	Event	Location	Number of Attendees/ Respondents
6/1/24 – 11/25/2024	Our City STP Webpage Hits	Virtual	1.4k Aware Visitors
9/1/2024 – 10/1/2024	Which Wheels Go Where? Questionnaire	Virtual	1,478
6/26/24	Summer Bike to Work Day	Poudre River Trail at Lee Martinez Park	207
7/10/24	Land Conservation Stewardship Board	Nix Farm	7
7/19/2024 – 9/3/2024	Online Interactive Proposed Trails Map Review	Virtual	~500
7/22/2024	Climate Equity Committee	Virtual	10
7/27/24	Hickory Village Mobile Home Park Resource Fair	400 Hickory Street	46
8/13/2024	City Council Work Session	City Council Chambers	6
9/5/2024	Youth Advisory Board	215 N Mason St	9
9/11/2024	Senior Advisory Board	Senior Center	6
9/15/2024	Open Streets Fair	Shields St.	*~14,000*
9/26/2024	Northern Colorado Trails Summit	The Agave Room, Fort Collins	189
11/20/2024	Natural Resources Advisory Board	Hybrid	8

RESULTS SUMMARY

Each engagement strategy, as well as a high-level summary of the key points and takeaways from each engagement event are provided below. Key themes that emerged consistently across all engagement opportunities are highlighted on the right side of the page. For additional details, see the complete engagement results at the end of this document.

Online Interactive Map

From August 19 – September 3, 2024, an online interactive map presented proposed trails and collected community feedback on the proposed routes, missing connections, and other feedback through geo-located comments on the map. In total, 248 pins or comments were placed on the map with 177 replies to the comments and 712 "likes."



Results

- Total number of unique comments: 248
  - Comment on New Trail: 156
  - Comment on Missing Connection: 92
- Total number of replies: 177
- Total number of votes/hearts/likes: 7121
- Top five most "liked" comments:
  - "*Please prioritize this new trail, and don't wait to start work on it. This connection is so badly needed! This area is frequently forgotten by the city in other efforts and I'm so happy to see it here. Connecting the neighborhoods in the northeast will allow so many families to participate in what makes Fort Collins special*." (Location: Country Club Road and Turnberry intersection;46 "likes" or votes)
  - "*This would be a very valuable new N/S trail connection to increase bike commuting for those on the west side of town to get around. It would be invaluable for those commuting to and from the Harmony Library, FRCC, and the new Montessori charter school at 'Harmony/Shields. There aren't many N/S bike trails on the west side of town."* (Location: Pleasant Valley and Lake Canal east of Westbrooke Court;24 "likes" or votes)

Emerging Theme

COMPLEMENT ON-STREET INFRASTRUCTURE. Trails should complement, not replace on-street bicycle infrastructure

Emerging Theme

PROTECT PRIVACY. Homeowner concern for loss of privacy if trails are developed within irrigation ditch corridors and close to homes.

- *"Timberline/Mulberry area has many businesses but is dangerous to access by bike, even though it's not physically far from downtown or the Poudre Trail. This trail connection to the Spring Creek Trail is important and timely*." (Location: Timberline Road and Mulberry intersection;18 "likes" or votes)
- *"Happy to see a trail along this canal and through the Foothills Campus."* (Dixon Canal at north end of Maxwell Natural Area ;15 "likes" or votes)
- "*Is there a plan to cross the railroad here? There is currently no safe way to cross the railroad between the Power Trail and SE Fort Collins."* (Location: intersection of the Power Trail, Mail Creek Ditch, and Union Pacific Railroad ;15 "likes" or votes)

Emerging Theme

NEW TRAILS IN THE NORTHEAST. Strong support for investment in NE Fort Collins trails and interim facilities while future development processes unfold.

- Comments demonstrated strong support for NE Fort Collins trails and a desire for the City to possibly explore interim solutions to improve active transportation in the near term while development continues.
- Demand for additional grade separated crossings of Union Pacific Railroad to access the Power Trail.
- Neighborhood tensions between residents who desire a paved trail along the Pleasant Valley and Lake Canal and those who prefer to see the trail remain natural surface.
- Concern along Overland Road corridor that trail infrastructure will replace existing bicycle infrastructure.

Emerging Theme

TRAIL SAFETY EDUCATION. Need for additional trail safety education regarding user behaviors/etiquette.

Northern Colorado Trails Summit

On Thursday, Sept. 26, the STP project team hosted the inaugural Northern Colorado Trails Summit. The event convened nearly 190 representatives from regional trail development agencies, partners, advocates, user groups, and supporters in celebration of the history and accomplishments of paved trail development in Northern Colorado.

The event featured an exhibition hall with local and regional trail projects, organizations, and initiatives where attendees could network, connect, learn, and inspire each other with the multitude of exciting trail-related projects taking place in Northern Colorado.

Emerging Theme

PARNTERSHIPS PRODUCE RESULTS. Collaborative trail development in Northern Colorado has resulted in the successful completion of numerous projects that connect Fort Collins to neighboring communities. The City should continue to leverage partnerships for a coordinated approach to network development.

The Summit highlighted the outstanding regional trail system that our communities enjoy while looking to the future of paved trails through presentations from regional speakers, representing Great Outdoors Colorado, Cache La Poudre River National Heritage Area, and an inspirational keynote address by author and award-winning landscape

architect, Chuck Flink. Attendees enjoyed an exceptional evening connecting, learning, and inspiring each other with the multitude of trail-related projects taking place in Northern Colorado.

Which Wheels Go Where? Questionnaire

The project team partnered with FC Moves to explore the use of human and lightweight electric powered micromobility devices on city facilities, such as, sidewalks, streets, bike lanes, and trails. FC Moves administered a questionnaire regarding the use of these devices to help gauge public attitudes, perceptions, and beliefs. Common themes from the questionnaire responses included:

Results

- Safety concerns due to speed differentials, yielding the right-of-way, pedestrian safety, and lack of knowledge on traffic rules and proper etiquette
- Focus on infrastructure and regulation including separate paths, clear rules and signage, and enforcement
- Accessibility and mobility for older adults and encouraged alternative transportation
- Suggestions for improvement focusing on speed limits, education and etiquette, and flexibility on rules

Pop-up Engagement

Throughout the summer and fall, the project team capitalized on opportunities for “pop-up” table engagement at already-occurring events with interactive engagement activities to increase awareness of the planning process and solicit feedback and input on key concepts and ideas. Events included:

- Summer Bike to Work Day (6/26/24)
- Open Streets Fair (9/15/2024)

City Boards

The project team presented to the Land Conservation Stewardship Board (7/10/24) Climate Equity Committee (7/22/24), Youth Advisory Board (9/5/2024), Senior Advisory Board (9/11/2024), and Natural Resources Advisory Board (11/20/2024) at their regularly scheduled meetings. The presentations addressed the STP scope of work, goals, objectives, and discussed the overall future vision for paved trails from the perspective of each board.

Results

Considerations and ideas for plan improvement:

General:

- Amenities, such as, more benches, shade structures and additional access to drinking water is needed.
- Better or increased wayfinding would help as would information at kiosks, including more trail map availability.
- The use of e-bikes has been very helpful for all types of people to go further, better manage hilly terrain, and haul cargo (& children)
- Trails do wonderfully at connecting to nature (natural areas + parks)

Safety:

- Promote lights at night for bikes, front and rear
- E-bikers and recreational road bikers need to understand their impact on others in terms of higher speeds and passing without an audible signal
- Promote dogs on leash
- Separation of trail users (bikes & pedestrians) would decrease conflict at high volume areas
- Prioritize maintenance practices (snow removal) near senior residential areas
- Be mindful of people who are hearing or sight impaired
- Some underpasses need better lighting
- Personal security on the trail is a concern

Hickory Village Mobile Home Park Resident Resource Fair

The project team attended the Hickory Village Mobile Home Park Resident Resource Fair on July 27th to increase awareness of the planning process and solicit feedback and input on key concepts and ideas from neighborhood residents. This event was a Spanish-first engagement effort.

Results

- 46 attendees
- Several students use the Hickory spur to the Poudre Trail to get to Lincoln Middle
- Some concern for feelings of security in Soft Gold Park at night and on the Poudre Trail at night in the underpasses
- Connecting the park to the Hickory spur will help further activate this park

City of Fort Collins

STRATEGIC TRAILS PLAN

B

APPENDIX B:

Plan Congruence Matrix

STRATEGIC
TRAILS PLAN

STP Plan Congruence Matrix

Related Plan Policies, Objectives, Recommendations	Equity	Connectivity to destinations, neighborhoods, adjacent communities, and regional trails	Safety & Accessibility	Maintenance	Level of Service and Trail Experience	Design and Construction Standards	Implemenation (easements, cost sharing, construction)	Irrigation Ditch Compatibility	Funding Strategies	Regional Collaboration & Partnerships	Conservation/Land Stewardship	Public Health	Economic Vitality	Mobility & Transportation	Climate Change & Resiliency	(*Council Priority*) Reduce Climate Pollution and Air Pollution Through Best Practices, Emphasizing Electrification	(*Council Priority*)Advance a 15-Minute City by Accelerating Our Shift to Active Modes
	STP Focus Areas and Themes																
Active Modes Plan																	
Big Move: A Complete and Connected Network																	
CCN1. Provide direct connections		x			x		x							x			x
CCN2. Locate and fill network gaps		x	x		x		x							x			x
CCN3. Connect to the trail system		x	x				x							x			x
CCN4. Expand the wayfinding system					x									x			
Big Move: Comprehensive Access to Destinations																	
CAD1. Upgrade facilities to meet ADA standards	x		x											x			
CAD2. Connect to Mobility Hubs	x	x								x			x	x			x
CAD3. Repair sidewalks and bikeways	x			x										x			
Big Move: Safe and Comfortable Travel																	
SCT1. Support the implementation of Vision Zero goals			x				x							x			
SCT2. Install traffic calming improvements			x		x									x			x
SCT4. Frequently evaluate safety			x														
Big Move: A Healthy and Equitable Community																	
HEC2. Increase diverse community involvement	x																
HEC3. Improve network equity by using the Health Equity Index	x											x					
Big Move: A Supportive and Inclusive Culture																	
SIC2. Build active modes awareness	x											x		x	x		x
SIC3. Increase active school trips		x	x							x				x	x		x
SIC4. Expand recreational active modes opportunities							x			x		x		x			x
Natural Areas Strategic Framework Plan	x	x					x		x	x	x	x			x		x
Utilities Strategic Plan																	
Objective 2-B – Ensure a sustainable future by planning for future demands.				x											x		
Objective 2-C – Build on past investments through system renewal and replacement efforts that result in the provision of reliable and resilient utility services.	x			x					x								
Objective 3-E -- Improve effective relationships with the development community based on infill and greenfield development.				x						x							
Objective 6A – Ensure that Utilities is prepared for and able to adapt to climate change and disruptive events.				x											x		
Objective 6D – Evaluate activities for contribution to increased organization and community resiliency.				x											x		
Our Climate Future																	
BIG MOVE 1 SHARED LEADERSHIP AND COMMUNITY PARTNERSHIP																	
SLCP1: Continue, and where appropriate expand, upon durable partners beyond Fort Collins to achieve climate, energy and waste goals										x	x				x	x	
SLCP6 Embed resilience into City policy planning initiatives															x		
BIG MOVE 3 CLIMATE RESILIENT COMMUNITY																	
CRC6: Integrate climate resilience considerations into city strategic and operational plans				x		x									x		
CRC9: Engage community-based organizations in building climate resilience communities	x									x	x				x		
BIG MOVE 4 CONVENIENT TRANSPORTATION CHOICES																	
CTC1: Continue to build bicycle facilities as identified in the Bicycle Master Plan		x												x	x		x
CTC2: Create mobility hubs to support convenient transportation connection options		x			x									x	x		x
CTC6: Create flexible transit system that adapts with variable demand		x	x		x									x	x		x
BIG MOVE 5 LIVE, WORK, AND PLAY NEARBY																	
LWPN1: Enhance partnerships with schools to ensure safe ways for kids to get to school		x	x		x					x				x	x		x
LWPN2: Evaluate opportunities within the Land Use Code to better encourage the development of "complete neighborhoods" that include a variety of housing options, access to services and amenities, and proximity of housing to jobs		x												x	x		x
BIG MOVE 7 HEALTHY, AFFORDABLE HOUSING																	
HAH5: Create targeted neighborhood level interventions to increase green infrastructure and/or energy retrofits to address environmental justice issues (also known as Green Zone)		x				x		x			x				x	x	

STRATEGIC
TRAILS PLAN

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STP Focus Areas and Themes																	
BIG MOVE 10 ZERO WASTE ECONOMY																	
ZWE2: Continue to explore ways to further reuse and recycle soil from City projects						x									x		
ZWE7: Require recycled/recyclable construction materials in city projects						x									x		
BIG MOVE 11 HEALTHY NATURAL SPACES																	
HNS3: Protect and expand natural habitats as growth occurs						x					x				x		
City Plan																	
Principle LIV 1: Maintain a compact pattern of growth that is well-served by public facilities and encourages the efficient use of land.		x			x	x				x	x			x			x
Strategy LIV-1c. Collaborate with Larimer County to adopt Fort Collins design and development standards within the GMA.						x				x							
Strategy LIV-1e. Continue to purchase open lands and conservation easements, and use other tools such as development regulations, TDRs, and GMA planning for the purposes of defining and protecting community edges, establishing community separators, mitigating flood hazards, and increasing access to nature in underserved areas.	x	x					x			x					x		
Principle LIV 3: Maintain and enhance our unique character and sense of place as the community grows.																	
Strategy LIV-3a. Update open space and amenity requirements for urban and mixed-use development to support Nature in the City objectives and provide relief from higher densities supported in these locations.		x			x	x					x				x		
Principle LIV 4: Enhance neighborhood livability.	x	x	x		x												x
Principle LIV 9: Encourage development that reduces impacts on natural ecosystems and promotes sustainability and resilience.						x									x		
Principle CR 2: Provide a variety of high-quality outdoor and indoor recreational opportunities that are accessible to all residents.	x	x	x		x												
Strategy CR-2a. Continue the design and construction of new paved recreational trails throughout the city in accordance with the 2013 Paved Recreational Trail Master Plan.		x				x											
Strategy CR-2b. Continue support for the maintenance and rehabilitation of existing parks and recreation facilities in accordance with increasing demand				x		x											
Strategy CR-2c. Collaborate with partner agencies and organizations within the region, as well as at state and federal levels, to continue to implement segments of the Colorado Front Range Trail located within the GMA.		x								x							
Principle CR 3: Adapt and expand parks and recreation facilities and programs to meet the needs of a changing community.		x	x	x	x	x											
Strategy CR-3b. Periodically survey residents regarding parks and recreational facility programs and priorities.																	
Principle EH 5: Engage and help shape regional economic development efforts.										x			x				
Strategy EH-5c. Work with regional partners to identify regional transportation-management solutions to address commute issues for workers and residents.		x								x				x			
Principle ENV 1: Conserve, preserve, protect, create and enhance ecosystems and natural spaces within Fort Collins, the GMA and the region.											x				x		
Strategy ENV-1d. Monitor and periodically update maps and connectivity analysis of a 10-minute walk to nature and wildlife connectivity within the GMA.		x			x									x			x
Strategy ENV-1e. Explore opportunities to partner on acquiring and managing various open lands for multiple uses (e.g., Community Services, recreation, stormwater, trails, agriculture/food production, etc.).							x			x	x						
Principle ENV 2: Become a carbon-neutral community by 2050 and improve the community's resilience by preparing for and adapting to the impacts of climate change.															x	x	
Principle ENV 9: Protect human health, safety, wildlife habitat and the environment by limiting light pollution and protecting our night sky.						x						x				x	
Strategy ENV-9f. Implement lighting best practices at City-owned facilities and for City-owned lighting, including street lighting.						x										x	
Principle SC 4: Provide opportunities for residents to lead healthy and active lifestyles and access healthy local food.	x											x		x			x
Strategy SC-4e. Continue to explore new opportunities to partner on acquiring and managing various open lands for multiple uses (e.g., natural areas, recreation, stormwater, trails, agriculture/food production, etc.).										x	x						
Principle T 1: Coordinate transportation plans, management and investments with land use plans and decisions.														x			

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STP Focus Areas and Themes																	
Strategy T-1a. Update the Pedestrian Plan based on the updated Structure Plan map.		x	x											x			x
Strategy T-1c. Adopt a system-completeness approach for MMLOS.					x									x			x
Principle T 2: Build and maintain high-quality infrastructure supporting all modes of travel.						x								x			x
Strategy T-2c. Identify priority modal corridors in the layered network and incorporate into the Master Street Plan and CIP.		x												x			x
Strategy T-2d. Continue to apply for state and federal funding for infrastructure improvements for all modes of transportation.									x					x			
Strategy T-2e. Continue implementation of various infrastructure improvements through capital projects, intersection improvements, and bicycle and pedestrian programs.							x										
Principle T 4: Pursue regional transportation solutions.		x								x				x			x
Strategy T-4d. Support the NFRMPO in the development of regional multiuse trails as identified in the Non- Motorized Plan.		x															
Strategy T 4g. Continue collaboration with CSU to implement transit and mobility enhancements.			x			x				x				x			x
Principle T 6: Support bicycling as a safe, easy and convenient travel option for all ages and abilities by building a connected network of facilities.	x	x	x		x	x								x			x
Principle T 7: Support walking as a safe, easy and convenient travel option for all ages and abilities by building a connected network of sidewalks, paths and trails.		x	x		x	x				x				x			x
Strategy T-7d. Develop a walking program that educates, encourages and promotes walking as a primary mode of transportation.		x	x							x		x		x			x
Principle T 9: Utilize the transportation system to support a healthy and equitable community.	x	x	x											x			x
Principle T 10: Support and enhance safety for all modes.			x		x							x		x			x
Principle HI 3: Provide opportunities for meaningful and inclusive community involvement in governance and decision-making.	x									x							
ReCreate Parks and Recreation Master Plan																	
3.1 Expand the network of paved, multi-use trails.																	
3.1.1 Continue to implement the recommendations of the Paved Recreational Trail Master Plan and the Bicycle Master Plan.		x					x										
3.1.2 Coordinate paved trail development with transportation and stormwater planning.										x				x			
3.1.3 Ensure all existing and future community parks and community centers are connected to a major paved trail.		x	x									x					
3.1.4 Evaluate opportunities to create better connections across or around current barriers, including major arterial streets.		x	x											x			x
3.1.5 Coordinate trail expansion with surrounding communities and Larimer County.		x								x							
3.1.6 Pursue agreements with irrigation ditch companies to allow trail access on or next to maintenance roads.							x	x									
3.1.7 Coordinate trail expansion with developers.		x					x										
3.2 Increase safe routes to parks and recreation facilities.																	
3.2.1 Fill gaps in sidewalks and on-street bicycle facilities that connect parks and recreation facilities to neighborhoods, schools, transit, and other facilities.		x	x											x		x	x
3.2.2 Ensure transit connections to parks and recreation facilities in the classifications section.		x												x		x	x
3.2.3 Consider the use of signalization, signal prioritization, pedestrian refuges, grade separation, and other techniques where trails cross wide and heavily trafficked roadways.			x											x			x
3.2.4 Consider physical barriers to access, and how to avoid or overcome them, in the siting of new parks and recreation facilities.	x	x	x									x		x			
3.3 Ensure trails function for a range of recreational and transportation users.																	
3.3.1 Promote trail education and etiquette for both skilled and novice users with signage or the development of a "learn to ride" area for trails added onto the Walk & Wheel Skills Hub.			x		x												
3.3.2 Collaborate with regional partners to develop regional trail wayfinding standards, complementary to the city's existing wayfinding standards, that address hierarchy, destinations, landmarks, identity, and congestion for both recreational and transportation users, and to be more accessible to novice and non-English-speaking users	x		x										x	x			x
3.3.3 Use striping on major trails to separate traffic moving in opposite directions, where appropriate.			x		x	x											
3.3.4 Ensure paved trails are wide enough for passing and that there is enough space alongside trails to pull over.					x	x											

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STP Focus Areas and Themes																	
3.3.5 Where widening of trails is not possible to meet demand due to physical, environmental, or other constraints, consider the development of parallel trail and complete street corridors.					x												
3.3.6 Maintain trails to defined standards to avoid blockages caused by weather or disrepair.																	
Level of Service Target: 30 miles of paved multi-use trails per 100,000 residents. Current LOS is 25.2. Meeting the target LOS will require adding 28 miles to the system by 2040.				x													
Grade Separated Crossing Prioritization Study																	
2001 Grade Separated Crossing Guidelines						x											
3. Prioritization Criteria																	
Demand Category - Bicycle demand, pedestrian demand, population density, youth density, student density, senior density	x													x			
Connectivity Category - to transit, enhanced travel corridors, regional trail connection, connecting bicycle paths and trails, alternate crossing location, connecting existing streets and sidewalks, connecting natural resources, connecting destinations and amenities		x	x		x					x							
Safety Category - low stress network location, crash reduction potential, quality of existing crossing			x		x												
Social Equity Category	x																
Cost and Constructability Category - cost and feasibility, partnership or funding opportunities							x		x	x							
Vision Zero Action Plan																	
Focus on vulnerable users			x														
Prioritize safer speeds and multimodal places			x											x			
Center equity	x																
Regional Active Transportation Corridors																	
The corridors were identified based on a series of selection criteria focused on consistency with local/regional/state planning efforts, multimodal connectivity, economy and tourism, access to key destinations, obstacles to implementation, and public input.		x					x										
Equity Plan																	
GOAL 2: Inclusive & Equitable Engagement																	
Strategy: Inclusive and targeted engagement	x									x							
Strategy: Boards and Commissions and Employee Resource Groups	x									x							
Strategy: Accessibility	x		x									x		x			
GOAL 3: Data Accountability																	
Strategy: Data Routine and Cataloging	x			x													
CSU Bicycle Master Plan																	
Equip CSU to apply for North Front Range MPO funding in partnership with the City of FC									x	x							
Provide guidance for accomodating bicycles on campus in new residences, office and educational buildings, and parking garages.		x															
Attain platinum bicycle-friendly designation	x	x			x												
15 Minute City Report																	
Goal: Strengthen Underserved Communities	x	x	x		x												x
Goal: Shift to Active Modes Trips		x	x		x							x		x	x		x
Goal: Enhance Resiliency in Fort Collins																	x
Expand the active transportation network		x	x											x	x		x
Support Mixed-use neighborhoods		x	x		x									x	x		x
Increase housing capacity in areas with strong connectivity		x	x		x												x
Expand access to nature and parks					x							x		x			
Subarea Plans																	
East Mulberry Plan																	
2.3: Incorporate or collocate stormwater and floodplain enhancements alongside other East Mulberry Plan Area environmental protection and transportation enhancements.						x		x			x						
3.5: Establish safe and direct multimodal connections between destinations/character areas within the East Mulberry Plan Area, as well as primary travel corridors and to adjoining areas within the City of Fort Collins such as Downtown, natural areas, and the Mulberry & Lemay Crossings commercial area.		x	x											x		x	

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STP Focus Areas and Themes																	
3.1: Augment existing streets to create multi-modal connections that support safe and comfortable mobility and traffic calming prior to improving streets to Larimer County Urban Area Street Standards (LCUASS).		x	x			x								x			x
4.2, Increase access and availability of public amenities that contribute to the wellbeing and quality of life for individuals and neighborhoods, including but not limited to green spaces, recreational parks, schools, pedestrian and bike trails, and natural areas.		x	x		x					x		x					x
6.3: Provide a vital connection to the Poudre River and regional trail system, while protecting the recognized sensitive natural areas by maintaining responsible public access.		x	x			x				x	x						
6.4: Improve and increase approporiate public access to open spaces and natural features		x	x														
6.5: Identify new areas for natural areas to purchase and explore future opportunities to incorporate parks and recreational facilities within the plan area.							x			x	x						
6.7.1 Existing man-made irrigation ditches and canals, should be enhanced to provide multi-use trails where feasible; including preservation of existing native vegetation, addition of new native landscaping and trails, and utilization of other site amenities to create an open lands system				x		x	x	x			x				x		
2017 Downtown Fort Collins Plan																	
EE 2f (3): Apply the Transportation Air Quality Impacts Manual to City projects in the Downtown to inform land use and transportation decisions.												x			x	x	
TP 1e (2): Amend the Land Use Code to integrate car share and/or bike share to reduce required on-site parking and support multi-modal options.		x												x			x
UD6a (1): Identify the need for future Downtown parks and recreation services within the Parks and Recreation Policy Plan update.					x												
TP 1c (1): Explore concepts for Complete Street corridors in the next Transportation Master Plan (TMP) update including but not limited to: Howes, Mason, Vine, Maple, Mountain and Walnut (east of College), Magnolia and Canyon (building off the design in Urban Design section). Emphasize biking, walking, and transit elements, as well as safety improvements for all users			x			x	x							x			x
TP 1a (6): Implement a more fine-grained pedestrian network through the use of safe and clear connections (e.g., alleys, other midblock connections).		x	x		x	x								x			
EE 1c (1): Create additional sidewalks, trail connections and gathering places along the river that allow people to view and experience the Poudre River corridor while minimizing impacts to sensitive natural resources.		x	x		x	x					x						
TP 1b (2): Implement multi-modal intersection-related improvements identified in TP 1b (1), including identifying and pursuing funding within the larger citywide project prioritization process.			x		x		x			x				x			
TP 1a (2): Continue to implement the Pedestrian Improvement Program, including identifying potential improvements in coordination with the Street Maintenance Program (SMP) and other capital project opportunities.		x	x							x	x			x			
West Central Area Plan																	
2.1 Prioritize improvements that support safe routes to schools and community facilities		x	x											x			x
2.3 Encourage safe and efficient travel for all modes through infrastructure improvements, education, and enforcement			x		x									x			x
2.5 Ensure high quality, comfortable first- and lastmile connections to transit		x			x									x			x
3.3 Ensure that parks and open space are easily accessible by all modes of transportation and for all ages and abilities	x	x	x											x			x
3.4 Allow for appropriate access along and across ditches			x					x									
3.6 Improve safety in public parks, open space, and along trails			x														
Old Town Neighborhoods Plan																	
LUT 4.2 Improve safety for pedestrians, bicyclists, and vehicles at street crossings along high-volume streets and intersections.			x														
LUT 4.3 Encourage foot traffic in public places by adding or augmenting paths, landscaping, and activity spaces.					x	x											
C 1.3 Identify appropriate locations for new or enhanced arterial crossings		x	x		x												
C 2.1 Improve connections from the neighborhoods to nearby parks, natural areas, and trails.		x															
C 3.2 Implement wayfinding to guide bicyclists and pedestrians to low-stress bicycle routes, parks, open spaces, or notable locations within the surrounding neighborhoods and community.		x	x		x												

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STP Focus Areas and Themes																	
S 2.1 Implement neighborhood greenways featuring streetscape and stormwater improvements along key neighborhood routes that connect to nearby green spaces and the community low-stress bicycle network.		x			x	x											
Harmony Corridor Plan																	
UD-4 Promote the development of an extensive recreational trail that connects to the city-wide trail system.		x								x							
UD-5 Promote the development of a commuter bikeway system that supports bicycling as an alternative mode of transportation in the corridor.														x			x
UD-8 Adopt design guidelines and standards for retail development in the corridor to create better neighborhoods by promoting safe, pleasant walking and bicycling environments, more lively commercial centers, convenient transit access, and human scale design.					x	x											
GW-6 Create networks of open space and trail systems, that incorporate wetlands and wildlife habitat.											x						
LU-1 Strive for excellence and high quality in the design and construction of buildings, open spaces, pedestrian and bicycle facilities, and streetscapes by establishing and enforcing design guidelines specific to the corridor area.						x											
I-25 Subarea Plan																	
Policy I-25-T-1.1 The subarea's transportation system will support the development of interconnected regional and local transit, bicycle connections, and an integrated pedestrian system.		x								x				x			
Policy I-25-NOL-1.1 Within this subarea, a primary off-street "green way" will be located along Boxelder Creek establishing an important connection between neighborhoods, employment areas, and activity centers, and other areas within the subarea. This trail facility will be designed and located in accordance with both the City's Parks and Recreation Policy Plan and Natural Areas Policy Plan.		x				x	x										x
Lincoln Corridor Plan																	
Add new bike/ pedestrian bridge on the Poudre River Trail at the railroad trestle between Linden and College.		x	x			x											
Construct paved trail from Mulberry/ Riverside Intersection across Pickle Plant Site and Udall Natural Area to Lincoln.		x															
Restoration and construction of trail improvements on the Coy Ponds area of Gustav Swanson Natural Area.		x															
Parking lot and paved trail improvements.				x		x								x			
Midtown Master Plan																	
Design guidelines for the public realm: Pedestrian circulation systems should provide access to buildings, courtyards, paths and plazas. These should interconnect to facilitate pedestrian movement throughout the area.						x											
Establish a network of several minor public open spaces throughout Midtown as part of private development projects, but which contribute to the larger Parks and Open Space concept for Midtown.		x			x	x											
Pedestrian promenade - ideal cross section allows for 15' multi-use path with 15' landscaping and 10' buffer between path and building.						x											
Create a safe and attractive multi-modal environment to encourage walking and biking to the area.		x	x														
Mountain Vista Subarea Plan																	
Policy MV-T-1.1 The design of the grade-separated crossings will be determined when funding is available and engineering is initiated. The design and project cost options will be assessed (underpass vs. overpass) to analyze efficiencies in costs, and visual and noise impacts on nearby areas.		x				x											
Policy MV-T-1.4 Bicycle and pedestrian facilities, both on- and off-street, will be developed to link this subarea to downtown Fort Collins and Poudre River Trail. These connections will link to the comprehensive city- and region-wide bicycle, pedestrian, and transit systems.		x	x		x												
Policy MV-NOL-1.2 An off-street multi-use trail network will be located within this subarea that establishes an important connection between neighborhoods, School, Community Park, Community Commercial District, and employment areas, and destinations outside of the subarea. This trail network will be designed and located in accordance with the City's Parks & Recreation Policy Plan and the Natural Areas Policy Plan.		x			x	x											
Policy MV-NOL-1.3 A network of open lands including parks, trails and natural areas will be connected by existing ditch and canal facilities, and other existing and proposed rights-of-ways. Buffer setbacks will be created for new development in accordance with existing City's Natural Areas Program Standards & Guidelines		x				x		x			x						

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STP Focus Areas and Themes																	
Policy MV-NOL-1.4 The City will work closely with representatives of the No. 8 Ditch to coordinate enhancements, realignment, access, and modifications to reduce hazards in protecting the health and safety of the public. Such improvements will also enhance the drainage corridor by establishing new landscaping, grading of ditch bank slopes, and new trail alignment. Future funding of the proposed ditch corridor enhancements will need to be identified and coordinated between the City, ditch provider (Windsor Reservoir and Canal Company), and adjacent land owners including the Poudre School District.			x			x		x		x		x					
North College Corridor Plan																	
STN 2.2 - Other Infrastructure. Utility corridors, easements, channels, and detention basins will be integrated with the network for multiple purposes (e.g. recreation, personal mobility, image and identity.)						x	x										
RIV 1.2 - Attractive Connection – Landscaping. The City and URA will seek opportunities to formulate landscape projects on City-owned property between Cherry Street and the Lake Canal. Potential opportunities may originate in various sources, e.g. transportation, parks/trails, natural areas, stormwater, the DDA, or the URA.						x				x							
RIV 1.4 - Active Connection – Trails. The City will explore possible extensions and enhancements to the trail network to expand appropriate recreation and enjoyment of the river landscape in the heart of Fort Collins.		x	x		x												
Northside Neighborhoods Plan																	
T-8. Provide Trails. Provide trail connections to the Poudre Trail from the neighborhoods and businesses. A future multi-use trail is proposed along Lake Canal. A widened, multi-use sidewalk is proposed along the northside of Buckingham Street and the eastside of Redwood Street.		x															
Northwest Subarea Plan																	
Goal P-2: The Northwest Subarea will contain a system of connected trail corridors that provide access to the Foothills, Poudre River, the Soldier Creek trail, between neighborhoods, and to local parks, schools, and other destinations. This connected trail system will be achieved with willing participants.		x					x										
Policy P-2.1 Provide new multi-purpose recreation trails that connect neighborhoods and schools with the Foothills and Poudre River Trails, as shown Figure 14 - Open Lands & Trails Plan on page 27.		x												x			x
Policy P-2.2 Provide local neighborhood connection trails that are safe routes for travel between schools, parks, natural areas, and homes; and that connect to other major destinations within the community, including CSU and Downtown.		x	x											x			x
Policy P-2.3 Establish Soldier Creek Trail, as indicated on the Open Land and Trails Plan, through partnerships, acquisitions, and development agreements.		x					x			x							
Policy P-2.4 Limit impacts of trails on neighboring properties through proper design, setbacks, and screening of trails.						x											
Policy P-2.5 Design and locate new trails to minimize impacts on wildlife, native plant communities, aesthetics, and other visitors' enjoyment of public open lands.						x					x						
Policy P-2.6 Establish future trail locations with property owner willingness and public acquisition, or as part of future developments.							x										
South College Corridor Plan																	
Goal T 3: Make walking and biking practical and enjoyable methods to shop or commute.		x											x	x			x
T 3.1 - South College Multi-Use Path. In addition to onstreet bicycle lanes, pedestrian and bicycle circulation will be enhanced through an eight-foot detached, multi-use path paralleling South College.		x															
T 3.2 - Pedestrian Access to Businesses and Neighborhoods. Create pedestrian connections between the highway and businesses, and from building to building.		x											x	x			x
T 3.3 - Highway Crossings. Improve east/west pedestrian crossings of South College for pedestrians as the highway and intersections are improved.		x			x	x											
T 3.4 - Trail Connections. Create community trail systems that link important destinations through the Corridor.		x															
Country Club Road Corridor Plan (Tier 3 Recommended Improvements)																	
10ft. Multiuse path on north side of CC Road																	
Mini-roundabout or other intersection improvements at Ft.Collins Country Club Access																	
Roundabout or traffic signal at Gregory & Lemay intersection																	
Paved Recreational Trail Master Plan																	

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STP Focus Areas and Themes																	
Ch 2: Recreational Trail Funding									x								
Ch 7: Recreational Trail Design Standards			x			x		x									
Ch 10: Other Action Items		x		x	x						x						
Bicycle Wayfinding Plan																	
Program system of routes that builds on the Low Stress Bicycle Route network identified in the 2014 Bicycle Master Plan and seamlessly connects to the multi-use trail network		x			x												
Design the bicycle wayfinding system so that it is comprehendible to a broad user group	x		x														

City of Fort Collins

STRATEGIC
TRAILS PLAN

C

APPENDIX C:

Proposed Trails Quadrant Maps

City of Fort Collins Strategic Trails Plan
Proposed Paved Trails Overview

Paved Trails
- City of Fort Collins Parks and Recreation - Major Trail
- City of Fort Collins Parks and Recreation - Minor Trail
- City of Fort Collins Other Departments
- Other Municipalities
- Colorado State University
- HOA and Unknown

Active Modes Facilities
- Existing On-Street Bike Facilities
- Existing Separated Bike Lane
- Existing Sidepath
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- Proposed Trail on CSU Property
- Proposed or Improved At Grade Crossing
- Existing At Grade Crossing
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- Proposed Grade Separated Collector Road Crossing
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- Soft Surface Trails
- 8'-10' Proposed Soft Surface Trail
- Railways
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- Canals
- Parks
- Natural Areas
- Growth Management Area
- City Limits
- College/University
- Elementary, Middle, and/or High School

0 0.5 1 2 Miles

City of Fort Collins
STRATEGIC TRAILS PLAN

N

HIGHWAY 287
N OVERLAND TRL
N COUNTY ROAD 19
COUNTY ROAD 54G
W DOUGLAS RD
E DOUGLAS RD
E COUNTY ROAD 54
N COUNTY ROAD 17
TERRY LAKE RD
GREGORY RD
TURNBERRY RD
N COUNTY ROAD 9
RICHARDS LAKE RD
E COUNTY ROAD 52
COUNTRY CLUB RD
GIDDINGS RD
MOUNTAIN VISTA DR
E COUNTY ROAD 50
West Poudre Trail
N TAFT HILL RD
N SHIELDS ST
W WILLOX LN
E WILLOX LN
N COLLEGE AVE
N LEMAY AVE
Lincoln Spur Trail
Hickory Trail
E SUNIGA RD
LINDENMEIER RD
E VINE DR
N TIMBERLINE RD
E COUNTY ROAD 48
N COUNTY ROAD 5
W VINE DR
AIRPORT RD
9TH ST
JEFFERSON ST
N MASON ST
W MOUNTAIN AVE
E LINCOLN AVE
W MULBERRY ST
S HOWES ST
RIVERSIDE AVE
E MULBERRY ST
W LAUREL ST
S SUMMIT VIEW DR
W ELIZABETH ST
S OVERLAND TRL
REMINGTON ST
W PROSPECT RD
East Spring Creek Trail
Spring Creek
E PROSPECT RD
Boxelder Creek
East Poudre Trail
W DRAKE RD
E DRAKE RD
Dixon Creek
Power Trail
S TIMBERLINE RD
Rendezvous Trail
Mills Channel
S TAFT HILL RD
West Spring Creek Trail
W HORSETOOTH RD
E HORSETOOTH RD
Pleasant Valley Trail
S COLLEGE AVE
JOHN F KENNEDY PKWY
LANDINGS DR
BOARDWALK DR
MAIN ST
Spring Creek
W HARMONY RD
E HARMONY RD
ZIEGLER RD
STRAUSS CABIN RD
E COUNTY ROAD 38
W COUNTY ROAD 38E
Fossil Creek Trail
Burns Tributary
McClelland Creek
Mail Creek
Mail Creek Trail
KECHTER RD
S COUNTY ROAD 7
E COUNTY ROAD 36
Stone Creek
Power Trail
Fossil Creek
Smith Creek
Long View Trail
W TRILBY RD
E TRILBY RD
Lang Gulch
Stanton Creek
S COUNTY ROAD 5
S COUNTY ROAD 19
CARPENTER RD
STATE HIGHWAY 392
S US HIGHWAY 287
S COUNTY ROAD 13
S COUNTY ROAD 11
S COUNTY ROAD 9
E COUNTY ROAD 30

City of Fort Collins
STRATEGIC
TRAILS PLAN

City of Fort Collins Strategic Trails Plan
Proposed Paved Trails Overview NE Quadrant

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- Growth Management Area
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- Elementary, Middle, and/or High School

N

0 0.5 1 2 Miles

W DOUGLAS RD
E DOUGLAS RD
TERRY LAKE RD
GREGORY RD
TURNBERRY RD
N COUNTY RD
RICHARDS LAKE RD
E COUNTY ROAD 52
COUNTRY CLUB RD
GIDDINGS RD
W WILLOX LN
E WILLOX LN
MOUNTAIN VISTA DR
E COUNTY ROAD 50
N LEMAY AVE
N COLLEGE AVE
E SUNIGA RD
LINDENMEIER RD
Dry Creek
N TIMBERLINE RD
Cache la Poudre River
E VINE DR
E COUNTY ROAD 48
N COUNTY ROAD 5
West Poudre Trail
East Poudre Trail
9TH ST
N HOWES ST
N MASON ST
JEFFERSON ST
LINCOLN AVE
E MOUNTAIN AVE
INTERSTATE 25
E LINCOLN AVE
S HOWES ST
S MASON ST
E MULBERRY ST
RIVERSIDE AVE
W LAUREL ST
East Poudre Trail
S SUMMIT VIEW DR
REMINGTON ST
East Spring Creek Trail
Boxelder Creek
W PROSPECT RD
E PROSPECT RD
Spring Creek
West Spring Creek Trail
East Spring Creek Trail
S LEMAY AVE
S TIMBERLINE RD
S COLLEGE AVE
W DRAKE RD
E DRAKE RD
Power Trail
Rendezvous Trail
Foothills Channel
East Poudre Trail
S COUNTY ROAD 5
E HORSETOOTH RD
JOHN F KENNEDY PKWY
LANDINGS DR
STRAUSS CABIN RD
MAIN ST

City of Fort Collins Strategic Trails Plan
Proposed Paved Trails Overview NW Quadrant

City of Fort Collins
STRATEGIC
TRAILS PLAN

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0 0.5 1 2 Miles

N

COUNTY ROAD 54G
N COUNTY ROAD 19
N OVERLAND TRL
West Poudre Trail
N TAFT HILL RD
N SHIELDS ST
Dry Creek
W DOUGLAS RD
N COUNTY ROAD 17
GREGORY RD
TERRY LAKE RD
W WILLOX LN
E WILLOX LN
Lincoln Spur Trail
Hickory Trail
N COLLEGE AVE
E SUNIGA RD
W VINE DR
E VINE DR
East Poudre Trail
LAPORTE AVE
JEFFERSON ST
N HOWES ST
N MASON ST
W MOUNTAIN AVE
E MOUNTAIN AVE
W MULBERRY ST
S HOWES ST
S MASON ST
E MULBERRY ST
W LAUREL ST
S OVERLAND TRL
W ELIZABETH ST
REMINGTON ST
W PROSPECT RD
E PROSPECT RD
West Spring Creek Trail
East Spring Creek Trail
S TAFT HILL RD
S SHIELDS ST
S COLLEGE AVE
W DRAKE RD
E DRAKE RD
Spring Creek
Dixon Creek
West Spring Creek Trail
Fossil Creek Trail
Pleasant Valley Trail
W HORSETOOTH RD
E HORSETOOTH RD
LANDINGS DR

City of Fort Collins Strategic Trails Plan
Proposed Paved Trails Overview SE Quadrant

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0 0.5 1 2 Miles

N

City of Fort Collins
STRATEGIC TRAILS PLAN

City of Fort Collins Strategic Trails Plan
Proposed Paved Trails Overview SW Quadrant

W PROSPECT RD
E PROSPECT RD
REMINGTON ST
W DRAKE RD
E DRAKE RD
W HORSETOOTH RD
E HORSETOOTH RD
W BOARDWALK DR
W HARMONY RD
E HARMONY RD
E TROUTMAN PKWY
W TRILBY RD
E TRILBY RD
CARPENTER RD
E COUNTY ROAD 30
S OVERLAND TRL
S TAFT HILL RD
S MASON ST
S COLLEGE AVE
JOHN F KENNEDY PKWY
LANDINGS DR
BOARDWALK DR
S SHIELDS ST
S US HIGHWAY 287
W COUNTY ROAD 38E
S COUNTY ROAD 19

West Spring Creek Trail
East Spring Creek Trail
Fossil Creek Trail
Pleasant Valley Trail
Long View Trail
Foothills Channel
Dixon Creek
Spring Creek
Burns Tributary
Fossil Creek
Stone Creek
Smith Creek
Lang Gulch
Mail Creek

0 0.5 1 2 Miles

N

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City of Fort Collins
STRATEGIC
TRAILS PLAN

City of Fort Collins

STRATEGIC
TRAILS PLAN

D

APPENDIX D:

Quantitative LOS & Crash Analysis Report

Memorandum

Date: October 3, 2024

To: Dave "DK" Kemp, City of Fort Collins; Taylor Broyhill, Logan Simpson

From: Nick VanderKwaak, Maggie Ostwald, Erika Jermé - Fehr & Peers

Subject: Fort Collins Strategic Trails Plan: Trail Analysis and Recommendations

DN24-0814

Overview

The Fehr & Peers team conducted quantitative, desk-based studies to understand existing conditions of Fort Collins' trail system and develop recommendations. The three levels of analysis including a quantitative trail level of service analysis, level of traffic stress analysis, and a preliminary assessment of safety at-grade crossings will inform prioritization of improvements to the trail system.

Quantitative Level of Service Analysis

Methodology

A Level of Service (LOS) analysis was conducted on all designated shared-use trails within the Fort Collins trails network. The methodology used for this analysis followed the FHWA Shared-Use Path Level of Service Calculator User's Guide, which was published in 2006 and remains the industry standard for evaluating shared-use paths. The calculator is rooted in path operations data, user perception surveys, and the theory of traffic flow on a path. It evaluates four criteria (meetings, active passes, passive passes, and delayed passings) based on four inputs from users (volume, mode split, trail width, and presence of a centerline). Equation 1 which incorporates these factors is shown below and is embedded in an excel workbook produced by the FHWA that calculates LOS based on the four user inputs.

$$SUPLOS = 5.446 - 0.00809(E) - 15.86(RW) - 0.287(CL) - (DPF)$$

Where:

E = Events = Meetings per minute + 10 (active passes per minute)
RW = Reciprocal of path width (i.e., 1/path width, in feet)
CL = 1 if trail has a centerline, 0 if trail has no centerline
DPF = Delayed pass factor

Equation 1: Basic SUPLOS Equation

Equation 1 above produces a LOS Grade based on the score received. The scale of grading is shown in Table 1 below.

LOS Score	LOS Grade	
$X \geq 4.0$	A	Best
$3.5 \leq X < 4.0$	B	↓
$3.0 \leq X < 3.5$	C	
$2.5 \leq X < 3.0$	D	
$2.0 \leq X < 2.5$	E	
$X < 2.0$	F	Worst

Table 1: SUPLOS Scale

Inputs into the LOS calculator included mode split, centerline, and volume data that was gathered from City of Fort Collins and other data. More information regarding each of these inputs is included below.

User Volumes

Trail volumes are collected by volunteers annually at 13 locations throughout Fort Collins. The counts used for this study were collected on a Tuesday and Saturday in September of 2022. The count locations are:

- Poudre Trail at Taft Hill Parking Lot
- Poudre Trail at Timberline Road
- Poudre Trail at Lee Martinez Park
- Spring Creek Trail at Lilac Park
- Spring Creek Trail at Creekside Park
- Spring Creek Trail at Edora Park
- Spring Creek Trail at Drake Road and Dunbar Avenue
- Mason Trail at West Horsetooth Road
- Power Trail at East Horsetooth Road

- Mason Trail at Spring Creek Trail
- Fossil Creek Trail at Stanton Creek Trail
- Longview Trail at Trilby Road
- Fossil Creek Trail at Spring Creek Trail

Some trails within the study did not have counts collected near them. For these trails, Strava Metro data was used to estimate trail volumes. Strava Metro provides, among other data, the total number of cyclists who used a specific trail segment while tracking an activity on Strava within a given one-hour period during the entire month of September 2022. This data is also available for pedestrian users. To estimate trail volumes based on Strava Metro data, the number of cyclists and pedestrians using Strava was summed and documented for every City count collection point as well as for locations where counts were not collected, and ratios were calculated at City count collection points to extrapolate volumes for the other segments. The sum of the bicyclists and pedestrians captured on Strava Metro is significantly less than the number of users captured by volunteer counters in the same month because Strava Metro only documents those users that use Strava to track their activity. Strava Metro data is highly recreational and only represents a portion of total users, which is why ratios were used to compare counted locations to unrepresented locations instead of directly utilizing the Strava Metro user counts.

Figure 1 below shows peak one-hour one-way volumes for the studied trails. Unidirectional volumes were assumed to be equal to half of the total one-hour volume.

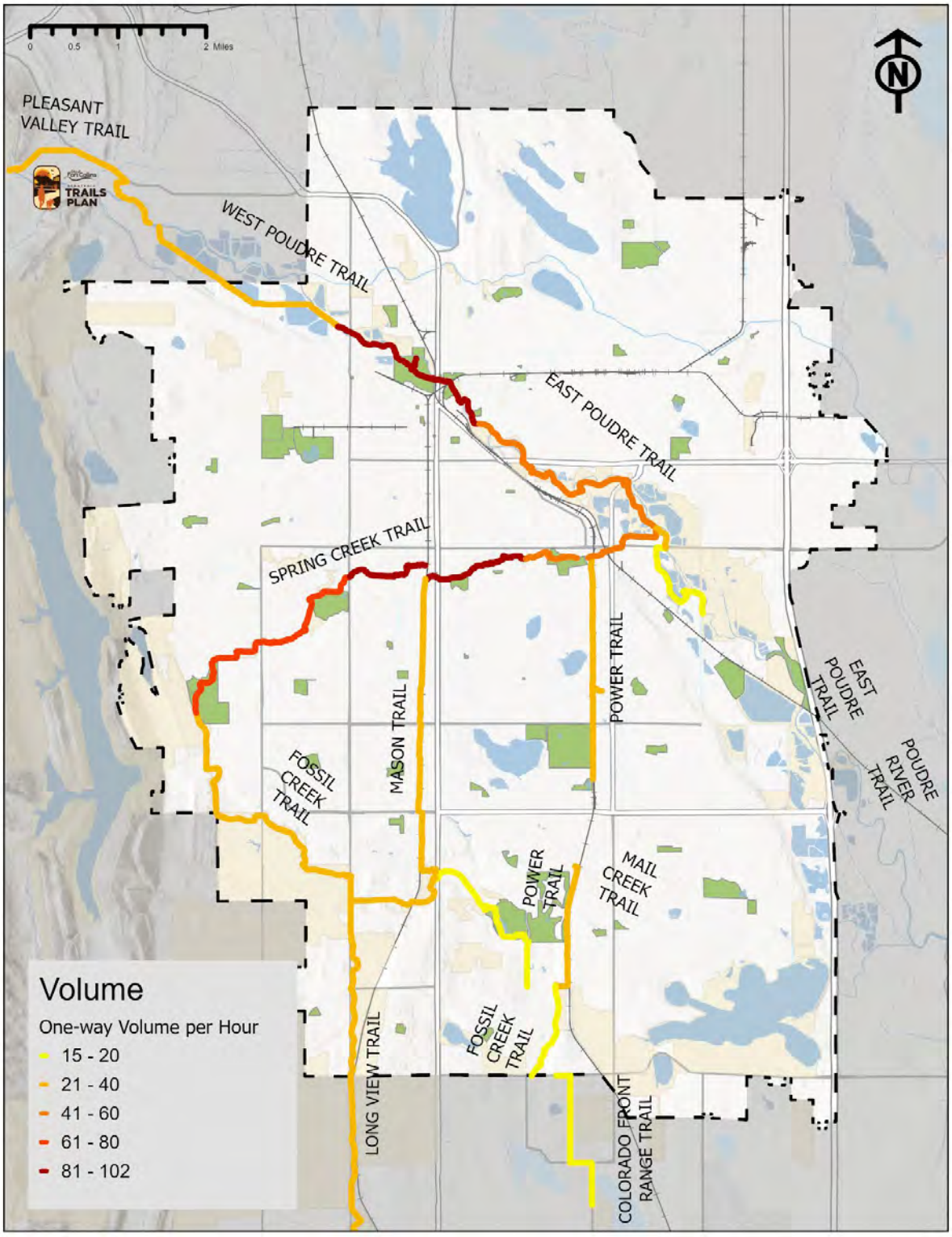

Figure 1: Map of One-Way Trail Volume per Hour

Mode Split

Mode split is defined as the share of a mode of transport in the overall volume of users. Mode split was provided by the City in the trail counts detailed above. The modes documented were all bicyclists, e-bike users, youth cyclists, walker/jogger/stroller, wheel-chair users, e-scooter users, other e-device users, and other. The mode splits incorporated into the LOS Calculator are adult cyclists, pedestrians, runners, in-line skaters, and youth cyclists. The calculations used to process the City mode split counts into the LOS Calculator mode splits are shown in Table 2 below.

Table 2: Comparison of Mode Split Categories

LOS Calculator Mode Split	Fort Collins Mode Splits Included
Adult cyclists	All bicyclists + e-scooter users + other e-device users – youth cyclists
Pedestrians	(Walker/jogger/stroller + wheel-chair users)/2
Runners	(Walker/jogger/stroller + wheel-chair users)/2
In-line skaters	Other
Youth cyclists	Youth cyclists

Figure 2 below shows the mode split for all cyclists (adult cyclists + youth cyclists) on the studied trails.

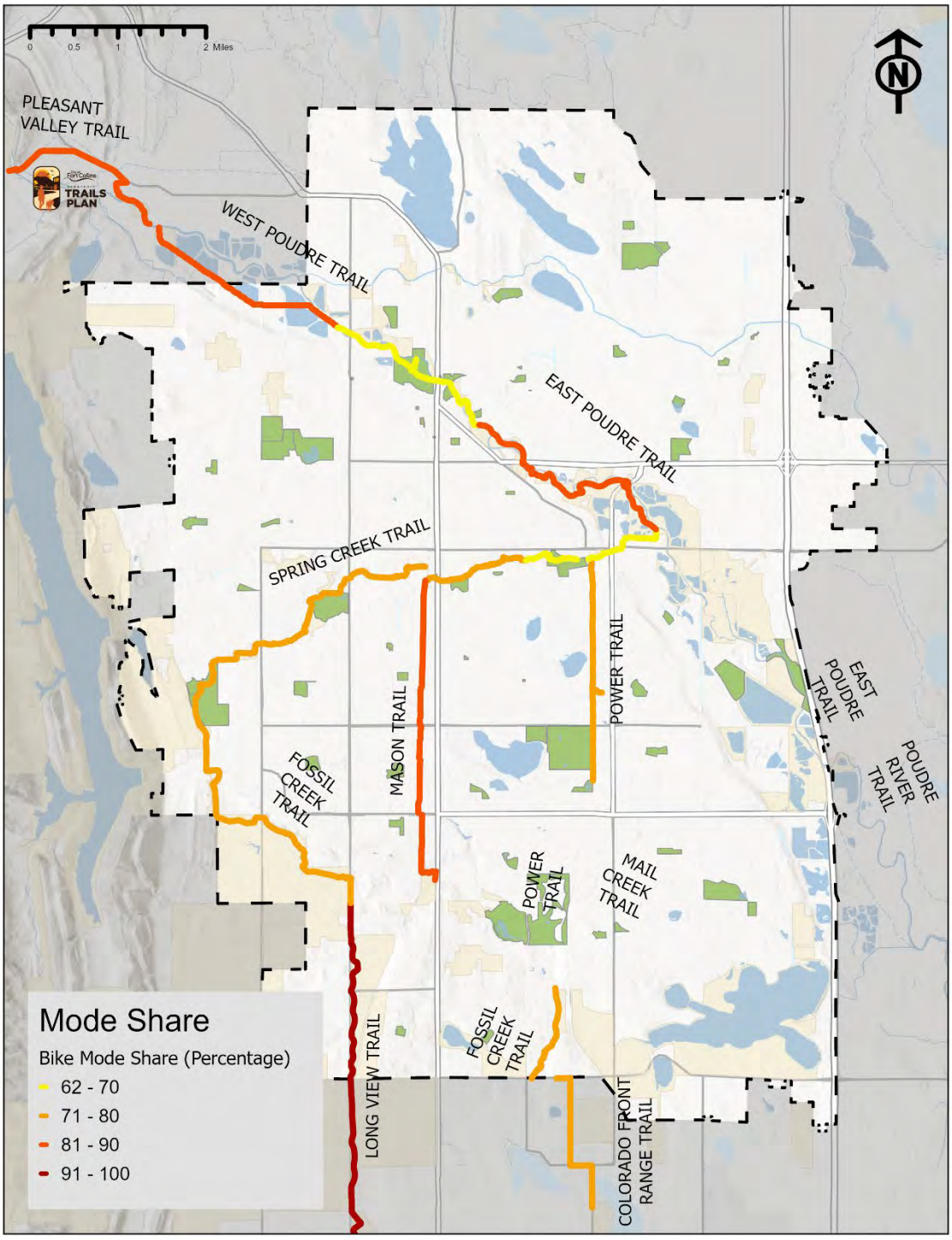

Figure 2: Map of Bicycle Mode Split

Presence of Centerline

The presence of a centerline can improve safety but also reduces trail level of service due to the perceived restriction of movement. Centerline presence data was provided by the City and verified using Google Earth aerial imagery. Figure 3 below shows the trail segments that have a centerline and those that do not.

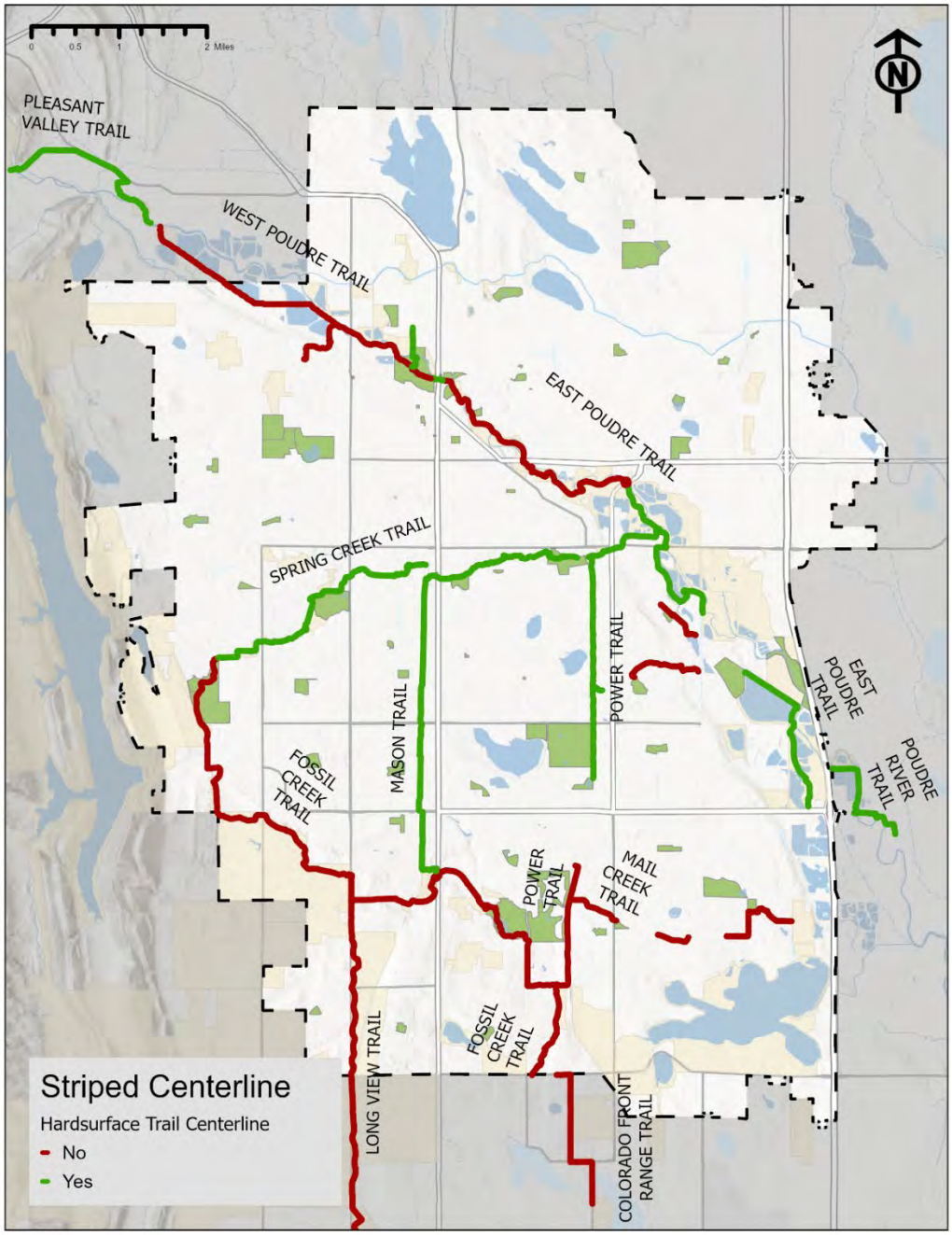

Figure 3: Map of Trail Centerline Presence

Trail Width

Wider trails can accommodate more users comfortably and therefore have a higher level of service. Trail width was provided by the City and spot checked using Google Earth aerial imagery. Figure 4 below shows the widths of trail segments throughout the study area.

Figure 4: Map of Trail Width

Trail Level of Service (LOS) Results

LOS scores were calculated for 41.5 miles of trail. Figure 6 shows the evaluated LOS of all the trail segments. While this analysis shows that roughly two-thirds of trails already provide an A-grade level of service, another third of the city's trails could use improvement (Table 3). Of the trails studied, the Spring Creek trails perform the poorest, with 5 miles of C- and D-graded trails (Figure 5).

Table 3: LOS Scores by Mileage and Percentage

Score	Miles	Percent
A	26.0	63%
B	7.2	17%
C	7.0	17%
D	1.4	3%

Poorer grades are associated with higher volumes. Of trail segments receiving a score of A, the average hourly one-way volume is 25 users. By contrast, segments receiving C and D scores have an average hourly one-way volume of 83 users. B-graded segments have 57 hourly one-way users, on average. As Fort Collins' population increases, the city will need to improve trails to keep pace with growing demand.

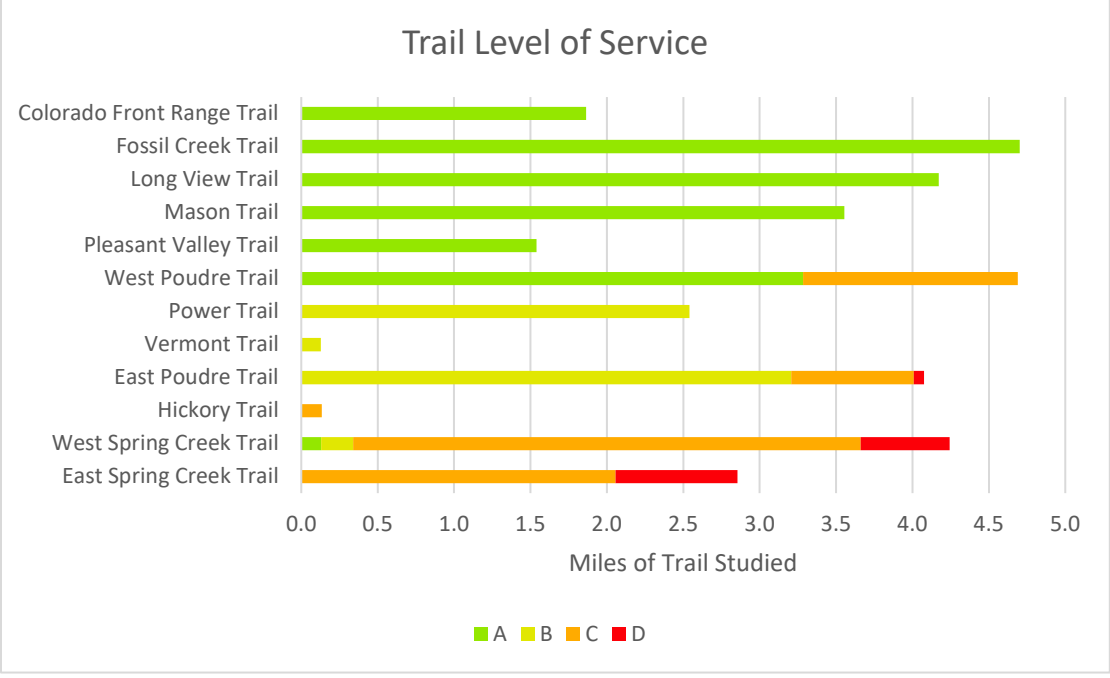

Figure 5: Miles of Each Trail Studied by Level of Service. Note that the Pleasant Valley Trail is often considered to be part of the West Poudre Trail.

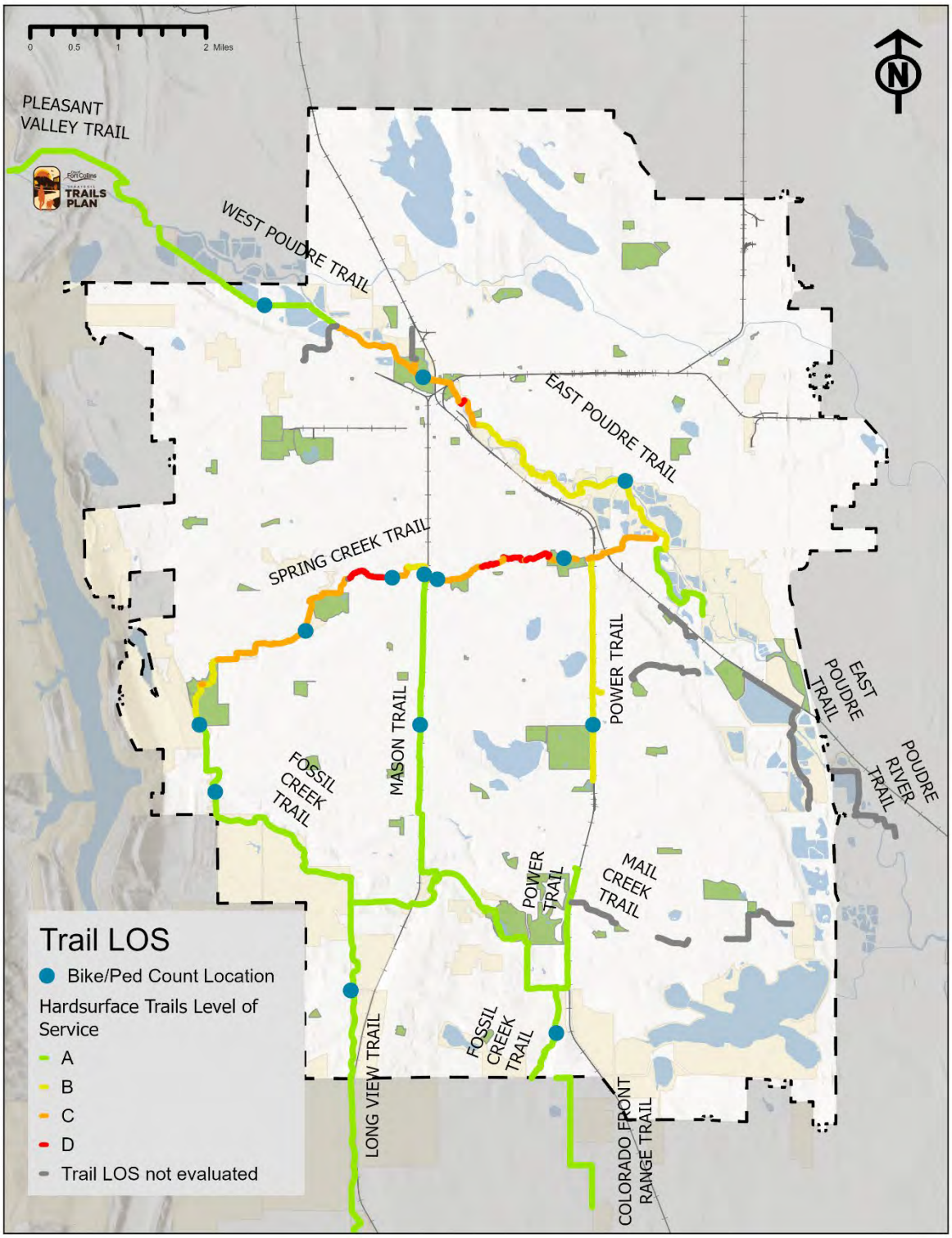

Figure 6: Map of Trail Level of Service Scores

In addition to outputting the LOS score, the FHWA Calculator calculates a user perception LOS Grade based on the surveys they conducted. For some trails, there is a slight discrepancy between the perceived score and the official trail level of service. In all but a handful of segments, the perceived LOS and actual LOS score differ only by one grade. Along the section of Fossil Creek Trail that is adjacent to Lemay Avenue, the scores vary substantially: the user perception LOS grade is F, but the trail LOS grade is A. The "trail" in this section is only a five-foot wide sidewalk with only narrow separation from the roadway, diminishing the user experience of the trail. Yet the volumes on this segment are low enough (only 17 one-way users per hour) that users are unlikely to have difficulty passing each other along this stretch, which explains why the actual score is so much higher. Although this segment of trail receives an A grade, it is narrower than the city's standards and should be considered for upgrading. Moreover, cyclists may choose to switch to on-street bike lanes for this segment. As a result, the recorded volumes on the trail may be artificially low.

Level of Traffic Stress Analysis

A level of traffic stress (LTS) analysis was completed on all trails within Fort Collins that lie parallel to and within 15 feet of a roadway. LTS is a best practice scoring system used to classify the comfort of bicycle facilities, based on the understanding that different segments of the population have different levels of comfort biking in or near traffic. An LTS of 1 is assumed to be comfortable for all users, even children, while an LTS of 4 denotes a bikeway that only the most experienced, committed cyclists will feel comfortable using.

Fehr & Peers has developed a tool (StreetScore+) that integrates the original Level of Traffic Stress methodology developed by Mekuria, Furth, and Nixon[1] with guidance from the National Association of City Transportation Officials' (NACTO's) *Urban Bikeway Design Guide*, 2nd edition. While a traditional LTS gives any off-street bikeway the best possible rating, StreetScore+ can distinguish among off-street bikeways of varying quality and comfort. StreetScore+ also includes a pedestrian module based on the NACTO *Urban Streets Design Guide* (USDG) and engineering judgment.

The project team analyzed 7.5 miles of trail for pedestrian and bicycle LTS, or roughly 14% of the trails in the study area. All other trail segments are assumed to have an LTS of 1, given their greater separation from the nearest roadway. The methodology and findings for each analysis are described in the following sections.

Pedestrian LTS Methodology

The pedestrian LTS was based on Fehr & Peers' StreetScore+ criteria for sidewalks in urbanized areas. The analysis used the following inputs:

- Speed limit of adjacent roadway
- Number of travel lanes on adjacent roadway
- Trail width
- Trail sidewalk quality
- Buffer width
- Presence of landscaping along the buffer (e.g., continuous trees to provide a physical barrier from traffic)
- Buffer quality

[1] Furth, Peter G., Maaza C. Mekuria, and Hilary Nixon. "Network connectivity for low-stress bicycling." *Transportation research record* 2587.1 (2016): 41-49.

Table 4 documents how each of these categories was scored.

Table 4: StreetScore+ Criteria for Sidewalks

Criteria		StreetScore+ 1	StreetScore+ 2	StreetScore+ 3	StreetScore+ 4
# of Travel Lanes	***Buffer width >=14 feet***	2-3 lanes	4-5 lanes	6+ lanes	(no effect)[2]
	Buffer width <14 feet	2-3 lanes	(no effect)	4-5 lanes	6+ lanes
Usable Sidewalk Width		>=10 feet	8 to 9 feet	6 to 7 feet	< 6 feet
Sidewalk Quality		Even, Smooth Surface	(no effect)	Some Cracks and Upheavals, but usable sidewalk width is maintained	Cracks, Failing Pavement, such that usable sidewalk width is not maintained
Posted Speed Limit	***Buffer scorewidth >=14 feet***	<= 30 MPH	31-35 MPH	36-40 MPH	>40 MPH
	Buffer width <14 feet	<= 25 MPH	26-30 MPH	31-35 MPH	>=36 MPH
	Buffer width = 0	<=20 MPH	21-25 MPH	26-30 MPH	31-35 MPH
Landscape Buffer and Street Trees		Yes, Continuous	Yes, Discontinuous[3]	No Landscaping	(no effect)
Buffer Quality		High quality buffer such as lush landscaping or parklet	Physical barrier such as modest landscaping, parked cars, or bicycle parking	Width buffer such as painted bike lane or bus lane	(no effect)

Trail quality was assumed to be "Even, Smooth Surface" (score of 1). Fieldwork was not performed to verify quality; the analysis can be updated for areas known to have poorer surfaces. If trail quality is worse than all other evaluated factors it would degrade the score. Similarly, buffer width was based on measurements of imagery in Google Earth, while qualitative attributes of the buffer are subject to analyst interpretation. Scores were calculated in ArcGIS Pro 3.1 using simple Python scripts. The lowest characteristic score became the final LTS score for each segment, following the "weakest link" principle of the LTS methodology.

[2] "No effect" signifies that there is no further decrease in comfort for that variable.

[3] Discontinuous is defined as not having a consistent effect on street life. Regularly spaced street trees may still feel like a "continuous" buffer and should receive a score of 1.

Bike LTS Methodology

The bike LTS was based on Fehr & Peers' StreetScore+ criteria for two-way protected bike lanes. The analysis used the following inputs:

- Speed limit of adjacent roadway
- Number of travel lanes on adjacent roadway
- Trail width
- Buffer width
- Barrier type (e.g., raised curb, grass, etc.)

Table 5 documents how each of these categories was scored. As with the pedestrian LTS, buffer width and barrier type were determined using Google Earth.

Table 5: StreetScore+ Criteria for Protected Bike Lanes

Criteria		StreetScore+ 1	StreetScore+ 2	StreetScore+ 3	StreetScore+ 4
Buffer Width		>=6 feet OR continuous barrier[4]	3 to 6 feet	(no effect)	<3 feet
Barrier Type	***<25 mph***	Raised curb + grass buffer, raised curb only, grass buffer only	Paint only	(no effect)	(no effect)
	25 – 30 mph	Raised curb + grass buffer	Raised curb only, grass buffer only	Paint only	(no effect)
	31 – 35 mph	Raised curb + grass buffer	Raised curb only, grass buffer only	(no effect)	Paint only
	>=36 mph	Raised curb + grass buffer	(no effect)	Raised curb only, grass buffer only	Paint only
Bicycle Lane Width		>=10 feet	8 to <10 feet	(no effect)	<8 feet

Scores were calculated in ArcGIS Pro 3.1 using simple Python scripts. The lowest characteristic score became the final LTS score for each segment, following the "weakest link" principle of the LTS methodology.

[4] A continuous barrier can be a continuous raised curb/median, continuous landscape planters, parking stops, or similar continuous physical barrier.

LTS Results

Of the 7.5 miles of trail that lie parallel to and are within 15 feet of a road, the majority scored an LTS 1 for bicyclists, but performed poorly (LTS 3 or 4) for pedestrians. Table 6 shows trail mileage by LTS score for the two user types. The difference in scores by user type reflects pedestrians' lower tolerance for proximity to higher speed traffic as well as a desire for a physical barrier provided by landscaping (e.g., trees, shrubs). A map showing the pedestrian LTS scores is shown in Figure 7 and a maps showing bicycle LTS is shown in Figure 8

Table 6: Miles of Trail by LTS Score and User Type.

LTS Score	Miles of Trail - Pedestrian	Miles of Trail - Bike
1	0.2 (2.7%)	4.2 (56.0%)
2	0.6 (8.0%)	1.2 (16.0%)
3	3.2 (42.7%)	1.4 (18.7%)
4	3.5 (46.7%)	0.7 (9.3%)

Figure 7: Pedestrian LTS Analysis Results

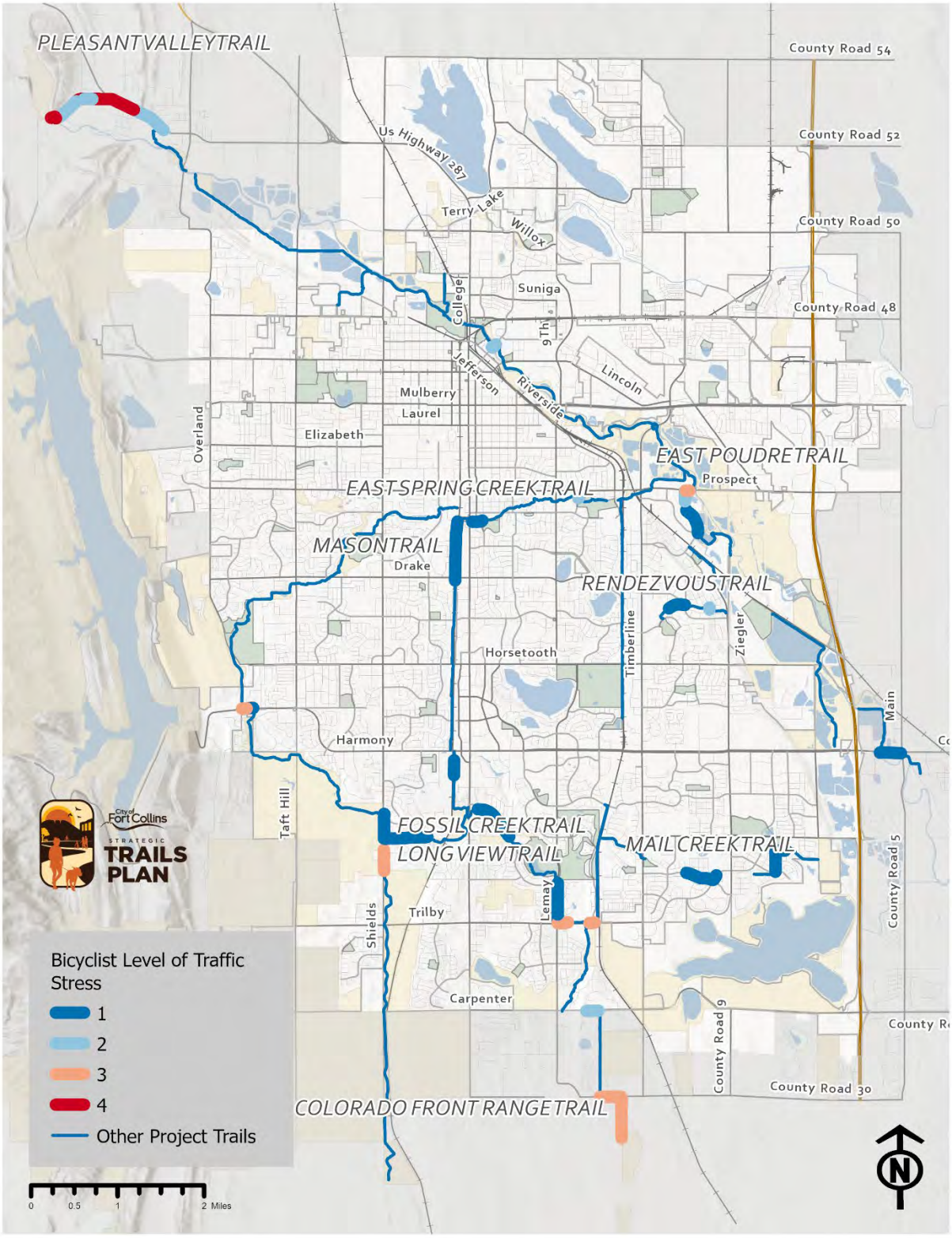

Figure 8: Bike LTS Analysis Results

Crash Activity at Trail Crossings

Of the 41.5 miles of paved trails included in the analysis, the trail crosses a roadway at grade at 58 locations. Fehr & Peers studied pedestrian and bicycle crash history at these trail crossings using eleven years of crash data (2012 through 2023) pulled from DiExSys. A subset of crashes involving pedestrians or bicyclists was spatially joined to the crossings, using a 250-foot search radius. Of the 58 locations where a trail intersects a road at-grade, only seven had a bike or pedestrian crash within 250 feet, with nine crashes total.

Based on crash reports, six of the nine crashes were omitted from further study because they were not related to the trail they were located near. The three remaining crashes all involved a bicyclist and resulted in injury.

Table 7: Bicycle and Pedestrian-Involved Crashes within 250 Feet of an At-Grade Trail Crossing, 2012 – 2023

Trail	Intersecting Road	Severity	Description	Relevant to Trail?
Mason Trail	W Harmony Road	Injury (B)	Car ran red light and hit cyclist in trail crosswalk.	Yes
Mason Trail	W Harmony Road	Fatal (K)	Pedestrian was lying in the road, not at a crosswalk, and was hit by a car.	No
Power Trail	E Drake Road	Injury (B)	Car ran red light and hit cyclist in trail crosswalk, potentially due to glare.	Yes
Power Trail	E Drake Road	Serious Injury (A)	Pedestrian on a scooter was hit while using a sidewalk/crosswalk.	No
West Poudre Trail	N Taft Hill Road	Serious Injury (A)	Bicyclist in bike lane veered into travel lane.	No
East Poudre Trail	Linden Street	Injury (B)	Cyclist in bike lane was hit by car backing out of parking space.	No
Fossil Creek Trail	Fossil Creek Drive	Injury (B)	Cyclist was hit in the crosswalk by a car that ran the stop sign.	Yes
Mason Trail	W Drake Road	Injury (B)	Car hit bike in the bike lane.	No
Fossil Creek Trail	Hawkeye Street	Serious Injury (A)	Pedestrian was hit by a car in the dark in a crosswalk	No - located in the Lemay Street trail gap

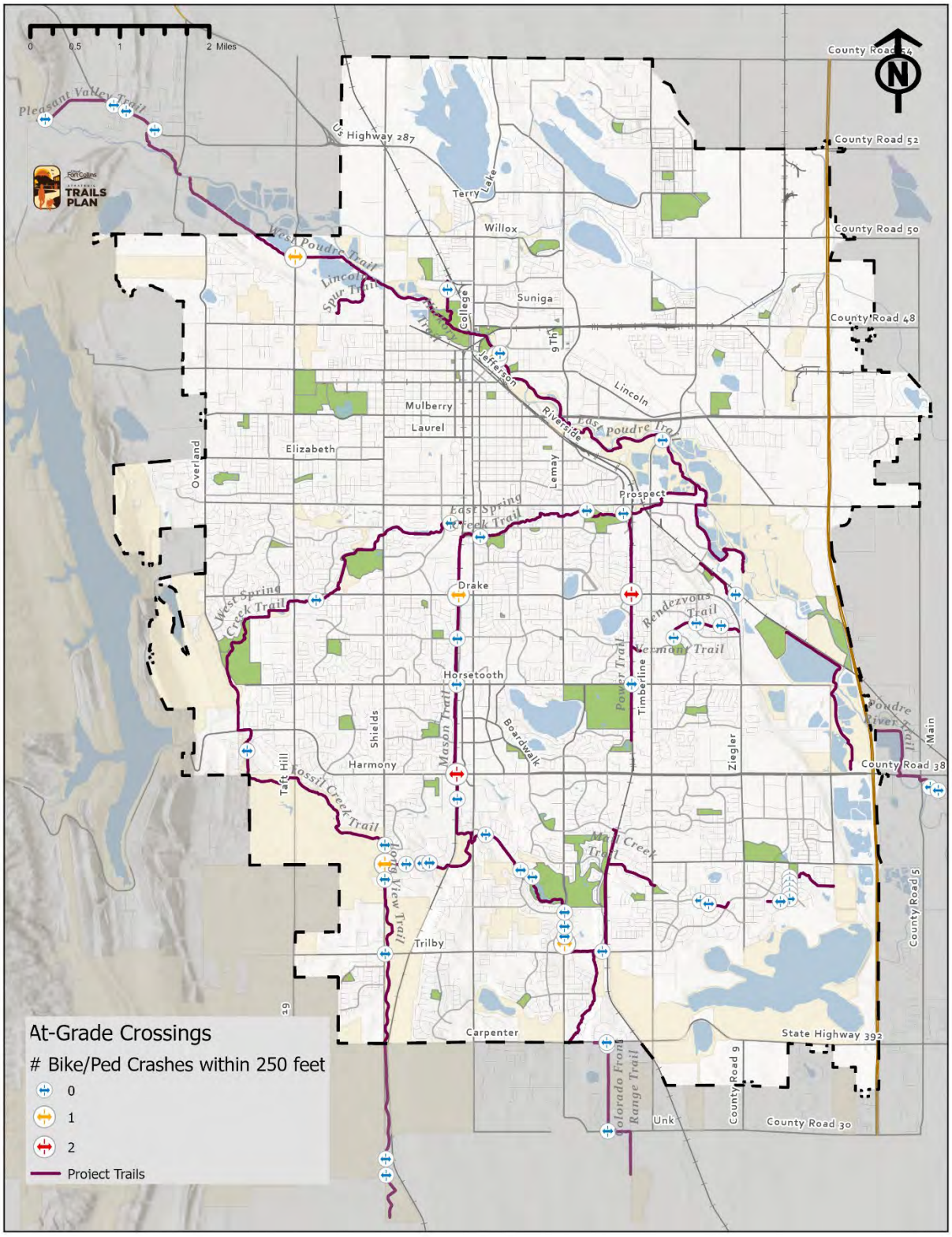

Figure 9: At-Grade Crossings with Nearby Bike or Pedestrian Crashes

All but one of these crashes occurred at a crossing with an arterial or collector. Table 3 below shows which trails have the most at-grade crossings, including a breakdown of crossings by functional classification.

Table 8: Number of At-Grade Crossings Along each Trail, by Roadway Functional Classification

Trail	Total At-Grade Crossings	Arterial Crossings	Collector Crossings	Guideway Crossings	Local Crossings
Colorado Front Range Trail	3	1			2
Dovetail Spur	1				1
East Poudre Trail	3	1	2		
East Spring Creek Trail	3		3		
Fossil Creek Trail	14		2		12
Hickory Trail	1				1
Mail Creek Trail	2				2
Mason Trail	5	3	1	1	
Pleasant Valley Trail	4				4
Poudre River Trail	3	1			2
Power Trail	3	2	1		
Rendezvous Trail	3		2		1
West Poudre Trail	1	1			
West Spring Creek Trail	2				2
Unnamed (Radiant Park area)	6		1		5

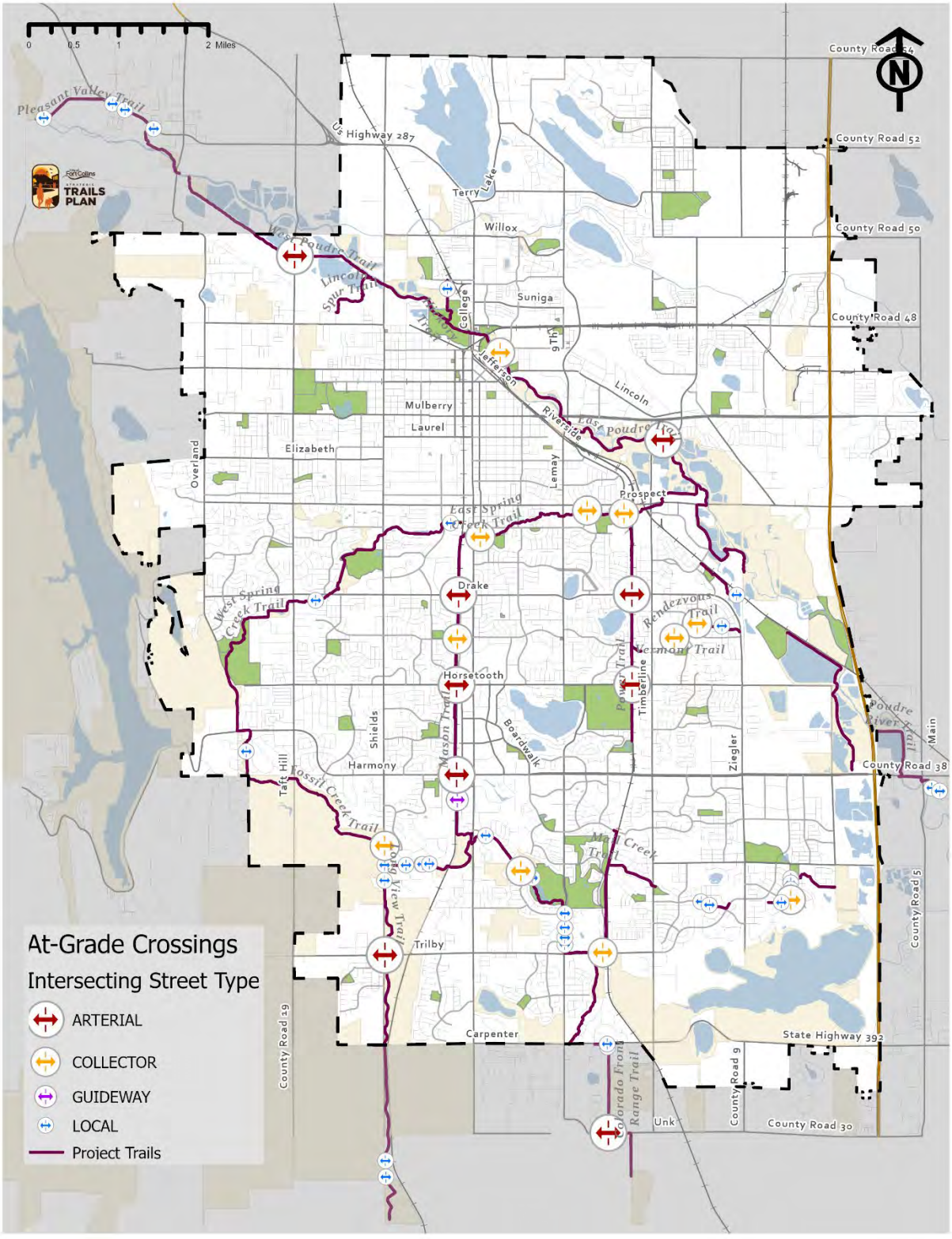

Figure 10: Functional Classifications of the Roadways Crossed at Grade by Project Trails

Recommended Trail Improvements

Analyzing the Level of Service (LOS) calculations, the crash history for at-grade crossing locations, and the Level of Traffic Stress for bicyclists and pedestrians at trail locations parallel to a roadway helped to identify some citywide trail recommendations and specific spot level recommendations in the areas of analysis. These recommendations are not exhaustive but help to frame potential investments at existing locations, some locations for consideration of grade separation, and help to define trail standards that will apply to future trails and existing trail improvements.

Centerline Striping Recommendation

The shared-use path LOS calculator incorporates presence of trail centerline as a factor in the calculation of LOS. Intuitively, it might make sense to include a centerline on all trails, but the LOS calculator shows that doing so may be a detriment to trail LOS if applied uniformly without considering context. Recommendations regarding centerline striping in Fort Collins are made in the Strategic Trails Plan Design Standards and Details. Future trail projects should consider and incorporate these centerline guidelines.

Trail Width

Trail width recommendations for new or updated trails are made in the Strategic Trails Plan Design Standards and Details. The updated details show a standard ten-foot width (eight-foot minimum) for trails with no gravel sidepath and a standard twelve-foot width (ten-foot minimum) for trails with a gravel sidepath. Trails with widths less than recommended standards are likely to have a lower Level of Service, especially with typical volume growth.

Some cases warrant a trail to be wider than the standard recommendation, such as:

- When a trail runs adjacent to a wall (10-foot minimum width, 12-foot width preferred)
- When a trail utilizes an overpass (12-foot minimum width, 14-foot width preferred)
- When a trail utilizes an underpass (14-foot minimum width)

Lowering Traffic Stress

Pedestrian Level of Traffic Stress (LTS)

The most stressful trail segments for pedestrians are along roadways with speed limits of 35 MPH or higher. Where possible, the city should move trails further from roadways with high speeds and provide additional landscaping or other vertical barriers to increase separation between pedestrians and vehicle traffic. In all cases where a trail lies within 15 feet of a roadway, pedestrians will benefit from high quality landscaping, such as regularly spaced trees or shrubs. This type of landscaping provides a physical barrier between pedestrians and vehicles, reduces traffic noise, and shades pedestrians. Recommendations to improve pedestrian LTS for areas that score LTS 3 or 4 are shown in Table 9.

Table 9: Recommendations to Improve Pedestrian LTS

Trail	Extent	LTS Score	Primary Issue	Recommendation
Fossil Creek Trail	Along Lemay from just north of Fossil Creek Parkway to Trilby and St. Thomas Drive	4	High vehicle speeds and volumes	Where possible, increase barriers between pedestrians and vehicles
Fossil Creek Trail	Fossil Creek Drive to Shields underpass	4	High vehicle speeds	Where possible, increase barriers between pedestrians and vehicles
Fossil Creek Trail	Shields to Pleasant Hill Lane	3	Limited buffer width with empty amenity zone	Consider adding vertical barrier such as fencing or bollards where buffer is narrowest
Fossil Creek Trail	Red Fox Road to County Road 38 underpass	4	High vehicle speeds	Where possible, increase barriers between pedestrians and vehicles
Fossil Creek Trail	Snead Drive to Mail Creek Lane	3	Empty amenity zone	Add trees or other landscaping to provide separation from vehicles and shade
Long View Trail	Midway Drive to Scenic Drive	4	High vehicle speeds	Where possible, increase barriers between pedestrians and vehicles
Colorado Front Range Trail	Vantage View Place to Golden Prairie Court	4	High vehicle speeds and volumes	Where possible, increase barriers between pedestrians and vehicles
Colorado Front Range Trail	County Road 30 crossing to County Road 11c crossing	4	High vehicle speeds with poor buffer	Where possible, increase barriers between pedestrians and vehicles
Pleasant Valley Trail	Cedar Court to Poudre River	4, 3	High vehicle speeds with poor buffer	Where possible, increase barriers between pedestrians and vehicles
Mason Trail	South Transit Center to County Road 38	4	High vehicle speeds	Where possible, increase barriers between pedestrians and vehicles
Mason Trail	Drake Road to Bay Road	3	No buffer	Add bollards to create a barrier between pedestrians and vehicles
Power Trail	Fossil Creek to Southridge Greens Boulevard	4	High vehicle speeds	Where possible, increase barriers between pedestrians and vehicles
Poudre River Trail	Harmony Road underpass to County Road 5	4	High vehicle speeds and volumes with poor buffer	Add bollards to create a barrier between pedestrians and vehicles
East Poudre Trail	Half block east of Sharp Point Drive	4	High vehicle speeds with poor buffer	Where possible, increase barriers between pedestrians and vehicles
East Poudre Trail	Prospect Road to Midpoint Drive	3	Limited buffer width with empty amenity zone	Consider adding vertical barrier such as fencing or bollards where buffer is narrowest
East Poudre Trail	Linden Street bridge over Poudre River	3	No buffer and narrow trail	Move trail under Linden with future GS crossing

Trail	Extent	LTS Score	Primary Issue	Recommendation
East Spring Creek Trail	Welch Street bridge over Spring Creek	3	No buffer and narrow trail	Widen trail when bridge is rebuilt in future
East Spring Creek Trail	Remington Street to College Avenue	3	Narrow trail with parking buffer	Widen trail and move away from parking lane
Mail Creek Trail	Trilby Road and Zephyr Road	3	Empty amenity zone	Add planters or other barriers between cars and pedestrians
Rendezvous Trail	Chase Drive bridge over Foothills Channel	3	No buffer	Consider adding pedestrian trail over channel
Unnamed Trail at Radiant Park	Radiant Park along Muskrat Creek Drive	3	No buffer	Reroute trail behind existing trees

Bike Level of Traffic Stress (LTS)

All trail segments with an LTS 3 or 4 score would benefit from an improved barrier between the trail and vehicle traffic. The Pleasant Valley Trail (northwest extension of the Poudre River Trail) along W County Road 54G and Rist Canyon Road has the greatest need for improvement. Much of the trail here is separated from 35+ MPH traffic by paint only. Adding bollards or cement barriers to protect cyclists here would significantly increase comfort and reduce traffic stress. Additional recommendations for segments with LTS 3 or 4 are provided in Table 10.

Table 10: Recommendations to Improve Bike LTS

Trail	Extent	LTS Score	Primary Problem	Recommendation
Pleasant Valley Trail	McConnell Drive to the Poudre River	4	No buffer or barrier between cyclists and vehicles	Add bollards or other physical barrier separating cyclists from car traffic
Long View Trail	Midway Drive to Fossil Creek Drive	3	No vertical barrier between cyclists and vehicles	Provide vertical barrier through landscaping or bollards
Fossil Creek Trail	Lemay Avenue & Trilby Road intersection to Saint Thomas Drive	3	No vertical barrier between cyclists and vehicles	Provide vertical barrier through landscaping or bollards
Fossil Creek Trail	Red Fox Road to Highlands West Drive	3	No vertical barrier between cyclists and vehicles	Provide vertical barrier through landscaping or bollards
Power Trail	Fossil Creek to Southridge Greens Boulevard	3	No vertical barrier between cyclists and vehicles	Provide vertical barrier through landscaping or bollards
Colorado Front Range Trail	County Road 30 crossing to County Road 11c crossing	3	No vertical barrier between cyclists and vehicles	Provide vertical barrier through landscaping or bollards

East Poudre Trail	Half block east of Sharp Point Drive	3	No vertical barrier between cyclists and vehicles	Provide vertical barrier through landscaping or bollards

At-Grade Crossing Improvements

The three trail intersections that saw pedestrian or bicycle crashes during 2012-2023 were:

- Mason Trail at Harmony Road
- Power Trail at East Drake Road
- Fossil Creek Trail at Fossil Creek Drive

These intersections represent two high-risk intersection types that should be improved proactively for pedestrian and bicycle safety, in addition to the necessary improvements at these three intersections specifically.

Mason Trail at Harmony Road and Power Trail at East Drake Road are four-leg intersections that involve a major road, a trail crossing, a railroad crossing, and in some cases also a minor road parallel to the trail and railroad. The intersection of the Mason Trail and Harmony Road is shown in Figure 11 as an example.

Figure 11: Intersection of Mason Trail & Harmony Road

This type of intersection is seen in many locations along the Power Trail and Mason Trail, and many of these instances are already signalized. Recommendations to improve these intersections include:

- Aligning the trail such that it travels directly across the road instead of approaching at different locations on either side of the major road
- Installing an RRFB or HAWK, as warranted
- Installing advance warning signage and striping about the presence of the trail
- Introducing a grade-separated trail crossing

Fossil Creek Trail at Fossil Creek Drive, shown in Figure 12, is a three-leg intersection where the trail crosses the minor road, which is a stop-controlled approach.

Figure 12: Intersection of Fossil Creek Trail and Fossil Creek Drive

This can be a safety concern for trail users because they have the right-of-way but are not always noticed by drivers. Trail users have a point of conflict with both vehicles turning onto the minor road and vehicles coming to a stop on the minor road approach, who may stop on the trail crossing instead of behind it. Recommendations to improve these intersections include:

- Installing advance warning signage and striping about the presence of the trail for vehicles turning onto the minor road
- Moving the trail alignment such that the crossing is further away from the intersection on the minor road
- Installing an RRFB facing the minor approach and the major approach turning lanes, as warranted
- Reducing the curb radius of the right turn onto the minor road such that vehicles slow down as they approach the turn

- Signalizing the intersection, as warranted
- Introducing a grade-separated trail crossing

Service Improvements

Spring Creek Trail

The Spring Creek Trail has several segments that do not meet City standards for trail width and sees some of the highest volumes in Fort Collins. At a minimum, the trail should be widened to be at least ten feet wide throughout the trail corridor, but further widening is necessary to accommodate the current and future volumes comfortably. The LOS Calculator shows that some segments would have to be widened to up to 18 feet to achieve an LOS score of A, so any widening that is feasible is recommended. Although a centerline can improve safety, the volumes are low enough on the Spring Creek Trail to consider removing the centerline to further improve LOS, except at constrained locations specifically mentioned in the proposed trail standards updates.

The most constrained segments of the Spring Creek Trail are west of Lilac Park and Edora Park where the trail width is only eight feet. Further trail widening near junctions in these areas could help improve the flow of traffic along the trail, such as near underpasses and park trails or sidewalks.

Poudre Trail

The Poudre Trail generally meets City standard trail widths but sees very high user volumes, especially near Lee Martinez Park. The LOS Calculator shows that trail segments need to be widened to 16-18 feet to achieve an LOS score of A. Additionally, there are many trail junctions in and near the park, creating opportunities to improve the trail by widening specifically at trail junctions in addition to throughout the corridor. These sections do not currently have centerlines, and it is recommended to maintain the Poudre Trail without a centerline except at constrained locations specifically mentioned in the proposed trail standards updates.

City of Fort Collins

STRATEGIC TRAILS PLAN

E

APPENDIX E:

Irrigation Ditch Compatibility Assessment Results

FINAL REPORT

IRRIGATION DITCH COMPATIBILITY

June- August, 2024 Logan Simpson conducted an irrigation ditch compatibility study to evaluate the feasibility of locating proposed trails along or across irrigation ditches. The purpose of this study is to:

- Develop better understanding among community members for the role and operational considerations of ditch companies operating within the Fort Collins' GMA, leading to increased transparency and communication.
- Identify potential constraints, opportunities, and other impacts where our current proposed trails cross or run adjacent to existing ditch alignments.
- Identify possible missed opportunities to pair trails with irrigation ditches whose boards (or directors) may be amenable to trail development.
- Cross reference case studies to identify potential solutions to ditch company coordination challenges or concerns about trails.

The study resulted in the production of four tools to help guide future implementation of trails along or across irrigation ditches within Fort Collins Growth Management Area:

1. Irrigation Ditch Company Evaluation Matrix
2. Irrigation Ditch Viability Map
3. Case Studies
4. Consolidated GIS Shapefile of all Ditches within the GMA

IRRIGATION DITCH COMPANY EVALUATION MATRIX

This analysis relied heavily on City relationships with irrigation companies. On July 11, 2024, the STP project team conducted a workshop with City water resource engineers and attorneys to understand key details of each ditch company operating in the City's GMA such as history of relationships with the City, representation on ditch company board, ownership share, and issues such as liability and maintenance in order to make a determination of compatibility for proposed trails. The results of the analysis are documented in the Irrigation Ditch Company Evaluation Matrix. The matrix includes all ditch companies operating within the GMA but focuses detailed analysis on the ditches that would be impacted by proposed trails.

IRRIGATION DITCH VIABILITY MAP

Results of the stakeholder analysis as documented in the Irrigation Ditch Company Evaluation Matrix, were mapped to produce the color-coded Irrigation Ditch Viability Map that visually conveys ditch company sentiment towards trail development for the ditches that are impacted by proposed trails. The colors assigned to each ditch signify the following:

- Green = company is likely agreeable to trail development
- Yellow = company may be agreeable to trail development
- Red = company is likely not agreeable to trail development

As implementation progresses, the Irrigation Ditch Compatibility Matrix and associated map, should be re-evaluated and updated regularly to reflect new opportunities or changes in ditch company sentiment towards trails.

CASE STUDIES CONCLUSIONS

Logan Simpson conducted case study research of six communities in Arizona, Colorado, and Texas exhibiting large-scale success in utilizing ditch corridors for public trail development. These communities have developed mutually beneficial relationships with ditch companies who are willing trail partners and could serve as valuable advisers to the City on future negotiations with ditch companies. Key conclusions from this research are summarized below.

KEY FINDINGS

- Focus trail development where the City might have greater influence from higher shareholder interest; work through existing City representatives on irrigation ditch company boards to coordinate with companies on potential trail development.
- Focus future trail development efforts along corridors that are identified as “likely agreeable to trail development” on the Irrigation Ditch Viability Map.
- Engage ditch company managers and boards in early discussions on potential trail development and determine how projects can be developed to provide shared benefits.
- Focus on ditch/trail corridors that connect community resources such as residential areas, retail hubs, community or recreation centers, parks, open spaces.
- As pre-development work commences on proposed trails, evaluate return on investment of opportunities to take on or share ditch maintenance responsibilities in exchange for constructing a trail within the ditch corridor.
- Prior to trail construction, develop formal agreements that address both trail development, management/maintenance, and the City’s added liability for the trail. Define parameters for development and use of trails that do not impact the ditch or canal’s original functions or the ability to maintain them.
- Establish agreed-upon design guidelines for the trail at the outset of negotiations with ditch companies.

GIS DATA

Logan Simpson consolidated four data sets from different sources including the Natural Areas Department, City hydrology data, and the Water Resources Department to produce a single, definitive data source for water conveyance structures including ditches, canals, laterals, inlets, and outlets operating in Fort Collins GMA. During data consolidation and reconciliation, Logan Simpson corrected naming inconsistencies with guidance from City Water Resources engineers and attorneys.

CASE STUDIES

IRRIGATION DITCH AND CANAL-ADJACENT TRAILS

SALT RIVER PROJECT (SRP) TRAILS SYSTEM, CITY OF PHOENIX, AZ

Notable because the SRP offers funding to trails and conservation projects in addition to their partnerships with municipalities.

In the City of Phoenix, a 50-year agreement has led to many miles of recreational and canal management areas with full public access along the Salt River Project (SRP) Canal system. The SRP trail system originated with the estimated 150-mile system of the Hohokam canals which served as irrigation in Salt River Valley over 1500 years ago— the largest prehistoric irrigation project in North America. (HOHOKAM IRRIGATION CANALS Pueblo Grande Museum).

The SRP canal system today serves as a municipal utility function as well as a recreational one, as it provides electricity for the Valley of the Sun. The SRP partners closely with the community by distributing funding to local nonprofits for trails projects, sponsoring annual trail bike races, and are generally partnered with community organizations to give back to land management and conservation. All recreational activities of non-motorized vehicles are allowed, including fishing in the canals as well as fee-based special events such as festivals and educational gatherings. The partnership between the SRP and Maricopa County and other municipalities throughout the region have led to a unique system along over 80 miles of canal trails while still delivering water to more than 2.5 million residents in the region through the same canal system. (SRP: Water Recreation)

The SRP today is an essential attraction, guiding its users through the City of Phoenix through public art, parks and open spaces, neighborhoods, and into trail-facing local businesses. The Grand Canalscape project completed in February 2020 is a 10 to 12 foot wide concrete paved trail along the SRP-operated canal. The project was developed through a partnership between the City of Phoenix, SRP, and the US DOT Federal Highway Administration through a TIGER Grant. (City of Phoenix, Grand Canalscape)

BROWNSVILLE, TX: PASEO DE LA RESACA TRAILS

This trail system is unique due to the public recreational access to the water while connecting residential and other trails in their system, and provision of essential flood and stormwater management.

Opened in 2000, the Paseo de la Resaca Trails system weaves along *resacas*, former channelized waterways of the Rio Grande which serve as both stormwater retention and irrigation. The trails follow the resacas over bridges, through waterside parks, and connect surrounding residential neighborhoods with 128 acres of parkland including marinas, playgrounds, 4.1 miles of resacas, 7 miles of paved trails, and the Brownsville Events Center. Resacas in the area typically share mixed ownership wherein the water within the channel is owned by the State of Texas, while the riverbed is privately owned by individual landowners. The State of Texas then authorizes water use by local public agencies so that the waterways of Resacas are publicly owned and managed at a local level, allowing public recreational use of the waterways. The city has constructed trails along the resacas that it owns or has partnered with Cameron County Drainage to develop public trails.

The Paseo de la Resaca trails system serves as a connection of residential areas to natural landscapes, recreational access to water, and system connected to other local trails that is accessible to all.

DENVER, COLORADO: HIGH LINE CANAL

Notable because of the direct and extensive leadership of a conservancy group dedicated to the canal trail which in its efforts aligns the many regional interests with public support.

The 71-mile long High Line Canal connects Denver area residents to the agricultural history of Colorado while still operating to provide water during seasonal flows.

The canal is owned and operated by Denver Water who has long partnered with non-profit group High Line Canal Conservancy to manage the long-term vision and planning for the canal and the trail. Denver Water began to lease the land around the canal starting in 1970 to surrounding municipalities to be used for pedestrian, equestrian, and cycling among other recreation activities (History Colorado). Over time, the management and maintenance of the canal has been distributed between seven agencies with recreation use agreements. These agencies are generally parks departments, trails organizations, and recreation districts which operate in the areas along the canal. (High Line Canal Conservancy)

CITY OF WESTMINSTER, CO: FARMERS HIGH LINE CANAL TRAIL

Notable because it was constructed by the ditch companies over time. Today, the City of Westminster is a shareholder in the companies that own and maintain the ditches.

The Farmers' High Line Canal trail winds 10.3 miles through the City of Westminster along one of the primary functioning irrigation ditches supplying the City's water. First segments were constructed in the mid-19th century by the Arapahoe Ditch Company and later segments by the Golden City and Arapahoe Ditch Company. The scenic trail connects open space, parks, recreation centers, residential, and retail areas.

Westminster is a shareholder in multiple ditch companies in the area, including the Farmers' High Line Canal & Reservoir Company who owns and operates the canal. (City of Westminster News)

MARANA, AZ: CAP TRAIL

Notable because trail design guidelines and development policy were established at the time of canal construction as a plan to incorporate trails from the very beginning. These guidelines laid out a clear path for trail development.

The Central Arizona Project (CAP) Trail system provides non-motorized recreation between multiple jurisdictions from Tucson through Northern Phoenix and onward northwest through La Paz County. The Central Arizona Water Conservation District (CAWCD) is quasi-governmental entity with a publicly elected board that manages the Central Arizona Project (CAP), a 336-mile-long canal system which delivers water to more than 80% of Arizona's population through aqueducts, tunnels, pumping plants, and pipelines. While much of the trail system along the CAP canals is still conceptual, a segment along North Phoenix and North from Marana are constructed and an additional 17-mile strip is under construction.

Because CAP is not legally authorized to build or maintain the trail along the canals, partnerships and cooperation with municipal, county, and tribal agencies are essential to constructing and sponsoring trail development. Guidelines on trail construction along with the facilitation of recreation agreements between the U.S. Bureau of Reclamation and city or county sponsors allow CAP to guide the development of a uniform trail system along the canal's length. With extensive guidelines established by the CAWCD Board to pave the way for trail construction along the existing canal system, the CAP trail exemplifies how an established trail policy can ease trail development. With construction of the CAP trail beginning in 1973, these policies have specified uniform parameters for trail design and construction, including locating the trail outside of CAP's security fence initially installed 10-20 feet inset from the CAP property line, reducing liability and operational security concerns. Public use is allowed for non-motorized wheeled vehicles, hiking, horses, and biking among other uses. This set of policies enables CAP to help promote trail development by working with private developers and public entities to approve trail design, contribute to landscaping in advance of trail agreements, and involve planning departments in permitting additional trail width or setbacks on new developments to allow for proper grading, drainage, and landscaping between built developments and the trail. (CAP Trail)

CASE STUDY CONCLUSIONS

- Collaborative partnerships between ditch companies and governmental bodies including cities, counties, and recreation districts generally have success in trail development and management along canals and ditches
- Establishing design guidelines for an entire trail system along a ditch or canal facilitates straightforward, standardized trail development
- Prioritize trail development along ditches and canals where City has a shareholder interest and greater influence
- Canal trail systems are most successful for users when geographically focused on connecting community resources, including residential areas, retail hubs, community or recreation centers, parks, and open spaces
- Successful partnerships define parameters for development, maintenance, and use of trails that does not impact the canal's original functions such as provision of water for agriculture and irrigation, potable drinking water, electricity production, recreational water access, and stormwater retention.

City of Fort Collins Strategic Trails Plan
Ditches and Canal Trail Development Viability Map

City of Fort Collins STRATEGIC TRAILS PLAN

- Proposed Trail
- Irrigation Ditch or Canal
- Ditch Company Likely Agreeable to Trail Development
- Ditch Company Likely Not Agreeable to Trail Development
- Ditch Company Maybe Agreeable to Trail Development

Paved Trails
- City of Fort Collins Parks and Recreation - Major Trail
- City of Fort Collins Parks and Recreation - Minor Trail
- City of Fort Collins Other Departments
- Other Municipalities
- Colorado State University
- HOA and Unknown

- River or Stream
- Soft Surface Trails
- Railways
- Parks
- Natural Areas
- Growth Management Area
- City Limits

0 0.5 1 2 Miles

N

N US HIGHWAY 287
N OVERLAND TRL
N COUNTY ROAD 17
N COUNTY ROAD 19
COUNTY ROAD 54G
W DOUGLAS RD
E DOUGLAS RD
E COUNTY ROAD 54
TERRY LAKE RD
GREGORY RD
TURNBERRY RD
N COUNTY ROAD 9
RICHARDS LAKE RD
E COUNTY ROAD 52
No.8 Outlet Ditch
COUNTRY CLUB RD
FUTURE NORTHEAST COMMUNITY PARK
GIDDINGS RD
MOUNTAIN VISTA DR
E COUNTY ROAD 50
Larimer And Weld Canal
West Poudre Trail
Larimer County Canal No.2
Elliot lateral
Pleasant Valley And Lake Canal
Vine lateral
Lincoln Ditch Trail
Hickory Trail
N TAFT HILL RD
N SHIELDS ST
W WILLOX LN
E WILLOX LN
N COLLEGE AVE
N LEMAY AVE
NORTH SHIELDS POND NATURAL AREA
MAGPIE MEANDER NATURAL AREA
GOOSE HOLLOW NATURAL AREA
MCMURRY NATURAL AREA
SALYER NATURAL AREA
KESTREL FIELDS NATURAL AREA
RESERVOIR RIDGE NATURAL AREA
E SUNIGA RD
LINDENMEIER RD
N TIMBERLINE RD
Lateral
E VINE DR
E COUNTY ROAD 48
N COUNTY ROAD 5
LEE MARTINEZ COMMUNITY PARK
POUDRE RIVER WHITEWATER PARK
GUSTAV SWANSON NATURAL AREA
9TH ST
JEFFERSON ST
East Poudre Trail
E LINCOLN AVE
Cache La Poudre Inlet Ditch
E MULBERRY ST
CIVIC CENTER PARK
W MOUNTAIN AVE
W LAPORTE AVE
College Lake Inlet
Arthur Canal
CITY PARK
W MULBERRY ST
W LAUREL ST
W ELIZABETH ST
S HOWES ST
REMINGTON ST
RIVERSIDE AVE
SUMMIT VIEW DR
E PROSPECT RD
LEDORA COMMUNITY PARK
COTTONWOOD NATURAL AREA
RAINING DEER NATURAL AREA
PROSPECT POINTE NATURAL AREA
Lake Canal
W PROSPECT RD
East Spring Creek Trail
Dixon Canal
New Mercer Ditch
West Spring Creek Trail
W DRAKE RD
E DRAKE RD
Power Trail
Rendezvous Trail
FUTURE EAST COMMUNITY PARK
S TIMBERLINE RD
S STAFT HILL RD
SPRING CANYON COMMUNITY PARK
W HORSETOOTH RD
E HORSETOOTH RD
Pleasant Valley Trail
Fossil Creek Reservoir Inlet
W HARMONY RD
E HARMONY RD
Dixon Lateral
BOARDWALK DR
S LEMAY AVE
ZIEGLER RD
Arthur Lateral
Boxelder Ditch
E COUNTY ROAD 38
W COUNTY ROAD 38E
Fossil Creek Trail
Long View Trail
KECHTER RD
TWIN SILO COMMUNITY PARK
E COUNTY ROAD 36
Mail Creek Ditch
Spring Canon Wasteway Ditch
FOSSIL CREEK COMMUNITY PARK
W TRILBY RD
E TRILBY RD
North Louden Ditch
S COUNTY ROAD 19
S US HIGHWAY 287
CARPENTER RD
STATE HIGHWAY 392
S COUNTY ROAD 11
E COUNTY ROAD 30

City of Fort Collins

STRATEGIC
TRAILS PLAN

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APPENDIX F:

Trail Design & Construction Standards

Trail Design and Construction Standards

Prepared for:
City of Fort Collins

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FEHR PEERS

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Introduction

This document summarizes the review of the City of Fort Collins existing standard details and provides recommendations for updating typical trail sections to advance future trail projects. The content and recommendations in this memorandum are intended to accompany the Strategic Trails Plan and to serve as a reference document City staff and trail development partners in the Fort Collins community. The following elements are included:

- **Previous Plan and Standards Review and Incorporation**– Review and summary of Paved Pedestrian Plan (2011), Recreational Trail Master Plan Trail Standards (2013), Bicycle Wayfinding Master Plan (2015), and Grade Separated Crossing Prioritization Tool (2018). The review includes an assessment of what elements are carried forward into the Strategic Trails Plan Design Standards and Guidelines.
- **Strategic Trails Plan Trail Standard Design Guidelines –** Revised trail types and descriptions of trail standard details included in the Strategic Trails Plan.
- **At-Grade Crossing Standards** – Provides a comprehensive assessment of at-grade improvement design alternatives.
- **Grade Separated Crossings Standards** – Provides design considerations, including desired minimum heights and widths depending on crossing type (road, water feature, railroad), and a process for choosing an underpass or overpass for varying locations.

This memorandum summarizes and recommends fundamental components included in the updated Design and Construction Standards included with the Strategic Trails Plan.

Previous Plan and Standards Review and Incorporation

Pedestrian Plan (2011)

The Pedestrian Plan addresses citywide pedestrian needs, proposes solutions to problems for pedestrians, and guides and prioritizes pedestrian improvements.

Pedestrian needs, such as gaps in the sidewalk network and noncompliant ramps, were identified using a new Pedestrian Level of Service (LOS) scoring methodology, which considered:

- Directness
- Continuity
- Signalized Street Crossings
- Visual Interest and Amenity
- Security

Priority areas include the following:

- Pedestrian districts, such as downtown and university areas
- Activity centers/commercial corridors, such as College Avenue and East Mulberry Street
- Areas within a one-mile radius of public schools
- Areas within a one-quarter-mile radius of transit routes

The Pedestrian Plan also includes a crossing policy to guide decisions regarding crossing treatments and created a list of recommended pedestrian projects throughout the City. The Strategic Trails Plan includes a simplified trail-specific crossing guide that is intended to supplement the existing pedestrian crossing guidelines and be incorporated into a future update.

Paved Recreational Trail Master Plan Trail Standards (2013)

Design standards were included in the 2013 Paved Recreational Trail Master Plan to provide trail planners and designers guidance to develop an enjoyable, safe trail system for all users. These standards were the starting point for revising and refining to meet the needs of the updated Strategic Trails Plan. A summary chart showing how these recommendations were integrated into updated recommendations for the Strategic Trails Plan is included at the end of this document in Table 2.

Grade Separated Crossing Prioritization Plan (2018)

The Bicycle and Pedestrian Grade Separated Crossing Prioritization Study was conducted to establish an approach to prioritize candidate bicycle and pedestrian grade separation locations to prioritize investment using a data driven approach. The process included identifying crossing opportunities, establishing criteria for evaluation, and screening according to benefits generated for the bicycle network and the community.

Many of the identified grade separated crossings are trail locations to access trails and provide through trail connections. The following prioritization categories were developed and scored for each crossing:

- **Demand Category** (Bicycle Demand, Pedestrian Demand, Population Density, Youth Density, Student Density, Senior Density)
- **Connectivity Category** (Transit, Enhanced Travel Corridor, Regional Trail, Connects to Trail, Alternate Crossing Location, Existing Streets and Sidewalks, Natural Resources, Destinations)
- **Safety Category** (Low-Stress Network, Crash Reduction Potential, Quality of Existing Crossing)
- **Public Support Category** (included in previous plan)
- **Social Equity Category** (low- and moderate-income populations served)
- **Cost and Constructability Category** (Cost, Partnership or funding opportunities)

All locations were scored using the set criteria and prioritized according to individual category priorities. Concept design options were established for top-scoring locations. As part of the Strategic Trail Plan process, an updated list of desired future grade separated crossings was generated, and each location was scored following the prioritization process which included a few updates due to updates in data availability. The documentation of the new prioritization process and summary of prioritized locations is included in a separate memorandum.

Bicycle Wayfinding Plan (2015)

The 2015 Bicycle Wayfinding Plan created a uniquely branded, consistent, and integrated bicycle wayfinding system to reliably and intuitively guide bicyclists of all abilities to key destinations throughout Fort Collins along the bicycle network. The goals of the plan include:

- Create a custom designed set of wayfinding signs that reflect the spirit of Fort Collins.
- Program system of routes that builds on the Low Stress Bicycle Route network identified in the 2014 Bicycle Master Plan and seamlessly connects to the multi-use trail network.
- Sign local and regional bicycle routes consistently within the City of Fort Collins.
- Integrate the wayfinding system with existing park and trail system.
- Design the bicycle wayfinding system so that it is comprehendible to a broad user group.

High quality wayfinding helps users safely and efficiently navigate the bicycle network and improves overall comfort and usability.

Trail Corridor Standard Design Guidelines

Trail design guidelines, consistent with previously defined guidelines and national trail design best practices, standards, and guidelines are integrated into proposed trail standards. These are intended to provide the City of Fort Collins with a resource for implementing the recommendations in the Strategic Trails Plan. They are intended to provide engineering guidance for trail design and implementation.

Trail Standard Guidance

Trail design standards for Fort Collins are developed based on existing City standards as well as other relevant design guidelines including those listed below. Should any design standards not be included in this document following, the guidelines below shall be used in supplement:

- **AASHTO Guide for the Development of Bicycle Facilities, 5th Edition** provides guidance on the dimensions, use, and layout of specific bicycle facilities including streets, roads, highways, and off-street paths.
- **Manual on Uniform Traffic Control Devices (MUTCD), 11th Edition** effective on January 18, 2024, defines the standards used by road managers nationwide to install and maintain traffic control devices on all streets, highways, pedestrian and bicycle facilities open to public travel. It is the primary source for guidance on pavement markings, signal warrants, and signage.
- **Public Right-of-Way Accessibility Guidelines (PROWAG)** addresses access to sidewalks and streets, crosswalks, curb ramps, pedestrian signals, and other components of public right-of-way. It includes guidelines for shared-use paths, which are designed primarily for use by bicyclists and pedestrians for transportation and recreation purposes.
- **FHWA, Evaluation of Safety, Design, and Operation of Shared-Use Paths** provides guidance on how to design shared-use paths and how to manage users based on the FHWA Shared-Use Path Level of Service Calculator.
- **National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide, Second Edition** provides nationally recognized bikeway design standards and guidance on the current state of the practice designs. An updated edition was published on January 14, 2025 but updated guidance has not yet been integrated into this trail standard guidance.

Proposed Trail Types

A network of trails can consist of a variety of trail types and contexts. When designing and constructing new trails and connections, determining an appropriate trail type that serves the specific purpose and context of the trail can help to create a predictable user experience. This section outlines proposed trail types, each included to serve specific purposes and contexts along trails.

Major Trail: a trail that connects Fort Collins to neighboring communities, promoting long-distance travel and regional connectivity. They tend to be suitable for higher volumes of users and often have a higher mode share of bicyclists than other trail types.

a. Oftentimes, major trails feature an adjacent crusher fines trail, which is preferred whenever possible.
b. If a major trail runs immediately adjacent and parallel to a roadway, it is considered a sidepath and it should follow the same or better design guidelines as a standard major trail and should be separated from the edge of the traveled roadway by a minimum of five feet. Other requirements for sidepaths are available in the AASHTO Guide for the Development of Bicycle Facilities.

Minor Trail: a trail that connects Fort Collins to local destinations and primarily promotes short-distance trips. They often support a lower mode share of long-range bicyclists and serve higher shares of runners and walkers. Minor trails may not always connect to the larger trail network but tend to serve significant volumes of users with a highly varied mode share.

Spur/Connector Trail: a shorter trail that links to major or minor trails to establish and maintain connections to local destinations such as parks, schools, and neighborhoods. They enhance trail connectivity and provide comfortable access for more people. Spur and connector trails tend to serve fewer users, often with a higher mode share of pedestrians. Spur/connectors are typically constructed as a part of another project such as park construction or neighborhood development.

Trail Section Standard Details

Fort Collins has three existing trail section standard details that were developed more recently than the 2013 Paved Recreational Trail Master Plan. These sections were developed to standardize design assumptions and have provided an improvement over previous design guidelines. Based on feedback obtained from coordination with City of Fort Collins staff and best practices for inclusion, proposed changes to each detail are documented below. Updated sections are included in the appendices of this document.

Typical Trail Section Detail with Detached Gravel Path

a. This standard detail shall be considered for use on major trails and minor trails, depending on local context.
b. The recommended and minimum width for the paved trail is 10 feet. Increasing the width along sections of trail to 12 feet may be preferred, particularly at trail junctions, near parks or activity centers, and other concentrated areas that experience a high volume of users.
c. Specify the type of material to be used for crusher fines.
d. Specify that fiber mesh in concrete shall be applied at a rate of 1.5 pounds per cubic yard of concrete.
e. Specify that the trail shall have an expansion joint every 100 feet instead of 400 feet and specify that joints shall be caulked with self-leveling caulk approved by the City. Expansion joints should be used at cold joints as well.

f. Change the specified depth of crusher fines to four inches and specify that it shall be installed in two-inch lifts with a vibratory plate compactor with water on each lift.
g. Specify that the color of crusher fines shall be grey.
h. Specify that concrete forms (metal or wood) shall be used to delineate the edge of crusher fines and that the outside edge of crusher fines should be shored up with compacted topsoil prior to the installation and compaction of crusher fines.
i. Specify a maximum shoulder slope of 1:6.
j. Specify a recommended shoulder width of 5 feet and a minimum shoulder width of 2 feet for short distances.
k. Specify a minimum overhead clearance of 10 feet.

Typical Trail Section Detail with Attached Gravel Path

a. This standard detail shall be considered for use on major trails and minor trails depending on local context, especially in natural areas.
b. The recommended and minimum width for the paved trail is 10 feet. Increasing the width along sections of trail to 12 feet may be preferred, particularly at trail junctions, near parks or activity centers, and other concentrated areas that experience a high volume of users.
c. Specify the type of material to be used for crusher fines.
d. Specify that fiber mesh in concrete shall be applied at a rate of 1.5 pounds per cubic yard of concrete.
e. Specify that the trail shall have an expansion joint every 100 feet instead of 400 feet and specify that joints shall be caulked with self-leveling caulk approved by the City. Expansion joints should be used at cold joints as well.
f. Change the specified depth of crusher fines to five inches and specify that it shall be installed in 2.5 inch lifts with a vibratory plate compactor with water on each lift.
g. Specify that the color of crusher fines shall be grey.
h. Specify that concrete forms (metal or wood) shall be used to delineate the edge of crusher fines and that the outside edge of crusher fines should be shored up with compacted topsoil prior to the installation and compaction of crusher fines.
i. Specify a maximum shoulder slope of 1:6.
j. Specify a recommended shoulder width of 5 feet and a minimum shoulder width of 2 feet for short distances.
k. Specify a minimum overhead clearance of 10 feet.

Typical Trail Section Detail

a. This standard detail shall be noted as the preferred typical section for spur/connector trails.
b. Recommended trail width is 10 feet and minimum trail width is 8 feet in constrained locations or for short distances.
c. Specify that fiber mesh in concrete shall be applied at a rate of 1.5 pounds per cubic yard of concrete.
d. Specify that the trail shall have an expansion joint every 100 feet instead of 400 feet and specify that joints shall be caulked with self-leveling caulk approved by the City. Expansion joints should be used at cold joints as well.

e. Specify a maximum shoulder slope of 1:6.
f. Specify a recommended shoulder width of 5 feet and a minimum shoulder width of 2 feet for short distances.
g. Specify a minimum overhead clearance of 10 feet.

Width

The recommended trail width for all trail types is ten feet. The minimum trail width for major and minor trails is ten feet and for spurs/connectors is eight feet. Increasing the width along sections of trail to 12 feet may be preferred, particularly at trail junctions, near parks or activity centers, and other concentrated areas that experience a high volume of users. Trails that separate users by mode should be a minimum of 15 feet wide with a minimum of ten feet for bicycling and five feet for walking.

In locations where horizontal curves equal to or less than 90 degrees cannot be avoided, the trail can be widened to improve comfort for users navigating the curve. The maximum constructable radius of the path within the available space should be provided on both sides of the trail. Widening on the corner of the curve should be supplemented by a widening taper on the approach to the curve. The taper should be calculated using the formula shown in Figure 1 below.

Shifting Taper Equation		
$L = \frac{WS^2}{60}$		
Where:		
L	=	longitudinal lane shift (ft), minimum 20 ft
W	=	lateral width of offset (ft)
S	=	target bicyclist operating speed (mph)

Figure 1: Shifting Taper Equation

In cases where it is not possible to achieve the recommended trail width, the following considerations should be taken:

- Potentially hazardous fixed objects should be properly marked.
- Advance warning signs should be installed where sight distance is limited.
- Consider installing a "path narrows" sign (W5-4a).
- Consider using a centerline to help organize traffic.

If intersection queuing on a trail results in crowding near the roadway, the trail approach to the intersection can be widened to help increase crossing capacity and reduce conflicts. Crosswalk width should match the width of the trail at the roadway edge.

Shared-Use Path Level of Service (SUP LOS)

The AASTHO Guide for the Development of Bicycle Facilities recommends agencies use a minimum SUP LOS of C in order to meet current demand and have some ability to handle future capacity. Given the high importance of trails in the City of Fort Collins, it is recommended that the City aim for a minimum SUP LOS of B on all trails. The peak operating condition of a LOS B shared-use path is described as having "a moderate ability to absorb more users across all modes". The ten-foot minimum trail width shown in the Trail Section Details should be increased as needed to achieve a SUP LOS of B at a minimum. Figure 2 below identifies the SUP LOS Score associated with various trail volumes and widths, given a typical mode split. SUP LOS can be calculated more accurately using the FHWA SUP LOS Calculator (2006) if the actual mode share of a trail is known.

Shared Use Path Level of Service Look-Up Table, Typical Mode Split*

Shared Use Path Peak Hour Volume	Shared Use Path Width (ft)									
	8	10	11	12	14	15	16	18	20	≤ 25
50	B	B	B	B	B	A	A	A	A	A
100	D	C	B	B	B	A	A	A	A	A
150	D	C	B	B	B	A	B	A	A	A
200	D	D	C	B	B	A	B	A	A	A
300	E	D	C	C	C	B	B	B	B	A
400	F	E	D	D	C	C	C	B	B	A
500	F	F	D	D	D	C	C	C	C	A
600	F	F	E	E	E	D	D	C	C	A
800	F	F	F	F	F	E	E	E	E	A
1,000	F	F	F	F	F	E	F	F	F	A
≥ 1,200	F	F	F	F	F	F	F	F	F	A

*Assumptions:

1. Mode split is 55 percent adult bicyclists, 20 percent pedestrians, 10 percent runners, 10 percent in-line skaters, and 5 percent child bicyclists.
2. An equal number of trail users travel in each direction (the model uses a 50 percent–50 percent directional split).
3. Trail volume represents the actual number of users counted in the field (the model adjusts this volume based on a peak hour factor of 0.85).
4. Trail has a centerline.

Figure 2: FHWA SUP LOS Look-Up Table for Typical Mode Split

Design Speed

15 MPH is the minimum recommended design speed for bicycles and is appropriate for up to 2% running slope in urban settings. 30 MPH is generally the maximum recommended design speed for bicycles and is appropriate for major trail segments with sustained steeper grades. The City of Fort Collins advised against sustained steep grades in the 2013 Paved Recreational Trail Master Plan, so a 30 MPH design speed should generally be avoided. Due to the need to accommodate maintenance vehicles on trails, bicycle design speed is generally not the constraining factor in trail design.

Horizontal Alignment

The horizontal alignment for the trail is controlled by many factors including the topography, natural and man-made obstacles, and the amount of right-of-way that can be obtained. An alignment that allows for a pleasant horizontal flow to the trail should be the goal. Sharp horizontal corners should be avoided. Trails in Fort Collins are serviced by vehicles that have significantly less maneuverability than a bicycle, such as plows, forestry grapple trucks, and utility vacuum trucks, which should determine the minimum horizontal radius on trails. To accommodate these vehicles, the minimum interior horizontal radius on

trails should be 40 feet generally and 45 feet for curves within 50 feet of a bridge or other grade-separated structure, whenever these allowances can be achieved within reason given local context and environmental impacts.

Vertical Alignment

Trail grades should be less than 5% where possible to provide an enjoyable experience for the trail user and to minimize cuts and fills. When grades reach more than 5% and up to 8% for a sustained distance, the trail should have rest areas of 2% grade for a distance of 10 feet for every 2.5 feet of rise/fall along the trail center line. Grades over 8% to 10% should only be used for very short distances (less than 50 feet) and have ADA handrails. Grades over 10% should not be used on the trail.

Vertical curves should adhere to the stopping sight distance required by a typical adult bicyclist. The minimum length of a crest vertical curve based on grade difference and stopping sight distance is shown in Figure 3.

Minimum Length of Crest Vertical Curve (ft) Based on Stopping Sight Distance														
A	S = Stopping Sight Distance for flat grade (ft)*													
(%)	40	60	80	100	120	140	160	180	200	220	240	260	280	300
2									17	57	97	137	177	217
3						25	65	105	145	185	225	265	307	352
4				9	49	89	129	169	209	253	301	353	409	470
5			7	47	87	127	167	211	261	316	376	441	512	587
6			32	72	112	154	201	254	313	379	451	530	614	705
7		11	51	91	132	179	234	296	366	442	526	618	716	822
8		24	64	104	150	205	267	338	418	505	602	706	819	940
9		35	75	117	169	230	301	381	470	569	677	794	921	1057
10	3	43	84	131	188	256	334	423	522	632	752	883	1023	1175
11	10	50	92	144	207	281	368	465	574	695	827	971	1126	1292
12	16	56	100	157	226	307	401	508	627	758	902	1059	1228	1410
13	21	61	109	170	244	333	434	550	679	821	978	1147	1331	1527
14	25	66	117	183	263	358	468	592	731	885	1053	1236	1433	1645
15	29	70	125	196	282	384	501	634	783	948	1128	1324	1535	1762
16	32	75	134	209	301	409	535	677	836	1011	1203	1412	1638	1880
17	35	80	142	222	320	435	568	719	888	1074	1278	1500	1740	1997
18	37	85	150	235	338	461	602	761	940	1137	1354	1589	1842	2115
19	40	89	159	248	357	486	635	804	992	1201	1429	1677	1945	2232
20	42	94	167	261	376	512	668	846	1044	1264	1504	1765	2047	2350
Shaded area represents S = L. Minimum length of vertical curve = 5 ft														

Figure 3: Minimum Length of Crest Vertical Curve

Centerline Standards

It is recommended to stripe a centerline at specific locations where conflicts with objects or other trail users are likely to arise. Standard details for each location type are described below.

When a bollard or similar device is present on a trail, a centerline should be striped to clearly divide trail users in opposing directions. MUTCD provides a standard detail, shown in Figure 4, that should be applied to trails in Fort Collins.

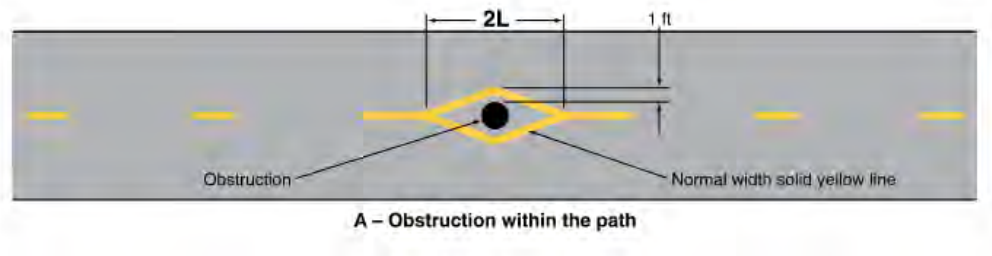


Figure 4: Obstruction Pavement Markings

When a trail approaches an intersection with a roadway that is designated as a collector or arterial, a solid centerline should be striped for the length of the stopping sight distance on either side of the intersection.
When a trail approaches a sharp curve or an area where sight distance is limited for any reason, a solid centerline should be striped throughout the curve as well as for the length of the stopping sight distance in each direction.

Painting a continuous centerline on a trail can positively impact safety for users by separating opposing traffic but can also negatively impact user perception of trail comfort due to the nature of restricting users' freedom to maneuver. As a result, it is not always appropriate to stripe a centerline in otherwise unobstructed sections of a trail. It is recommended to consider striping a continuous centerline on trails with a peak one-way volume greater than 100 users per hour. Broken centerlines should only be used where passing is permitted. MUTCD provides a standard detail for a 4-6 inch" continuous centerline stripe, shown in Figure 5.

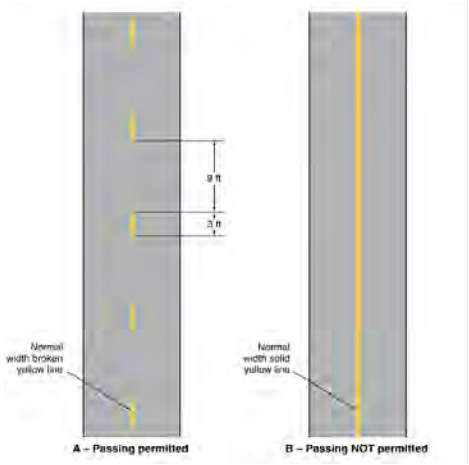


Figure 5: Centerline Markings

Striping on trails shall be painted using thermoplastic pavement markings. Although thermoplastic materials cost more initially, they are more effective than standard pavement marking paint and require less frequent reapplication, especially given typical weather conditions in Fort Collins.

Separation of Modes

Separating bicyclists and pedestrians can be an efficient and safe way of managing trail users when there is sufficient width. Separating users should be considered when peak volume is greater than 300 users or when pedestrians make up 30% or more of the total users. Trails that separate by mode should be at least 15 feet wide. Separation of modes may also be warranted by high user volumes, proximity to destinations, limited sight distance, and/or approaches to intersections and trailheads.

Figure 6: Example of a Mode-Separated Trail

Right of Way

The recommended right-of-way width is 50 feet. The minimum trail right-of-way width is 30 feet for short distances (less than 500 feet minimized right of way width including tapers to recommended width). There should be no more than 1,500 feet in total (including tapers) of minimized right of way width per trail mile. These distances allow for the trail to meander and allow for the placement of the adjacent gravel path in certain standard trail sections.

Trail Placement and Environmental Sensitivity

Within the urban context of the Fort Collins trail system there is a spectrum from disturbed to less disturbed habitat areas. Waterways are generally considered a critical habitat element and function as movement corridors for a variety of species within Fort Collins. Many of the stream corridors are already highly altered habitats due to the history of agriculture and the urban setting. This, however, does not diminish the importance of streams, rivers and even ditches serving as movement corridors, and critical habitat and refuge areas for wildlife.

Trail placement should avoid high quality and/or sensitive habitat areas. Trail alignments should avoid fragmenting high quality habitat and be aligned along habitat edges to minimize impact. Trails with a wide buffer from the built environment can function as corridors for wildlife between good habitat patches. The number of river, stream and wetland crossings by the trail should be minimized. Also, efforts should be made to minimize disturbances to and find opportunities to restore floodplain function (e.g., allowing the river or stream to periodically over-top its banks). Trail alignment should avoid or minimize or mitigate removing native trees or shrubs, especially in riparian areas. All setbacks and seasonal closures for rare, sensitive, threatened or endangered plants and wildlife should be respected with regard to trail placement. When possible and appropriate, trails should be aligned where there is already an existing

disturbance, such as a utility right-of-way or crossing streams at existing roads and bridges. The vertical alignment of trails should minimize grade inconsistencies and alterations from that of existing natural areas as much as is reasonable. Also, careful placement of the trails should be considered to discourage off-trail use in sensitive habitat areas.

As new trails are developed along or extending past the urban core of Fort Collins, more sensitive habitats will be found. Trail planners should work with Natural Areas Department staff and Colorado Parks and Wildlife as necessary to assess potential sensitive habitats and to ensure best or next-best case trail placement options.

Trail Placement in Riparian Buffer Areas & Natural Habitat Buffer Areas

Many existing trails follow natural habitat areas and river and stream corridors, which as mentioned above are considered sensitive and important habitat. The condition of this habitat varies greatly throughout the city. Trails are permitted within the development buffers of these waterways and habitats. However, to alleviate the added pressure on wildlife in these corridors and to help create wildlife refuge areas, the trail should not remain in the buffers for the entire stretch of the corridor. Along river and stream corridors and natural habitat buffers, the trail should periodically be pulled toward the edge of the buffer to create areas without constant disturbance from trail users. The trail can then meander back into the buffer areas to provide a balance of good stewardship and visitor experience. It is difficult to set a determined length to how often and for how far these meanders should occur. When opportunities exist to pull the trail further from a waterway or closer to the edge of a habitat, for example when the trail runs through a natural area, the opportunity should be considered while balancing the environmental value with the recreational trail value. Trail Planners and Natural Areas staff will continue to work in collaboration toward this end.

Opportunities for Restoration

Construction of new efforts to widen or realign trails create opportunities for restoration of native vegetation especially within riparian and stream corridors. The City's Stormwater Department previously assessed the habitat along several stream reaches with the goal of restoring many of these reaches. It is imperative that all future trail work within the City's stream corridors include consultation with the Stormwater and the Natural Areas Departments to assess restoration opportunities.

Horizontal Clearance

The edges of the paved trails should have a minimum three feet of horizontal clearance from vertical obstructions. The gravel path should also have three feet of horizontal clearance on both sides. The edges of paved trails should have a minimum of ten feet of horizontal clearance to trees, if present, unless otherwise approved by the Parks Department.

When a trail is running parallel and immediately adjacent to a wall, fence, or other vertical structure, a one-foot buffer between the structure and the edge of the trail shall be given at a minimum. Two feet is recommended.

Vertical Clearance

Paved trails and gravel paths should have a minimum vertical clearance of ten feet.

Sight Distance

Efforts should be made to provide ample sight distances at intersections and at junctions with streets, underpasses, etc. Curves along the trail alignment should not be greater than a 90 degree angle. More pronounced curves require the trail to be placed to avoid any sight distance obstruction being within 30 feet of the trail centerline at the midpoint of the curve. Trail underpasses and bridges should have a straight section of at least 20 feet approaching the structure.

Trail Lighting

The trail system is not lit except at underpasses where "dark sky" friendly light fixtures are used to help trail users enter, travel through, and exit these facilities. All lighting shall comply with current exterior lighting standards in the City of Fort Collins Land Use Code. When dark sky fixtures are available, lighting shall be scaled appropriately for pedestrians and can be limited to expected trail use hours only if desired, such as until 11pm and starting at 6am. All trail intersections with roads should always be lit to improve safety of nighttime users.

Signage

Trail signage should comply with the most current Manual on Uniform Traffic Control Devices and the 2015 Bicycle Wayfinding Master Plan.

Fencing

The standard fence along the trail should be the western two-rail. A non-climb horse fabric can be installed on the fence for animal control. Other types of fencing may be needed depending upon the situation and should be determined site-by-site.

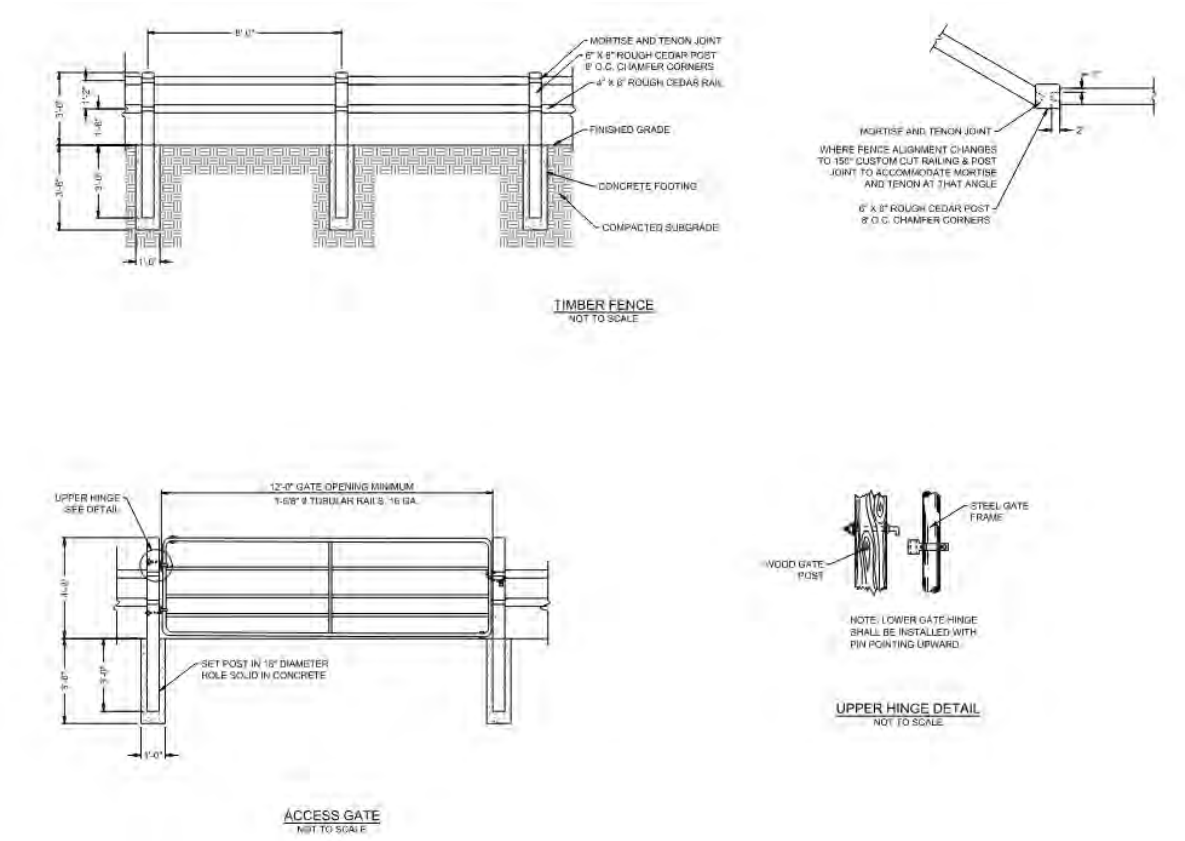


Figure 7: Standard Fence Detail

Fencing along the trail should be wildlife friendly and passable. This includes considering height of the fence as well as analysis with Natural Areas Department staff as to where considerations for wildlife should be made. Colorado Parks and Wildlife (CPW) has guidelines that should be followed for appropriate wildlife fencing for the specific wildlife species found in the area.

Mesh fabric can greatly impede movement of smaller animals along riparian corridors and has been a problem for snapping turtles. Tall privacy fences have created barriers to deer, forcing them to cross busy streets. CPW guidelines for wildlife-friendly fencing is ideally 16 inches off the ground and a maximum height of 42 inches on level ground. When mesh is needed in key wildlife movement areas, periodic openings can alleviate problems. Elevating the mesh above the ground, where possible, helps create passages for small wildlife. Keeping the fencing height to a minimum allows safe passage for young deer.

Seeding

The required seed mix for when the trail is not bisecting irrigated turf areas should be a blend of buffalo grass, blue gramma, and little blue stem. These short growing warm season grasses require less water and mowing. The short grasses should be planted in the three-foot shoulder area of the paved trail and/or the gravel sidepath. Any additionally disturbed areas beyond the trail and shoulder width (including staging areas) should be planted with the native seed mixes recommended by the City's Natural Areas

Department. In any of the non-turf areas, no exotic species will be allowed to be planted, specifically no smooth brome (Bromus inermis) or crested wheatgrass (Agropyron cristatum).

Trail Safety

Paved trails will have an Emergency Locator System for communicating trail location during emergency response situations. Accurate location reporting by trail users helps police dispatchers guide the appropriate responders to the emergency site. Safety signage identifies such conditions as slow zones, sharp corners, road crossing, etc. and are installed after careful review of conditions. Park and Natural Area Rangers patrol trails and can issue misdemeanor citations for riding in a careless manner and warn users who are not abiding by trail courtesy. Rangers also patrol for unleashed dogs who pose a safety hazard to other trail users.

Recreational Value

Maintaining and enhancing the recreational value of the paved trail system is equally important to planning for utilitarian connections. The future of the trail system shall be designed in such a manner that preserves the recreational experience by planning a system that provides the following features:

- Cascading or stacked recreational loops
- Trail design that emulates the shape of the natural landscape and provides variety
- Prioritization of trails to access parks, natural areas, and open spaces.

Other Trail Applications for Consideration

Some additional design standards have not been detailed or documented as part of this process but could be useful to define in future documents. For consideration, these include:

- Trails in Active Rail Corridors – document any railroad requirements or easements
- Trails in Ditch & Utility Corridors – define best practice on easements and coordination
- Trails along Roads – additional guidance on minimum and desired trail configurations to minimize pedestrian and bicycle level of traffic stress

At-Grade Crossings Standard Design Guidelines

The most appropriate at-grade crossing treatment in the City of Fort Collins varies and must be determined at each location where a trail intersects with a roadway. This is impacted by volume of vehicular traffic, vehicle speeds, road width, and adjacent land uses and destinations. Guidance on selecting appropriate at-grade crossing standards is drawn from previously documented national guidelines, Colorado standards, and City of Fort Collins standards including:

- CDOT Pedestrian Crossing Installation Guide (2021)
- Fort Collins Pedestrian Plan (2011)
- Fort Collins Intersection Guidelines for Pedestrian and Bicycles (2022)

Existing At-Grade Crossing Locations

The paved trails evaluated in the Fort Collins Strategic Trails Plan have 58 at-grade roadway crossings. This includes ten arterial crossings, twelve collector crossings, one guideway crossing, and 35 local crossings. Of the arterial crossings, six are fully signalized, one has a HAWK , two have RRFBs, , and one is uncontrolled. Of the collector crossings, one has an RRFB, three are stop-controlled at a three-leg intersection, and eight are uncontrolled. The number of at-grade crossings along each trail, summarized by roadway functional classification, is shown in Table *1*.

Table 1: Number of Existing At-Grade Crossings by Trail

Trail	Total At-Grade Crossings	Arterial Crossings	Collector Crossings	Guideway Crossings	Local Crossings
Colorado Front Range Trail	3	1			2
Dovetail Spur	1				1
East Poudre Trail	3	1	2		
East Spring Creek Trail	3		3		
Fossil Creek Trail	14		2		12
Hickory Trail	1				1
Mail Creek Trail	2				2
Mason Trail	5	3	1	1	
Pleasant Valley Trail (often considered to be part of the West Poudre Trail)	4				4
Poudre River Trail	3	1			2
Power Trail	3	2	1		
Rendezvous Trail	3		2		1
West Poudre Trail	1	1			
West Spring Creek Trail	2				2
Unnamed (Radiant Park area)	6		1		5

At-Grade Treatment Identification and Selection

Crossing treatment process was defined in the Fort Collins Pedestrian Plan (2011) and confirmed again in the Fort Collins Active Modes Plan (2022) and shown in Figure 8. A new trail crossing specific process has been drafted in Figure 9. At identified locations, an appropriate crossing treatment for any given trail and roadway intersection should be determined using the uncontrolled crossing evaluation table found in the Fort Collins Intersection Guidelines for Pedestrian and Bicycles within the Fort Collins Active Modes Plan (2022), which was created based on FHWA guidelines. The uncontrolled crossing evaluation table identifies appropriate crossing treatments based on roadway type, vehicle volumes, and speed limit. Decisions regarding at-grade crossing treatments must ultimately be approved by the City Traffic Engineer.

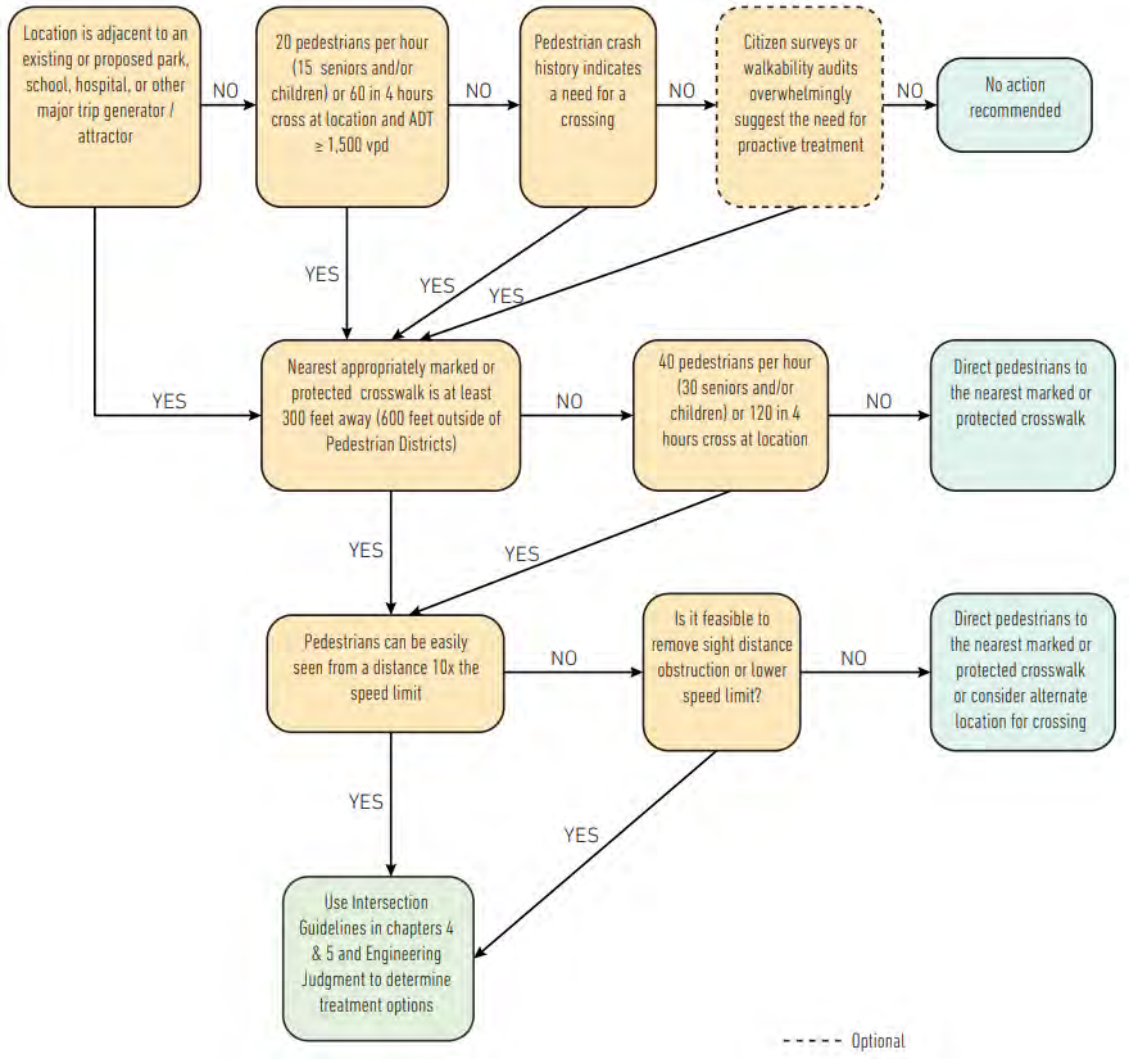


Figure 8: Pedestrian Plan (2011) Crossing Policy

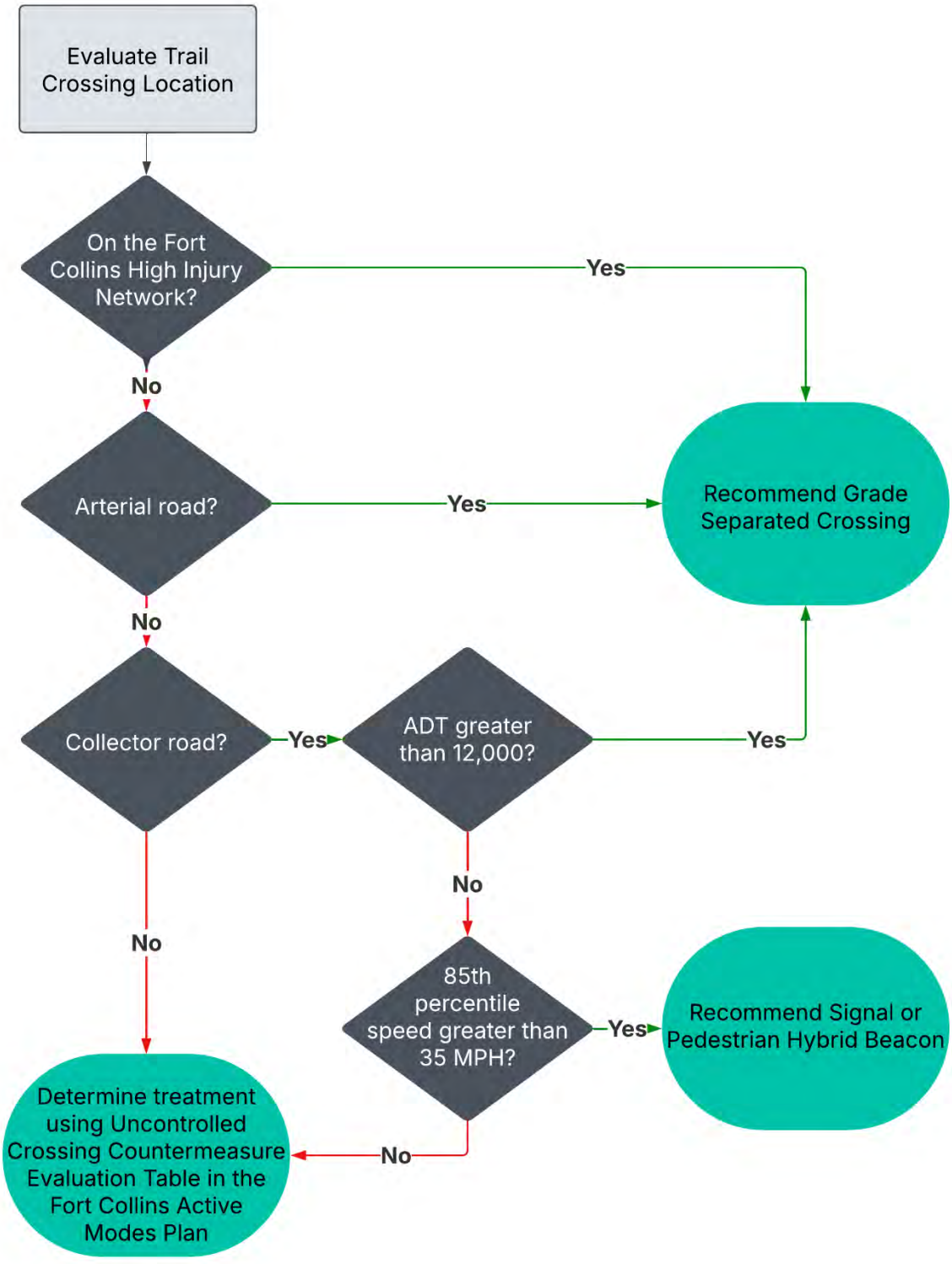


Figure 9: Updated Trail Crossing Policy

At-Grade Crossing Treatments

At locations where existing or proposed trails intersect roads at grade, identified appropriate treatments can be implemented. Potential at-grade crossing treatments are described in subsequent sections.

Uncontrolled Marked Crossing

Pavement markings are recommended as a minimum treatment at all at-grade trail crossings. Crossing markings for two-way trails should be delineated with high visibility (diagonal or ladder style) marked crosswalks. They delineate the crossing location and can help alert roadway users to the potential conflict ahead.

Raised Crossing

At appropriate locations, raised crossings improve safety by increasing visibility and encouraging vehicles to yield to trail users. A speed table, recommended to be 22 feet in length, includes a marked crosswalk on top of it. The MUTCD provides a standard design for raised crossings, shown in Figure 10 below.

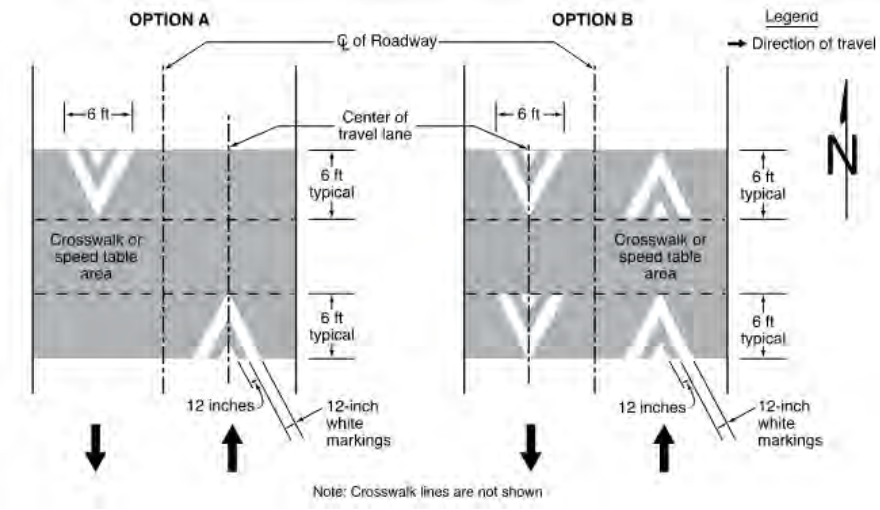


Figure 10: Pavement Markings for Raised Crosswalks

Rectangular Rapid Flashing Beacon (RRFB)

A pedestrian push button activates flashing lights on a pedestrian warning sign to increase visibility of pedestrians and trail users and increase driver yielding behavior. NACTO provides a concept drawing of an RRFB, shown in Figure 11, and refers to MUTCD for additional design guidance.

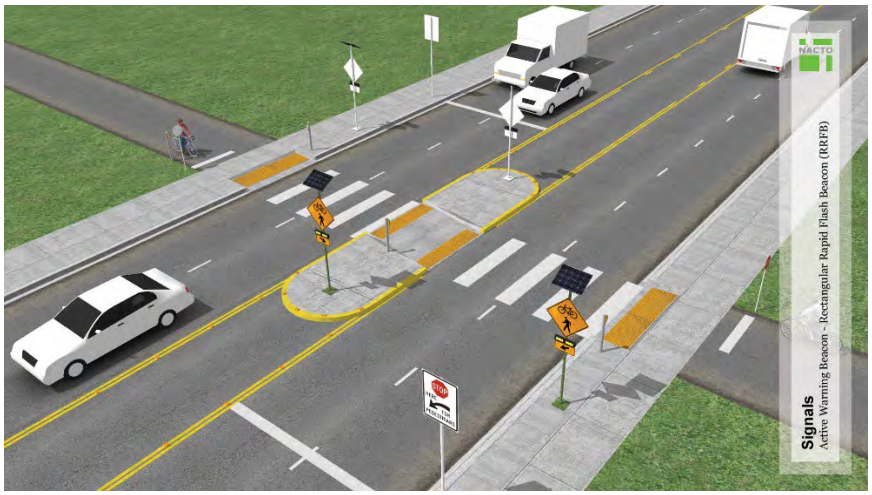


Figure 11: RRFB Concept Drawing

Pedestrian Hybrid Beacon (HAWK)

An overhead signal that is activated by a pedestrian push button and requires vehicles to come to a complete stop. NACTO provides a concept design of a HAWK, shown in Figure 12, and references the MUTCD for HAWK signal warrant requirements.

Figure 12: HAWK Concept Drawing

Signalized Crossing

These trail crossing locations have an existing full traffic signal or meet MUTCD warrant for a new signal. In Fort Collins, signals must be located more than 300 feet from other signalized intersections. The signals may operate for the trail using push button activation for trail users or may be activated with pedestrian recall to automatically include a trail crossing signal phase in every cycle. Trails can be directly aligned with the traffic signal or can be routed to a nearby signal along a perpendicular sidepath to cross at the signalized location. A fully signalized trail crossing would look very similar to the HAWK signal shown in Figure 13, and further design guidance from the Fort Collins Active Modes Plan Intersection Guidelines for Pedestrian and Bicycles should be consulted.

Landing Area at Trail Crossings

When a trail approaches a road at grade, it is recommended to maintain a consistent width rather than narrowing the trail. However, narrowing a trail can be a strategy to help to manage trail user speeds. If a trail changes direction at an intersection, a landing area with a minimum width of the trail and a minimum length of 10 feet is recommended to provide additional comfort and allow a variety of users to maneuver at the location.

Grade-Separated Crossings Standard Design Guidelines

The three main barriers in the trail system are roadways, railroads, and water crossings. These barriers may result in a significant amount of out-of-direction travel for trail users or undesired and potentially unsafe social trails that are more direct. Grade-separated crossings provide critical trail links by joining areas separated by these barriers.

Previous work documented all potential new grade-separated crossing locations within the City and established a prioritization methodology to implement new structures. Grade-separated crossings are a significant investment, so it is important to prioritize the most needed structures first.

Roadway Crossings

Grade-separated crossings of roads provide a lower-stress trail experience and lower the operational impacts of trail use on traffic. There are not any minimum roadway characteristics to consider a grade separated crossing, but they do require significant investment and may often not be feasible due to site constraints. The following roadway crossings can be evaluated for potential grade separation:

- **Arterial Crossings:** In all locations where a trail crosses an arterial roadway, a grade-separated crossing is preferred and feasibility should be evaluated, especially during redevelopment. The number of travel lanes on an arterial roadway should be considered in prioritization of grade separated crossing locations. If a grade-separated crossing at an arterial is not selected during the redevelopment process, this decision must be approved by the City. Even if a grade-separated crossing is not selected during the redevelopment process, the proposed development should not preclude the future construction of a grade-separated crossing.
- **Collector Crossings:** Locations where a trail crosses a collector roadway should also be evaluated for grade-separated crossing feasibility, especially during redevelopment. Even if a grade-separated crossing is not selected during the redevelopment process, the proposed development should not preclude the future construction of a grade-separated crossing.

Grade-separated crossings can be an overpass or underpass depending upon site constraints and desired user experience. The following general design features apply:

- **Overpass**: 14-foot width preferred; 12-foot minimum. Depending upon grades, an overpass generally requires more ramp distance due to a higher minimum elevation difference from the road. Ten-foot height is recommended for bicyclists and pedestrians, 12-foot height is recommended for equestrian activity, and 13-foot-6 inches height is required for emergency vehicles, if applicable. Trail bridges should be rated for a 10,000-pound vehicle and have a 52” inch high railing.

- **Underpass**: 14-foot minimum width; greater width for longer lengths. Ten-foot height recommended for bicyclists and pedestrians, 12-foot height recommended for equestrian activity, 13-foot-6 inches height required for emergency vehicles.

Railroad Crossings

Railroad crossings should always be evaluated for a grade-separated crossing facility. If a railroad must be crossed at grade, designers should refer to NACTO for design guidance.

- Clear and visible signage indicating the presence of the railroad crossing well in advance per MUTCD standards
- Smooth crossing surface level with the trail to accommodate all users
- Angle of intersection no less than 60 degrees but ideally 90 degrees, as shown in Figure 13

Figure 13: Achieving an Appropriate Angle of Intersection at a Railroad Crossing

Water Crossings

Trail bridges should be rated for a 10,000-pound vehicle, be a minimum of ten feet wide, have a railing height of 52 inches, utilize weathering steel and iron wood or concrete deck, have a rub rail, and be break-a-way if required for City Stormwater approval. Trail width on all bridges shall be a minimum of twelve feet. All trail crossing and drainage structures will be constructed and placed in a way that does not impede fish passage. Trail designers will work with the City's Stormwater Department, Natural Resource Department, and if needed Colorado Parks and Wildlife for guidance on this item.

Low water crossings may be permitted for shallow water and ditch crossings. Low water crossings should have a minimum twelve-foot width and are not required to have a railing but shall have concrete edges (minimum one-foot width) on both sides that are poured in a contrasting color such as red. Drainage pipes, box culverts, etc. shall be engineered to support the needed construction equipment and the trail loading. Drainage improvements will meet the City's Stormwater Department regulations, design, and construction standards. The CDOT standard details listed below should be referenced for water crossing design guidance.

- CDOT M-206-1 Excavation and backfill for structures (for box culverts)
- CDOT M-601-1, 2, 3 Concrete box culvert (cast-in-place)
- CDOT M-601-20 Wingwalls for pipe or box culverts

Wildlife Crossings

Trail underpasses of busy roads often serve to help wildlife get across the roads. Wildlife use of underpasses should be considered when underpasses are planned and designed.

Groundwater Quality Monitoring and Mitigation

When grade-separated crossings are installed in locations where groundwater levels are high, it is required that water quality be monitored when it is pumped out of the underpass, as it may contain heavy metals. Groundwater monitoring and mitigation is very costly. Therefore, groundwater levels should be verified and considered when choosing and prioritizing locations for grade-separated crossings.

Summary of Standards Changes

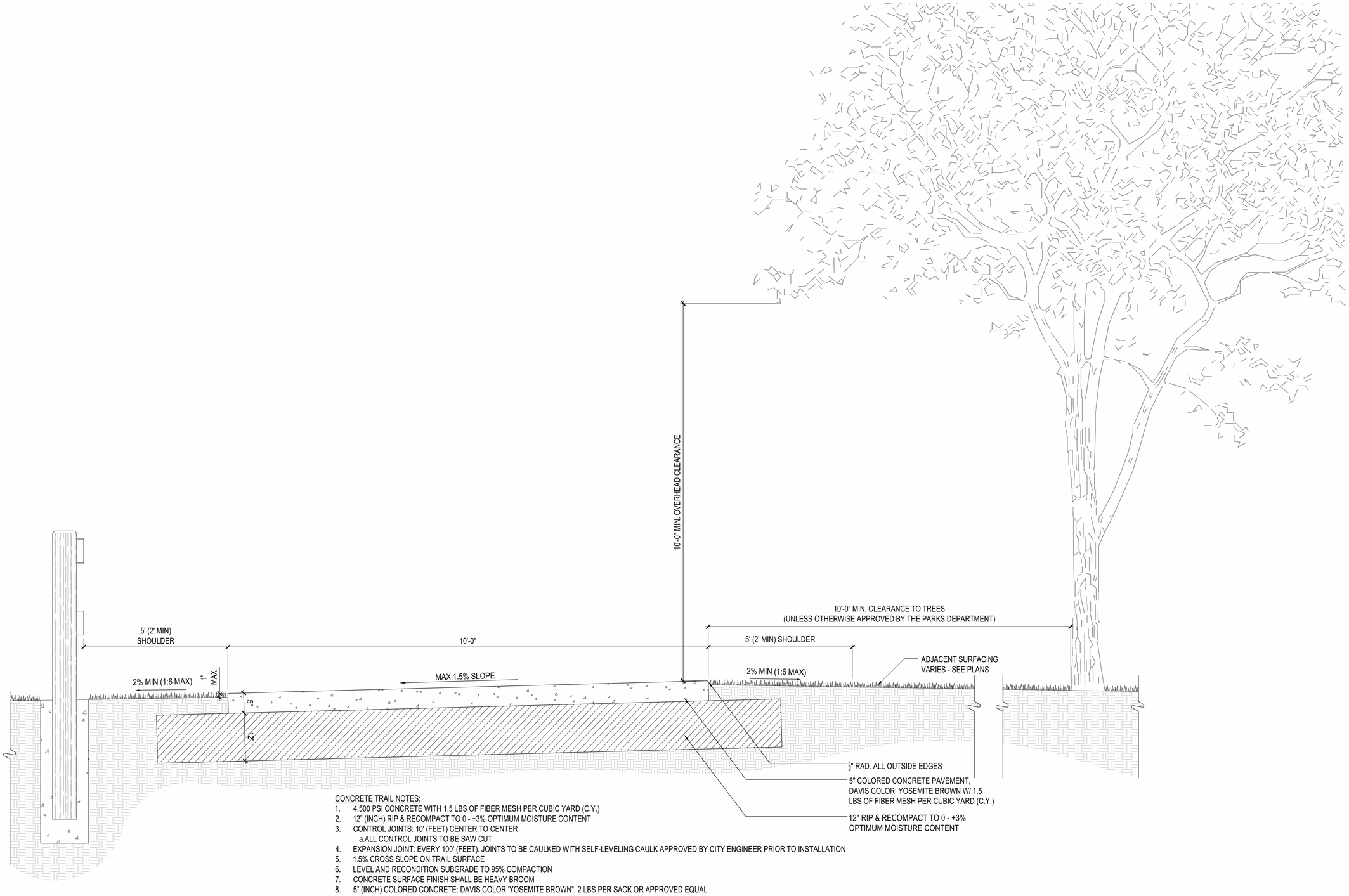
The table below summarizes updates made since the 2013 Paved Recreational Trail Master Plan Trail Standards.

Table 2: Summary of Standards Changes

Category	Previous Standard	New STP Standard
Right of Way	Recommend 50 feet with a minimum trail ROW of 30 feet for short distances	Defined limit on short distances of minimized ROW to clarify plan review standards
Horizontal Alignment	Goal is to have pleasant horizontal flow to the trail that avoids sharp corners. For unavoidable sharp corners, ROW should allow for a minimum 40 feet centerline radius to accommodate construction and maintenance vehicles	Added standard of 45-foot centerline radius within 50 feet of a bridge or other grade-separated structure to better accommodate City maintenance vehicles
Vertical Alignment	Trail grades less than 5% recommended where possible. For steeper grades up to 8%, trail should have rest areas of 2% grade for a distance of over 10 feet for every 2.5 feet of rise/fall along trail centerline. Grade of 8-10% only used for distances 50 feet and have ADA handrails. Grades > 10% should not be used.	Unchanged
Trail Placement and Environmental Sensitivity	Trail placement should avoid impacting high quality and/or sensitive habitat areas such as streams, rivers, and wetlands by following habitat edges and minimizing crossings.	Unchanged
Trail Placement in Riparian Buffer Areas	Opportunities to occasionally pull trail alignments away from waterways should be considered in order to balance environmental value with recreational value.	Unchanged, and added Trail Placement in Natural Habitat Buffer Areas to the discussion
Opportunities for Restoration	All future trail work within stream corridors shall include consultation with the Fort Collins Stormwater and Natural Areas Departments to assess restoration opportunities.	Unchanged

Category	Previous Standard	New STP Standard
Width	Paved trail width is recommended to be ten feet except in high congestion areas where it can be twelve feet and can be widened at other critical areas. Paved trail thickness is recommended to be 5-6 inches. Trails should have a three-foot-wide shoulder and an adjacent 5–6-foot gravel path, separated from the trail by 3-5 feet, that is 2-3 inches thick.	Changed to 10-foot minimum standard width and incorporated into Trail Section Details to better accommodate trail volumes and user comfort
Cross Slope	Cross slope should be between 1 and 2%.	Unchanged, but incorporated into Trail Section Details
Horizontal Clearance	Paved trails and gravel paths should have three feet of horizontal clearance at minimum.	Added 10-foot minimum clearance to trees to ensure consistency with Trail Section Details
Vertical Clearance	Paved trails and gravel paths should have a minimum vertical clearance of 8 feet.	Unchanged
Design Speed	Trails do not have a design speed, but City Code requires users to ride at a controlled speed for safety reasons.	Combined with Horizontal Alignment guidance, and changed to include a recommended minimum bicycle design speed of 18 MPH to reflect relevant standard guidelines.
Sight Distances	Curves should not be greater than 90 degrees but if they are there should be no sight obstructions within 30 feet of the trail centerline, and trails should have a straight section for 20 feet approaching an underpass.	Unchanged
Trail Lighting	The only lighting at underpasses and should be “dark sky” friendly	Added requirement of compliance with Fort Collins lighting standards to integrate trails with citywide regulations
Underpasses	Underpasses should comply with the Fort Collins Design Guidelines for Grade-Separated Pedestrian, Bicyclist, and Equestrian Structures	Unchanged, but incorporated into Grade-Separated Roadway Crossings

Category	Previous Standard	New STP Standard
Grade Separated Structures	Use of underpasses by wildlife should be considered when trail underpasses are planned and designed	Unchanged, but renamed to Wildlife Crossings
Drainage Structures	Trail bridges should be rated for 10,000 pounds, have a minimum width of ten feet, and have a 52 inch high railing. Structures must meet Stormwater Department regulations and standards. All water crossings and structures must not impede fish passage.	Unchanged, but incorporated into Water Crossings
Street Connections	Should be determined by City Traffic regulations and standards.	Unchanged, but incorporated into At-grade Crossing Treatment Guidance
Signage	Should comply with MUTCD.	Unchanged
Fencing	Standard fencing type along trails is Western two-rail. Fences should be wildlife friendly and passable.	Added fence standard detail
Seeding	Required seed mix for the three-foot shoulders and other disturbed areas is a blend of buffalo grass, blue gramma, and little blue stem. No exotic species are allowed.	Unchanged
Trail Safety	Trails should have Emergency Locator Systems and warning signage. Park and Natural Area Rangers on patrol can issue misdemeanor citations for unsafe trail use and unleashed dogs who are posing a hazard to other trail users.	Unchanged



CONCRETE TRAIL NOTES:

1. 4,500 PSI CONCRETE WITH 1.5 LBS OF FIBER MESH PER CUBIC YARD (C.Y.)
2. 12" (INCH) RIP & RECOMPACT TO 0 - +3% OPTIMUM MOISTURE CONTENT
3. CONTROL JOINTS: 10' (FEET) CENTER TO CENTER
   a. ALL CONTROL JOINTS TO BE SAW CUT
4. EXPANSION JOINT: EVERY 100' (FEET). JOINTS TO BE CAULKED WITH SELF-LEVELING CAULK APPROVED BY CITY ENGINEER PRIOR TO INSTALLATION
5. 1.5% CROSS SLOPE ON TRAIL SURFACE
6. LEVEL AND RECONDITION SUBGRADE TO 95% COMPACTION
7. CONCRETE SURFACE FINISH SHALL BE HEAVY BROOM
8. 5" (INCH) COLORED CONCRETE: DAVIS COLOR 'YOSEMITE BROWN", 2 LBS PER SACK OR APPROVED EQUAL
9. FORM WORK TO BE APPROVED BY ENGINEER OR INSPECTOR PRIOR TO POUR
10. CRUSHER FINES (3/8" MINUS AGGREGATE) FROM COLORADO LIEN CO. OR APPROVED EQUAL PER PARK PLANNING AND DEVELOPMENT, COLOR GREY SUBMIT SAMPLE FOR APPROVAL
11. 3' (FOOT) FLAT SHOULDER (SLOPED AWAY FROM TRAIL FOR DRAINAGE ~2%)
12. ALL DISTURBED AREAS SHALL BE REVEGETATED WITH THE SPECIFIED SEED MIX

A 5" CONCRETE TRAIL SECTION

SCALE: NOT TO SCALE

City of Fort Collins
Park Planning & Development

Park Planning & Development
215 North Mason Street
Fort Collins, Colorado 80521
tel: 970.221.6360
www.fcgov.com/parkplanning/

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
1-800-922-1987
OR 534-6700 IN METRO DENVER

CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

TYPICAL TRAIL SECTIONS
CITY OF FORT COLLINS
FORT COLLINS, COLORADO

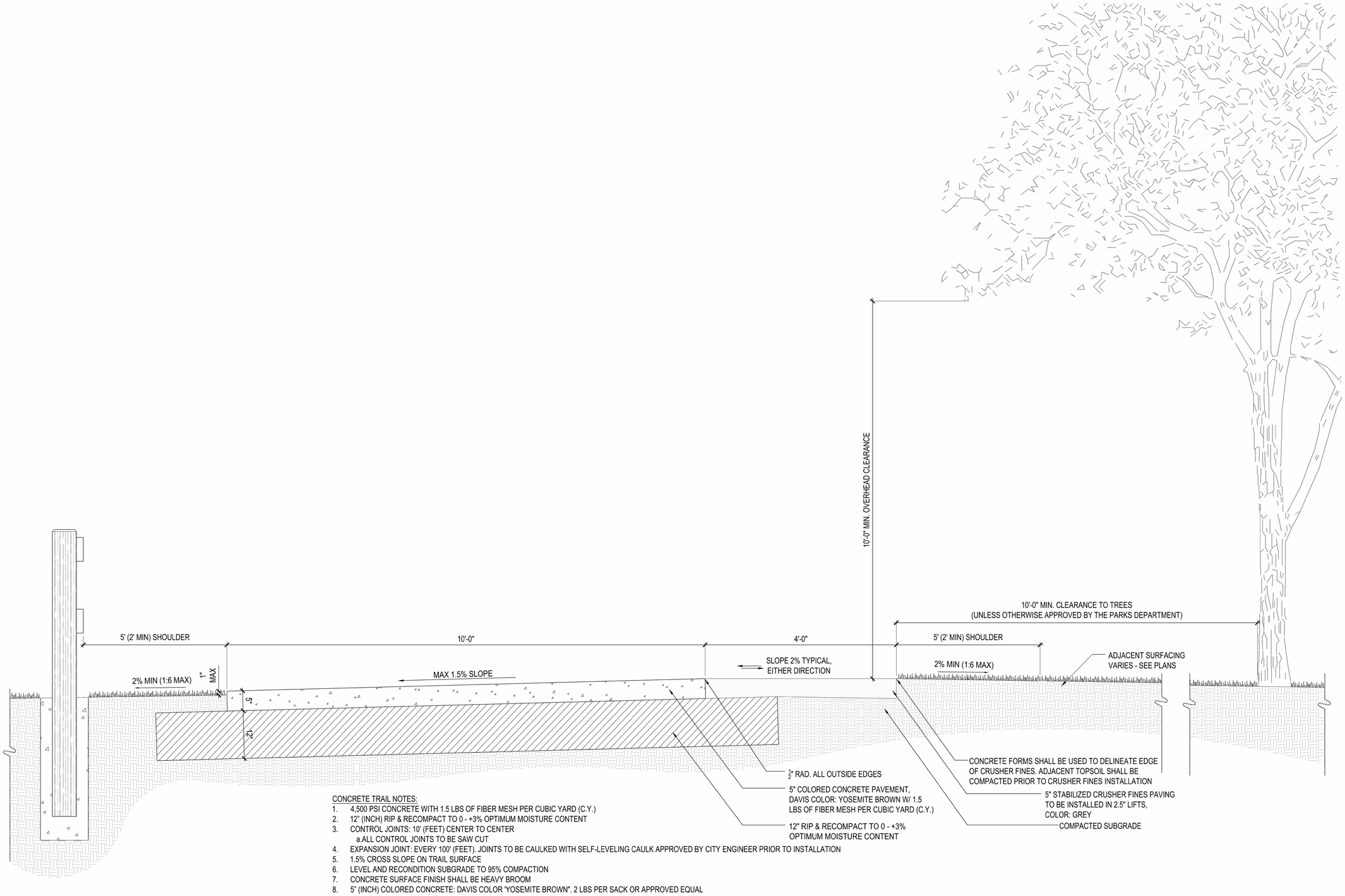
PROJ. NO. ...
DRAWN: MN
CHECKED: MN
APPROVED: MN
DATE: JANUARY 2024
REVISIONS :

TYPICAL TRAIL SECTIONS

ISSUED FOR:
-

SHEET TITLE:
TYPICAL TRAIL SECTION DETAIL

SCALE:
SHEET NUMBER
LS501



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TYPICAL TRAIL SECTIONS
CITY OF FORT COLLINS
FORT COLLINS, COLORADO

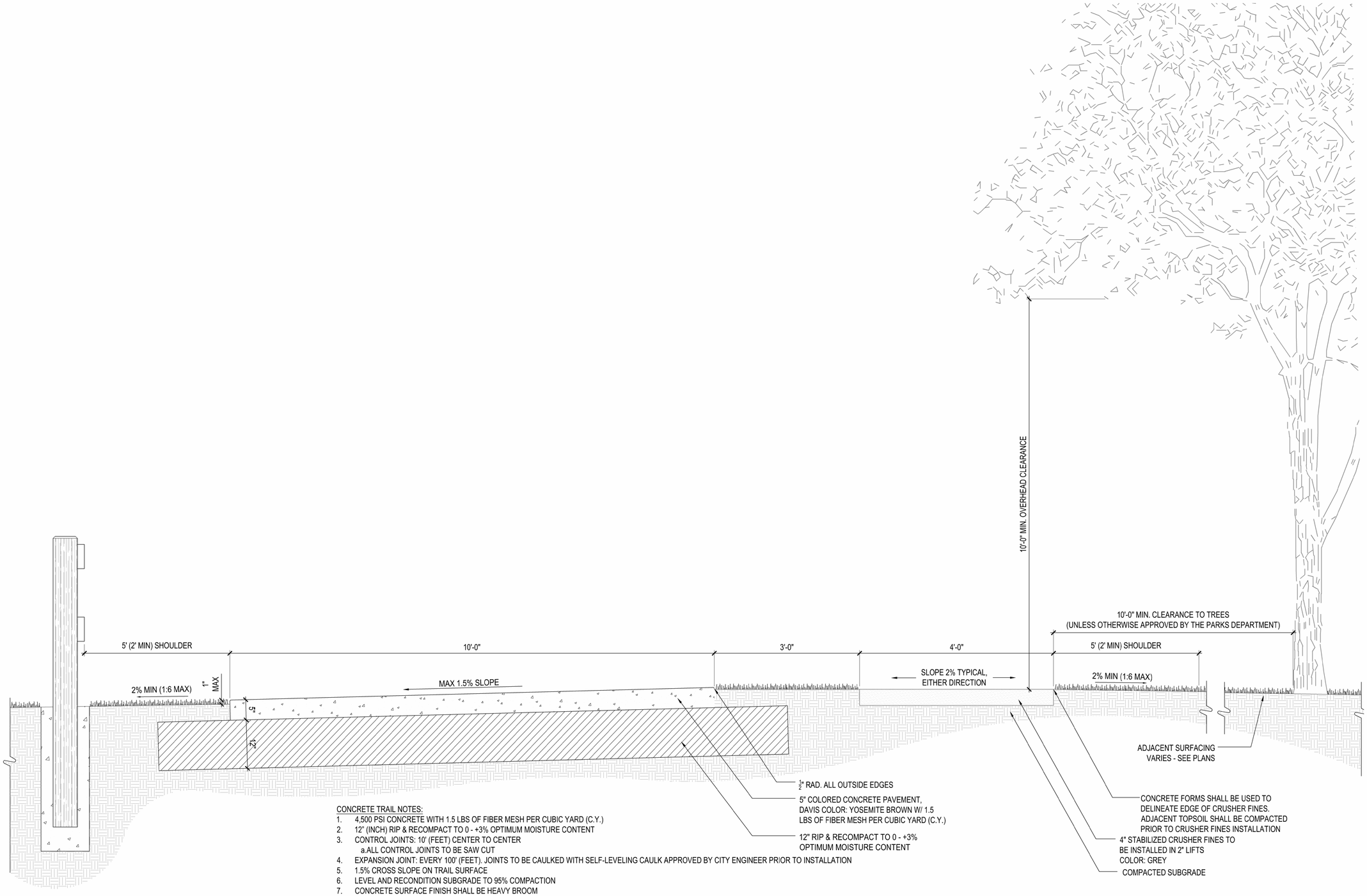
PROJ. NO. ...
DRAWN: MN
CHECKED: MN
APPROVED: MN
DATE: JANUARY 2024
REVISIONS :

TYPICAL TRAIL SECTIONS

ISSUED FOR:
-

SHEET TITLE:
TYPICAL TRAIL SECTION DETAIL W/ ATTACHED GRAVEL PATH
SCALE:

SHEET NUMBER
LS502



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TYPICAL TRAIL SECTIONS
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CITY OF FORT COLLINS
FORT COLLINS, COLORADO

PROJ. NO. ...
DRAWN: MN
CHECKED: MN
APPROVED: MN
DATE: JANUARY 2024
REVISIONS :

TYPICAL TRAIL SECTIONS

ISSUED FOR:
-

SHEET TITLE:
TYPICAL TRAIL SECTION DETAIL W/ DETACHED GRAVEL PATH
SCALE: .

SHEET NUMBER
LS503

City of Fort Collins

STRATEGIC TRAILS PLAN

G

APPENDIX G:

Prioritization Methodology & Results

EXISTING TRAILS PRIORITIZATION

See criteria, their weight, definition, and assigned values on the table on the next page.

See limitations below for data edits and symbology considerations.

Existing Trails Prioritization: GIS Methodology

Equitable Service Delivery: Existing Equity Focus Areas (EFA) dataset from City of Fort Collins was used. See the Fort Collins 2022 15-Minute City Analysis for more information on the EFA dataset.

Quantitative LOS Rating: The Existing Trails Quantitative Level of Service (QLOS) analysis dataset was created in this planning effort by Fehr & Peers, analyzing many different impacts to trail users. Read the Quantitative LOS and Crash Analysis report in Appendix D for more information about various data factored into the QLOS dataset.

Deferred Asset Management: This data is identified in the 2024 STP Asset Assessment Geodatabase (Categories include: Access Control, ADA Deficiency, Crossing Deficiency, Drainage/Flooding, Erosion, Lack of Lighting, Narrow Tread/Insufficient shoulder, Pavement Deficiency, Sharp Turns & Blind Spots, Other). This dataset was created during this planning effort and inventories points of maintenance need through in-person field work, staff input, desktop analysis, and more. Reduction of this number i**mproves individual safety and safety among user interactions.**

- This dataset is point data. Maintenance deficiency points within 20 meters of each segment were selected using Select by Location, then counted per 50 feet. ((Number of Points along segment/length of segment in feet) x 50)
- By identifying a rate of maintenance deficiencies rather than a count per segment, segments of different lengths received a more balanced score. The breaks in the rate assigned to the value score were determined based on qualitative understanding of frequency of areas of maintenance deficiencies.
- A limitation to consider is buffer for selection of points. The points in the dataset were collected in the field using Field Maps, where points were not snapped to the trail dataset and were collected with GPS location. Therefore, a buffer was required to select the points. Because each segment is adjacent to its neighbor, and points were selected by a buffer to each segment, some maintenance points may have been counted multiple times, by different segment units. However, this is generally reflective of the overall trend of trail quality and maintenance need along a trail area that would be experienced by users. Due to the quantity of trail segments and trail maintenance points in each respective dataset, budget in this planning effort did not allow for more granular representation of the points per segment. Future analysis would benefit from considering manually moving those maintenance points or assigning them directly to one unique segment of trail.

To calculate final prioritization score, for each trail segment, the assigned value of each criteria was multiplied by the weight of that criteria to produce a criteria score. Then, the criteria scores were summed to produce the final score. Reference the formula below.

Final Score =
((*Equitable Service Delivery* Value * *Equitable Service Delivery* Weight) +
(*QLOS* Value * *QLOS* Weight) +
(*Deferred Asset Management* Value * *Deferred Asset Management* Weight)

Existing Trails Prioritization: Limitations

- This analysis used the Existing Hardsurface Trails dataset as received from the City of Fort Collins. The received trails dataset had trails segmented into over 300 separate segments, and these were used as the unit of analysis. Some exceptions were changed for this analysis to better represent the impact of maintenance deficiencies.
    - In four (4) instances, segments were joined to an adjacent segment to create a more accurate representation of the impact of a weighted prioritization criteria. These segments were combined to reduce the skew of short segments representing short pedestrian bridges along existing trails as highlighted as needing prioritization as a result of the maintenance deficiencies per foot rate being skewed higher if multiple points of maintenance deficiencies (though representing only one issue) were placed on these shortest segments.
- Maintenance deficiencies were identified as a rate, rather than a count to normalize the dataset over the different lengths in the trail segments. The breaks in the rate assigned to the value score were determined based on qualitative understanding of frequency of areas of maintenance deficiencies.
- In the final map, classes for symbology of final prioritization scores for existing trails were split based on the project team's qualitative understanding of the trail system, so that an actionable spread of high and medium priority projects are identified as city priorities.
- Other Criteria were considered during the planning process. See the list of "Other Criteria" to review other considerations and reasoning why they were not included in the final analysis.

Existing Trails Prioritization: Criteria

CRITIERION	CRITERION WEIGHT (MULTIPLIER)	DEFINITION	VALUES	VALUE SCORE	DATA SOURCE
EQUITABLE SERVICE DELIVERY	40%	15-min City Equity Focus Area	within .25 miles of Equity Focus Area		Fort Collins 2022 15-min City Analysis
			Outside	0	
			Inside	1	
QUANTITATIVE LOS RATING	20%	Trail LOS Score based on 2024 F&P Analysis 2024	LOS Score		F&P QLOS Analysis 2024
			A	1	
			B	2	
			C	3	
			D	4	
			NULL (not evaluated)	0	
DEFERRED ASSET MANAGEMENT	40%	Identified in the 2023 STP Asset Assessment Geodatabase (Access Control, ADA Deficiency, Crossing Deficiency, Drainage/Flooding, Erosion, Lack of Lighting, Narrow Tread/Insufficient shoulder, Pavement Deficiency, Sharp Turns & Blind Spots, Other) **Improves individual safety and safety among user interactions**	Number of Maintenance Deficiencies per 50 feet		2023 Maintenance Assessment GDB
			0	0	count: 102
			0-0.5	1	count: 140
			0.5-1.0	2	count: 36
			1.0-2.0	3	count: 31
			2.0+	4	count: 15

Existing Trails Prioritization: Other Criteria Considered

CRITIERION	DEFINITION	RATIONALE FOR NOT INCLUDING:
PLAN OR PROJECT SYNERGY & EASE OF IMPLEMENTATION	Overlap with planned, development, programmed projects, or funded projects, level of railroad/utility impacts/right of way/advance landowner impacts; environmental impacts. Abiltiy to leverage resources/economy of scale and partnerships. Is additional study needed or is it "low-hanging fruit"	Geospatial data not readily available as a quantitative, measurable metric for evaluating each trail segment. As existing trails are already constructed and regular lifecycle replacement and maintenance is regularly performed, this criteria is less relevant to existing trails.
COST	Planning level estimate of probable cost	Cost is a project consideration and will determine how much or how little of a section of trail we can construct over time but shouldn't necessarily be a criterion. Because a project costs more or less shouldn't influence the objective prioritization process. If the project costs more than we have annually in the CTF budget, than we might find alternative funding sources (grants) for the big ones as discreet projects. (added Predevelopment step)
COMMUNITY INPUT/COMMUNITY SIGNIFICANCE	Addresses community needs and interests based on public input	subjective criterion (not objective)
TRAIL CLASSIFICATION	Trail type classification as defined in the STP and City's STP GIS data (Major, Minor, Spur)	Trail **"classification"** is important to understanding and/or describing the overall trail network and the differences between the three types, which we have articulated in Land Use Code document, but I'm not sure it should be an evaluation criterion. For example, and hypothetically speaking, a section of trail that is a "**spur"** and connects to a school may be more important to prioritize than a section of **minor** trail that connects to an office space.
BICYCLE LEVEL OF TRAFFIC STRESS SCORE	FP LTS 2024 analysis that classifies the comfort level for cyclists on paved trails within 15 ft. of a roadway	data suggests that trails overall show a very low level of traffic stress already.
PED LEVEL OF TRAFFIC STRESS SCORE	FP LTS 2024 analysis that classifies the comfort level for pedestrians on paved trails within 15 ft. of a roadway	data suggests that trails overall show a very low level of traffic stress already.
SAFETY		Safety elements related to the physical condition and design elements of the trail are addressed through the deferred asset management and quantitative LOS

PROPOSED TRAILS PRIORITIZATION

See criteria, their weight, definition, and assigned values on the table on the next page.

See limitations below for data edits and bin break considerations.

Proposed Trails Prioritization: GIS Methodology

Fills a Gap – Determined qualitatively by planning team based on where a proposed trail segment would alone or in tandem with another immediately adjacent proposed trail segment would connect two existing trails.

Demand & Growth – Planning team created this dataset to represent growth areas. The geography for this criteria was either in NE quadrant (N of Drake, E of College), OR anywhere west of Taft Hill.

All other criteria – Buffers were determined from the existing datasets (EFAs, Schools, Natural Areas/Parks) as a dissolved single feature layer buffered 0.25 miles from the boundaries of the base polygon or point layer.

To calculate final prioritization score, for each proposed trail segment, the assigned value of each criteria was multiplied by the weight of that criteria to produce a criteria score. Then, the criteria scores were summed to produce the final score. Reference the formula below.

Final Score =
((*Fills a Gap* Value * *Fills a Gap* Weight) +
(*In a Growth Area* Value * *In a Growth Area* Weight) +
(*Recreation Value* Value * *Recreation Value* Weight) +
(*Near School* Value * *Near School* Weight) +
(*In Equity Area* Value * *In Equity Area* Weight)

Proposed Trails Prioritization: Limitations

- Once assigned scores were calculated, the planning team reviewed the geospatial prioritization results and performed a qualitative adjustment of trail segments based on knowledge of contextual factors surrounding the viability of each segment that are not captured in the quantitative prioritization. The result is a prioritization list that first and foremost elevates the community values as reflected in the criteria listed above, while realistically anticipating when and how future trail segments will develop.
- Trails segmentation was determined by the planning team based on likelihood of development patterns. Logical segments of similar length were created to be used as the unit of analysis for the proposed trails prioritization. For example, a trail segment would not be split in the middle of a neighborhood without connecting to a crossing, road, or existing trail.
- Other Criteria were considered during the planning process. See the list of "Other Criteria" to review other considerations and reasoning why they were not included in the final analysis.

Proposed Trails Prioritization: Criteria

CRITIERION	CRITERION WEIGHT (MULTIPLIER)	DEFINITION	VALUES	VALUE SCORE	DATA SOURCE
EQUITABLE SERVICE DELIVERY	25%	15-min City Analysis - Equity Focus Areas (EFAs), cross referenced with city's EOA map	within .25 miles of Equity Focus Area		Fort Collins 2022 15-min City Analysis
			Outside Inside	0 1	
CONNECTIVITY TO NEIGHBORHOOD SCHOOLS	20%	Connection to neighborhood schools	within .25 miles of a school		Planning team-created buffer to City of Fort Collins Schools dataset
			Outside Inside	0 1	
RECREATIONAL VALUE	20%	Closes gaps, completes loops, or connects to parks or Natural Areas	within .25 miles of a park or natural area	1 or 0	Planning team-created buffer to City of Fort Collins Parks and Natural Areas datasets
			Outside Inside	0 1	
DEMAND & GROWTH	20%	Located in growth areas in alignment with current BFO proposals OR in areas of active and/or anticipated future development review projects	Located /Not Located in NE quadrant or West of Taft Hill Road		Planning team-created dataset: Either in NE quadrant (N of Drake, E of College), OR anywhere west of Taft Hill
			Outside Inside	0 1	
COMPLETES A GAP	15%	Proposed trail segment fills a gap between two areas of existing trail	proposed trail segment does or does not fill a gap in an existing trail		Planning team-determined based on connection to existing trails
			Does not complete a gap Completes a gap	0 1	

Proposed Trails Prioritization: Other Criteria Considered

CRITIERION	DEFINITION	RATIONALE FOR NOT INCLUDING:
PLAN OR PROJECT SYNERGY & EASE OF IMPLEMENTATION	Overlap with planned, programmed projects, or funded projects, level of railroad/utility impacts/right of way/adjacent landowner impacts; environmental impacts. Ability to leverage resources/economy of scale. Is additional study needed or is it "low-hanging fruit"	Geospatial data not readily available as a quantitative, measurable metric for evaluating each trail segment. Furthermore, from an operational perspective, each discreet project will continuously be cross referenced with other future related, or adjacent projects and developments to ensure synergy & ease of Implementation. If the city is able to leverage a project in terms of additional resources, or if the project is considered "low-hanging fruit," these factors may influence a shift in the project's ranking.
COST	Planning level estimate of probable cost	Cost is a project consideration and will determine how much or how little of a section of trail we can construct over time but shouldn't necessarily be a criterion. Because a project costs more or less shouldn't influence the objective prioritization process. If the project costs more than we have annually in the CTF budget, then we might find alternative funding sources (grants) for the big ones as discreet projects.
COMMUNITY INPUT/COMMUNITY SIGNIFICANCE	Addresses community needs and interests based on public input	subjective criterion (not objective)
TRAIL CLASSIFICATION	Trail type classification as defined in the STP and City's STP GIS data (Major, Minor, Spur)	Trail **"classification"** is important to understanding and/or describing the overall trail network and the differences between the three types, which we have articulated in Land Use Code document, but I'm not sure it should be an evaluation criterion. For example, and hypothetically speaking, a section of trail that is a "**spur"** and connects to a school may be more important to prioritize than a section of **minor** trail that connects to an office space.
SAFETY		"Safety" doesn't translate as directly to new trails projects, but is captured at the GSC where street meets trail and represented in the GSC prioritization. - Reference High Injury Network (Vision Zero)

PROPOSED MAJOR/MINOR TRAILS PRIORITIZATION RESULTS

Miles	Name of Major/Minor Trail Segment	Final Prioritization Score	Phase
0.112378	Whitewater Park to Jerome St.	1	Near term
0.736264	Soft Gold Park to Poudre Valley MHP to College Ave.	0.45	Near term
0.102645	Gustav Swanson Natural Area to Whitewater Park	1	Near term
0.901823	Soldier Creek Trail/New Mercer Ditch to Poudre High School	0.85	Near term
1.647685	Future Suniga Rd. Extension East Sidepath	0.85	Near term
0.456839	Lindenmeier/North Lemay Ave. Sidepath	0.65	Near term
0.921957	Lake Canal Trail at Redwood Meadows (Old Town North existing trail terminus to N. Lemay)	0.65	Near term
0.359107	North Lemay (east side) from Suniga to Existing Underpass	0.65	Near term
0.410106	Rendezvous Trail West Extension across Timberline to Vermont Trail	0.55	Near term
0.517613	Fossil Creek Trail Upgrade along South Lemay Ave. at Paragon Point	0.6	Near term
0.172228	Hickory Trail Extension along Hickory St. to Soft Gold Park	0.6	Near term
0.625889	Puente Verde Trail (pave existing soft surface path)	0.6	Near term
0.720661	Dovetail Park to Jessup Farm	0.6	Near term
0.4345	Spring Creek Trail to Jessup Farm	0.6	Near term
3.443241	Overland Corridor: South from West Poudre River Trail via Overland Rd. or Kestrel Fields Natural Area and Vine St	0.6	Near term
1.026642	Overland Corridor: Spring Creek Trail to Dixon Canyon Road	0.4	Near term
0.345585	Maple Hill Extension from Crescent Park to Proposed Trail along No. 8 Outlet	0.6	Near term
2.229606	No 8. Outlet Trail from Country Club Rd. north to GMA boundary	0.6	Near term
0.402405	Richards Lake Park to existing Minor Trail at Mainsail Dr.	0.4	Near term
1.768609	Timberline Sidepath north from Mosaic to Future NE Community Park	0.6	Near term
0.496759	NE Community Park Trail east-west from Turnberry Rd. to Proposed Trail along No. 8 Outlet Ditch	0.6	Near term
2.245623	Overland Corridor: Dixon Canyon Road to Laporte Avenue	Null	Near term
20.078165			
0.52288	Timberline East side trail/sidepath	0.6	Mid term
2.017134	Carpenter Road: Long View Trail to Fossil Creek Trail	0.6	Mid term
1.403519	Lake Canal Trail: Mulberry to Mosaic to EW Mosaic Trail	0.6	Mid term
0.693439	Mail Creek Trail across Ziegler	0.55	Mid term
1.371463	Skyview Neighborhood Trails	0.65	Mid term
0.784931	Pleasant Valley Trail from Rossborough Park to Spring Creek Trail	0.55	Mid term

Miles	Name of Major/Minor Trail Segment	Final Prioritization Score	Phase
0.853494	Pleasant Valley Trail Mountain Ridge Farm to Harmony	0.55	Mid term
0.563617	Dry Creek Trail North	0.45	Mid term
1.361809	Mail Creek Trail West Lemay Ave. to Harmony Rd.	0.65	Mid term
1.318311	Ridgewood Hills North-South Trail from Carpenter Rd. to Trilby Rd.	0.65	Mid term
1.736454	Airport Trail from Timberline Rd.to Duff Dr.	0.85	Mid term
1.646612	McClelland Channel to Mail Creek Trail, Public Connection Fossil Ridge to Traut and Preston schools; Harmony Park to Twin Silo	0.4	Mid term
3.73797	Carpenter Road Trail from I-25 to Fossil Creek Trail	0.65	Mid term
18.011633			
0.325097	Timberline East side trail/sidepath south	0.4	Long term
0.680343	Waterglen & Trailhead Neighborhood Trail	0.4	Long term
1.489658	Trail Head Neighborhood Vine to Mulberry	0.4	Long term
1.068954	Carpenter Road Trail Long View Trail to Coyote Ridge	0.4	Long term
1.591718	Boxelder Creek Trail Timnath Sch to Mulberry	0.4	Long term
1.862724	Lake Canal Trail Prospect to Mulberry	0.4	Long term
0.795767	Anheuser Busch Connector	0.4	Long term
0.984701	Rendezvous East through future East Community Park, Desired easement acquisition W of RR for PRT	0.35	Long term
1.516755	Terry Lake Sidepath	0.2	Long term
0.665757	Mail Creek Trail West Existing Trail to Lemay	0.2	Long term
0.546992	Foothills Parkway Path	0.2	Long term
2.06231	Eastern Fossil Creek Res. Trail	0.2	Long term
0.717786	FC Reservoir Inlet Trail Rendezvous to Horsetooth Rd.	0.2	Long term
1.677066	FC Reservoir Inlet Trail Horsetooth Rd. to Harmony Transfer Center	0.2	Long term
0.651154	FC Reservoir Inlet Trail Harmony Transfer Center to Strauss Cabin Rd	0.2	Long term
0.512267	FC Reservoir Inlet Trail Strauss Cabin Rd. to Kechter Rd.	0.2	Long term
0.429932	FC Reservoir Inlet Trail Kechter Rd. to Mail Creek Trail	0.2	Long term
0.37271	Lake Canal Trail I-25 Interchange and GSCs	0.2	Long term
0.964228	Boxelder Creek Trail Mulberry to GMA Boundary	0.2	Long term
18.91519			

PROPOSED SPUR/CONNECTOR TRAILS PRIORITIZATION RESULTS

Miles	Name of Major/Minor Trail Segment	Final Prioritization Score
0.128259	Mason to Manhattan Connector (establish public access)	0.65
0.092844	Poudre River Trail to Woodward Way	0.65
0.224762	Lakeview on the Rise to Stoney Brook Rd	0.45
0.141631	Poudre River Trail to Riverside Ave.	0.4
0.10397	Spring Creek Trail to Dixon Creek Ln. (Quail Hollow)	0.4
0.119296	Mason Trail Realignment at Spring Creek Trail Intersection	0.4
0.046795	Power Trail to Nancy Gray Ave. (to be constructed as part of GSC project)	0.2
0.085071	Power Trail to Caribou Dr. (to be constructed as part of GSC project)	0.2
0.059722	Longview Trail to Bon Homme Richard Dr. (Registry Ridge)	0.2
0.107952	Fossil Creek Trail to Venus Ave	0.2
0.008705	Power Trail to Centennial Rd. (establish public access)	0
0.040736	Spring Creek Trail Realignment through Lilac Park	Null
0.054829	Power Trail to Shepardson Elementary School Connector South	Null
0.489765	Power Trail to Shepardson Elementary School Connector	Null
0.980978	Blevins Middle School to Ross Drive	Null
2.685315		

EXISTING TRAILS PRIORITIZATION RESULTS

TRAILLABEL	Miles	Prioritization Score
East Poudre Trail	0.005966	2.6
East Spring Creek Trail	0.027289	2.4
West Poudre Trail	0.011136	2.2
East Poudre Trail	0.012234	2.2
East Spring Creek Trail	0.014202	2.2
East Poudre Trail	0.031331	2.2
Vermont Trail	0.008084	2
East Spring Creek Trail	0.027031	2
East Spring Creek Trail	0.013851	1.8
East Spring Creek Trail	0.014894	1.8
West Poudre Trail	0.005628	1.8
East Spring Creek Trail	0.010833	1.8
West Poudre Trail	0.00712	1.8
West Spring Creek Trail	0.010569	1.8
East Spring Creek Trail	0.030958	1.8
East Spring Creek Trail	0.011331	1.8
East Poudre Trail	0.026269	1.8
East Spring Creek Trail	0.025606	1.8
West Spring Creek Trail	0.005562	1.8
West Spring Creek Trail	0.016005	1.8
Power Trail	0.009077	1.8
Fossil Creek Trail	0.006619	1.8
East Spring Creek Trail	0.284438	1.6
NONE-17096	0.001713	1.6
East Spring Creek Trail	0.04485	1.6
West Spring Creek Trail	0.023934	1.6
East Poudre Trail	0.018284	1.6
East Poudre Trail	0.004074	1.6
West Spring Creek Trail	0.004613	1.6
East Poudre Trail	0.009644	1.6
East Poudre Trail	0.066357	1.6
West Spring Creek Trail	0.019311	1.6
Vermont Trail	0.015218	1.6
West Spring Creek Trail	0.006143	1.6
East Spring Creek Trail	0.013901	1.6
East Poudre Trail	0.028759	1.6
East Poudre Trail	0.01491	1.6
East Poudre Trail	0.025166	1.6

TRAILLABEL	Miles	Prioritization Score
Fossil Creek Trail	0.02669	1.4
East Spring Creek Trail	0.020427	1.4
East Spring Creek Trail	0.012086	1.4
Power Trail	0.02249	1.4
East Poudre Trail	0.008878	1.4
East Spring Creek Trail	0.01773	1.4
East Poudre Trail	0.03224	1.4
Fossil Creek Trail	0.009823	1.4
West Spring Creek Trail	0.018366	1.4
Fossil Creek Trail	0.016184	1.4
Fossil Creek Trail	0.012064	1.4
West Poudre Trail	0.010631	1.4
Fossil Creek Trail	0.007766	1.4
Long View Trail	0.00876	1.4
East Poudre Trail	0.127821	1.4
West Poudre Trail	0.207888	1.4
East Poudre Trail	0.02152	1.4
West Poudre Trail	0.514098	1.4
East Poudre Trail	0.073809	1.4
Fossil Creek Trail	0.3302	1.4
Fossil Creek Trail	0.022786	1.4
West Spring Creek Trail	0.34212	1.2
East Poudre Trail	0.378549	1.2
West Spring Creek Trail	0.167811	1.2
East Poudre Trail	0.021496	1.2
East Poudre Trail	0.01998	1.2
East Spring Creek Trail	0.112908	1.2
East Poudre Trail	0.032748	1.2
West Spring Creek Trail	0.010035	1.2
East Poudre Trail	0.191968	1.2
East Spring Creek Trail	0.268682	1.2
East Poudre Trail	0.561285	1.2
East Poudre Trail	0.152546	1.2
East Poudre Trail	0.069306	1.2
West Spring Creek Trail	0.189416	1
East Spring Creek Trail	0.097239	1
East Poudre Trail	0.013331	1
East Spring Creek Trail	0.104813	1
West Poudre Trail	0.031833	1
Fossil Creek Trail	0.090324	1

TRAILLABEL	Miles	Prioritization Score
Fossil Creek Trail	0.013298	1
East Poudre Trail	0.007608	1
Fossil Creek Trail	0.026458	1
Hickory Trail	0.092535	1
East Poudre Trail	0.109165	1
West Poudre Trail	0.05873	1
West Spring Creek Trail	0.385956	1
West Spring Creek Trail	0.028942	1
West Poudre Trail	0.014534	1
West Poudre Trail	0.021949	1
East Spring Creek Trail	0.291022	1
West Spring Creek Trail	0.005991	1
West Spring Creek Trail	0.098805	1
East Poudre Trail	0.229618	1
Fossil Creek Trail	0.017107	1
Fossil Creek Trail	0.013479	1
Fossil Creek Trail	0.061022	1
East Poudre Trail	0.015493	1
Fossil Creek Trail	0.119496	1
Fossil Creek Trail	0.163615	1
West Spring Creek Trail	0.025269	1
West Poudre Trail	0.123095	1
West Spring Creek Trail	0.117659	1
East Spring Creek Trail	0.04688	1
West Poudre Trail	0.243983	1
East Spring Creek Trail	0.526556	1
East Poudre Trail	0.104666	1
East Poudre Trail	0.010597	1
Fossil Creek Trail	0.203478	1
East Poudre Trail	0.011861	1
East Spring Creek Trail	0.0406	1
West Poudre Trail	0.019385	1
Fossil Creek Trail	0.017389	1
East Poudre Trail	0.026043	1
East Poudre Trail	0.019837	1
West Spring Creek Trail	0.191135	1
West Spring Creek Trail	0.097414	1
Fossil Creek Trail	0.048044	1
Fossil Creek Trail	0.043868	1
West Poudre Trail	0.127198	1

TRAILLABEL	Miles	Prioritization Score
Hickory Trail	0.040917	1
East Spring Creek Trail	0.124795	1
Fossil Creek Trail	0.068004	1
Fossil Creek Trail	0.049551	1
Fossil Creek Trail	0.022804	1
West Spring Creek Trail	0.084816	1
West Poudre Trail	0.010039	1
East Spring Creek Trail	0.022497	1
Fossil Creek Trail	0.102533	1
East Spring Creek Trail	0.083567	1
West Spring Creek Trail	0.27622	1
Fossil Creek Trail	0.018779	1
Fossil Creek Trail	0.239517	1
East Poudre Trail	0.014867	1
West Spring Creek Trail	0.020955	0.8
Power Trail	1.219493	0.8
Vermont Trail	0.104347	0.8
East Spring Creek Trail	0.011261	0.8
East Poudre Trail	0.512098	0.8
	0.035365	0.8
East Poudre Trail	0.291644	0.8
West Spring Creek Trail	0.362065	0.8
Rendezvous Trail	0.014303	0.8
East Spring Creek Trail	0.033953	0.8
Power Trail	1.059009	0.8
West Spring Creek Trail	0.001581	0.8
East Poudre Trail	0.024835	0.8
East Poudre Trail	0.01272	0.8
West Spring Creek Trail	0.187366	0.8
Hickory Trail	0.105785	0.8
East Poudre Trail	0.042592	0.8
East Poudre Trail	0.016919	0.8
West Spring Creek Trail	0.124764	0.8
Rendezvous Trail	0.028939	0.8
East Poudre Trail	0.106324	0.8
East Poudre Trail	0.146123	0.8
West Spring Creek Trail	0.16066	0.8
East Poudre Trail	0.050345	0.8
East Poudre Trail	0.137404	0.8
East Poudre Trail	0.127515	0.8

TRAILLABEL	Miles	Prioritization Score
East Spring Creek Trail	0.011242	0.8
West Spring Creek Trail	0.209741	0.8
West Spring Creek Trail	0.046802	0.8
Fossil Creek Trail	0.276875	0.6
East Spring Creek Trail	0.026189	0.6
East Spring Creek Trail	0.024018	0.6
East Spring Creek Trail	0.16439	0.6
West Poudre Trail	0.403749	0.6
Fossil Creek Trail	0.333387	0.6
West Spring Creek Trail	0.0251	0.6
Long View Trail	0.572559	0.6
East Spring Creek Trail	0.004541	0.6
West Spring Creek Trail	0.029344	0.6
West Spring Creek Trail	0.049236	0.6
Fossil Creek Trail	0.295545	0.6
East Poudre Trail	0.193266	0.6
Fossil Creek Trail	0.070515	0.6
West Spring Creek Trail	0.019793	0.6
East Spring Creek Trail	0.021068	0.6
Long View Trail	0.374043	0.6
Fossil Creek Trail	0.035837	0.6
East Poudre Trail	0.079571	0.6
East Spring Creek Trail	0.014567	0.6
East Poudre Trail	0.015936	0.6
East Spring Creek Trail	0.009346	0.6
Fossil Creek Trail	0.086316	0.6
West Spring Creek Trail	0.010182	0.6
East Poudre Trail	0.235585	0.6
East Poudre Trail	0.126528	0.6
East Spring Creek Trail	0.004036	0.6
Fossil Creek Trail	0.030095	0.6
Fossil Creek Trail	0.194066	0.6
West Poudre Trail	0.029815	0.6
West Spring Creek Trail	0.025393	0.6
Fossil Creek Trail	0.043601	0.6
West Spring Creek Trail	0.109426	0.6
Fossil Creek Trail	0.148417	0.6
Fossil Creek Trail	0.148454	0.6
Long View Trail	0.317497	0.6
Long View Trail	0.349596	0.6

TRAILLABEL	Miles	Prioritization Score
Fossil Creek Trail	0.025723	0.6
Fossil Creek Trail	0.157633	0.6
West Poudre Trail	1.107772	0.6
West Spring Creek Trail	0.325954	0.6
Fossil Creek Trail	0.465144	0.6
Fossil Creek Trail	0.083257	0.6
West Spring Creek Trail	0.123341	0.6
West Spring Creek Trail	0.007075	0.6
Fossil Creek Trail	0.246421	0.6
Power Trail	0.409235	0.6
West Spring Creek Trail	0.087566	0.6
Fossil Creek Trail	0.608622	0.6
East Spring Creek Trail	0.17483	0.6
West Spring Creek Trail	0.009117	0.6
East Poudre Trail	0.040085	0.6
East Poudre Trail	0.017786	0.6
East Poudre Trail	0.011852	0.6
West Poudre Trail	0.035215	0.6
West Poudre Trail	0.084707	0.6
Power Trail	0.105655	0.6
Power Trail	0.982515	0.6
West Spring Creek Trail	0.014854	0.6
Fossil Creek Trail	0.393047	0.6
East Poudre Trail	0.208227	0.6
East Spring Creek Trail	0.009186	0.6
Fossil Creek Trail	0.669796	0.6
Fossil Creek Trail	0.170657	0.6
Fossil Creek Trail	0.223665	0.6
Fossil Creek Trail	0.555673	0.6
East Poudre Trail	0.16596	0.6
East Poudre Trail	0.173139	0.6
West Spring Creek Trail	0.027016	0.6
Fossil Creek Trail	0.281706	0.6
West Spring Creek Trail	0.128036	0.6
East Spring Creek Trail	0.076027	0.6
East Spring Creek Trail	0.019805	0.6
Fossil Creek Trail	0.130311	0.6
Fossil Creek Trail	0.532167	0.6
Long View Trail	0.474744	0.6
Rendezvous Trail	0.342761	0.4

TRAILLABEL	Miles	Prioritization Score
Mail Creek Trail	0.027962	0.4
Power Trail	0.216984	0.4
	0.145408	0.4
	0.060649	0.4
Rendezvous Trail	0.280685	0.4
East Poudre Trail	0.083286	0.4
Rendezvous Trail	0.037609	0.4
Lincoln Spur Trail	0.481498	0.4
	0.093606	0.4
East Poudre Trail	0.901738	0.4
East Poudre Trail	0.033666	0.4
East Poudre Trail	0.003052	0.4
	0.431512	0.4
East Poudre Trail	1.012	0.4
East Poudre Trail	0.05579	0.4
East Poudre Trail	0.104812	0.4
East Poudre Trail	0.03653	0.4
East Poudre Trail	0.021888	0.4
	0.068478	0.4
Hickory Trail	0.190305	0.4
East Poudre Trail	0.065115	0.4
East Poudre Trail	0.054172	0.4
Mail Creek Trail	0.252983	0.4
Power Trail	0.045458	0.4
Pleasant Valley Trail	0.464401	0.4
East Poudre Trail	0.038115	0.4
East Poudre Trail	0.091798	0.4
Rendezvous Trail	0.193993	0.4
Pleasant Valley Trail	0.167506	0.4
Lincoln Spur Trail	0.27561	0.4
Mail Creek Trail	0.601677	0.4
	0.544994	0.4
West Spring Creek Trail	0.006461	0.2
Fossil Creek Trail	0.005505	0.2
West Poudre Trail	0.133916	0.2
Fossil Creek Trail	0.112679	0.2
Fossil Creek Trail	0.002971	0.2
Fossil Creek Trail	0.035758	0.2
Fossil Creek Trail	0.012187	0.2
Fossil Creek Trail	0.026403	0.2

TRAILLABEL	Miles	Prioritization Score
East Poudre Trail	0.004019	0.2
West Poudre Trail	0.593225	0.2
Fossil Creek Trail	0.019522	0.2
West Poudre Trail	0.134938	0.2
Fossil Creek Trail	0.015547	0.2
Fossil Creek Trail	0.005491	0.2
Fossil Creek Trail	0.031133	0.2
Fossil Creek Trail	0.014801	0.2
East Poudre Trail	0.008343	0.2
Fossil Creek Trail	0.096288	0.2
East Poudre Trail	0.063253	0.2
Long View Trail	0.020888	0.2
West Poudre Trail	0.081138	0.2
Fossil Creek Trail	0.007574	0.2
Fossil Creek Trail	0.119055	0.2
East Poudre Trail	0.401243	0
Hickory Trail	0.006156	0
	0.046114	0
	0.095759	0
East Poudre Trail	0.003579	0
	0.009464	0
East Poudre Trail	0.003225	0
Mail Creek Trail	0.088864	0
East Spring Creek Trail	0.089654	0
West Poudre Trail	0.012802	0
West Spring Creek Trail	0.020985	0
	0.005513	0
	0.022756	0
	0.020636	0
Hickory Trail	0.052905	0
Rendezvous Trail	0.001474	0
	0.005394	0
East Spring Creek Trail	0.034671	0
Rendezvous Trail	0.010067	0
East Spring Creek Trail	0.014427	0
Hickory Trail	0.015588	0
	0.061427	0
	0.03914	0
Mail Creek Trail	0.53271	0
East Poudre Trail	0.67491	0

TRAILLABEL	Miles	Prioritization Score
East Poudre Trail	0.446679	0
Power Trail		0

City of Fort Collins Strategic Trails Plan
Proposed Paved Trails Phases

Proposed Trail Prioritization Phase
- Near Term
- Mid Term
- Long Term

Paved Trails
- City of Fort Collins Parks and Recreation - Major Trail
- City of Fort Collins Parks and Recreation - Minor Trail
- City of Fort Collins Other Departments
- Other Municipalities
- Colorado State University
- HOA and Unknown

Active Modes Facilities
- Existing On-Street Bike Facilities
- Existing Separated Bike Lane
- Existing Sidepath
- Proposed On-Street Bike Facilities
- Proposed Separated Bike Lane
- Proposed Sidepath

- Proposed or Improved At Grade Crossing
- Existing At Grade Crossing
- Existing Grade Separated Crossing
- Proposed Grade Separated Arterial Road Crossing
- Proposed Grade Separated Collector Road Crossing
- Proposed Grade Separated Waterway Crossing
- Proposed Grade Separated Railroad Crossing
- Future Trail in Coordination with Regional Partners
- NFRMPO Regional Active Transportation Corridor

- Soft Surface Trails
- 8'-10' Proposed Soft Surface Trail
- Railways
- Rivers/Streams
- Canals
- Parks
- Natural Areas
- Growth Management Area
- City Limits
- College/University
- Elementary, Middle, and/or High School

0 0.5 1 2 Miles

City of Fort Collins STRATEGIC TRAILS PLAN

N

W DOUGLAS RD
E DOUGLAS RD
E COUNTY ROAD 54
N COUNTY ROAD 17
N OVERLAND TRL
HIGHWAY 287
N COUNTY ROAD 19
COUNTY ROAD 54G
TERRY LAKE RD
GREGORY RD
TURNBERRY RD
N COUNTY ROAD 9
RICHARDS LAKE RD
E COUNTY ROAD 52
COUNTRY CLUB RD
GIDDINGS RD
MOUNTAIN VISTA DR
E COUNTY ROAD 50
W WILLOX LN
E WILLOX LN
N SHIELDS ST
N COLLEGE AVE
W VINE DR
E SUNIGA RD
LINDENMEIER RD
E VINE DR
N TIMBERLINE RD
E COUNTY ROAD 48
N COUNTY ROAD 5
9TH ST
W MOUNTAIN AVE
N MASON ST
JEFFERSON ST
E LINCOLN AVE
W MULBERRY ST
S HOWES ST
RIVERSIDE AVE
E MULBERRY ST
W LAUREL ST
S SUMMIT VIEW DR
W ELIZABETH ST
REMINGTON ST
W PROSPECT RD
E PROSPECT RD
East Spring Creek Trail
Spring Creek
East Poudre Trail
W DRAKE RD
E DRAKE RD
Dixon Creek
Power Trail
S TIMBERLINE RD
Rendezvous Trail
Mail Creek Ditch
S SHIELDS ST
W HORSETOOTH RD
E HORSETOOTH RD
Pleasant Valley Trail
S COLLEGE AVE
JOHN F KENNEDY PKWY
LANDINGS DR
BOARDWALK DR
S LEMAY AVE
ZIEGLER RD
STRAUSS CABIN RD
MAIN ST
E COUNTY ROAD 38
W COUNTY ROAD 38E
Fossil Creek Trail
Burns Tributary
W HARMONY RD
E HARMONY RD
McClelland Creek
Mail Creek
KECHTER RD
S COUNTY ROAD 7
E COUNTY ROAD 36
Stone Creek
Long View Trail
W TRILBY RD
E TRILBY RD
Lang Gulch
Fossil Creek
S COUNTY ROAD 19
CARPENTER RD
STATE HIGHWAY 392
S US HIGHWAY 287
S COUNTY ROAD 13
S COUNTY ROAD 11
S COUNTY ROAD 9
E COUNTY ROAD 30

City of Fort Collins

STRATEGIC TRAILS PLAN

H

APPENDIX H:

Updated Grade Separated Crossings Prioritization Study Update

Memorandum

Date: June 3, 2025

To: Dave "DK" Kemp, City of Fort Collins & Taylor Broyhill, Logan Simpson

From: Nick VanderKwaak & Kelsey Lindquist, Fehr & Peers

Subject: Fort Collins Strategic Trails Plan: Grade Separated Crossing Methodology Changes

DN24-0814

Introduction and Purpose

This document summarizes the methodology for prioritizing Grade Separated Crossings (GSC) in the Fort Collins Strategic Trails Plan. The methodology is based on the methodology developed for the 2018 Grade Separated Prioritization Study.

Fehr & Peers was provided 34 proposed locations for GSCs which consists of existing trails crossing roads, proposed trails crossing roads, and trail crossings of railroads. The list is categorized by type in **Table 1.**

Table 2 outlines the criteria used to determine the priority of the GSCs. The evaluation matrix based on the previous study, but the definition, source, and range have all been updated with the most recent data. Metrics that are highlighted have been altered since the previous study. The **Changed Metrics** section provides more detail on how the metrics were altered.

Table 1: Grade Separated Crossing Locations

Map ID	Trail Name	Road Name	Road Type	Narrative Description	Coordinates
Existing Trails					
ET-A	West Poudre Trail	N Taft Hill Rd	Arterial	N Taft Hill Rd at West Poudre Trail	105° 06' 52.33" W 40° 36' 26.1" N
ET-B	East Poudre Trail	Linden St	Collector	Linden St at East Poudre Trail	105° 04' 15.06" W 40° 35' 29.4" N
ET-C	Mason Trail	W Prospect Rd	Arterial	Mason Trail at Prospect Rd	105° 04' 44.13" W 40° 34' 1.73" N
ET-D	Mason Trail	Drake Rd	Arterial	Drake Rd at Mason Trail	105° 04' 50.27" W 40° 33' 9.74" N
ET-E	Power Trail	Drake Rd	Arterial	Power Trail at Drake Rd	105° 02' 36.37" W 40° 33' 9.66" N
ET-F	Rendezvous Trail	Rigden Pkwy	Collector	Rigden Pkwy at Rendezvous Trail	105° 01' 46.8" W 40° 32' 52.03" N
ET-G	Rendezvous Trail	Ziegler Rd	Arterial	Zeigler Rd at Rendezvous Trail	105° 01' 13.84" W 40° 32' 46.63" N
ET-H	Mason Trail	Horsetooth Rd	Arterial	Horsetooth Rd at Mason Trail	105° 04' 51.75" W 40° 32' 17.04" N
ET-I	Power Trail	Horsetooth Rd	Arterial	Power Trail at Horsetooth Rd	105° 02' 36.5" W 40° 32' 16.79" N
ET-J	Mason Trail	Harmony Rd	Arterial	Harmony Rd at Mason Trail	105° 04' 52.58" W 40° 31' 24.64" N
ET-K	Longview Trail	E Trilby Rd	Arterial	E Trilby Road at Longview Trail	105° 05' 45.73" W 40° 29' 40.14" N
Proposed Trails					
PT-A	Proposed Trail	E Mulberry St	Arterial	E Mulberry St near Dawn Ave at proposed trail	105° 01' 3.24" W 40° 34' 52.67" N
PT-B	Proposed Trail	E Mulberry St	Arterial	East Mulberry St at proposed trail along Boxelder Creek	104° 59' 35.82" W 40° 34' 52.07" N
PT-C	Proposed Trail	I-25	Arterial	I-25 at Proposed Trail along Boxelder Creek	105° 00' 4.83" W 40° 34' 22.94" N
PT-D	Proposed Trail	E Prospect Rd	Arterial	E Prospect Rd at proposed trail north of Running Deer NA	105° 00' 32.29" W 40° 34' 0.27" N
PT-E	Proposed Trail	LCR 42C	Collector	LCR 42C at proposed trail along Overland Trl	105° 08' 3.07" W 40° 33' 24.98" N
PT-F	Future Rendezvous Trail	S Timberline Rd	Arterial	S Timberline Rd at Proposed Rendezvous Trail	105° 02' 21.24" W 40° 32' 40.93" N
PT-G	Proposed Trail	E Harmony	Arterial	E Harmony between Cinquefoil and Strauss Cabin at Proposed Trail	105° 00' 19.78" W 40° 31' 23.58" N
PT-H	Future Mail Creek Trail	S Lemay Ave	Arterial	S Lemay Ave at proposed Mail Creek Trail	105° 03' 29.14" W 40° 30' 47.9" N
PT-I	Proposed Trail	E County Rd 36/Ketcher Rd	Arterial	E County Rd 36/Ketcher Rd at proposed trail along FCRID	104° 59' 53.11" W 40° 30' 31.19" N
PT-J	Future Mail Creek Trail	Ziegler Rd	Arterial	Ziegler Rd at proposed Mail Creek Trail	105° 01' 11.51" W 40° 30' 12.64" N
PT-K	Proposed Trail	W Trilby Rd	Arterial	W Trilby Rd at proposed trail from Skyview Neighborhood	105° 04' 51.08" W 40° 29' 41.18" N
PT-L	Proposed Trail	S Timberline Rd	Arterial	S Timberline Rd at proposed trail along Carpenter Rd	105° 02' 21.37" W 40° 28' 49.76" N
PT-M	Proposed Trail	S College Ave	Arterial	S College Ave at proposed trail along Carpenter Rd	105° 04' 38.57" W 40° 28' 49.04" N
PT-N	Proposed Trail	S Lemay Ave	Arterial	S Lemay Ave at proposed trail along Carpenter Rd	105° 03' 29.71" W 40° 28' 48.75" N
PT-O	Proposed Trail	S Shields St	Arterial	S Shields St at Proposed Trail south of Colina Mariposa NA	105° 05' 46.53" W 40° 28' 48.29" N
PT-P	Proposed Trail	S County Rd 19/ S Taft Hill Rd	Arterial	S County Rd 19/Taft Hill and proposed trail to Coyote Ridge underpass and wildlife crossing	105° 06' 56.38" W 40° 28' 48.14" N
Railroads					
RR-A	Proposed Trail	BNSF, Vine Dr	RR	Vine Dr. and BNSF east of Timberline	105° 01' 40.69" W 40° 35' 45.66" N
RR-B	Proposed Trail	GWRR	RR	Proposed Trail at GWRR and North Greenfield Dr.	105° 00' 53.27" W 40° 35' 31.64" N
RR-C	Power Trail	UPRR	RR	Power Trail access crossing UPRR at Nancy Grey	105° 02' 35.74" W 40° 33' 29.63" N
RR-D	Mason Trail	BNSF RR	RR	Mason Trail to Foothills Pkwy (RR overpass)	105° 04' 49.5" W 40° 32' 33.13" N
RR-E	Power Trail	UPRR	RR	Power Trail access crossing UPRR at Caribou Drive	105° 02' 36.29" W 40° 31' 50.52" N
RR-F	Proposed Trail	UPRR	RR	South Fort Collins Trail along Carpenter Rd. crossing UPRR	105° 02' 31.04" W 40° 28' 50.24" N
RR-G	Proposed Trail	BNSF	RR	South Fort Collins Trail along Carpenter Rd. crossing BNSF	105° 05' 42.06" W 40° 28' 48.53" N

Table 2: Criteria Matrix

Category	Criteria	Definition	Source	Range
Demand	Bicycle Demand	Annual usage of bicycling infrastructure in the immediate area.	Strava Metro 2024 total bike trips. For non-existent crossings, marked as "no data".	15 to 37340. No data available in several locations.
	Pedestrian Demand	Walkability in the immediate area.	Walk score from Walkscore.com	0 to 84
	Population Density	Existing populations of census block groups within ½ mile of crossing.	US Census ACS Block Group. Block groups contained in buffer are proportionally weighted and summed.	2583 to 36359
	Youth Density	Population under 18 of census block groups within ½ mile of crossing.	US Census ACS Block Group. Block groups contained in buffer are proportionally weighted and summed.	9% to 37%
	Student Density	Number of schools within ½ mile of crossing. Assumption made that schools include public and private, pre, elementary, middle, and high schools.	City of Fort Collins, Poudre School District	0-23
	Senior Density	Number of seniors (65+) of census block groups living within ½ mile of crossing.	US Census ACS Block Group. Block groups contained in buffer are proportionally weighted and summed.	8% to 21%
Connectivity	Connectivity to Transit	Transit located within ½ mile of crossing.	City of Fort Collins bus stops.	MAX, bus, none
	Part of an Enhanced Travel Corridor (ETC)	Yes/No if projects is located in Enhanced Travel Corridors, defined by the FC TMP	FC Transportation Master Plan (TMP)	
	Regional Trail Connection	Yes/No if new regional trail connection is created	Fort Collins GIS	Yes/No
	Connects a Bicycle Path and/or Trail	Connects to an existing or future trail.	Fort Collins GIS	Existing/Future
	Alternate Crossing Location	Out of direction travel distance (in feet) of an alternate crossing location	Google Maps	0 to 5000 ft
	Connects to Existing Streets and Sidewalks	Yes/No if connects to existing streets and sidewalks	Google Maps	Yes/No
	Connectivity to Natural Resources	Proximity of walkable natural resources	Fort Collins GIS	0-5 min, 5-10 min, 10+ min
	Connectivity to Destinations and Amenities (BNA)	Calculation of increased connectivity by low stress networks factoring in destinations and amenities over a 1 2/3 mile radius	BNA tool	
Safety	Bike High Injury Network	Crossing is along Bike HIN as identified by 2022 Active Modes Plan	2022 Active Modes Plan	Yes/No
	Pedestrian High Injury Network	Crossing is along Pedestrian HIN as identified by 2022 Active Modes Plan	2022 Active Modes Plan	Yes/No
Public Support	Public Support Survey Ranking	Support provided in an online survey to provide feedback on various locations	Survey monkey sent to citywide stakeholders (TBD)	
Social Equity	Social Equity	Percent of population of census block groups within ½ mile of the project with low and moderate income populations.	US Census ACS. Block groups contained in buffer are proportionally weighted and summed.	4% to 31%
Cost and Construction	Order of Magnitude Cost & Overall Feasibility	Estimate based on level of right of way impact, physical barriers/ infrastructure, and estimated cost	Based on professional engineering judgement	
	Partnership or Funding Opportunities	Secured or near future non City funding and partnership opportunities	City of Fort Collins	

Changed Metrics

This section describes the metrics that have been altered, added, or removed since the previous study was completed.

Part of an Enhanced Travel Corridor (ETC)

This metric was removed from the analysis because the 2019 Fort Collins Transportation Master Plan replaced the ETC concept with the identification of priority transit, bicycle, pedestrian, and automobile corridors. Other criteria included in the evaluation include pedestrian, bicycle, and transit access, so a replacement for this criteria was not deemed necessary.

Connects a Bicycle Path and/or Trail

In the previous analysis, this metric looked at whether a GSC would connect to an existing or planned bicycle path or trail and the response was yes or no. Because all GSCs in this analysis connect to an existing or planned bicycle path or trail, we thought it would be more beneficial to evaluate whether the trail is existing or planned. An existing trail scores higher than a planned trail.

Connectivity to Destinations and Amenities (BNA)

This metric was calculated using a Bike Network Accessibility Analysis that was conducted by Toole Design Group during the 2018 prioritization process. The analysis tools to reproduce this network were not available. At this point, the metric was not replaced with another, but an analysis of the 15 minute city could result in a similar metric.

Bike and Pedestrian High Injury Networks (HIN) 2020 Low-Stress Network Location

The previous safety metrics were replaced with the Bike and Pedestrian HIN. The previous safety metrics included the 2020 Low-Stress Network and Crash Reduction Potential.

The Low-Stress Network metric used the 2014 Bicycle Master Plan to determine if the GSC is along the 2020 Low-Stress Network. The 2022 Active Modes Plan does not have an updated Low-Stress Network so the metric was updated to be two separate metrics. The Crash Reduction Potential metric looked at the number of pedestrian and bicycle related crashes near the crossing within the last 5 years.

Public Support Survey Ranking

This metric was removed because no survey was conducted. If a survey is completed, the metric can be included in a future evaluation.

Order of Magnitude Cost & Overall Feasibility

This metric looks at the estimated level of right of way impact, physical barriers/ infrastructure, and estimated cost to determine a level of feasibility. It was not included in this analysis because the estimates have not yet been completed. Once the estimates are completed, the metric can be included in the evaluation.

Partnership or Funding Opportunities

This metric looks at if the project has secured or near future non City funding partnership opportunities. This has not been looked at yet, but once completed could be added in the evaluation.

Results

The following tables and figures show the prioritization results by category and combined. **Table 2** lists and **Figure 1** shows the existing trail crossings by rank, **Table 3** lists and **Figure 2** shows the proposed trail crossings by rank, **Table 4** lists and **Figure 3** shows the railroad crossings by rank, and **Table 5** lists and **Figure 4** shows all locations for GSCs on existing and proposed trails by rank.

All data and detail of the evaluation table are included in a excel files which are provided as a separate deliverables.

Table 3: Proposed GSCs on Existing Trails by Rank

Priority Ranking	Map ID	Narrative Description
Existing Trails		
1	ET-C	Mason Trail at Prospect Rd
2	ET-B	Linden St at East Poudre Trail
3	ET-J	Harmony Rd at Mason Trail
4	ET-D	Drake Rd at Mason Trail
5	ET-E	Power Trail at Drake Rd
6	ET-A	N Taft Hill Rd at West Poudre Trail
7	ET-H	Horsetooth Rd at Mason Trail
8	ET-G	Zeigler Rd at Rendezvous Trail
9	ET-K	E Trilby Road at Longview Trail
10	ET-I	Power Trail at Horsetooth Rd
11	ET-F	Rigden Pkwy at Rendezvous Trail

Figure 1: Proposed GSCs on Existing Trails

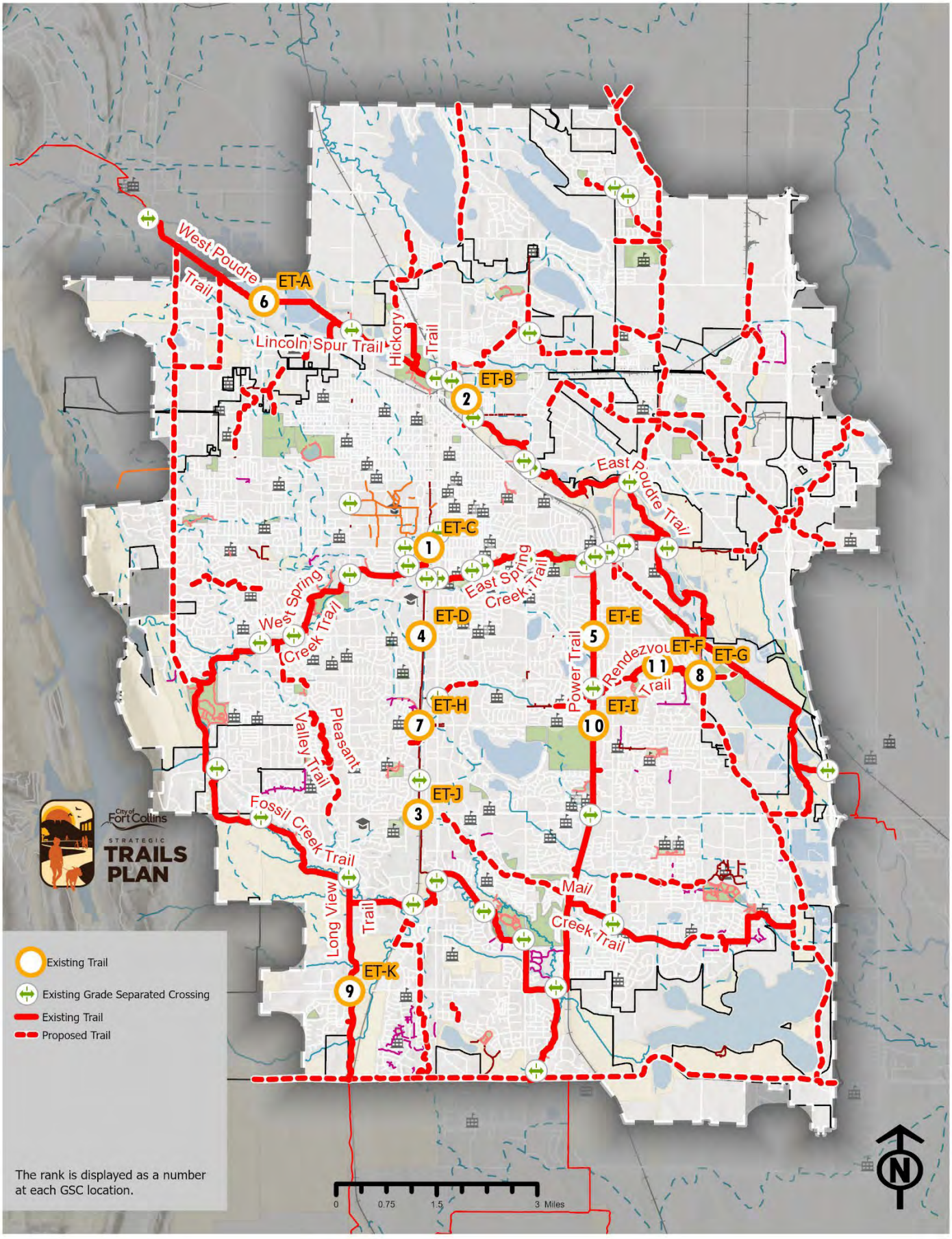


Table 4: Proposed GSCs on Proposed Trails by Rank

Priority Ranking	Map ID	Narrative Description
Proposed Trails		
1	PT-E	LCR 42C at proposed trail along Overland Trl
2	PT-O	S Shields St at Proposed Trail south of Colina Mariposa NA
3	PT-A	E Mulberry St near Dawn Ave at proposed trail
4	PT-B	East Mulberry St at proposed trail along Boxelder Creek
5	PT-F	S Timberline Rd at Proposed Rendezvous Trail
6	PT-H	S Lemay Ave at proposed Mail Creek Trail
7	PT-C	I-25 at Proposed Trail along Boxelder Creek
8	PT-K	W Trilby Rd at proposed trail from Skyview Neighborhood
9	PT-L	S Timberline Rd at proposed trail along Carpenter Rd
10	PT-I	E County Rd 36/Ketcher Rd at proposed trail along FCRID
11	PT-M	S College Ave at proposed trail along Carpenter Rd
12	PT-G	E Harmony between Cinquefoil and Strauss Cabin at Proposed Trail
13	PT-P	S County Rd 19/Taft Hill and proposed trail to Coyote Ridge underpass and wildlife crossing
14	PT-J	Ziegler Rd at proposed Mail Creek Trail
15	PT-D	E Prospect Rd at proposed trail north of Running Deer NA
16	PT-N	S Lemay Ave at proposed trail along Carpenter Rd

Figure 2:Proposed GSCs on Proposed Trails

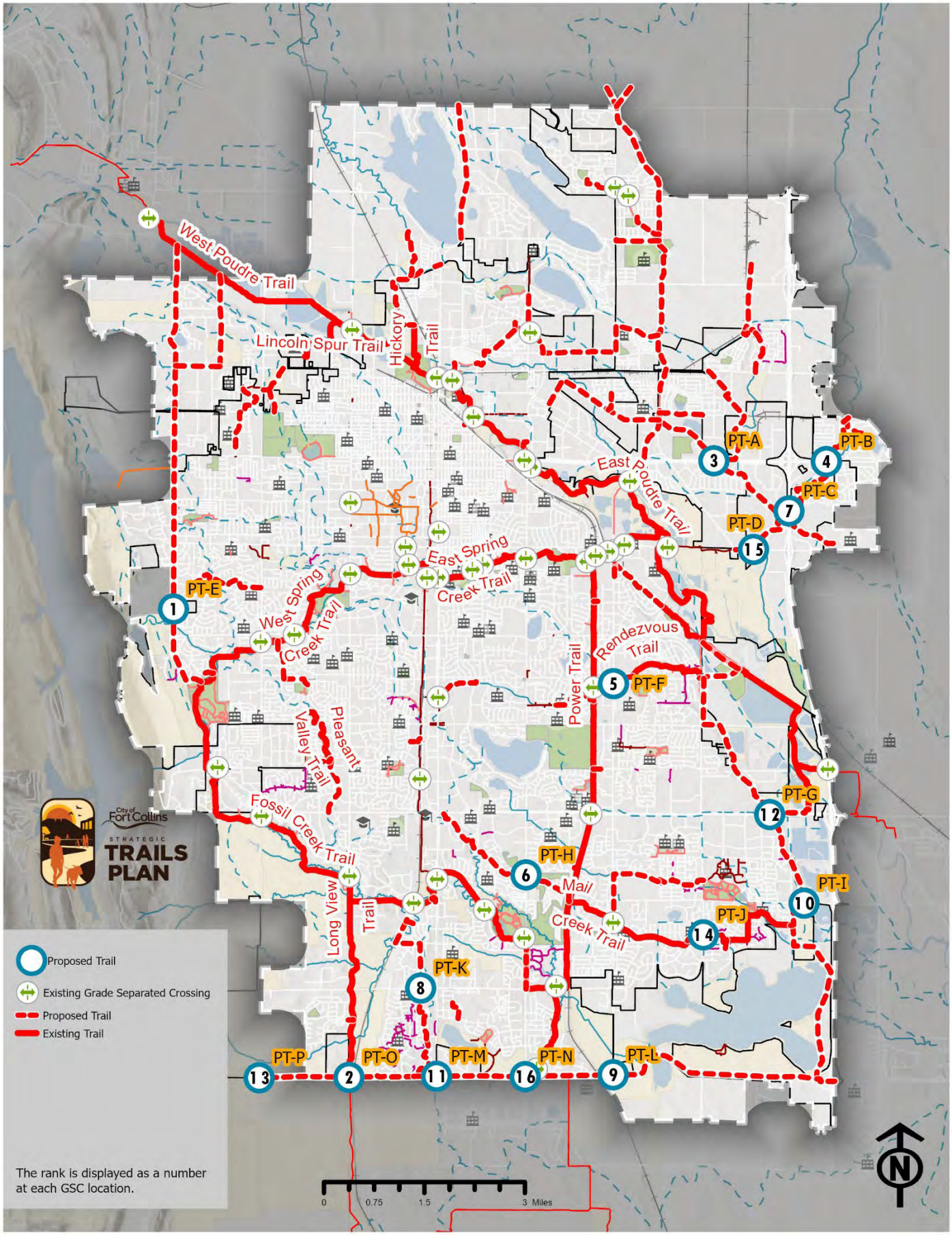


Table 5: Proposed GSCs on Railroads

Priority Ranking	Map ID	Narrative Description
Railroads		
1	RR-D	Mason Trail to Foothills Pkwy (RR overpass)
2	RR-C	Power Trail access crossing UPRR at Nancy Grey
3	RR-E	Power Trail access crossing UPRR at Caribou Drive
4	RR-A	Vine Dr. and BNSF east of Timberline
5	RR-B	Proposed Trail at GWRR and North Greenfield Dr.
6	RR-G	South Fort Collins Trail along Carpenter Rd. crossing BNSF
7	RR-F	South Fort Collins Trail along Carpenter Rd. crossing UPRR

Figure 3: Proposed GSCs on Railroads

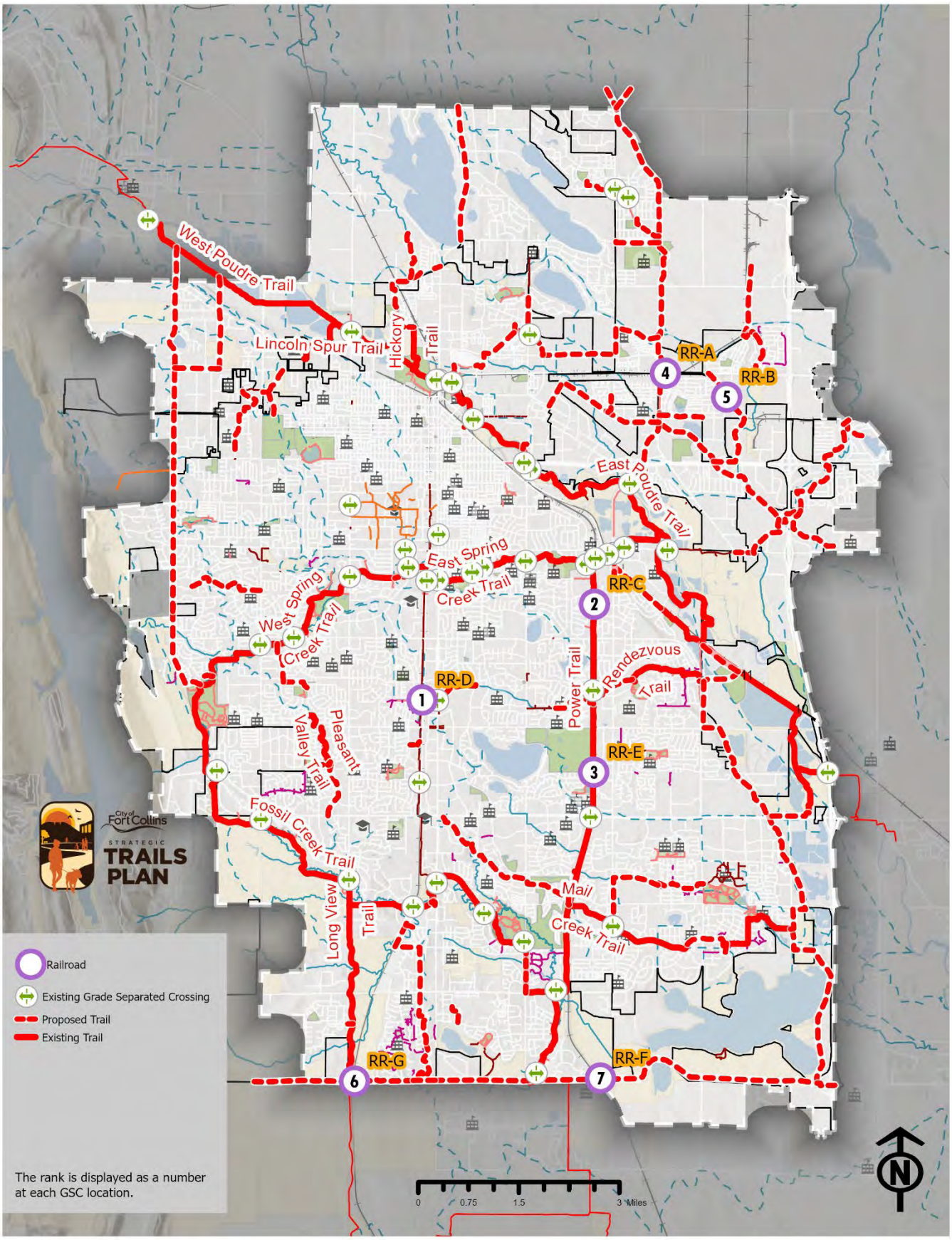
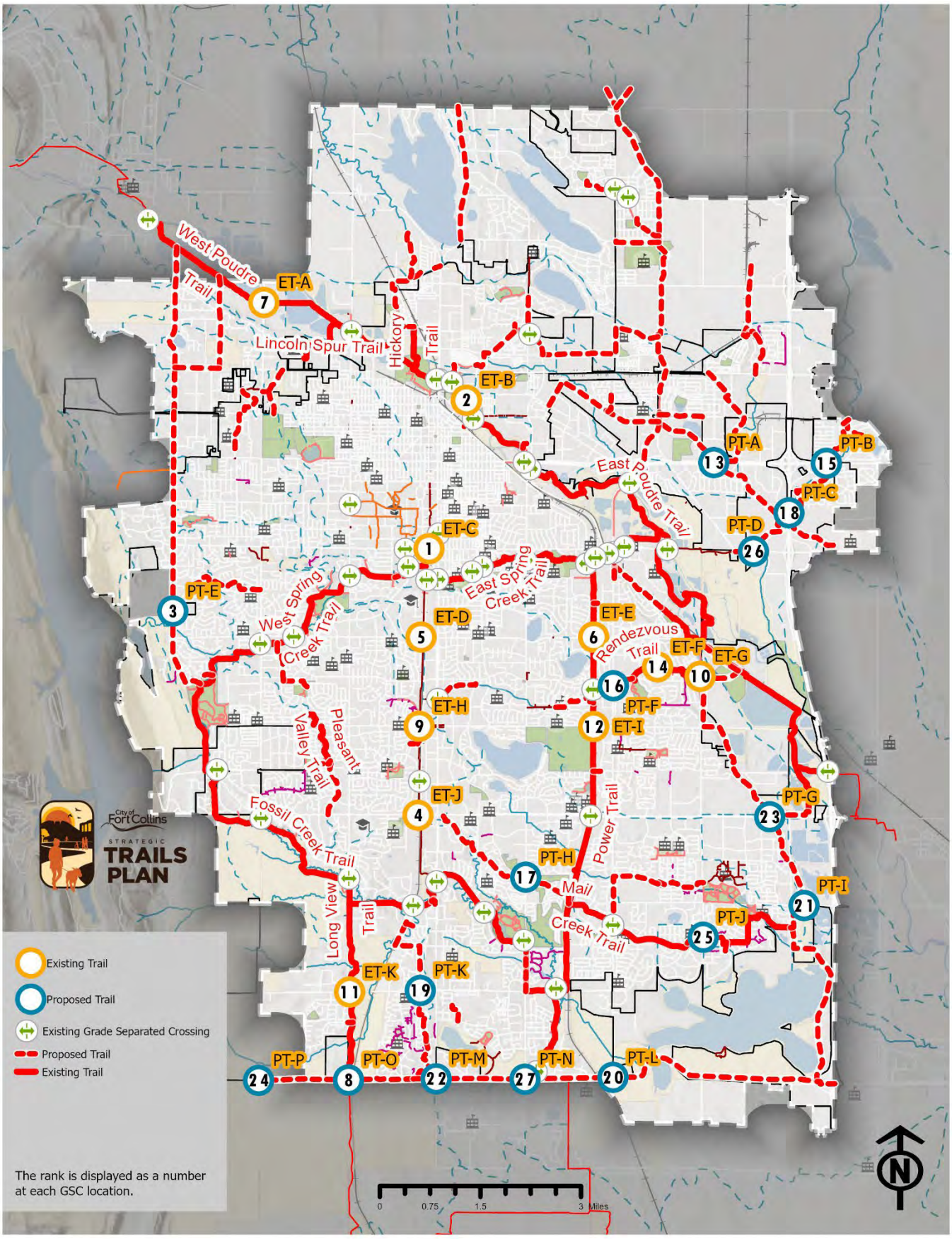


Table 6: All Proposed GSCs on Existing and Proposed Trails by Rank

Priority Ranking	Map ID	Narrative Description
1	ET-C	Mason Trail at Prospect Rd
2	ET-B	Linden St at East Poudre Trail
3	PT-E	LCR 42C at proposed trail along Overland Trl
4	ET-J	Harmony Rd at Mason Trail
5	ET-D	Drake Rd at Mason Trail
6	ET-E	Power Trail at Drake Rd
7	ET-A	N Taft Hill Rd at West Poudre Trail
8	PT-O	S Shields St at Proposed Trail south of Colina Mariposa NA
9	ET-H	Horsetooth Rd at Mason Trail
10	ET-G	Zeigler Rd at Rendevous Trail
11	ET-K	E Trilby Road at Longview Trail
12	ET-I	Power Trail at Horsetooth Rd
13	PT-A	E Mulberry St near Dawn Ave at proposed trail
14	ET-F	Rigden Pkwy at Rendevous Trail
15	PT-B	East Mulberry St at proposed trail along Boxelder Creek
16	PT-F	S Timberline Rd at Proposed Rendezvous Trail
17	PT-H	S Lemay Ave at proposed Mail Creek Trail
18	PT-C	I-25 at Proposed Trail along Boxelder Creek
19	PT-K	W Trilby Rd at proposed trail from Skyview Neighborhood
20	PT-L	S Timberline Rd at proposed trail along Carpenter Rd
21	PT-I	E County Rd 36/Ketcher Rd at proposed trail along FCRID
22	PT-M	S College Ave at proposed trail along Carpenter Rd
23	PT-G	E Harmony between Cinquefoil and Strauss Cabin at Proposed Trail
24	PT-P	S County Rd 19/Taft Hill and proposed trail to Coyote Ridge underpass and wildlife crossing
25	PT-J	Ziegler Rd at proposed Mail Creek Trail
26	PT-D	E Prospect Rd at proposed trail north of Running Deer NA
27	PT-N	S Lemay Ave at proposed trail along Carpenter Rd

Figure 4: All Proposed GSCs on Existing and Proposed Trails



Prepared for the
City of Fort Collins

BICYCLE & PEDESTRIAN

Grade Separated Crossing Prioritization Study

April 10, 2018

Prepared by
AECOM Imagine it. Delivered.

Table of Contents

Figures

1. Introduction

Purpose of Study

The addition of grade separated crossings for bicycles and pedestrians in the City of Fort Collins can create new connections, make existing connections safer, and enhance the low stress bicycle network. The City has already invested in constructing several new crossing locations, and there is an identified need for investment in many other areas in the City. This prioritization study established an approach to prioritize candidate bicycle and pedestrian grade separation locations to direct future investment towards locations that need it most using a data driven approach using both data and engineering judgement. The prioritization process included:

- Crossing opportunities identification
- Evaluation criteria identification and definition
- Data compilation
- Screening and prioritization according to the benefits generated for the bicycle network and the community

Project Management Team (PMT)

The multi-disciplined team included representatives from multiple City departments to provide a balanced comprehensive assessment of project opportunities.

- Aaron Iverson, Transportation Planning
- Nancy Nichols, Safe Routes to School
- Tessa Greegor, FC Bikes
- Nicole Hahn, Capital Projects
- Suzanne Bassinger, Park Planning and Development
- Tim Tuttle, Traffic Engineering

Consultant team staff from AECOM and Toole Design Group also participated on the PMT.

2. Crossing Opportunities Identification

Prior to this prioritization study, many crossing locations were discussed in previous studies in other contexts. A consolidation of various sources was required to generate a comprehensive list and GIS data layer that could be used to measure each potential crossing location.

Review of Previous Studies

Previous studies identified key crossing locations and pedestrian and bicycle connectivity in Fort Collins. Each of the following studies was reviewed for relevant information to inform the prioritization of grade separated crossing locations:

- Fort Collins Bicycle Master Plan (2014)
- Paved Recreational Trail Master Plan (2013)
- Fort Collins CIP (2012)
- Pedestrian Plan (2011)
- NFRMPO Non-Motorized Plan (2017)

In addition to locations identified in previous studies, the PMT identified other crossing locations that had been identified as potential grade separations in the context of other projects. Together, the PMT agreed upon the locations that should be evaluated for further prioritization. Figure 1 on the next page shows the top 25 priority locations.

Map of Locations

Potential new crossing locations and all existing grade separated crossings are identified below.

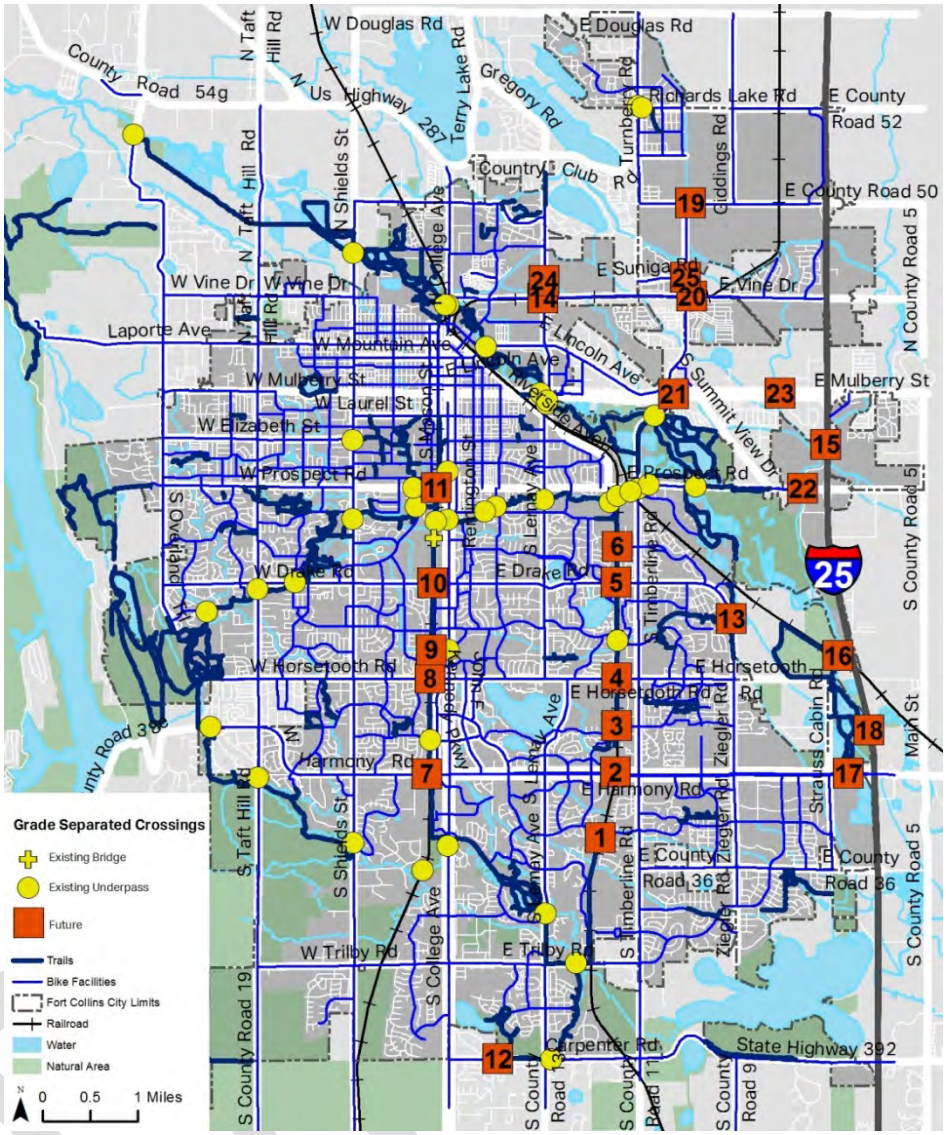


Figure 1: Identified Grade Separated Crossings

1	Power Trail Connection over UPRR	14	Future crossing over RR
2	Power Trail/Harmony	15	Boxelder Creek under I25
3	Caribou to Power Trail (RR Xing)	16	Poudre River Trail crossing GWR west of I25
4	Power Trail at Horsetooth Rd	17	Connection to future trail south of Harmony
5	Power Trail at Drake Rd	18	Poudre River Trail at I25 (funded with I25)
6	Nancy Gray to Power Trail (RR Xing)	19	Future Timberline Trail at Mountain Visa Dr
7	Mason Trail Crossing at Harmony Rd	20	Future Timberline Trail at Vine Dr
8	Mason Trail at Horsethooth Rd	21	Future Timberline Trail at Mulberry St
9	Mason Trail to Foothills Pkwy (RR overpass)	22	Future NE Trail at Prospect Rd (approximate)
10	Mason Trail at Drake Rd	23	Future NE Trail at Mulberry St (not in FC)
11	Mason Trail at Prospect Rd	24	Future Suniga crossing Lemay Ave
12	Carpender Road btwn College & Lemay	25	Future Suniga crossing Timberline Rd
13	Trail crossing Ziegler Rd near Drake Rd		

3. Prioritization Criteria

To support a data driven prioritization process, categories important to prioritization were identified and specific criteria were identified to roll up into a category score for each crossing. Specific criteria were identified within each category, as detailed below. The "range" identifies the metric for scoring or ranking each criterion, which was later used in spreadsheet format to compare criteria between each other.

Demand Category

Criteria	Definition	Source	Range
Bicycle Demand	Annual usage of bicycling infrastructure in the immediate area	Strava Metro 2016 total bike trips. For non-existent crossings, average activity taken on each side.	23 to 1339. No data available in several locations.
Pedestrian Demand	Walkability in the immediate area	Walkscore.com	1 to 76
Population Density	Existing populations within ½ mile of crossing	US Census ACS Block Group. Portion of block groups contained in buffer are proportionally weighted and summed.	371 to 3819
Youth Density	Population under 18 within ½ mile of crossing	US Census ACS Block Group. Portion of block groups contained in buffer are proportionally weighted and summed.	10% to 26%
Student Density	Number of schools within ½ mile of crossing	City of Fort Collins, Poudre School District	0-4
Senior Density	Number of seniors (65+) living within ½ mile of crossing	US Census ACS Block Group. Portion of block groups contained in buffer are proportionally weighted and summed.	6% to 22%

Connectivity Category

Criteria	Definition	Source	Range
Connectivity to Transit	Transit located within ½ mile of crossing	City of Fort Collins, Transfort bus stops.	MAX, bus, none
Part of an Enhanced Travel Corridor (ETC)	Yes/No if projects is located in Enhanced Travel Corridors, defined by the FC TMP	FC Transportation Master Plan (TMP)	Yes/No
Regional Trail Connection	Yes/No if new regional trail connection is created	Fort Collins GIS	Yes/No
Connects a Bicycle Path and/or Trail	Connects existing trail, connects future trail (if planned trail has not been constructed), or does not connect a trail	Fort Collins GIS	Yes/No
Alternate Crossing Location	Out of direction travel distance (in feet) of an alternate crossing location	Fort Collins GIS, Google	150 to 3620 ft
Connects to Existing	Yes/No if connects to existing streets and	Fort Collins GIS	Yes/No

Streets and Sidewalks	sidewalks		
Connectivity to Natural Resources	Proximity of walkable natural resources	Fort Collins GIS	0-5 min, 5-10 min, 10+ min
Connectivity to Destinations and Amenities (BNA)	Calculation of increased connectivity by low stress networks factoring in destinations and amenities over a 1 2/3 mile radius	BNA tool	0-100

Safety Category

Criteria	Definition	Source	Range
2020 Low-Stress Network Location	Crossing is along 2020 Low-Stress Network from Bicycle Master Plan	2014 Bicycle Master Plan	Yes/No
Crash Reduction Potential	Number of pedestrian and bicycle related crashes near crossing within last 5 years	Fort Collins Traffic Operations	Bike: no data,0,1,2-3,4-6; Ped: no data, 0,1
Quality of Existing Crossing	Existing quality level and availability of existing crossing	Aerial assessment and engineering judgement	No crossing, low, medium, high

Public Support Category

Criteria	Definition	Source	Range
Included in Previous Plan	Positively mentioned in documented planning study	Various studies	Yes/No

Social Equity Category

Criteria	Definition	Source	Range
Social Equity	Number of low and moderate income populations served within ½ mile of project	US Census ACS	15%-70%

Cost and Constructability Category

Criteria	Definition	Source	Range
Order of Magnitude Cost & Overall Feasibility	Estimate based on level of right of way impact, physical barriers/ infrastructure, and estimated cost	Based on professional engineering judgement	Low, Medium, Medium/High, High
Partnership or Funding Opportunities	Secured or near future non City funding and partnership opportunities	City of Fort Collins	no, partial, full

4. Screening Analysis

Data Collection

Available data for each crossing location was gathered and calculated. At some crossing locations, specific criteria data were not available (for example, future crossing locations where no existing bike activity occurs). Data sources for each of the criteria are documented in the spreadsheet tool.

Screening Process

To standardize the rollup of data in each criteria to the category score, the data for each criteria were standardized into a 0-100 scale score. Depending on criteria, locations with no data were given a score of 0 or other defined score.

A full set of collected data, category weighting, and screening results are available in the supplemental prioritization spreadsheet which is meant to be a living tool to be updated as future crossing locations are identified or evaluation criteria changes.

Figure 2 shows the results of the prioritization tool at the time this report was published.

	Demand ☑ Bicycle Demand ☑ Pedestrian Demand ☑ Population Density ☑ Youth Density ☑ Senior Density ☑ School Density	Connectivity ☑ Transit ☑ Nature ☑ ETC ☑ Regional ☑ Connects Path/Trail ☑ Alt Crossing ☑ Destinations (BNA)	Safety ☑ Crash Reduction Potential ☑ Low Stress Network ☑ Quality of Existing Crossing	Public Support ☑ Included in Previous Plan	Social Equity ☑ Low/Moderate Income	Cost and Constructability ☑ Order of Magnitude Cost ☑ Partnership/ Funding Opportunities	Overall Score	Overall Rank
	Category weights must add to 100%							
Map # Location	25%	25%	25%	0%	15%	10%	100%	
2 Power Trail/Harmony	80	57	100	0	37	63	71	1
3 Caribou to Power Trail (RR Xing)	72	61	100	0	43	13	66	2
11 Mason Trail at Prospect Rd	77	79	50	0	94	0	66	3
8 Mason Trail at Horsethooth Rd	78	66	50	0	82	13	62	4
1 Power Trail Connection over UPRR	69	57	100	0	29	0	61	5
9 Mason Trail to Foothills Pkwy (RR overpass)	71	79	33	0	83	13	60	6
6 Nancy Gray to Power Trail (RR Xing)	55	62	83	0	51	13	59	7
5 Power Trail at Drake Rd	68	62	67	0	49	25	59	8
10 Mason Trail at Drake Rd	83	57	50	0	65	0	57	9
4 Power Trail at Horsetooth Rd	69	61	67	0	33	25	56	10
7 Mason Trail Crossing at Harmony Rd	69	57	50	0	51	25	54	11
13 Trail crossing Ziegler Rd near Drake Rd	54	57	67	0	24	25	50	12
19 Future Timberline Trail at Mountain Visa Dr	51	48	50	0	52	50	50	13
21 Future Timberline Trail at Mulberry St	51	36	50	0	100	0	49	14
20 Future Timberline Trail at Vine Dr	52	37	50	0	69	13	46	15
25 Future Suniga crossing Timberline Rd	52	38	50	0	55	25	46	16
23 Future NE Trail at Mulberry St (not in FC)	52	29	50	0	83	0	45	17
22 Future NE Trail at Prospect Rd (approximate)	43	36	50	0	61	25	44	18
24 Future Suniga crossing Lemay Ave	50	41	50	0	41	25	44	19
16 Poudre River Trail crossing GWR west of I25	41	64	50	0	22	13	43	20
15 Boxelder Creek under I25	53	51	17	0	68	25	43	21
14 Future crossing over RR	51	36	50	0	57	0	43	22
18 Poudre River Trail at I25 (funded with I25)	49	50	50	0	23	0	41	23
12 Carpender Road btwn College & Lemay	46	50	33	0	36	25	40	24
17 Connection to future trail south of Harmony	44	46	50	0	22	13	40	25

Figure 2: Prioritization Results

5. Concept Design at Priority Locations

To be better prepared for future funding opportunities such as CIP funding, BFO offer, or grant applications, a more detailed analysis on the constructability of the top five priority crossing locations was completed to catalog order of magnitude cost estimates, major construction items, and major opportunities and constraints. The detailed analysis on these locations does not preclude moving forward with other locations but serves as a starting point to direct future investments and grant opportunities. Variables, such as new funding sources, could become available for locations outside of these five which could rank others higher in the future. The intent is to make this a living tool that can be modified over time.

The top five locations from the screening process are:

1. Power Trail/Harmony
2. Caribou to Power Trail (RR Xing)
3. Mason Trail at Prospect Rd
4. Mason Trail at Horsetooth Rd
5. Power Trail Connection over UPRR

In addition to these five crossings, the PMT decided to also investigate Mason Trail at Drake Rd due to the planned development in the area that could potentially contribute towards funding a new crossing.

Design Standards and Assumptions

Concept development of pedestrian and bicycle grade separated crossings for each location included an evaluation of bridge and underpass options depending on adjacent topography and site constraints. A wide variety of structure types are available at each location, but for the purposes of cost estimating the following general assumptions were made on structure type.

- Grade separated approaches and crossings were designed to accommodate a maximum grade of five percent (conforms with Americans with Disabilities Act (ADA) Standards)
- The minimum inside clear width of a pedestrian bridge on a pedestrian accessible route is 8 feet (AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, 2004).
- Pedestrian grade separations at railroad locations shall be in accordance with the 2016 BNSF-UPRR Railroad Guidelines for Railroad Grade Separation Projects.
- Underpass options assume the following:
  - Width of 16 feet and vertical clearance of 12 feet
  - 3-ft and 6-ft vertical cover over roadways and railroad tracks; respectively.
  - Headwalls extend approximately 5-ft (min) beyond edge of roadway or sidewalk.
  - Retaining wall and approach ramp geometric requirements based on 5% approach grades.

Power Trail at Harmony

The existing Power Trail alignment stretches 5 miles from Trilby Road on the south, to Prospect Road on the north, paralleling the west side of the Union Pacific Railroad. A 1-mile gap in the trail exists in the vicinity of Harmony Road due to the lack of a safe crossing location. Trail counts for 2017 at Horsetooth Road (1-mile north of Harmony Road) equaled 120,000. At the Southridge Greens counter (1-mile south of Harmony) the trail count equaled 78,000. The Power Trail has been identified by the North Front Range MPO as Fort Collin's portion of the Front Range Trail, identified by the state of Colorado to one day to stretch from New Mexico to Wyoming. The missing section of trail and grade separated crossing at Harmony Road will complete this popular and heavily used trail through Fort Collins.

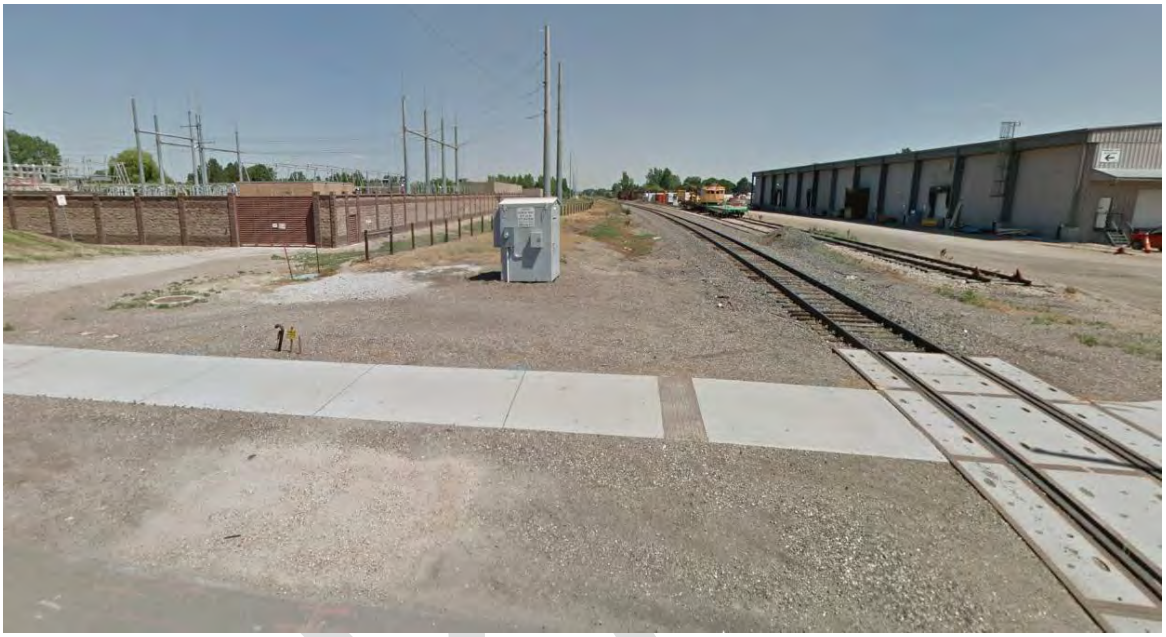


Figure 3: View from Harmony Rd Looking North

Figure 4: View from Harmony Rd Looking South

An underpass with ramps aligned parallel to the trail is the concept that was considered as a design in this location. The trail would be extended to the north and south of the crossing to connect with the existing Power Trail. Other tunnel and bridge concepts could be further explored as part of a more detailed design effort.

Power Trail at Harmony Assumptions

- Assume 12 feet high by 16 feet wide by 200 feet long
- Assume 1 foot slab and wall thickness
- Assume 3-ft of cover (Roadway to Top of Structure)
- Assume 8" of PCCP pavement removal and replacement
- Structure excavation is computed in accordance with the CDOT M&S standard specifications.
- Retaining walls extend along a straight 5% grade between the bottom of the underpass to finished grade
- Assume north and south approaches are 240 feet each.
- Assumes 4850 linear feet of trail required to connect with existing trails

Power Trail at Harmony Challenges

- Right of way/easement requirements likely needed from railroad. Temporary signals may be required to accommodate the phased construction
- City of Fort Collins Utilities' substation on the north side of Harmony Road is an unknown utility conflict and will require significant design coordination efforts
- Manhole structures both north and south of Harmony Road may require relocation
- Constraint for the trail is limited at railroad right of way
- Revisions to the roadside drainage along Harmony Road are anticipated
- Potential PCBs from Fort Collins Utilities' substation
- Parcel south of Harmony Rd has parking lot that extends into the right of way where the trail would go. This will need to be addressed with the parcel owner.

Power Trail at Harmony Concept level cost detail

- See cost estimate sheet for a preliminary cost estimate

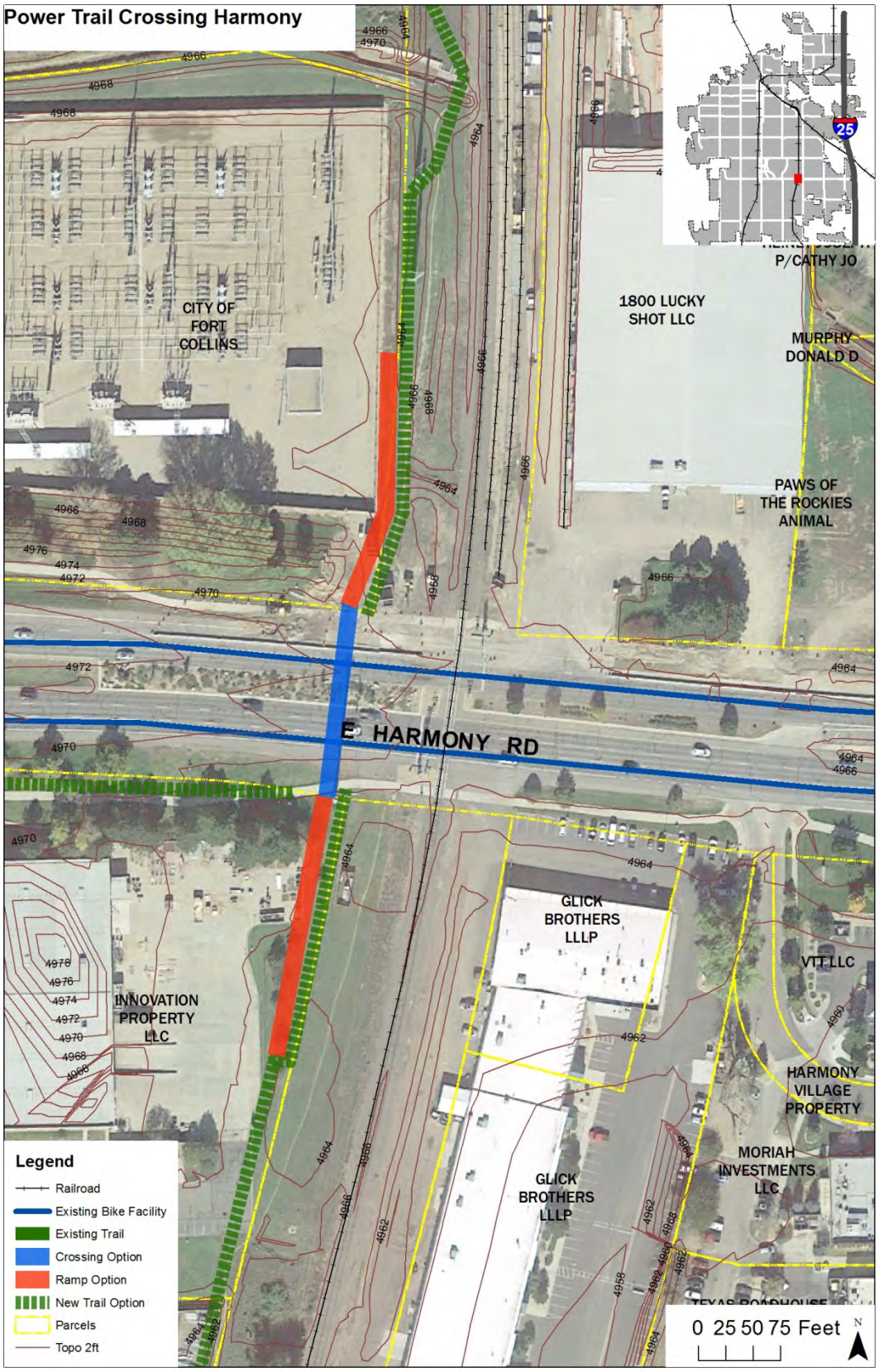


Figure 5: Power Trail at Harmony Underpass Concept

Mason Trail at Prospect Road

The Mason Trail runs east of the railroad and MAX transitway on the north side of Prospect Rd, and switches to the west side of the railroad south of Prospect Rd. Trail users cross the transitway and railroad at grade and then cross Prospect Rd at a signalized at grade crossing. A grade separated crossing at this location could create a more direct and safer route for trail users and could also improve traffic conditions.

Figure 6: Mason Trail at Prospect Rd Looking North

Figure 7: Mason Trail at Prospect Rd Looking South

This location is challenging because the Mason trail moves from the east side of the railroad on the north side of Harmony Road to the west side of the railroad on the south side of Harmony Road. Several concepts were explored, and the option that was explored as part of this effort is a tunnel under Prospect Road that does not cross the railway and transitway to join up with the Mason Trail. With this tunnel, trail users would have a grade separated crossing at Prospect Road but would still need to cross at grade over the railroad and transitway. A switchback ramp on the north side of Prospect was developed to allow this movement to happen, and a straight ramp on the south side was developed to join up with the Mason Trail.

Mason Trail at Prospect Road Assumptions

- Tunnel crossing Prospect Rd only (not crossing the railroad)
- Assume 12 feet high by 16 feet wide by 75 feet long. (Beneath Prospect, West of Mason)
- Assume 1 foot slab and wall thickness
- Assume 3-ft of cover (Roadway to Top of Structure)
- Assume 8" of PCCP pavement removal and replacement
- Structure excavation is computed in accordance with the CDOT M&S standard specifications.

- Assume underpass structure extends 10 feet past either side of roadway
- Retaining walls extend along a straight 5% grade between the bottom of the underpass to finished grade. North of Prospect Road, sidewalk to trail access via switch back is proposed
- Assume north and south approaches are 260 feet and 300 feet; respectively.

Mason Trail at Prospect Road Challenges

- Construction of this underpass will still require an at-grade crossing of the railroad and MAX guideway
- Right of way/easement requirements likely needed from railroad. Relocation of the railroad signal/communication house at the north side of Prospect Road may have significant cost impacts
- Revisions to the roadside drainage along Prospect Road are anticipated
- Retaining walls parallel to railroad tracks may require shoring and need to be designed to accommodate E80 railroad live load surcharge loading and will have significant cost impacts

Mason Trail at Prospect Road Concept level cost detail

- See cost estimate sheet for a preliminary cost estimate

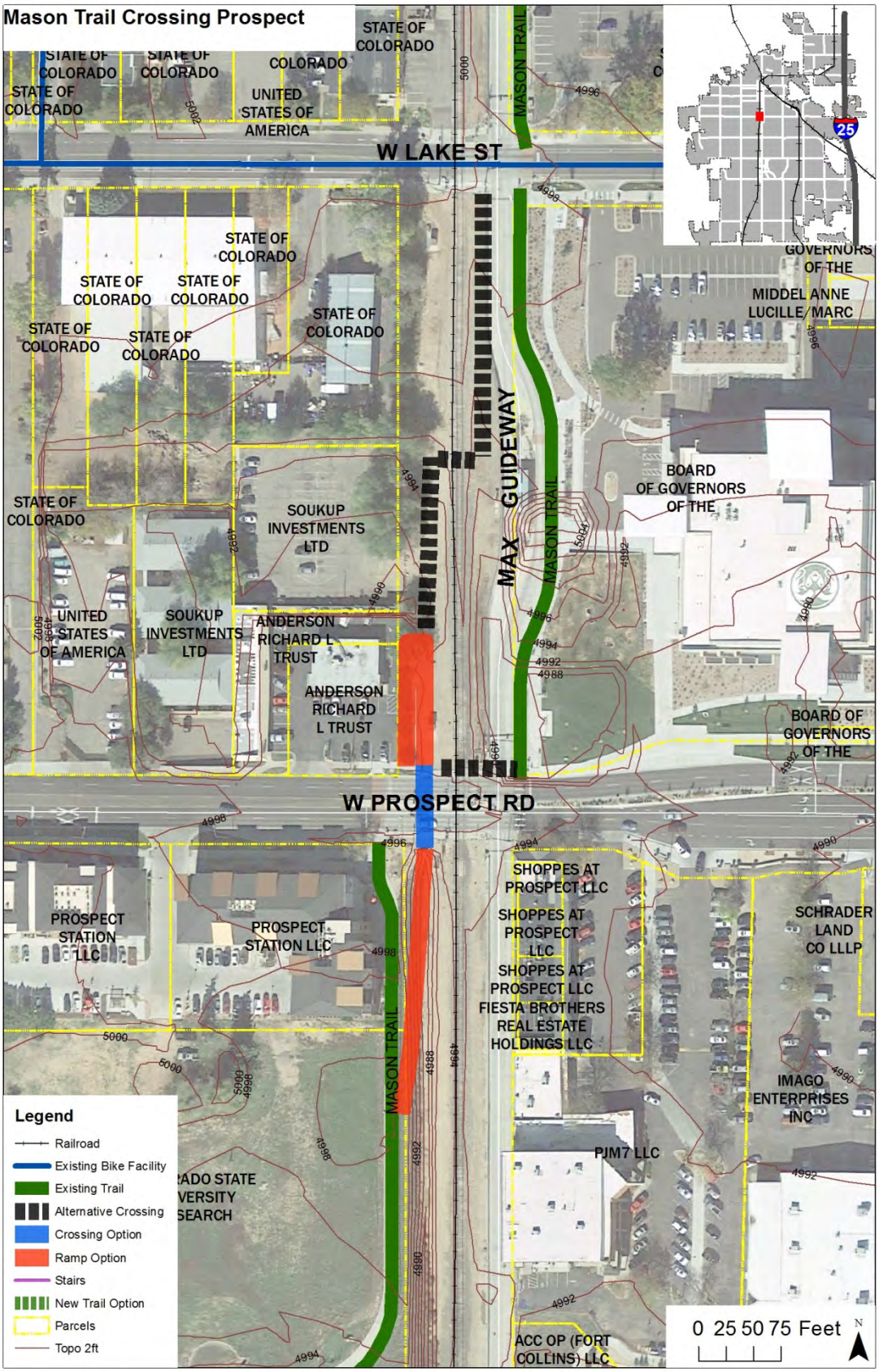


Figure 8: Mason Trail over Prospect Concept

Mason Trail at Horsetooth Rd

The Mason Trail is located along the west side of the railroad both north and south of Horsetooth Road. When continuing on the trail across Horsetooth Road, trail users cross five travel lanes at grade at the signalized crossing. An underpass in this location would reduce delay for Mason Trail users and vehicles traveling on Horsetooth Road.

Figure 9: Mason Trail at Horsethooth Rd Looking South

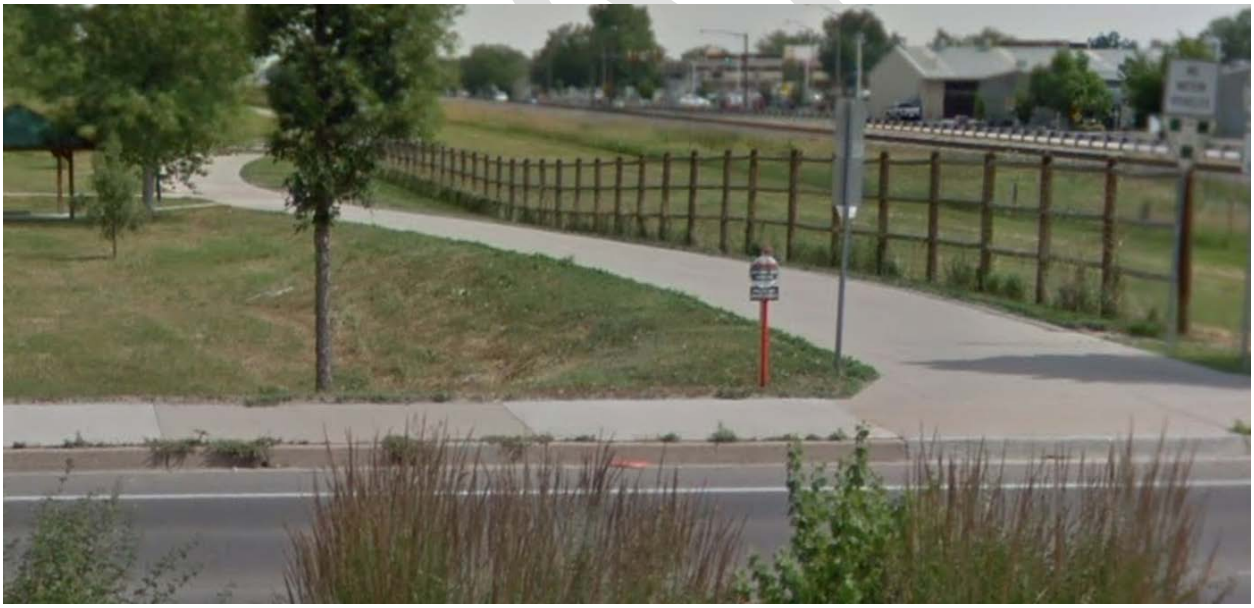


Figure 10: Mason Trail at Horsetooth Rd Looking North

The design concept explored for this location includes an overpass over Horsetooth Road on the west side of the ditch away from the railroad and utility conflicts present at the existing at grade crossing location. The ramp on the north extends down from the bridge to the ditch where it crosses and then continues to descent until it meets the Mason Trail. On the south side of Horsetooth Road, the ramp extends down between the surface parking lot and utility until it joins the existing Mason Trail.

Mason Trail at Horsetooth Road Assumptions

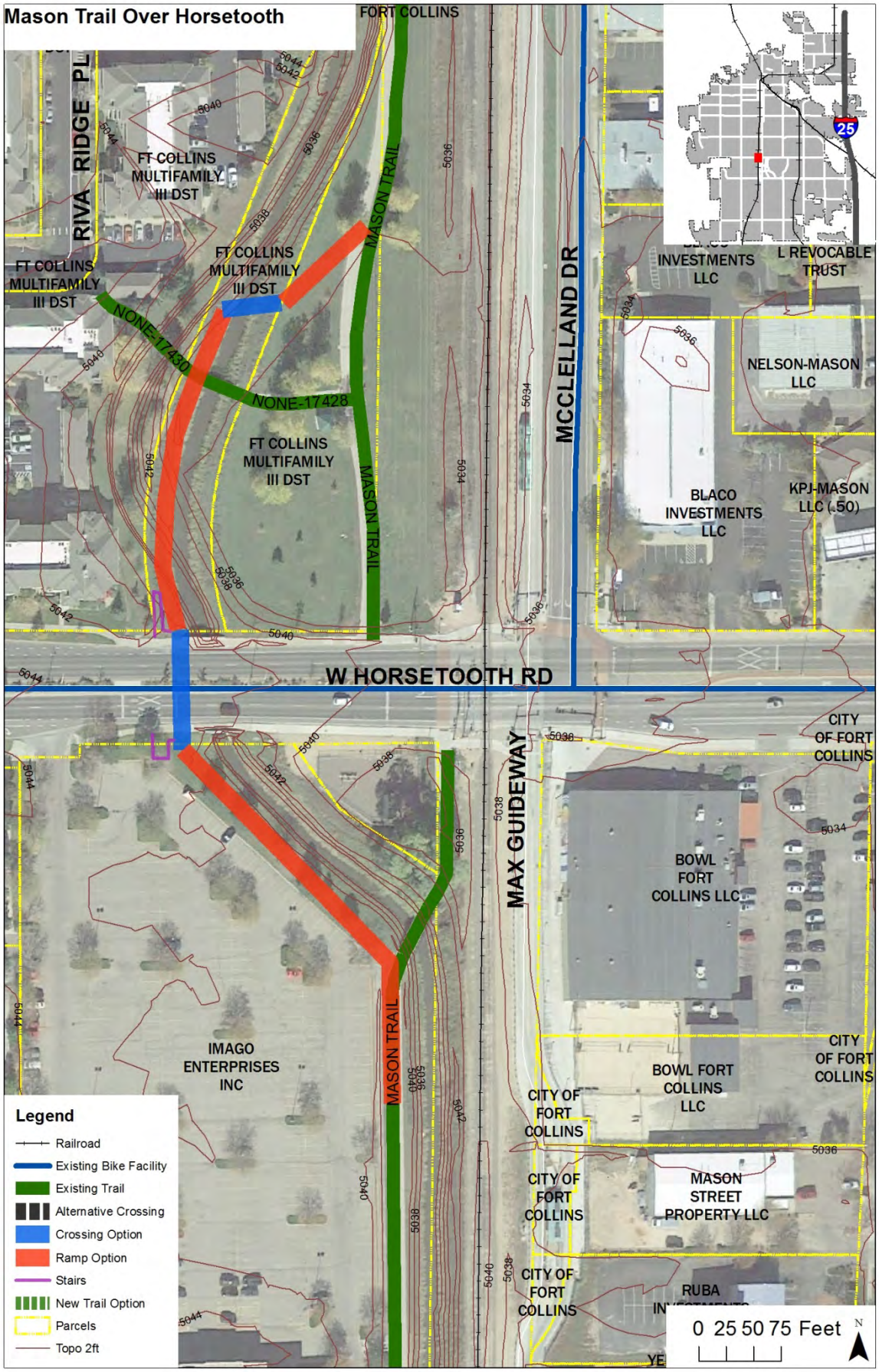
- Assumes ramp and stairway access only (i.e. no elevators)
- Assume pre-fab steel box truss structure types across Horsetooth Road and Ditch
- Assume 20 feet vertical clearance over Horsetooth Road
- Structure excavation is computed in accordance with the CDOT M&S standard specifications.
- Retaining walls are required along the elevated portions of the trail approaches both north and south the Horsetooth Pedestrian Bridge
- Ramp lengths are based on 5% grade
- Pedestrian bridge lengths over Horsetooth Road and the Ditch are 110 ft and 60 ft; respectively
- Ramp between bridge over Horsetooth and bridge over creek - 300 feet
- Ramps up to bridge over creek - 100ft each
- South Ramp up to Pedestrian bridge over Horsetooth - 400 feet

Mason Trail at Horsetooth Rd Challenges

- Right of way coordination along the west side both north and south of Prospect Road could be problematic

Mason Trail at Horsetooth Rd Concept level cost detail

- See cost estimate sheet for a preliminary cost estimate


Mason Trail Over Horsetooth
FORT COLLINS
RIVA RIDGE PL
FT COLLINS MULTIFAMILY III DST
FT COLLINS MULTIFAMILY III DST
FT COLLINS MULTIFAMILY III DST
FT COLLINS MULTIFAMILY III DST
MASON TRAIL
MASON TRAIL
MASON TRAIL
NONE-17430
NONE-17428
MCCLELLAND DR
INVESTMENTS LLC
L REVOCABLE TRUST
NELSON-MASON LLC
BLACO INVESTMENTS LLC
KPJ-MASON LLC (.50)
W HORSETOOTH RD
MAX GUIDEWAY
CITY OF FORT COLLINS
BOWL FORT COLLINS LLC
BOWL FORT COLLINS LLC
CITY OF FORT COLLINS
CITY OF FORT COLLINS
CITY OF FORT COLLINS
MASON STREET PROPERTY LLC
CITY OF FORT COLLINS
IMAGO ENTERPRISES INC
RUBA
Legend
Railroad
Existing Bike Facility
Existing Trail
Alternative Crossing
Crossing Option
Ramp Option
Stairs
New Trail Option
Parcels
Topo 2ft
0 25 50 75 Feet
N

Mason Trail at Drake

The Mason Trail runs along the west side of the railroad both north and south of Drake Road. When continuing on the trail across Drake Road, trail users cross five travel lanes at grade at the signalized crossing. An underpass in this location would reduce delay for trail users and vehicles traveling on Drake Rd.

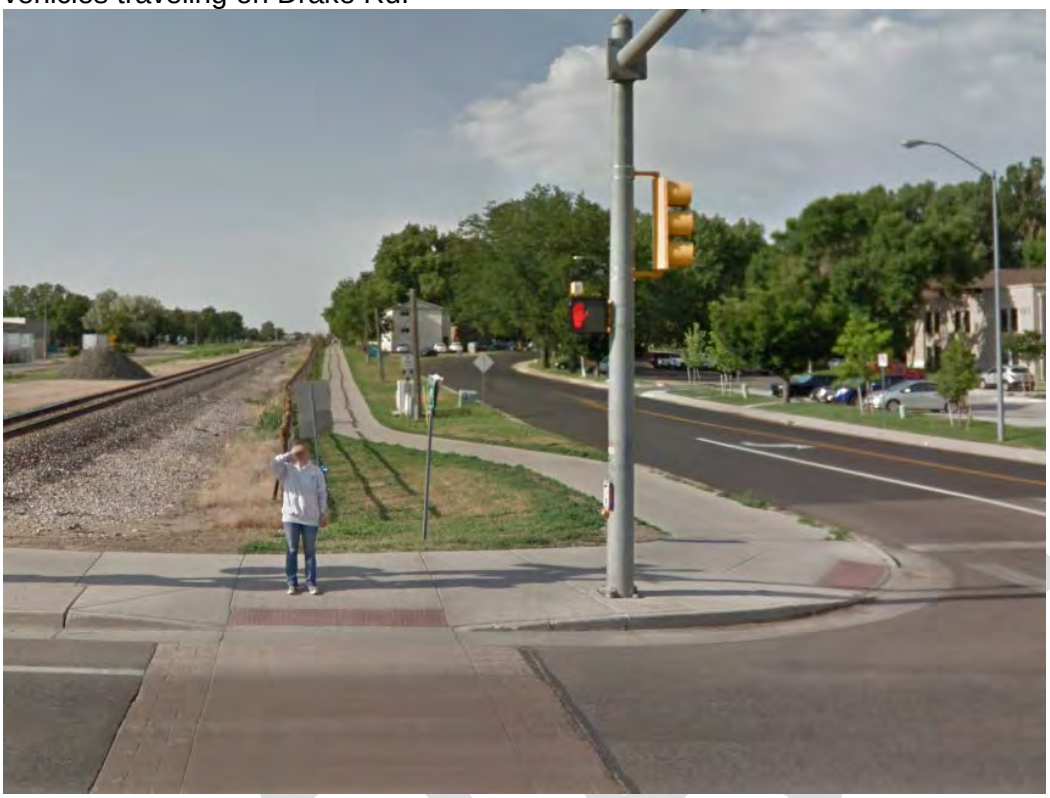


Figure 11: Mason Trail at Drake Looking South

Figure 12: Mason Trail at Drake Looking North

The tunnel concept developed for this location includes a tunnel adjacent to the railroad and ramps that run parallel to the railroad until they meet grade at the existing Mason Trail. Trail access points from Drake Road to the underpass are located immediately adjacent to the ramps on the west side to provide access to Drake Road.

Mason Trail at Drake Assumptions

- Assume 12 feet high by 16 feet wide by 130 feet long
- Assume 1 foot slab and wall thickness
- Assume 3-ft of cover (Roadway to Top of Structure)
- Assume 8" of PCCP pavement removal and replacement
- Structure excavation is computed in accordance with the CDOT M&S standard specifications.
- Retaining walls extend along a straight 5% grade between the bottom of the underpass to finished grade
- Assume north and south approaches are 320 feet and 360 feet; respectively

Mason Trail at Drake Challenges

- Available space on south side of Drake Road is ~30 feet between Redwing Road and the railroad right of way
- Tight constraint
- Right of way/easement requirements likely needed from railroad. Relocation of the railroad signal/communication house at the north side of Drake Road may have significant cost impacts
- Revisions to the roadside drainage along Drake Road are anticipated
- Retaining walls parallel to railroad tracks may require shoring, need to be designed to accommodate E80 railroad live load surcharge loading and will have significant cost impacts

Mason Trail at Drake Concept level cost detail

- See cost estimate sheet for a preliminary cost estimate

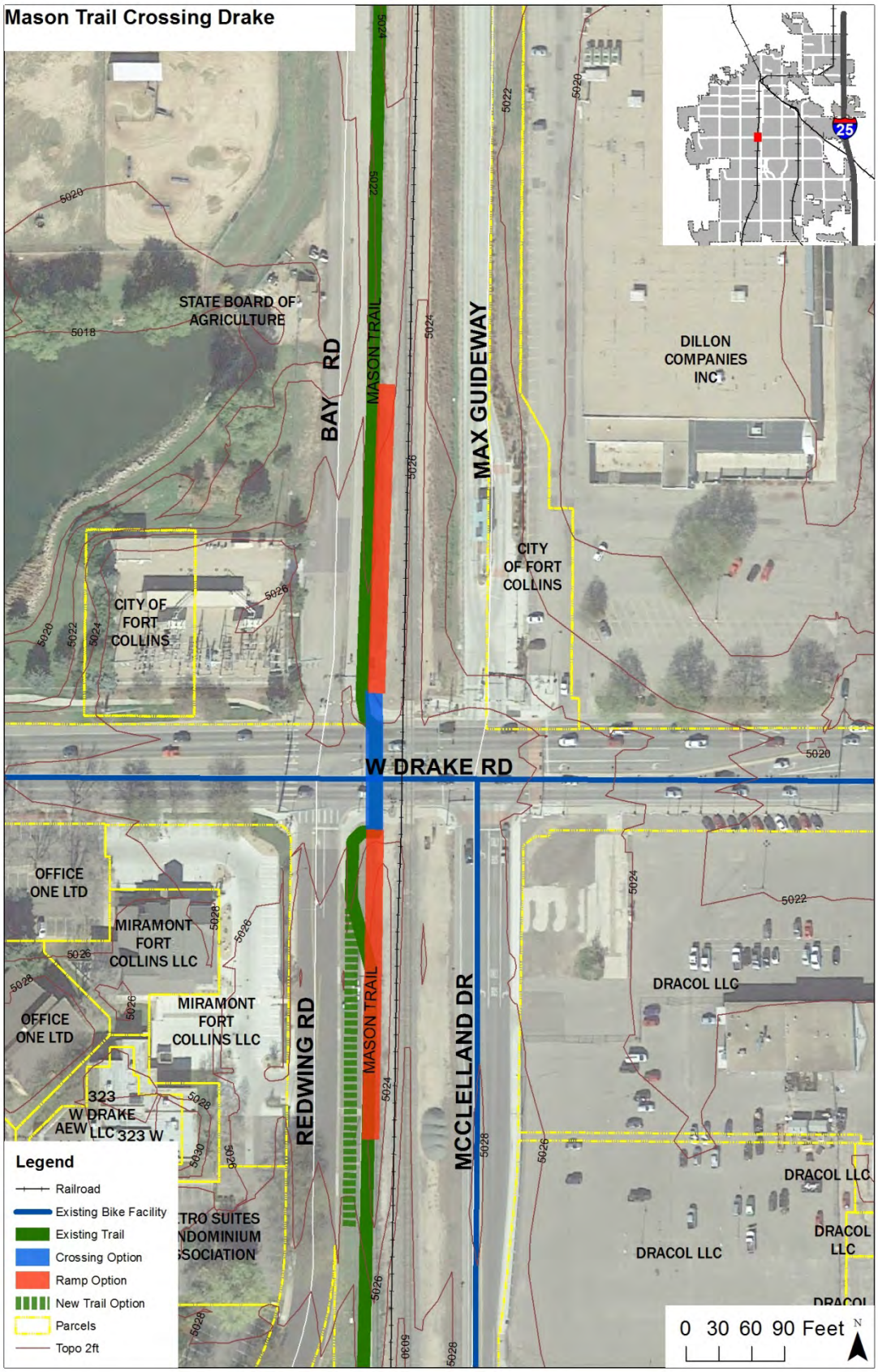


Figure 13: Mason Trail at Drake Rd

Caribou to Power Trail (RR Xing)

Bicycle and pedestrian access to the Power Trail from the neighborhoods in southern Fort Collins are limited to existing intersection crossings on the east side of the railroad. Creating a new grade separated crossing over the railroad at a location between major intersections would increase accessibility for residents and would also link together east/west on street bike routes on Caribou Drive which is located about a half mile north of Harmony Road and half a mile south of Horsetooth Road.

Figure 14: View from Caribou Dr Looking West Towards Railroad

The underpass concept explored with this concept includes a ramp on the east side of the railroad in between the buildings and a ramp on the west side of the railroad immediately extending north until it meets the Power Trail at grade.

Caribou to Power Trail (RR Xing) Assumptions:

- Assume 12 foot high by 16 foot wide by 76 foot long
- Assume 1 foot slab and wall thickness
- Assume 6-ft of cover (RR to Top of Structure)
- Assume west and east approaches are 360 feet and 320 feet; respectively
- Structure excavation is computed in accordance with the CDOT M&S standard specifications

Caribou to Power Trail (RR Xing) Challenges:

- West retaining walls parallel to railroad tracks may require shoring, need to be designed to accommodate E80 railroad live load surcharge loading and will have significant cost impacts
- Limited right of way along the east trail approach may require non-conventional retaining wall and will likely increase project costs
- Right of way/easement requirements likely needed from railroad

Caribou to Power Trail (RR Xing) Concept level cost detail

- See cost estimate sheet for a preliminary cost estimate

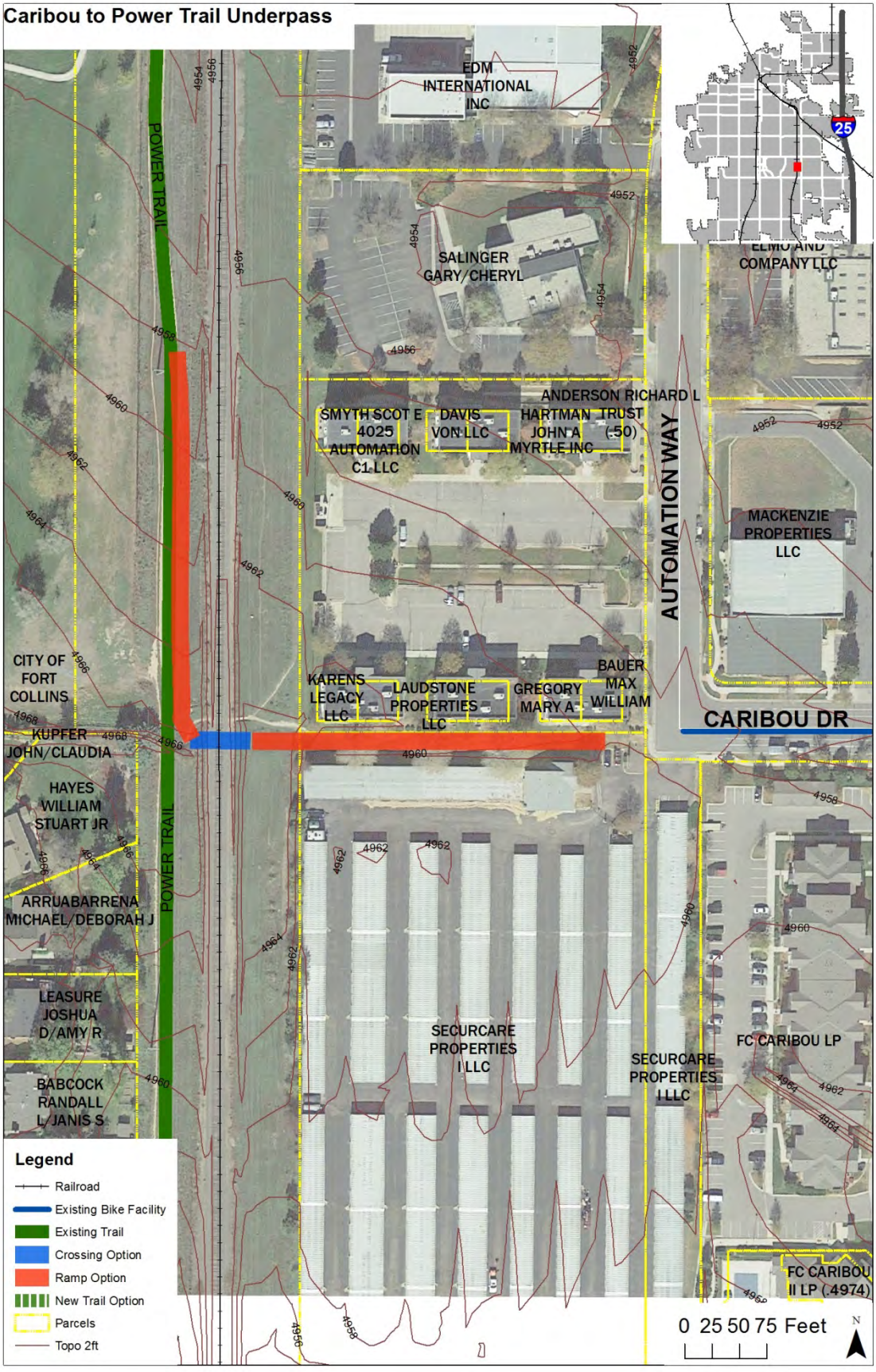


Figure 15: Caribou to Power Trail Crossing

Power Trail Connection over UPRR

The UPRR presents a significant barrier to access of the Fort Collins trail system. The area east of the RR and south of Harmony Road does not have safe access to Fort Collins recreational trail access. In addition, this crossing would be the only bike/ped crossing of the railroad in a 2-mile stretch. Several unprotected "social crossings" of the tracks, with steep embankments, are evident in this area and indicate the need for a safer crossing. Additional development currently underway in the area will only add to this crossing pressure.

A detailed feasibility study for several crossings of the UPRR around this location to access the Power Trail from the east side of the railroad was completed by Michael Baker International on April 29, 2016. Several locations and structure types were studied in the two-mile corridor west of Timberline Road to find a solution that provides the best combination of user convenience and least impact on the surrounds. The three general locations studied for possible grade separated crossings of the UPRR included:

- Keenland Underpass – at the Keenland Drive/Battlecreek Drive intersection
- Siphon Overpass – at the Mail Creek Ditch siphon crossings of the UPRR
- South Overpass – two sites north of Trilby Road

Based on the result of the study, the City would like to proceed with Siphon Overpass due to the central location between Harmony Road and Trilby Road (1 mile from each), likelihood of reducing illegal at grade crossings of UPRR, and alignment with the Trail Master Plan to the east along Mail Creek Ditch. Five concepts were developed at this location, but for the purposes of this evaluation, Siphon Overpass Concept 3 was selected as the most viable concept that could re-utilize an existing 160 foot bridge that was removed from a different location.

Power Trail Connection over UPRR Assumptions:

- Assumes ramp and stairway access only (i.e. no elevators)
- Assumes rehabilitation and relocation of the Mulberry Pedestrian Bridge.
- Stairway assumes a rise height of 7-inch
- Assumed a lower bridge cost (according to email, there is potentially an existing bridge 'saved' for this)
- Assume a required 25 feet of vertical clearance over UPRR tracks
- Assume structure dimensions of 16 feet x160 feet
- Assume a ramp width of 16 feet and a length of 129 feet to the west and 158 feet to the east
- Use Siphon option 3 from feasibility study

Power Trail Connection over UPRR Challenges:

- Potential visual impacts to existing homes and future development to the east
- Coordination with ditch company
- Overhead transmission lines may present construction and permanent challenges
- Right of way/easement requirements likely needed from railroad

Power Trail Connection over UPRR Concept level cost detail

- See cost estimate sheet for a preliminary cost estimate

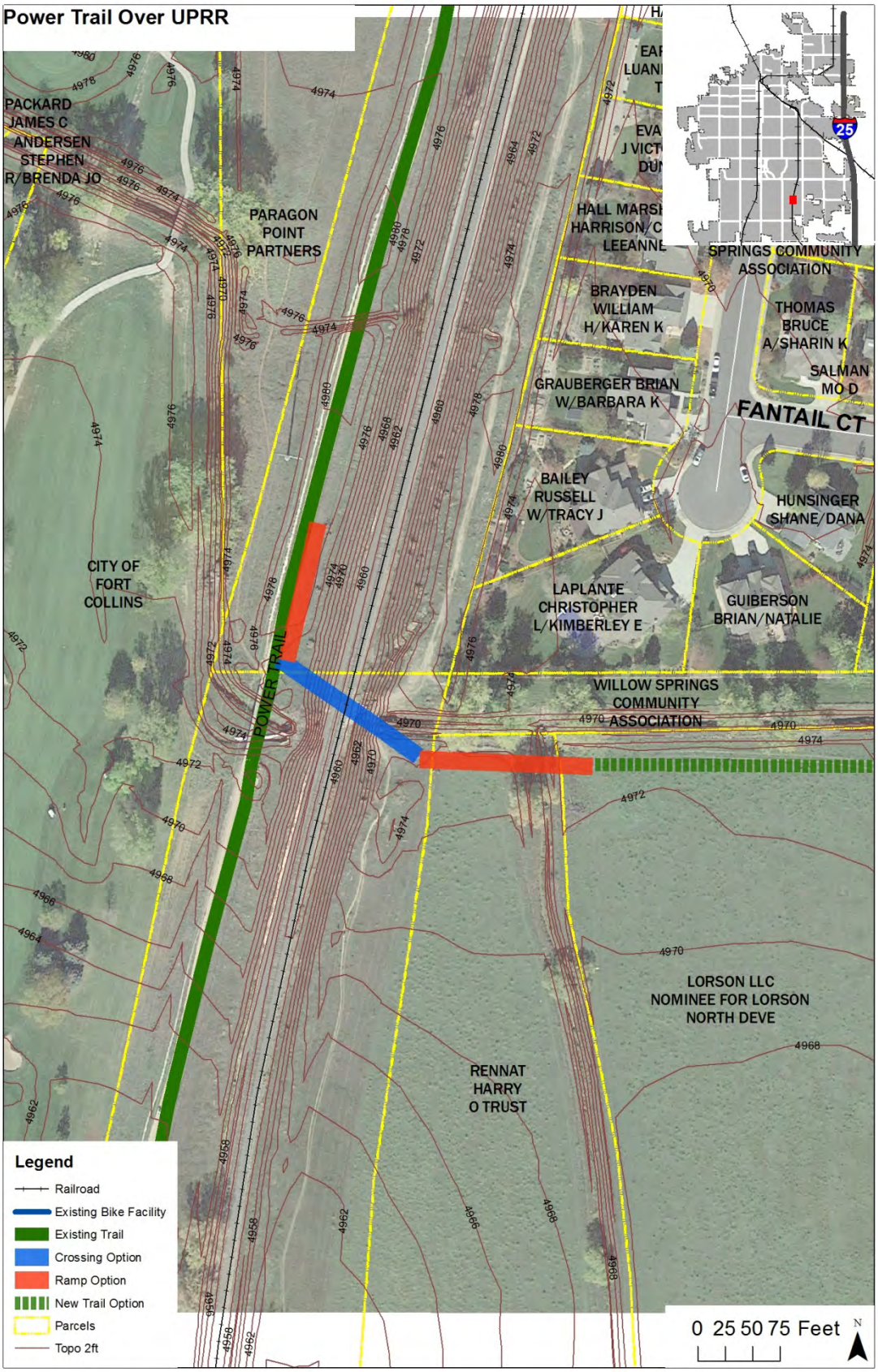


Figure 16: UPRR Connection to Power Trail

6. Next Steps

This prioritization study resulted in an organized prioritized list that can be used by the City moving forward as decisions are made about funding new capital investments. Immediate next steps to be undertaken by the city include:

- Focus on designing and funding the top six locations identified in this study. Discuss options to advance the options with City leadership, including City Council.
- Present all 25 concepts and the prioritization process to the public as part of the Transportation Master Plan (TMP) public process. Feedback received at this level can be added back to the prioritization tool to further refine the prioritization. This process could move popular projects that are prioritized lower towards the top of the list.
- In addition or potentially in lieu of presenting all options, present the top level concepts that were explored in this report to gather additional feedback. This type of feedback could inform City staff as to which option should be next in line for public investment.
- In the long term, explore the additional 19 bicycle and pedestrian grade separated crossing locations at a deeper concept level in a similar way the top six were explored in this report.

Appendix A Cost Estimate Details

Summary of Estimated Project Worksheets			
Concept/Location	**Type**	**Subtotal of Construction Costs**	**Total Program Cost**
Power Trail Underpass at Harmony	Underpass	$ 5,499,006	$ 7,123,758
Caribou to Power Trail RR Underpass	Underpass	$ 4,004,872	$ 5,256,090
Mason Trail Underpass at Prospect	Underpass	$ 4,954,421	$ 6,318,027
Mason Trail Underpass at Drake	Underpass	$ 5,787,958	$ 7,234,948
Mason Trail Overpass at Horsetooth	Underpass	$ 3,957,760	$ 5,072,200
Power Trail Connection over UPRR	Bridge	$ 1,394,275	$ 1,900,843

Estimated Project Worksheet
Harmony & Power Trail Underpass

	UNITS	QUANTITY	UNIT COST	TOTAL COST	
Clearing & Grubbing	SY	2175	$5.00	$10,874	
Structure Excavation (and backfill)	CY	5476	$50.00	$273,778	
Embankment Material	CY	135	$25.00	$3,384	
Underpass Structure	SF	3600	$250.00	$900,000	
Trail Section (6 inch)	SY	10283	$25.00	$257,067	
Retaining Walls	SF	7200	$75.00	$540,000	
Roadway Pavement Removal	SY	383	$10.00	$3,827	
HMA Pavement	TON		$125.00	$0	
PCCP Pavement	SY	352	$75.00	$26,367	
Guardrailing	LF	40	$50.00	$2,000	
Temporary RR Signals	EA	1	$100,000.00	$100,000	
	% RANGE		**% USED**	**COST**	
Project Construction Bid Items	Project Dependent		N/A	**$2,117,297**	(A)
Contingencies	(10% - 30%) of (A)		30%	$635,189	(B)
Urban Design	(6-10%) of (A+B) Default = 5%		15%	$317,595	
ITS/Lighting	(6-10%) of (A+B) Default = 6%		3%	$82,575	(C)
Utility Relocation	(3-10%)of (A+B) Default = 6%		20%	$550,497	(D)
Drainage/Erosion Control/SWMP	(1-5%) of (A+B) Default = 5%		10.0%	$275,249	(E)
Construction Signing and Traffic Control (Railroad Coordination)	5 to 25% of (A+B) Default = 20%		20%	$550,497	(F)
Mobilization	(4 to 10%) of (A+B+C+D+E+F) Default = 7%		7%	$294,791	(G)
Total of Construction Bid Items	(A+B+C+D+E+F+G)			**$4,823,690**	(H)
Force Account - Utilities	(1 to 2%) of (H) Default = 2%		2%	$96,474	(I)
Force Account - Misc.	(10 to 15%) of (H) Default = 12%		12%	$578,843	(J)
Subtotal of Construction Cost	(H+I+J)			**$5,499,006**	(K)
ROW Requirements		**SF**	**UNIT COST**		
		10000	$ 25.00	$250,000	
Designer Fee	(10%) of (K)		10%	$549,901	
Constr Mmgt/Inspection	(10 to 25%) of (K)		15%	$824,851	
Total Program Cost				**$7,123,758**	

Str. Length	200	ft
Span	16	ft
Wall Thickness	1	ft
Total Width	18	ft
Height	12	ft
Top Slab	1	ft
Cover	3	ft
Total Height	16	ft
Approach A	364	ft
Approach B	368	ft

Retaining Walls		
Approx. Length	240	ft
Area	1800	sf/wall
PCCP Pavement	8	in
Roadway	113	ft

$500 may have been based on total project cost

A		
Top Elevation	4970	
Culvert Trail Elevatio	4954	
End Elevation	4966	
Approach A	240	ft
B		
Top Elevation	4970	
Culvert Trail Elevatio	4954	
End Elevation	4966	
Approach B	240	ft

$ 1,527.50 per square foot

4852

Assumptions:

Assume 12 ft high by 16 ft wide by 200 ft long
Assume 1 ft slab and wall thickness
Assume 3-ft of cover (Roadway to Top of Structure)
Assume 8" of PCCP Pavement
Treat median as another lane for pavement calcs
Structure excavation is equal to total width of CBC +1.5' on either side+length of the approaches
Of the 3 ft of cover, 2' is embankment material - only used on either side of roadway
Retaining walls are treated as triangles along a straight 5% grade between the bottom of the underpass to the same elevation as the roadway
Assume north and south appraches are 240 ft and 240 ft; respectively.
Assumes 4850 linear feet of trailway required to connect with existing trails

*include excavation and backfill

Estimated Project Worksheet
Caribou to Power Trail RR Underpass

	UNITS	QUANTITY	UNIT COST	TOTAL COST	
Clearing & Grubbing	SY	1577	$5.00	$7,887	
Structure Excavation	CY	4839	$50.00	$241,967	
Embankment Material	CY	296	$25.00	$7,389	
Underpass Structure	SF	1368	$350.00	$478,800	
Trail Section (6 inch)	SY	1202	$50.00	$60,089	
Retaining Walls	SF	9860	$100.00	$986,000	
Roadway Pavement Removal	SY	152	$10.00	$1,520	
HMA Pavement	TON		$125.00	$0	
PCCP Pavement	SY		$75.00	$0	
Guardrailing	LF		$50.00	$0	
	% RANGE		% USED	COST	
Project Construction Bid Items	Project Dependent		N/A	**$1,783,652**	(A)
Contingencies	(10% - 30%) of (A)		30%	$535,096	(B)
Urban Design	(6-10%) of (A+B) Default = 5%		5%	$89,183	
ITS/Lighting	(6-10%) of (A+B) Default = 6%		2%	$46,375	(C)
Utility Relocation	(3-10%)of (A+B) Default = 6%		6%	$139,125	(D)
Drainage/Erosion Control/SWMP	(1-5%) of (A+B) Default = 5%		10%	$231,875	(E)
Construction Signing and Traffic Control (Railroad Coordination)	5 to 25% of (A+B) Default = 20%		20%	$463,750	(F)
Mobilization	(4 to 10%) of (A+B+C+D+E+F) Default = 7%		7%	$223,991	(G)
Total of Construction Bid Items	(A+B+C+D+E+F+G)			**$3,513,045**	(H)
Force Account - Utilities	(1 to 2%) of (H) Default = 2%		2%	$70,261	(I)
Force Account - Misc.	(10 to 15%) of (H) Default = 12%		12%	$421,565	(J)
Subtotal of Construction Cost	(H+I+J)			**$4,004,872**	(K)
ROW Requirements (Easment)	SF		UNIT COST		
	5000		$ 50.00	$250,000	
Designer Fee	(10%) of (K)		10%	$400,487	
Constr Mmgt/Inspection	(10 to 25%) of (K)		15%	$600,731	
Total Program Cost				**$5,256,090**	

Str. Length	76	ft
Span	16	ft
Wall Thickness	1	ft
Total Width	18	ft
Height	10	ft
Top Slab	1	ft
Cover	6	ft
Total Height	17	ft
Retaining Walls		
Average Length	290	ft
Area	2465	sf/wall
PCCP Pavement	8	in
Roadway	0	ft
A		
Top Elevation	4960	
Culvert Trail Elevatio	4943	
End Elevation	4959	
Approach A	320	ft
B		
Top Elevation	4962	
Culvert Trail Elevatio	4945	
End Elevation	4959	
Approach B	280	ft

$ 2,927.54 per square foot

Assumptions:

Assume 10 ft high by 16 ft wide by 76 ft long. Unit cost for underpass increased for tight ROW constrain
Assume 1 ft slab and wall thickness
Assume 6-ft of cover (RR to Top of Structure)
Assume west and east approaches are 360 ft and 320 ft long; respectively.
Structure excavation is equal to total width of CBC +1.5' on either side
Assume retaining wall can be 10 ft shorter than the average approach due to sloping nearby ground
ROW requirements warranted from RR to Caribou Drive. Obtaining additional easements from RR could be difficult.

Estimated Project Worksheet
Prospect & Mason Trail Underpass

	UNITS	QUANTITY	UNIT COST	TOTAL COST	
Clearing & Grubbing	SY	1482	$5.00	$7,409	
Structure Excavation	CY	4293	$50.00	$214,667	
Embankment Material	CY	23	$25.00	$584	
Underpass Structure	SF	1350	$350.00	$472,500	
Trail Section (6 inch)	SY	1129	$25.00	$28,223	
Retaining Walls	SF	8640	$100.00	$864,000	
Roadway Pavement Removal	SY	218	$10.00	$2,178	
HMA Pavement	TON		$125.00	$0	
PCCP Pavement	SY	187	$75.00	$14,000	
Guardrailing	LF	40	$50.00	$2,000	
Relocate RR Signal House	EA	1	$250,000.00	$250,000	
	% RANGE		% USED	COST	
Project Construction Bid Items	Project Dependent		N/A	**$1,855,561**	(A)
Contingencies	(10% - 30%) of (A)		30%	$556,668	(B)
Urban Design	(6-10%) of (A+B) Default = 5%		20%	$371,112	
ITS/Lighting	(6-10%) of (A+B) Default = 6%		4%	$96,489	(C)
Utility Relocation	(3-10%)of (A+B) Default = 6%		20%	$482,446	(D)
Drainage/Erosion Control/SWMP	(1-5%) of (A+B) Default = 5%		10%	$241,223	(E)
Construction Signing and Traffic Control (Railroad Coordination)	5 to 25% of (A+B) Default = 20%		20%	$482,446	(F)
Mobilization	(4 to 10%) of (A+B+C+D+E+F) Default = 7%		7%	$260,038	(G)
Total of Construction Bid Items	(A+B+C+D+E+F+G)			**$4,345,984**	(H)
Force Account - Utilities	(1 to 2%) of (H) Default = 2%		2%	$86,920	(I)
Force Account - Misc.	(10 to 15%) of (H) Default = 12%		12%	$521,518	(J)
Subtotal of Construction Cost	(H+I+J)			**$4,954,421**	(K)
ROW Requirements	SF		UNIT COST		
	5000		$ 25.00	$125,000	
Designer Fee	(10%) of (K)		10%	$495,442	
Constr Mmgt/Inspection	(10 to 25%) of (K)		15%	$743,163	
Total Program Cost				**$6,318,027**	

*might be higher

*going through an intersection? Does this justify a higher traffic control?

$ 3,669.94 per square foot

Str. Length	75	ft	*10 to 15 ft clearance on either side
Span	16	ft	graphics are 50 scale
Wall Thickness	1	ft	
Total Width	18	ft	
Height	12	ft	
Top Slab	1	ft	
Cover	3	ft	
Total Height	16	ft	
Retaining Walls			
Approx. Length	270	ft	
Area	2160	sf/wall	
PCCP Pavement	8	in	
Roadway	60	ft	
North			
Top Elevation	4997		
Culvert Trail Elevation	4981		Roadway Elev - Total Hgt
End Elevation	4994		
Approach A	260	ft	
South			
Top Elevation	4997		
Culvert Trail Elevation	4981		Roadway Elev - Total Hgt
End Elevation	4996		
Approach B	300	ft	*this one is really long, not sure if there is any way to decrease the length

Assumptions:

Assume 12 ft high by 16 ft wide by 75 ft long. (Beneath Prospect, West of Mason)
Assume 1 ft slab and wall thickness
Assume 3-ft of cover (Roadway to Top of Structure)
Assume 8" of PCCP Pavement
Structure excavation is equal to total width of CBC +1.5' on either side
Assume structure extends 10' past either side of roadway & sidewalks
Assume retaining wall can be 10' shorter than the average approach due to sloping nearby ground
Retaining walls are treated as triangles along a straight 5% grade between the bottom of the underpass to the same elevation as the roadway
Assume north and south approaches are 260 ft and 300 ft; respectively.
Obtaining additional easements from RR could be difficult.

Estimated Project Worksheet
Drake & Mason Trail Underpass

	UNITS	QUANTITY	UNIT COST	TOTAL COST	
Clearing & Grubbing	SY	1610	$5.00	$8,050	
Structure Excavation (and backfill)	CY	5102	$50.00	$255,112	
Embankment Material	CY	78	$25.00	$1,945	
Underpass Structure	SF	2340	$350.00	$819,000	
Trail Section (6 inch)	SY	1227	$25.00	$30,667	
Retaining Walls	SF	8400	$100.00	$840,000	
Roadway Pavement Removal	SY	311	$10.00	$3,112	
HMA Pavement	TON		$125.00	$0	
PCCP Pavement	SY	249	$75.00	$18,667	
Guardrailing	LF	40	$50.00	$2,000	
Relocate RR Signal House	EA	1	$250,000.00	$250,000	
	% RANGE		% USED	COST	
Project Construction Bid Items	Project Dependent		N/A	**$2,228,553**	(A)
Contingencies	(10% - 30%) of (A)		30%	$668,566	(B)
Urban Design	(6-10%) of (A+B) Default = 5%		15%	$334,283	
ITS/Lighting	(6-10%) of (A+B) Default = 6%		3%	$86,914	(C)
Utility Relocation	(3-10%)of (A+B) Default = 6%		20%	$579,424	(D)
Drainage/Erosion Control/SWMP	(1-5%) of (A+B) Default = 5%		10%	$289,712	(E)
Construction Signing and Traffic Control (Railroad Coordination)	5 to 25% of (A+B) Default = 20%		20%	$579,424	(F)
Mobilization	(4 to 10%) of (A+B+C+D+E+F) Default = 7%		7%	$310,281	(G)
Total of Construction Bid Items	(A+B+C+D+E+F+G)			**$5,077,156**	(H)
Force Account - Utilities	(1 to 2%) of (H) Default = 2%		2%	$101,543	(I)
Force Account - Misc.	(10 to 15%) of (H) Default = 12%		12%	$609,259	(J)
Subtotal of Construction Cost	(H+I+J)			**$5,787,958**	(K)
ROW Requirements		SF	UNIT COST		
		0	$ 25.00	$0	
Designer Fee	(10%) of (K)		10%	$578,796	
Constr Mmgt/Inspection	(10 to 25%) of (K)		15%	$868,194	
Total Program Cost				**$7,234,948**	

Str. Length	130	ft
Span	16	ft
Wall Thickness	1	ft
Total Width	18	ft
Height	12	ft
Top Slab	1	ft
Cover	3	ft
Total Height	16	ft
Approach A	280	ft
Approach B	280	ft

Retaining Walls
Approx. Length 280 ft
Area 2100 sf/wall

PCCP Pavement 8 in
Roadway 80 ft

$500 may have been based on total project cost

A
Top Elevation 5024
Culvert Trail Elevatio 5008 Roadway Elev - Total Hgt
End Elevation 5024
Approach A 320 ft

B
Top Elevation 5024
Culvert Trail Elevatio 5008 Roadway Elev - Total Hgt
End Elevation 5026
Approach B 360 ft

$ 2,473.49 per square foot 4852

Assumptions:

Assume 12 ft high by 16 ft wide by 130 ft long
Assume 1 ft slab and wall thickness
Assume 3-ft of cover (Roadway to Top of Structure)
Assume 8" of PCCP Pavement
Treat median as another lane for pavement calcs
Structure excavation is equal to total width of CBC +1.5' on either side+length of the approaches
Of the 3 ft of cover, 2' is embankment material - only used on either side of roadway
Retaining walls are treated as triangles along a straight 5% grade between the bottom of the underpass to the same elevation as the roadway. Walls adjacent to RR tracks need to accommodate E80 LL surcharge.
Assume north and south appraches are 320 ft and 360 feet; respectively.
Obtaining additional easements from RR could be difficult.

*include excavation and backfill

Mason Over Horsetooth
Overpass Alternative

	UNITS	QUANTITY	UNIT COST	TOTAL COST	
Clearing & Grubbing	SY	2027	$5.00	$10,134	
Structure Excavation	CY		$50.00	$0	
Embankment Material	CY		$25.00	$0	
Overpass Structure/Bridges	SF	2880	$250.00	$720,000	
Trail Section (6 inch)	SY	1200	$50.00	$60,000	
Ramp Retaining Walls	SF	16800	$75.00	$1,260,000	
Stairway	SF	1032	$200.00	$206,400	
Retaining Walls	SF		$50.00	$0	
Guardrailing	LF		$50.00	$0	
	% RANGE		% USED	COST	
Project Construction Bid Items	Project Dependent		N/A	**$2,256,534**	(A)
Contingencies	(10% - 30%) of (A)		30%	$676,960	(B)
Urban Design	(6-10%) of (A+B) Default = 5%		5%	$112,827	
ITS/Lighting	(6-10%) of (A+B) Default = 6%		5%	$146,675	(C)
Utility Relocation	(3-10%)of (A+B) Default = 6%		3%	$88,005	(D)
Drainage/Erosion Control/SWMP	(1-5%) of (A+B) Default = 5%		1%	$29,335	(E)
Construction Signing and Traffic Control	5 to 25% of (A+B) Default = 20%		1%	$29,335	(F)
Mobilization	(4 to 10%) of (A+B+C+D+E+F) Default = 7%		7%	$225,879	(G)
Total of Construction Bid Items	(A+B+C+D+E+F+G)			**$3,565,549**	(H)
Force Account - Utilities	(1 to 2%) of (H) Default = 2%		1%	$35,655	(I)
Force Account - Misc.	(10 to 15%) of (H) Default = 12%		10%	$356,555	(J)
Subtotal of Construction Cost	(H+I+J)			**$3,957,760**	(K)
ROW Requirements		SF	UNIT COST		
		5000	$ 25.00	$125,000	
Designer Fee	(15%) of (K)		10%	$395,776	
Constr Mmgt/Inspection	(10 to 25%) of (K)		15%	$593,664	
Total Program Cost				**$5,072,200**	

Str. Lengths (Horsetooth)	120	ft
Str. Lengths (Ditch)	60	ft
Trail Width	14	ft
Str. Thickness	1	ft
Total Width	16	ft
Ramp A Length	400	ft
Ramp A Width	12	ft
Ramp B Length	300	ft
Ramp B Width	12	ft
Ramp C Length	100	ft
Ramp C Width	12	ft
Ramp D Length	100	ft
Ramp D Width	12	ft
Stairway		
Grade Delta	20	ft
Stairway Width	12	ft
Landing Area	144	sf
Treads Required	31	each
Retaining walls	16800	sf

South ramp (Trial to Horsetooth)

North ramp (Horsetooth to Ditch)

South Ditch Ramp

North Ditch Ramp

17' for roadways and 24 for RR

Project Bid Items	44.5%
Construction Bid Iter	25.8%
F/A	7.7%
Other	22.0%

Assumptions:

Assumes ramp access only (i.e. no elevators)

Assume pre-fab steel box truss structure type over Horsetooth and Ditch.

Assume 20 ft vertical clearance

Retaining walls are treated as triangles along a straight 5% grade between the bridge and ground

Ramp length is based on 5% grade

Ped Bridge Lengths over Horsetooth and Dith are 120 ft and 60 ft; respectively.

Ramp between bridge over Horsetooth and bridge over creek - 300 ft

Ramps up to bridge over creek - 100 ft each

South Ramp up to Pedestrian bridge over Horsetooth - 400 ft

Estimated Project Worksheet
Power Trail over UPRR Overpass

	UNITS	QUANTITY	UNIT COST	TOTAL COST	
Clearing & Grubbing	SY	944	$5.00	$4,719	
Structure Excavation	CY		$50.00	$0	
Embankment Material	CY		$25.00	$0	
Overpass Structure	SF	2560	$100.00	$256,000	
Trail Section (6 inch)	SY	759	$50.00	$37,956	
Ramp Retaining Walls	SF	4147	$75.00	$311,025	
Stairway	SF	408	$200.00	$81,600	
Retaining Walls	SF		$50.00	$0	
Guardrailing	LF		$50.00	$0	
Culvert over Ditch					
	% RANGE		% USED	COST	
Project Construction Bid Items	Project Dependent		N/A	**$691,300**	(A)
Contingencies	(10% - 30%) of (A)		30%	$207,390	(B)
Urban Design	(6-10%) of (A+B) Default = 5%		10%	$69,130	
ITS/Lighting	(6-10%) of (A+B) Default = 6%		10%	$89,869	(C)
Utility Relocation	(3-10%)of (A+B) Default = 6%		3%	$26,961	(D)
Drainage/Erosion Control/SWMP	(1-5%) of (A+B) Default = 5%		2%	$17,974	(E)
Construction Signing and Traffic Control (Railroad Coordination)	5 to 25% of (A+B) Default = 20%		5%	$44,935	(F)
Mobilization	(4 to 10%) of (A+B+C+D+E+F) Default = 7%		7%	$75,490	(G)
Total of Construction Bid Items	(A+B+C+D+E+F+G)			**$1,223,048**	(H)
Force Account - Utilities	(1 to 2%) of (H) Default = 2%		2%	$24,461	(I)
Force Account - Misc.	(10 to 15%) of (H) Default = 12%		12%	$146,766	(J)
Subtotal of Construction Cost	(H+I+J)			**$1,394,275**	(K)
ROW Requirements	SF		UNIT COST		
	3160		$ 50.00	$158,000	
Designer Fee	(10%) of (K)		10%	$139,427	
Constr Mmgt/Inspection	(10 to 25%) of (K)		15%	$209,141	
Total Program Cost				**$1,900,843**	

*Use Siphon 3

Str. Length	160	ft
Trail Width	14	ft
Str. Thickness	1	ft
Total Width	16	ft

*assume use they have bridge

Height	12	ft
Top Slab	1	ft
Cover	3	ft
Total Height	16	ft

Ramp A Length	129	ft	
Ramp A Width	16	ft	
Ramp B Length	158	ft	*due to berms on either side of railway,
Ramp B Width	16	ft	may be able to reduce ramp lengths

Stairway

Grade Delta	10.5	ft	
Stairway Width	12	ft	
Landing Area	0	sf	rise of less than 12', therefore
Treads Required	17	each	no landing required.

Retaining Walls

Approx. Length	287	ft
Area	4147	sf

Required Vert Clr	25
RR Elevation	4960
Bridge Base East	4974
Bridge Base East	4975
East Ramp	11
West Ramp	10

assumed a 158 ft long (ramp) * average width of 20 ft

Assumptions:

Assumes ramp and stairway access only (i.e. no elevators)
Assumes rehabilitation and relocation of the Mulberrry Pedestrian Bridge.
Stairway assumes a rise height of 7-inch
Assumed a lower bridge cost (according to email, there is potentially an existing bridge 'saved' for this)
Assume a required 25 ft of clearance - berm on either side provides about 14 ft on either side
Assume structure dimensions of 16 ftx160 ft
Assume a ramp width of 16 ft and a length of 129 ft to the west and 158 ft to the east
Use Siphon Option 3 from Fort Collins' Feasibility Study
Obtaining additional easements from RR could be difficult.

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City of Fort Collins

STRATEGIC
TRAILS PLAN

APPENDIX I:

Which Wheels Go Where? Questionnaire Results Summary

Which Wheels Go Where

Community Engagement Summary

City of Fort Collins

Contents

Table 1. Where current ordinance allows and prohibits various types of vehicles

	Bicycles	E-bikes, Class 1 & 2	E-bikes, Class 3	E-scooters	Human powered vehicle	Lightweight electric vehicle	Low-power scooter
Street	Allowed	Allowed	Allowed	Allowed	Prohibited	Prohibited	Allowed
Bike lane	Allowed	Allowed	Allowed	Allowed	Prohibited	Prohibited	Prohibited
Sidewalk	Allowed	Allowed	**???**	**???**	Allowed	Allowed	Prohibited
Sidewalk – Dismount zone	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited
Paved Trails (except Mason Trail)	Allowed	Allowed	Prohibited	Prohibited	Allowed	Prohibited	Prohibited
Mason Trail	Allowed	Allowed	Prohibited	Allowed	Allowed	Allowed	Prohibited
Crosswalk	Ride	Ride	Ride	Dismount	Ride	Ride	Dismount
Crosswalk – Dismount zone	Dismount	Dismount	Dismount	Dismount	Dismount	Dismount	Dismount

Table 2. Possible future ordinances regulating various types of vehicles

	Human powered vehicles	Lightweight electric vehicles	Low power scooter
Street	Allowed	Allowed	Allowed
Bike lane	Allowed	Allowed	Prohibited
Sidewalk	Allowed	Allowed	Prohibited
Paved Trails	Allowed	Allowed	Prohibited
Crosswalk	Ride	Ride	Prohibited
Dismount zone	Dismount	Dismount	Prohibited

Overview

The term “micromobility,” is a new term that refers to small-wheeled devices, such as bicycles, scooters, skateboards, rollerblades, and other vehicles with a small profile compared to most motor vehicles, and which may be human powered or have electric motors. With recent battery and technology advances, the options have expanded rapidly and are continuing to change.

Today, people use human and electric-powered micromobility devices to move about the city; however, many of the laws pertaining to these devices are outdated. Current laws create a fragmented, inconsistent, and often unsafe network (Table 1). Peoples’ mobility choices are changing, and our laws need to stay current to regulate, educate, and enforce the safe use of these devices on city facilities and create a fair physical and legal environment for their use.

Fort Collins’ robust bicycle and pedestrian networks are well suited to accommodate most micromobility options, and the City is constantly working to improve these networks. Supporting the use of new devices provides community members more mobility choices that move away from use of motor vehicles that emit greenhouse gases and cause traffic congestion, which aligns with several City plans, such as Our Climate Future, the Active Modes Plan, and the Vision Zero Action Plan.

The goal of Which Wheels Go Where is to update and simplify the laws governing micromobility operations on streets, bike lanes, sidewalks, and paved trails (for example, Table 2). To inform this project, community members who experience bicycle and pedestrian facilities in different contexts were engaged to determine how best to accommodate human powered vehicles and lightweight electric vehicles on city facilities and to develop strategies to address concerns.

This project collected public input in the form of a questionnaire developed using the Alchemer platform. This document summarizes the responses received.

Summary of questionnaire responses

Respondents answered questions about their top concerns regarding human powered or lightweight electric vehicles on sidewalks, paved trails, bike lanes, and streets. Information was collected to assess whether riders of all types of micromobility and walkers responded. Finally, demographic information was collected to understand what groups may be underrepresented.

IP addresses were assessed to determine if there were duplicate responses that might indicate attempts to bias the results. Evidence of “ballot-stuffing” was not detected.

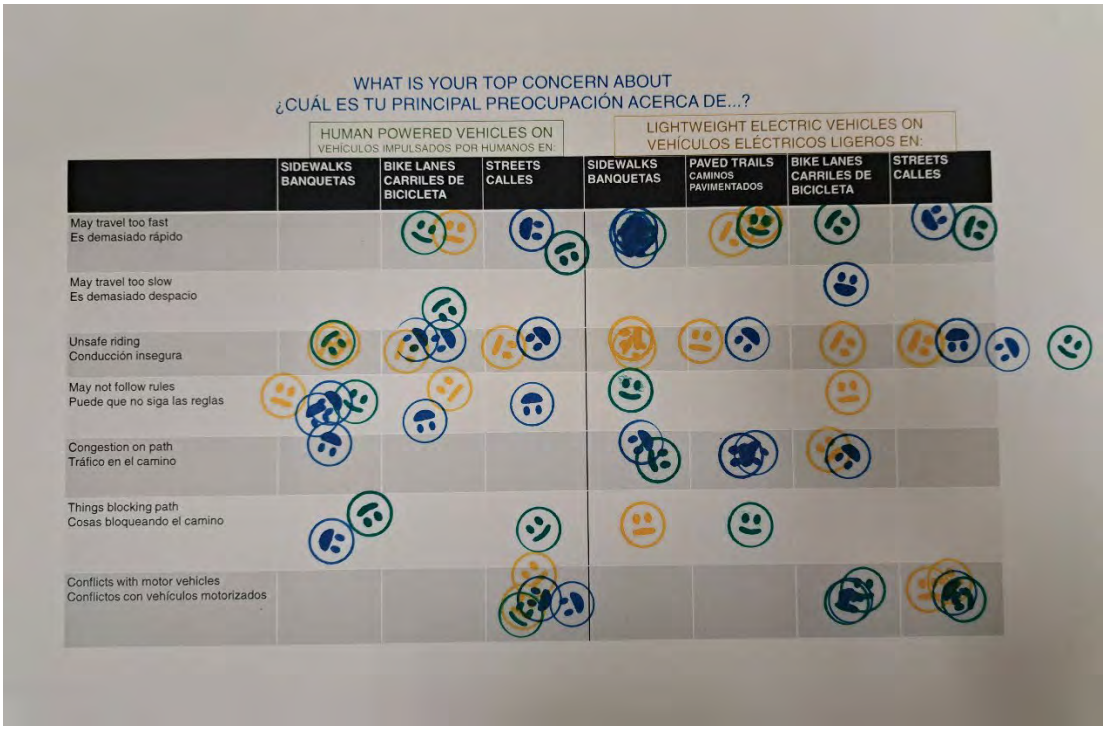
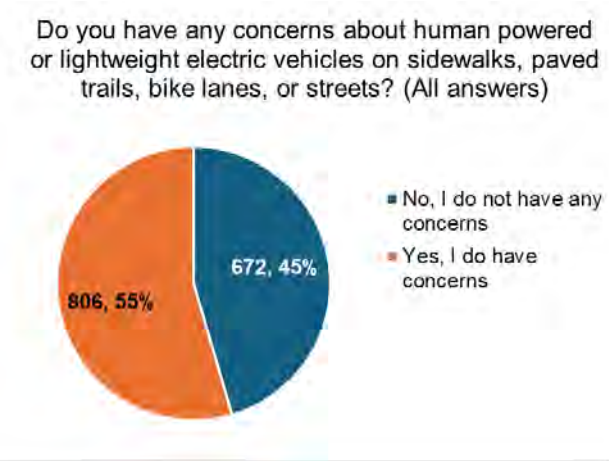


Figure 1. Multilingual activity at Hickory Village Resource Fair

Top concerns

Of the 1,478 respondents, a majority (55%) had concerns about human powered or lightweight electric vehicles on sidewalks, paved trails, bike lanes, or streets, while few (17%) of the 103 Spanish speaking respondents had concerns (Figure 2). Spin operates shared e-bikes and e-scooters in Fort Collins, and supported the questionnaire with $5 ride credit for anyone who completed the questionnaire and notifying people with Spin accounts about the questionnaire opportunity. Over half of the respondents (51%) requested the Spin ride credit, but only 9% (138) had Spin accounts and received the ride credit. People who requested the Spin ride credit were less likely (39%) than those who did not (71%) to have concerns (Figure 3).



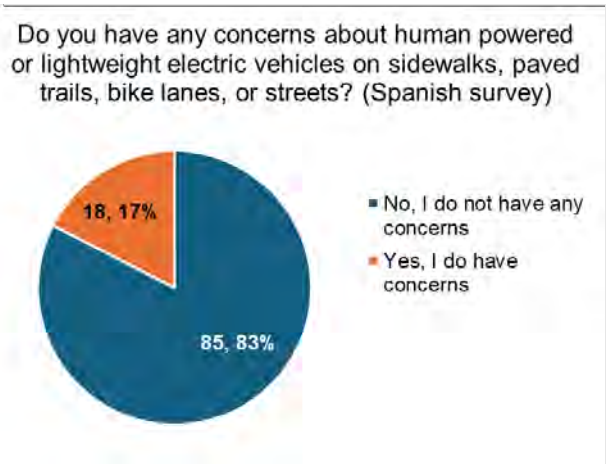
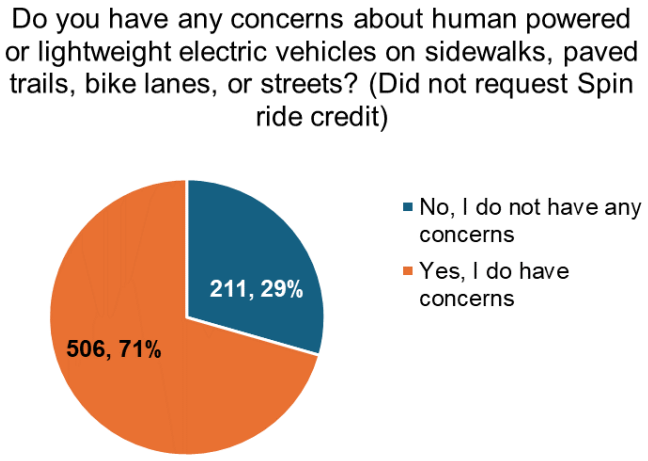


Figure 2. Number and % of respondents who did or did not have concerns about human powered or lightweight electric vehicles on sidewalks, paved trails, bike lanes, or streets. Left, all respondents; Right, Spanish respondents



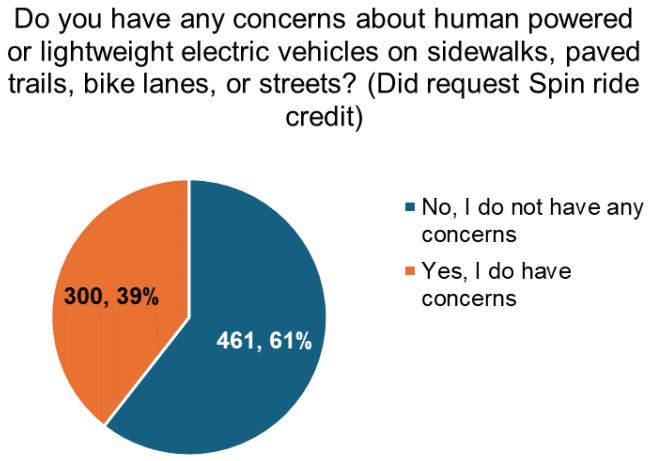


Figure 3. Number and % of respondents who did or did not have concerns about human powered or lightweight electric vehicles on sidewalks, paved trails, bike lanes, or streets. Left, respondents who did not request the Spin ride credit; Right, respondents who did request the Spin ride credit

Of the 806 respondents who had concerns, 30% identified “Unsafe riding” or “May travel too fast” as the top concern about human powered vehicles on sidewalks (Figure 4). These categories were also the top concern about lightweight electric vehicles on sidewalks, with 49% identified “May travel too fast” and 32% “Unsafe riding” as the top concern. “May travel too fast” (41%) and “Unsafe riding” (33%) were also the top concerns about lightweight electric vehicles on paved trails (Figure 5). The most common concern about human powered or lightweight electric vehicles in bike lanes was “No concern” (39% and 36% respectively), followed by “Conflicts with motor vehicles” (25% and 22% respectively, Figure 6). The most common concerns about human powered or lightweight electric vehicles on streets were “Conflicts with motor vehicles” (35% and 32% respectively) and “May not follow the rules of the road” (34% and 39% respectively, Figure 7).

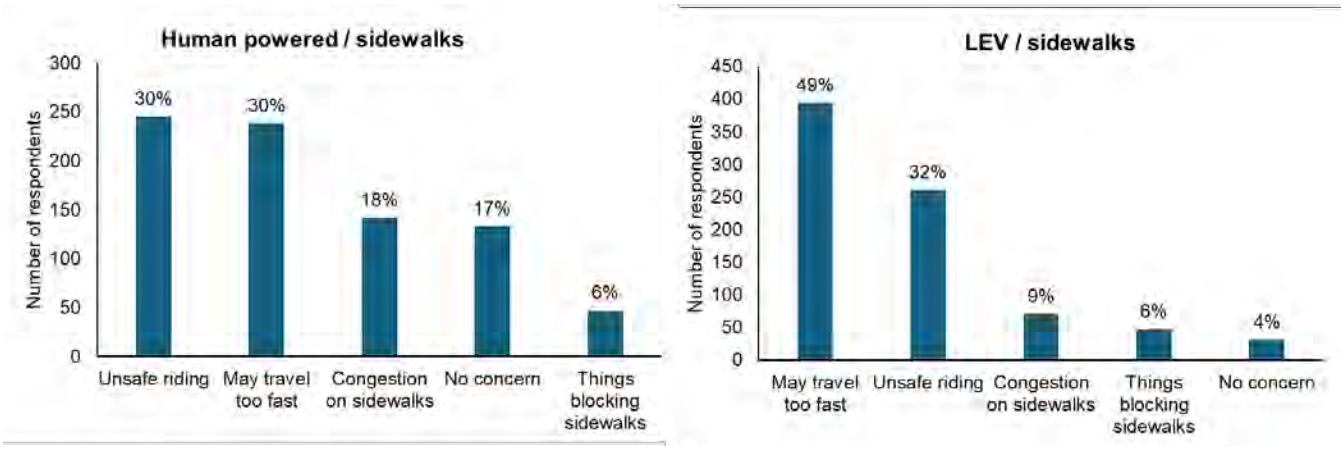


Figure 4 Top concern about human powered (left) or lightweight electric vehicles (LEV; right) on sidewalks

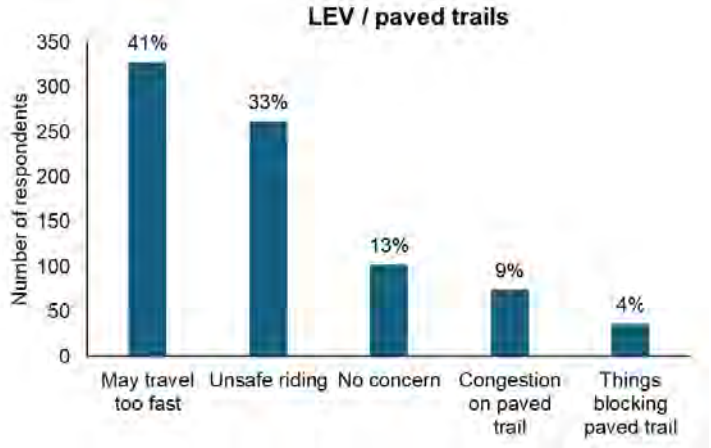
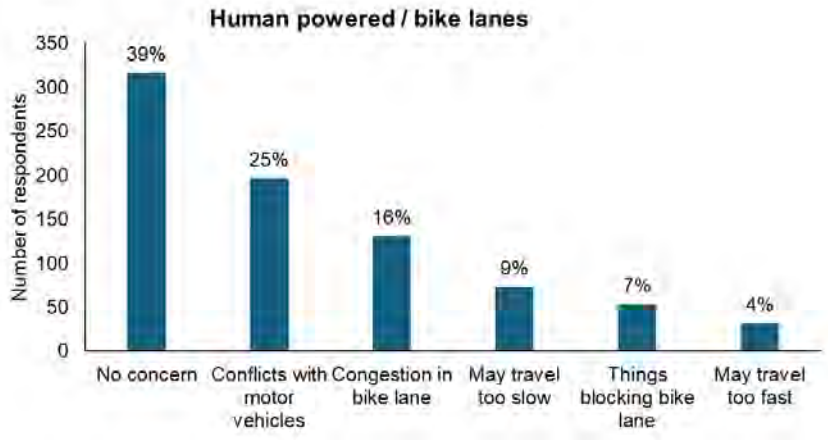


Figure 5 Top concern about lightweight electric vehicles on paved trails



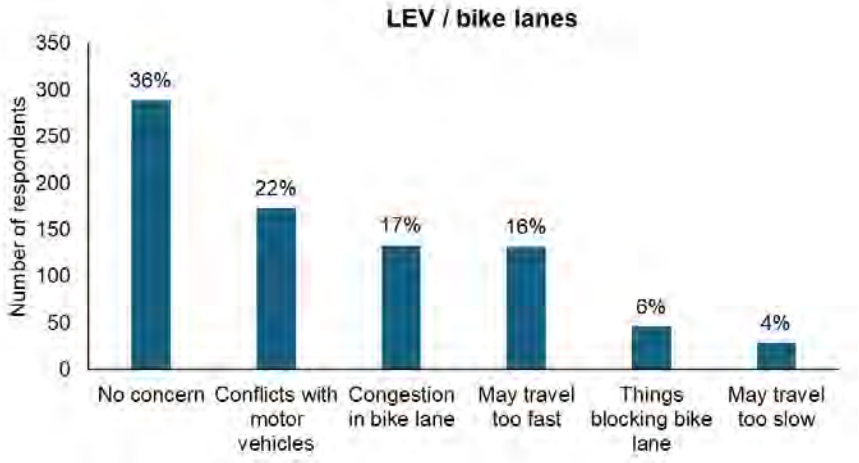


Figure 6 Top concern about human powered (top) or lightweight electric vehicles (bottom) in bike lanes

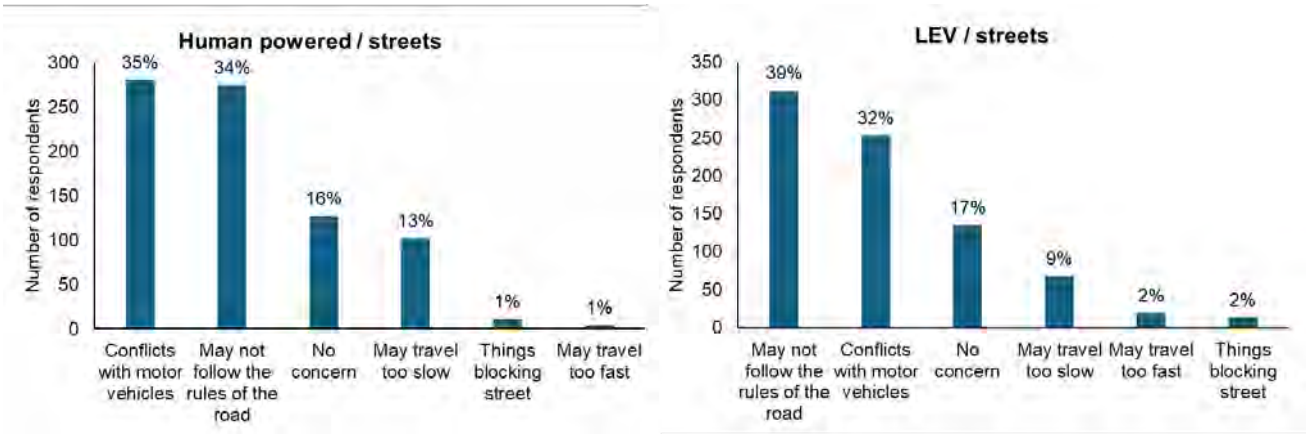


Figure 7 Top concern about human powered (left) or lightweight electric vehicles (right) on streets

How respondents use facilities

The next series of questions was to determine whether riders of all kinds of micromobility, as well as people who do not use micromobility, completed the questionnaire. Respondents reported using every kind of micromobility, walking, and riding horses on all types of facilities (Figures 8-11).

Sidewalks are designed for people traveling at walking speed, and most respondents (92%) walk on sidewalks. While riding micromobility on sidewalks is generally discouraged, there are times when people choose to use the sidewalk (Figure 8). On paved trails, most respondents walk (89%) and/or bicycle (79%, Figure 9). As expected, most respondents bike (82%) or e-bike (37%) in bike lanes (Figure 10). On streets without bike lanes, more respondents bike (63%) than drive (56%), and 27% ride e-bikes on streets (Figure 11).

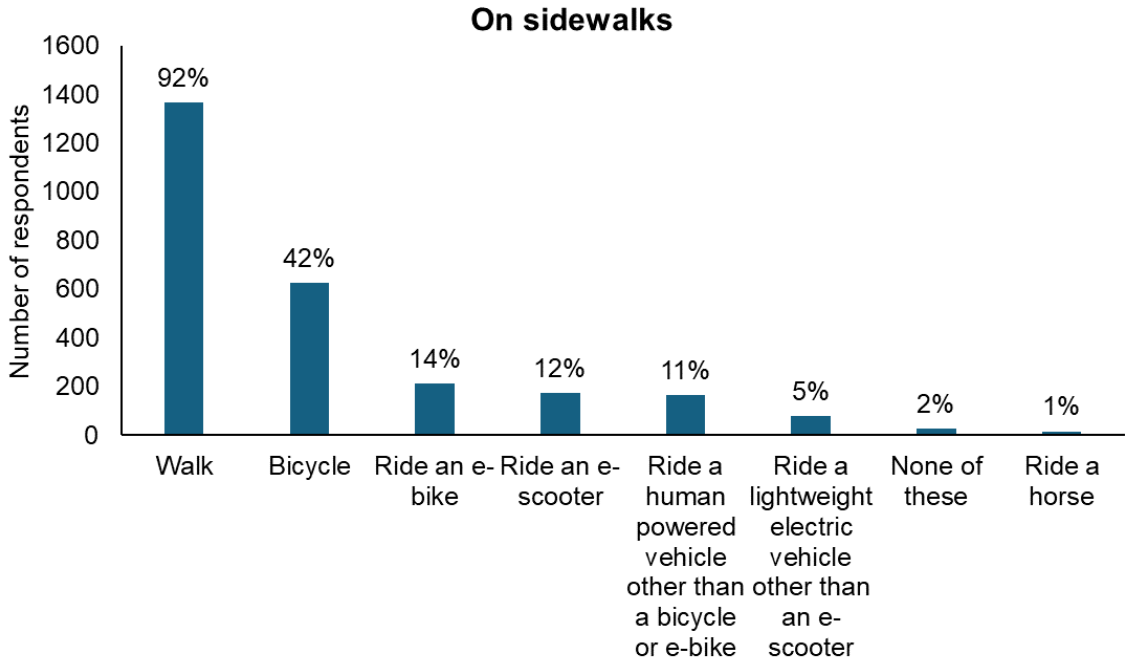


Figure 8. How respondents use sidewalks

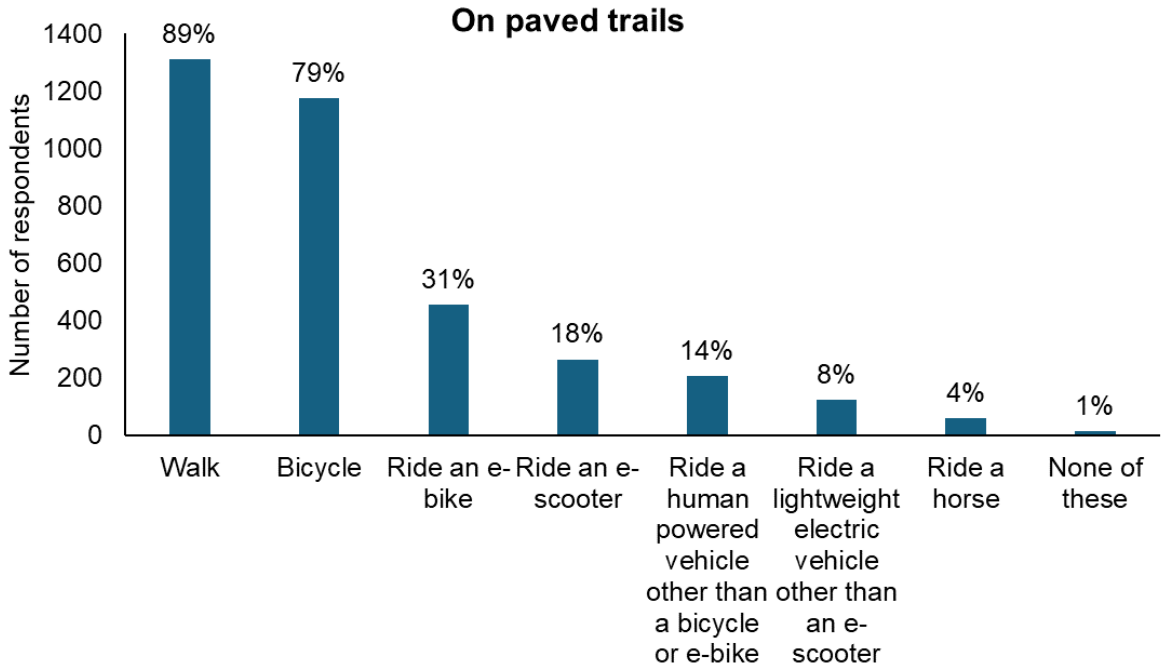


Figure 9 How respondents use paved trails

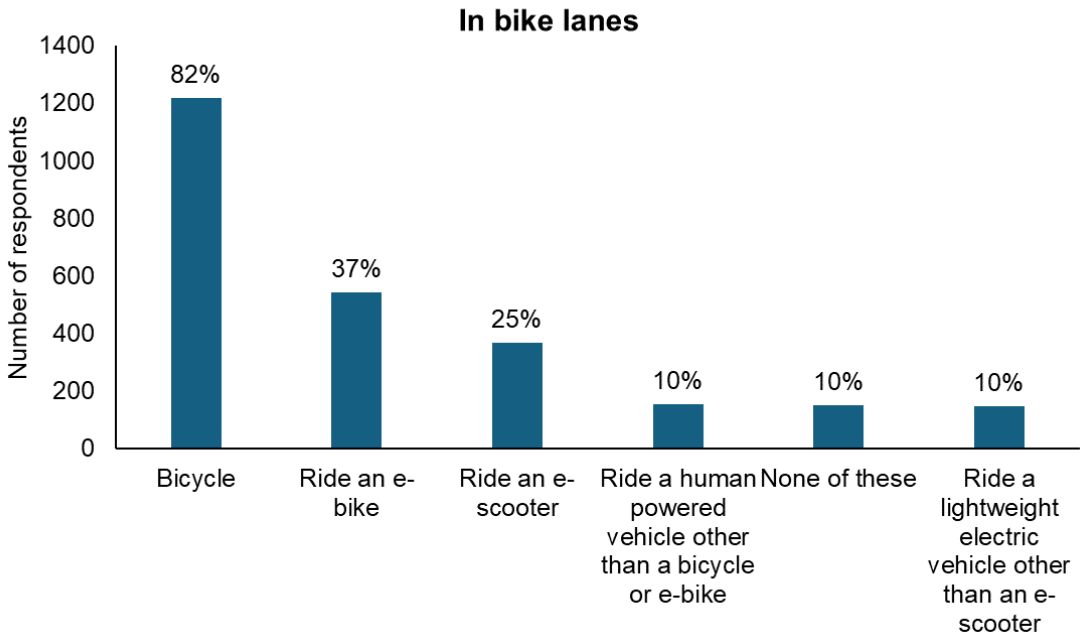


Figure 10 How respondents use bike lanes

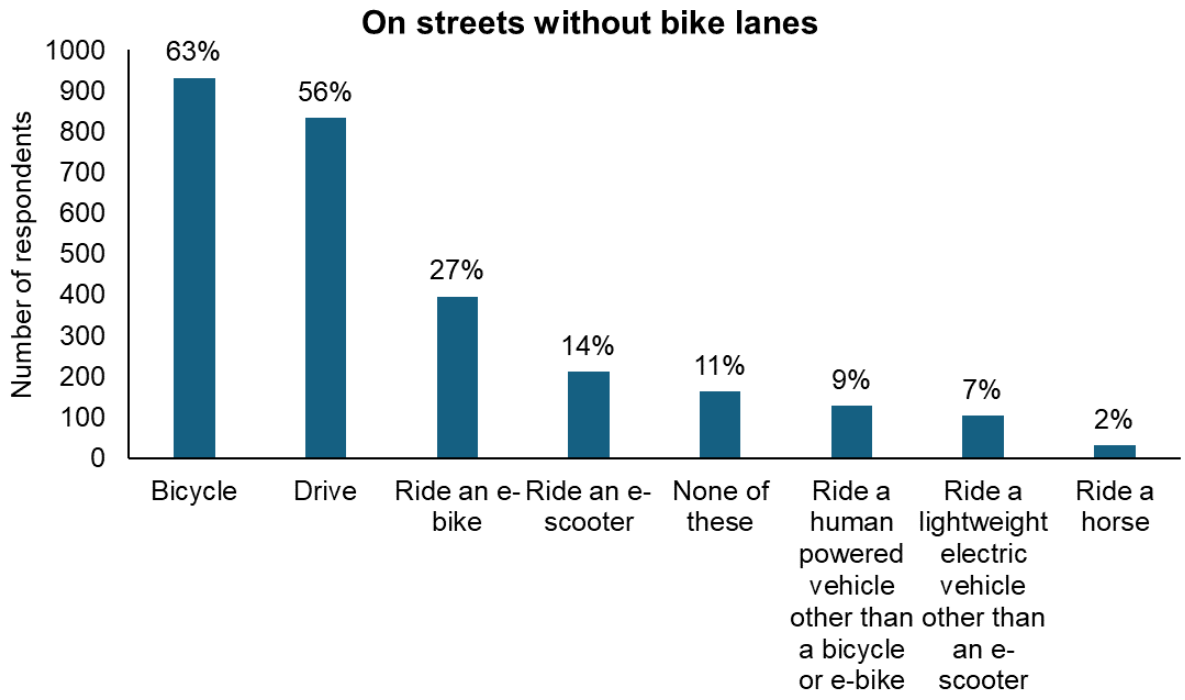


Figure 11 How respondents use streets without bike lanes

Demographics

The majority of respondents (69%) are unaffiliated with Colorado State University, with substantial representation from CSU students, faculty, and staff (Figure 12). Of the 10% of respondents who identified as having a disability, most reported a mobility disability (Figure 13). The highest age range responding to the survey was 30-30 years (19%), with responses evenly distributed across ages 30-69 years (Figure 14). Young people under 20 years of age are underrepresented. A hard-to-reach group is people with low income; 43% of respondents report annual household income below $100,000 and 21% below $50,000 (Figure 15). Respondents were slightly more likely to identify as men (47%) than women (42%) (Figure 16). Respondents were 72% White, 9% Hispanic/Latinx/Spanish Origin, and 8% other race/ethnicities (Figure 17).

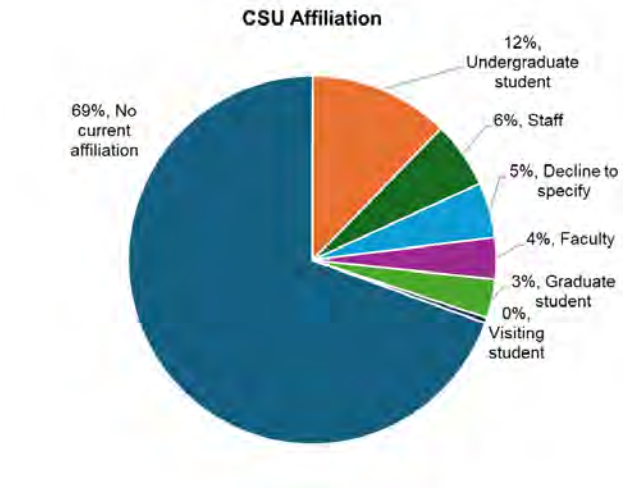


Figure 12 Colorado State University (CSU) affiliation

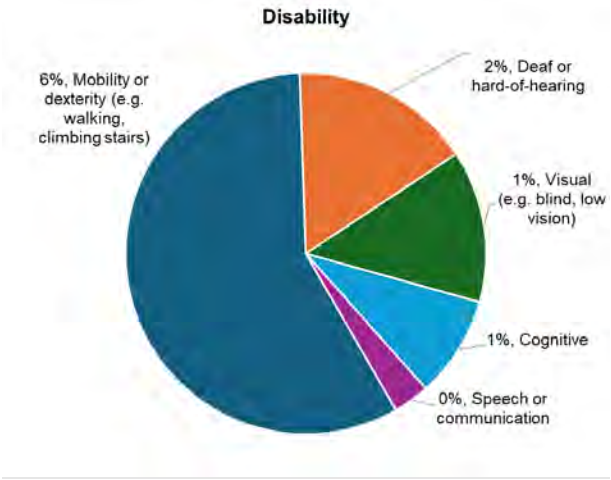


Figure 13 Type of disability reported by respondents who identified as having a disability

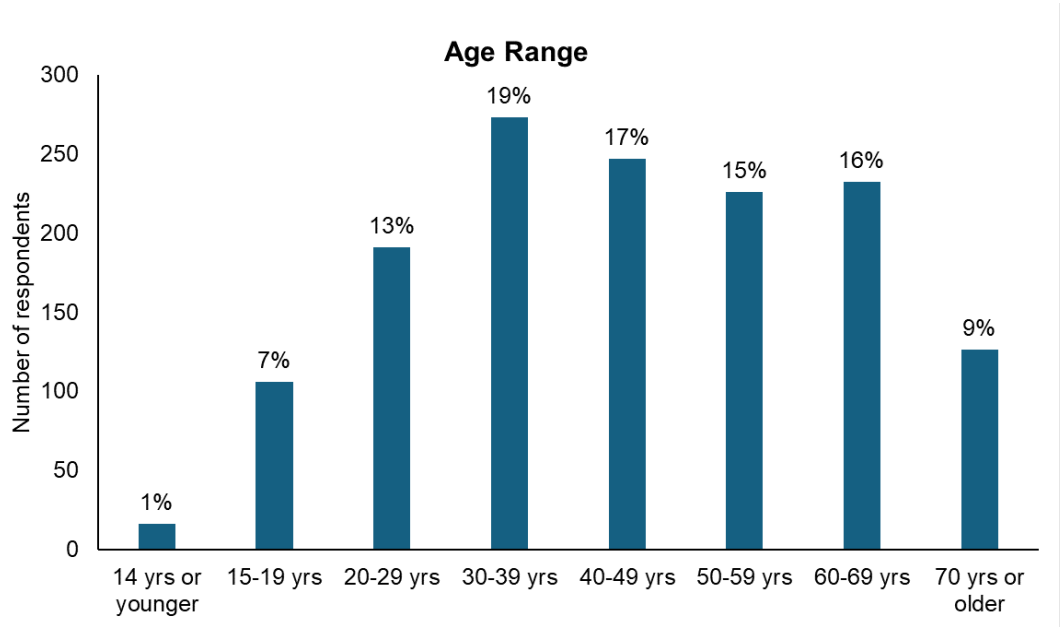


Figure 14 Age ranges of respondents

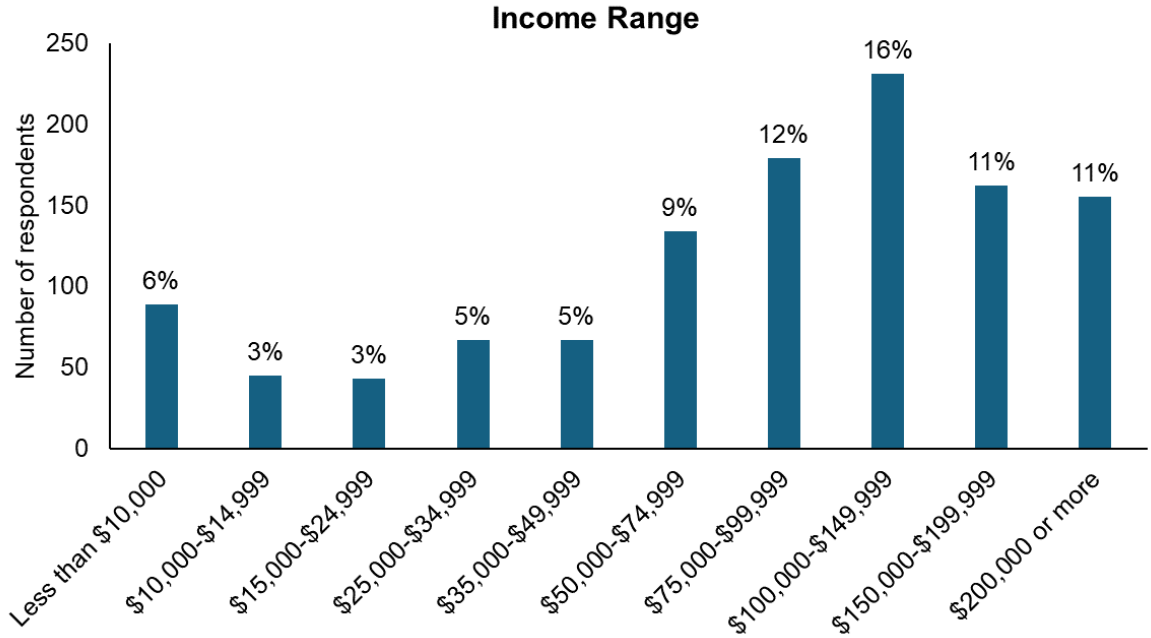


Figure 15 Income ranges of respondents

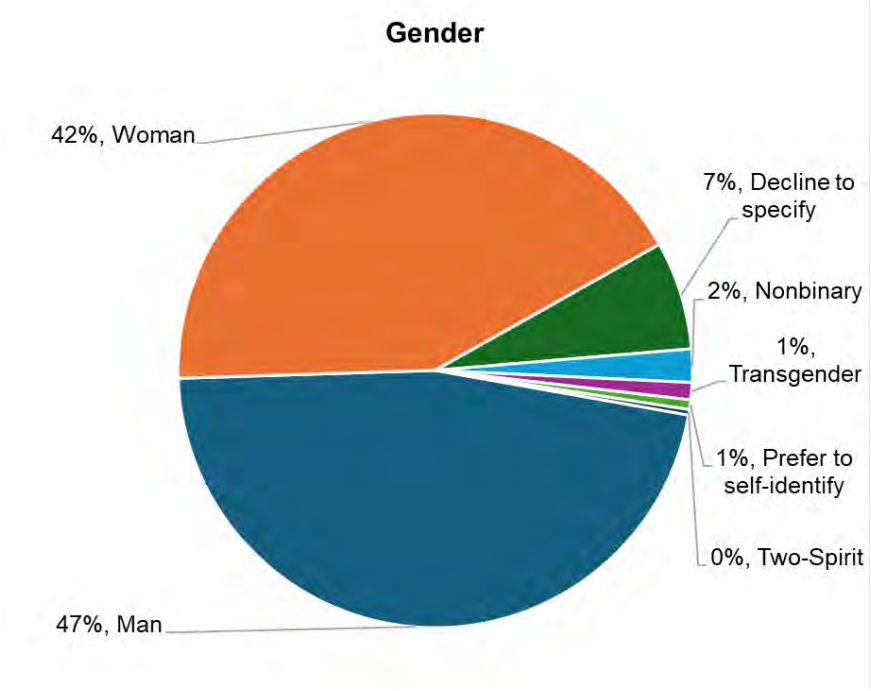


Figure 16 Gender of respondents

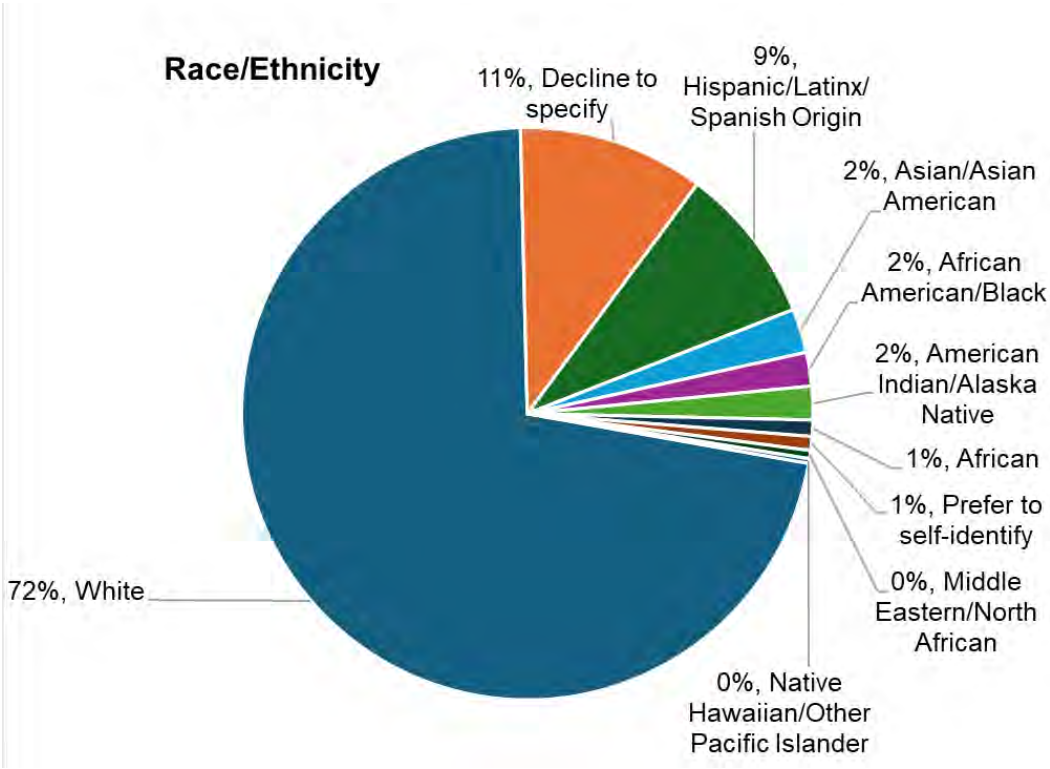


Figure 17 Race/ethnicity of respondents

Summary of comments

To facilitate analysis of the questionnaire, only one open-ended comment box was included, and 718 respondents providing comments. All 718 comments were read by staff.

Common themes
Key themes regarding micromobility devices on various transportation infrastructure, with quotes that encapsulate the diverse opinions and concerns surrounding micromobility devices, highlighting safety issues, infrastructure needs, accessibility benefits, and suggestions for improvement, are:

- Safety Concerns
    - Speed differentials: Many respondents expressed concern about the speed differences between various modes of transportation, particularly on paved trails. Many respondents noted that electric vehicles often travel too fast around pedestrians, raising fears about safety on paved trails. Fast-moving e-bikes and electric scooters were seen as potentially dangerous when mixed with slower pedestrians and traditional bicycles on sidewalks and on paved trails.
    - Yielding the right-of-Way: Many respondents reported faster travelers failing to yield the right-of-way to pedestrians on sidewalks and paved trails. Respondents also reported micromobility riders in bike lanes and on streets failing to yield the right-of-way to other travelers on streets.
    - Pedestrian safety: There was significant worry about pedestrian safety, especially on sidewalks and paved trails, with one respondent stating, "As a pedestrian on sidewalks, I worry about being hit by an electric vehicle." Many felt that motorized vehicles of any kind should not be allowed on sidewalks due to the risk of collisions with pedestrians.
    - Lack of knowledge: Some respondents noted that users of newer electric vehicles often seem unaware of traffic rules and proper etiquette, leading to unsafe behavior.
- Infrastructure and Regulation
    - Protected bike lanes: Several comments advocated for better-protected bike lanes to enhance safety, with one stating, "Bike lanes should be protected from traffic to increase use and confidence in being safe."
    - Separate paths: A common suggestion was to create separate paths for different types of vehicles. One respondent remarked, "Different speeds of travel should have different paths," echoing sentiments that mixed-speed environments can be dangerous.

    - Clear rules and signage: Many suggested clearer rules and better signage to inform users about where different vehicles can operate safely. One respondent said, "At current state it is confusing, and thus people will not be following the rules anyways," while another noted that "better posted rules of which vehicle can be used where" would help alleviate confusion.
    - Enforcement: Many respondents felt that current rules are not adequately enforced, rendering them ineffective. One respondent stated, "Any potential rules and regulations around these modes of transport are largely moot without any enforcement."

- Accessibility and Mobility
    - Benefits for seniors and those with mobility issues: Some commenters, particularly older adults, appreciated how e-bikes and other electric vehicles allow them to stay active and mobile. One respondent stated, "As a senior citizen with a class-1 e-bike, I appreciate being able to use the trail system for my health."
    - Encouraging alternative transportation: Several respondents saw the value in allowing various micromobility devices as a way to reduce car traffic and pollution.

- Suggestions for Improvement
    - Speed limits: Many suggested implementing and enforcing speed limits on paved trails, regardless of the type of vehicle.
    - Education and etiquette: There were calls for more education on etiquette on paved trails, such as using audible signals when passing.
    - Flexibility: Some respondents argued for more flexible rules based on behavior rather than specific vehicle types, as technology is evolving rapidly.

Overall, the comments reflect a desire for balance between accommodating new forms of transportation and ensuring safety for all users of shared spaces.

Bike lanes and streets

Because the comments were predominantly about paved trails, comments about micromobility in bike lanes and on streets are summarized separately here. Common themes regarding micromobility devices in bike lanes and on streets:

- Safety Concerns
    - Speed differentials: Many respondents expressed concern about the speed differences between various modes of transportation, particularly in bike lanes. Fast-moving e-bikes and electric scooters were seen as potentially dangerous when mixed with slower traditional bicycles.

    - Vulnerability to cars: There was significant worry about the safety of micromobility users on streets, especially when sharing space with cars. One commenter noted, "I bike to work and back in part to try and alleviate congestion but I don't know how much longer I can continue due to safety concerns."

- Infrastructure Needs
    - Protected bike lanes: Several comments called for better-protected bike lanes to increase safety and encourage use.
    - Separate lanes for different speeds: Some suggested the need for separate lanes for different speeds of travel.
- Regulation and Enforcement
    - Lack of rule adherence: Many respondents felt that users of micromobility devices often don't follow traffic rules. One comment noted, "Not following rules of the road: running through red lights or ignoring walk signs in crosswalks."
    - Need for education: There were calls for more education on traffic rules and etiquette for micromobility users. One respondent suggested, "Educating drivers in how to interact with these devices seems imperative."
- Accessibility and Mobility Benefits
    - Alternative to cars: Several respondents saw the value in allowing various micromobility devices in bike lanes and on streets as a way to reduce car traffic and pollution. One comment stated, "Assuming speeds stay low/responsible... there should be no reason to limit these vehicles. Less cars on the road, less traffic, less pollution."

These themes reflect the complex challenges and opportunities presented by the increasing use of micromobility devices in bike lanes and on streets, highlighting the need for balanced policies that prioritize safety while accommodating and encouraging diverse transportation options.

Unsafe riding

In the multiple-choice questionnaire questions, one option respondents could choose was "unsafe riding". "Traveling too fast" was also an option. Respondents used the comment box to provide other examples of unsafe riding on various types of infrastructure:

- On paved trails - Lack of audible warning
- In bike lanes - Wrong-way riding
- On streets
    - Ignoring traffic rules - "Not following rules of the road: running through red lights or ignoring walk signs in crosswalks."

- Not wearing helmets

Freedom and fairness

Based on the survey comments, several themes emerged regarding fairness and freedom of travel for micromobility users:

- Support for diverse transportation options: Some respondents advocated for allowing a wide range of micromobility devices, seeing them as beneficial alternatives to cars. One comment stated, "Assuming speeds stay low/responsible... there should be no reason to limit these vehicles. Less cars on the road, less traffic, less pollution."
- Concerns about restrictions: Several comments expressed frustration with overly complex or restrictive rules. One respondent noted, "Let people be encouraged to take other means than cars and allow them to travel in almost any location." This sentiment reflects a desire for more freedom in choosing transportation methods.
- Accessibility for seniors and those with mobility issues: Some comments highlighted the importance of e-bikes and other electric vehicles for maintaining mobility and independence, especially for older adults. One senior citizen remarked, "As a senior citizen with a class-1 e-bike, I appreciate being able to use the trail system for my health."
- Calls for balanced approach: While many supported more freedom, there were also calls for responsible use. An email received noted, “Those that don't [obey laws] should be punished accordingly, but don't punish good people that are enjoying the ride nicely, simply because of others. My e-bike can go fast but I don't have to use it that way.”
- Equity in infrastructure: Some respondents pointed out the need for better infrastructure to accommodate various users safely.
- Simplification of rules: There were calls for simpler, more understandable regulations to promote fair use. A respondent stated, "Don't make it complicated... with complicated rules that are too hard to understand, people spurn their government."

Overall, the comments reflect a desire for fair access to transportation infrastructure for various micromobility devices, balanced with safety considerations and clear, simple regulations.

Quality of the questionnaire

Respondents commented on the quality and the bias of the questionnaire.

- Relevance of issues: Many respondents appreciated the survey's focus on pressing issues related to micromobility. One comment noted, "Thank you for this all-important survey and follow-up to an issue gaining momentum." Some

participants felt that the survey could lead to positive changes in policy and infrastructure.

- Bias against electric micromobility: Some respondents felt that the survey questions were framed in a way that emphasized negative aspects of micromobility devices. One comment stated, "The survey seems to be biased against electric mobility devices. There are no options to say that they are good and should be encouraged."
- Bias toward electric micromobility: One respondent felt that offering a Spin credit as a reward indicates a bias toward a “dubious transit mode”.
- Insufficient options: Some respondents felt the options weren’t precise, were too limited, or didn’t ask the right questions.

Outreach

The questionnaire was provided in English and in Spanish.

The questionnaire was promoted in a variety of ways (Table 3). Three incentives were offered:

- $5 Spin ride credit
- A chance to win one of three drawings – E-scooter, $500 gift card to Recycled Cycles, or $200 gift card either to Market Skateshop or as a $200 Visa gift card (Figure 18).
- $5 King Sooper gift card (at select events only to increase participation of people with low income)

Over half (51%) of respondents requested the $5 Spin ride credit. Almost three-quarters (72%) of respondents entered one of the three drawings; 32% (473) entered the $500 Recycled Cycles gift card drawing, 26% (379) entered the e-scooter drawing, and 15% (218) entered the $200 Market Skateshop or Visa gift card drawing (Figure 18).

Figure 18. Winners of e-scooter (left), Recycled Cycles gift card (middle), and Visa gift card (right)

Outreach materials were:

- Flyers
- Yard signs
- Postcards (multilingual)
- Social media
- Press release
- Email (multilingual)
- Email to Spin riders

Table 3 Outreach

Outreach	Type	Dates	Outcome/Notes
CARE Housing Summer Festival – Blue Spruce	Event	7/20	6 survey responses (English) & $5 King Sooper gift cards
Hickory Village Resources Fair	Event	7/27	14 King Sooper gift cards, English & Spanish, ~25 interactions
Fort Shorts	Email	7/25	City employees

Outreach	Type	Dates	Outcome/Notes
ARC of Larimer County	Email	8/28	ARC board member shared the email
City-wide	Yard signs	8/7 – 9/17	See list below (Table 4)
City-wide	Press release	8/10	Coloradoan article
City-wide	Social media		
Active Modes Advisory Board	Presentation	8/19	
Fort Collins Cycling Club	Event	8/22	
Retail	Flyers	8/26	See list below (Table 5)
Las chicas en bicicletas	Email	Mid-August	Spanish
Postcards	Mailing	9/9	1600 low income addresses, bilingual postcard
Super Issues	Presentation	9/9	
Campus Safety Resource Fair	Event	9/10	Yard sign & flyer, Spin Access info
NoCo Bike & Ped Collaborative	Event	9/11	
CSU Outreach	Events	September	1 pop up, 3 Bike to Breakfast Wednesdays, 2 Rams Ride Right events
Open Streets	Event	9/15	Yard sign & flyer, Spin Access info
Trails pop-up	Event	9/25	Edora Park
Northern Colorado Trail Summit	Event	9/26	
United Way Health Fair	Event	9/27	

Table 4 Yard Signs

Location	Notes
Linden at Walnut flower box	Downtown, high pedestrian activity
Discovery Museum	Trail
Cherry & Sherwood	
Lee Martinez, trail parking lot	Trail
Hickory Trail	Trail, Equity
North College 55+	Equity
Romero Park	Equity
Collins Aire & Mosaic transit stop	Equity, transit
Power & Drake ped light	Trail

Location	Notes
Swallow/Centennial & Lemay	HAWK signal, bikeway, school
Caribou & Harmony Village (Stoneridge/Sunstone)	Equity
Power & Vermont underpass	Trail, school
South transit center	Trail, transit
Wabash & Century	School
Stanford bus stop near Monroe	Transit
Horsetooth & Taft Hill bus stop	Transit
Spring Canyon Park	Park
Mason at Swallow	Trail
Walk & Wheel Skills Hub	Trail
Centre at Botanical bus stop	Transit, CSU
Remington & Pitkin	Residential
Avery Park at Taft Hill	Transit, park
Ponderosa at Plum Bikeway/Orchard Pl	Trail
City Park Oak & Sheldon	Park
Laporte at Fishback bus stop	Transit
College at Target bus stop	Transit
Welch at Spring Creek Trail	Trail, Park, school
Spring Creek Trail at Shields underpass	Trail

Table 5 Retail locations flyers were distributed

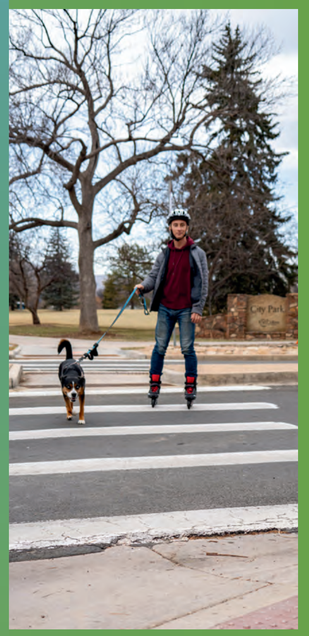
Location
Brave New Wheel
Drake Cycles
Gearage
proVelo
Recycled Cycles
REI
Incycle (South)
Incycle (North)
The Spoke
Runners World
Pedego
Trek
Precision E Bikes
Market Skate Shop

Which Wheels Go Where?

Help the City of Fort Collins update rules about which kinds of micromobility (e-scooters, skateboards, etc) can go where (sidewalks, paved trails, bike lanes, streets, etc).

fcgov.com/whichwheelsgowhere

City of Fort Collins



City of Fort Collins

Which Wheels Go Where?

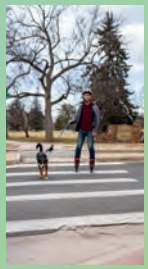
As our mobility choices evolve, our laws need to evolve to stay current and effectively regulate and enforce the safe use of these vehicles on City facilities.

Help the City of Fort Collins update rules about which kinds of micromobility (e-scooters, skateboards, etc.) can go where (sidewalks, paved trails, bike lanes, streets).

¿En dónde va cada vehículo?

A medida que evolucionan nuestras opciones de movilidad, nuestras leyes deben evolucionar para mantenerse actualizadas y regular y hacer cumplir de manera efectiva el uso seguro de estos vehículos en las instalaciones de la Ciudad.

Ayude a la ciudad de Fort Collins a actualizar las reglas sobre dónde pueden ir (aceras, senderos pavimentados, carriles para bicicletas, calles) qué tipos de micromovilidad (monopatines eléctricos, patinetas).



For more info visit:
Para más información, ingrese en:
fcgov.com/whichwheelsgowhere

City of Fort Collins
PO Box 580
Fort Collins, CO 80522-0580

Which Wheels Go Where?

Survey takers will receive a $5 Spin ride credit and a chance to win a bike, e-scooter, or skateboard!

¿En dónde va cada vehículo?

¡Los encuestados recibirán un crédito de viaje de $5 en Spin y la oportunidad de ganar una bicicleta, un monopatín eléctrico o una patineta!

Scan to take the survey
Realice la encuesta

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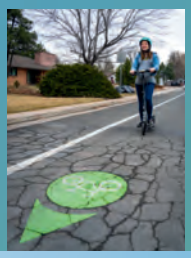
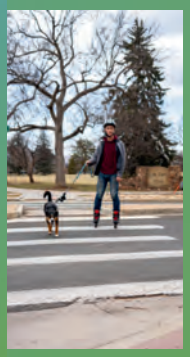


Which Wheels Go Where?

City of Fort Collins



Help the City of Fort Collins update rules about which kinds of micromobility (e-scooters, skateboards, etc) can go where (sidewalks, paved trails, bike lanes, streets, etc).

Survey takers will receive a $5 Spin ride credit and a chance to win a bike, e-scooter, or skateboard!

As our mobility choices evolve, our laws need to evolve to stay current and effectively regulate and enforce the safe use of these vehicles on City facilities.

For more info visit: fcgov.com/whichwheelsgowhere

24-25755

Which Wheels Go Where?

Share your feedback: Which wheels go where in Fort Collins?

Para español, haga clic aquí.
Technology innovations have led to new kinds of small-wheeled, human- and electric-powered devices in Fort Collins. Please let us know your concerns about how we accommodate these new things – and old things. The survey will close September 30, 2024. For more information, click here. Thank you for your input!

Next

0%

Which Wheels Go Where?

Which wheels are we talking about?

“Scooter” and other words can mean a lot of different things. Let’s make sure we’re all talking about the same things with a short quiz before continuing the survey.

1. Which of these are human powered vehicles?

- [ ] 
- [ ] 
- [ ] 
- [ ] 

2. An e-scooter is a vehicle that:

- [ ] Weighs less than 100 pounds.
- [ ] Has a handlebar and an electric motor.
- [ ] Has a maximum speed of twenty (20) miles per hour or less on a paved level surface when powered solely by the electric motor.

---

3. Which of these things are lightweight electric vehicles?

- [ ] 
- [ ] 
- [ ] 

---

4. Which of these are lightweight electric vehicles?

- [ ] 
- [ ] 

- [ ] 
- [ ] None of these.

Back Next

11%

Which Wheels Go Where?

Answers: Which wheels are we talking about?

“Scooter” and other words can mean a lot of different things. Let’s make sure we’re all talking about the same things with a short quiz before continuing the survey.

Which of these are human powered vehicles?
Answer: All of these. Skates, skateboards, kick scooters, and bikes are human powered. E-bikes are primarily human powered, with electric assist.

Answer: According to the definition in Colorado Revised Statue 42-1-102 (28.8), an e-scooter is a vehicle that weighs less than 100 pounds, has a handlebar and an electric motor, and has a maximum speed of 20 mph or less on a paved level surface when powered solely by the electric motor.

Which of these are lightweight electric vehicles?
Answer: All of these. E-scooters, electric skateboards, hoverboards, Onewheels, and electric unicycles are some of the lightweight electric vehicles that have appeared in recent years.

Which of these are lightweight electric vehicles?
Answer: None of these. Low power scooters, golf carts, and electric dirt bikes are not lightweight electric vehicles. Some of these may look like lightweight electric vehicles but they are more powerful, faster, and/or heavier.

Which Wheels Go Where?

Do you have concerns?

5. Do you have any concerns about human powered or lightweight electric vehicles on sidewalks, paved trails, bike lanes, or streets? *

- ◯ No, I do not have any concerns
- ◯ Yes, I do have concerns

Back Next

33%

Which Wheels Go Where?

Which Wheels Go Where?

Now that we understand the definitions, please let us know your concerns about the operations of these on different types of facilities.

6. 

What is your top concern regarding the use of **human powered vehicles** on **sidewalks**?

- ◯ May travel too fast
- ◯ Unsafe riding
- ◯ Congestion on sidewalks
- ◯ Things blocking sidewalks
- ◯ No concern

---

7. 

What is your top concern regarding the use of **lightweight electric vehicles** on **sidewalks**?

- ◯ May travel too fast
- ◯ Unsafe riding
- ◯ Congestion on sidewalks
- ◯ Things blocking sidewalks

◯ No concern

8. 

What is your top concern regarding the use of **lightweight electric vehicles** on **paved trails**?

◯ May travel too fast

◯ Unsafe riding

◯ Congestion on paved trail

◯ Things blocking paved trail

◯ No concern

9. 

What is your top concern regarding the use of **human powered vehicles** in **bike lanes**?

◯ Congestion in bike lane

◯ Conflicts with motor vehicles

◯ May travel too slow

◯ May travel too fast

◯ Things blocking bike lane

◯ No concern

10. 

What is your top concern regarding the use of **lightweight electric vehicles** in **bike lanes**?

- ◯ Congestion in bike lane
- ◯ Conflicts with motor vehicles
- ◯ May travel too slow
- ◯ May travel too fast
- ◯ Things blocking bike lane
- ◯ No concern

---

11. 

What is your top concern regarding the use of **human powered vehicles** on **streets**?

- ◯ May not follow the rules of the road
- ◯ Conflicts with motor vehicles
- ◯ May travel too slow
- ◯ May travel too fast
- ◯ Things blocking street
- ◯ No concern

---

12. 

What is your top concern regarding the use of **lightweight electric vehicles** on **streets**?

- ◯ May not follow the rules of the road
- ◯ Conflicts with motor vehicles
- ◯ May travel too slow
- ◯ May travel too fast
- ◯ Things blocking street
- ◯ No concern

Back Next

44%

Which Wheels Go Where?

Comments

13. Do you have other comments you'd like to share about Which Wheels Go Where?

Back Next

56%

Which Wheels Go Where?

Which wheels do YOU use?

We'd like to make sure we're hearing from people who use various kinds of wheels, or none at all. Which wheels do you use?

14. 

On **sidewalks**, do you:

- [ ] Walk
- [ ] Bicycle
- [ ] Ride an e-bike
- [ ] Ride an e-scooter
- [ ] Ride a human powered vehicle other than a bicycle or e-bike
- [ ] Ride a lightweight electric vehicle other than an e-scooter
- [ ] Ride a horse
- [ ] None of these

---

15. 

On **paved trails**, do you:

- [ ] Walk
- [ ] Bicycle

- [ ] Ride an e-bike
- [ ] Ride an e-scooter
- [ ] Ride a human powered vehicle other than a bicycle or e-bike
- [ ] Ride a lightweight electric vehicle other than an e-scooter
- [ ] Ride a horse
- [ ] None of these

---

16. 

In **bike lanes**, do you:

- [ ] Bicycle
- [ ] Ride an e-bike
- [ ] Ride an e-scooter
- [ ] Ride a human powered vehicle other than a bicycle or e-bike
- [ ] Ride a lightweight electric vehicle other than an e-scooter
- [ ] None of these

---

17. 

On **streets without bike lanes**, do you:

- [ ] Bicycle
- [ ] Ride an e-bike
- [ ] Ride an e-scooter
- [ ] Ride a human powered vehicle other than a bicycle or e-bike

- [ ] Ride a lightweight electric vehicle other than an e-scooter
- [ ] Drive
- [ ] Ride a horse
- [ ] None of these

Back Next

67%

Which Wheels Go Where?

Demographics

The City gathers demographic information to help improve programs, to determine potential barriers to participation and to ensure everyone in our community has access to their local government. Demographic information helps us assess what communities we are effectively reaching and who we may need to work harder to reach on important issues. All questions are optional, and any information gathered will be kept completely anonymous.

18. What is your affiliation with Colorado State University?
Check all that apply

- ☐ Undergraduate student
- ☐ Graduate student
- ☐ Visiting student
- ☐ Faculty
- ☐ Staff
- ☐ No current affiliation
- ☐ Decline to specify

---

19. Do you have a disability or health condition that affects the travel choices you make in Fort Collins?
Check all that apply

- ☐ Mobility or dexterity (e.g. walking, climbing stairs)
- ☐ Visual (e.g. blind, low vision)
- ☐ Deaf or hard-of-hearing
- ☐ Speech or communication
- ☐ Cognitive

- [ ] No disability
- [ ] Decline to specify

20. Age range:

- ◯ 14 yrs or younger
- ◯ 15-19 yrs
- ◯ 20-29 yrs
- ◯ 30-39 yrs
- ◯ 40-49 yrs
- ◯ 50-59 yrs
- ◯ 60-69 yrs
- ◯ 70 yrs or older
- ◯ Decline to specify

21. Household Income Range:

- ◯ Less than $10,000
- ◯ $10,000-$14,999
- ◯ $15,000-$24,999
- ◯ $25,000-$34,999
- ◯ $35,000-$49,999
- ◯ $50,000-$74,999
- ◯ $75,000-$99,999
- ◯ $100,000-$149,999
- ◯ $150,000-$199,999
- ◯ $200,000 or more
- ◯ Decline to specify

22. Gender:
Check all that apply

- [ ] Nonbinary
- [ ] Woman
- [ ] Man
- [ ] Transgender
- [ ] Two-Spirit
- [ ] Prefer to self-identify
- [ ] Decline to specify

---

23. Race/Ethnicity:
Check all that apply

- [ ] American Indian/Alaska Native
- [ ] African
- [ ] African American/Black
- [ ] Asian/Asian American
- [ ] Hispanic/Latinx/Spanish Origin
- [ ] Middle Eastern/North African
- [ ] Native Hawaiian/Other Pacific Islander
- [ ] White
- [ ] Prefer to self-identify:

  [ ]
- [ ] Decline to specify

Back Next

78%

Which Wheels Go Where?

Thank you!

In appreciation for your time, you can receive $5 ride credit for Spin and a chance to win a bike, an e-scooter, or a skateboard.

24. If you would like a $5 ride credit for Spin, enter your email.

25. If you would like a chance to win a bike, e-scooter, or skateboard, enter your email.
To be eligible for the drawing, you must enter a valid e-mail and you must select which drawing you wish to enter in the question below. Winners will be drawn at random from all entries after Sep mber 30, 2024. Winners will be notified by email and must accept prize within 7 days, or a new winner will be drawn.

26. Which drawing do you want to enter?

- ◯ $500 gift card to Recycled Cycles
- ◯ Segway Ninebot G30 e-scooter ($700 value)
- ◯ $200 gift card to Market Skateshop OR Visa gift card

Back Submit

89%

Which Wheels Go Where?

Thank You!

The questionnaire is complete. Thank you for your time.

~City of Fort Collins

100%

¿En dónde va cada vehículo?

Comparta sus comentarios: ¿En dónde va cada vehículo en Fort Collins?

Las innovaciones tecnológicas han dado lugar a nuevos tipos de dispositivos con ruedas pequeñas tanto eléctricos como accionados por humanos en Fort Collins. Háganos saber sus inquietudes sobre cómo adaptamos estas cosas nuevas y las antiguas. La encuesta se cerrará el 30 de septiembre. ¡Gracias por sus aportes!

Next

0%

¿En dónde va cada vehículo?

¿De qué vehículos estamos hablando?

"Monopatín" y otras palabras pueden significar muchas cosas diferentes. Asegurémonos de que todos hablamos de las mismas cosas con un breve cuestionario antes de continuar con la encuesta.

1. ¿Cuáles de los siguientes son vehículos accionados por humanos?

- ☐ 
- ☐ 
- ☐ 
- ☐ 

2. Un monopatín eléctrico es un vehículo que:

- [ ] Pesa menos de 100 libras.
- [ ] Tiene un manillar y un motor eléctrico.
- [ ] Tiene una velocidad máxima de veinte (20) millas por hora o menos en una superficie nivelada y pavimentada cuando funciona únicamente con el motor eléctrico.

---

3. ¿Cuáles de estos son vehículos eléctricos ligeros?

- [ ] 
- [ ] 
- [ ] 

---

4. ¿Cuáles de estos son vehículos eléctricos ligeros?

- [ ] 
- [ ] 

☐ 

☐ Ninguna de estas

Back Next

11%

¿En dónde va cada vehículo?

Respuestas: ¿De qué vehículos estamos hablando?

"Monopatín" y otras palabras pueden significar muchas cosas diferentes. Asegurémonos de que todos hablamos de las mismas cosas con un breve cuestionario antes de continuar con la encuesta

¿Cuáles de los siguientes son vehículos accionados por humanos?
Respuesta: Todas estas. Los patines, monopatines, patinetas y bicicletas son impulsados por humanos. Las bicicletas eléctricas son impulsadas principalmente por humanos, con asistencia eléctrica.

Respuesta: Según la definición de la sección 42-1-102 (28.8) de los Estatutos Revisados de Colorado, un monopatín eléctrico es un vehículo que pesa menos de 100 libras, tiene un manillar y un motor eléctrico, y tiene una velocidad máxima de 20 mph o menos en una superficie nivelada y pavimentada cuando funciona únicamente con el motor

eléctrico.

¿Cuáles de los siguientes son vehículos eléctricos ligeros?
Respuesta: Todas estas. Los monopatines eléctricos, las patinetas eléctricas, las aeropatinetas, las patinetas de una rueda y los monociclos eléctricos son algunos de los vehículos eléctricos ligeros que han aparecido en los últimos años.

¿Cuáles de los siguientes son vehículos eléctricos ligeros?
Respuesta: Ninguna de estas. Los escúter de bajo consumo, los carritos de golf y las motos enduro eléctricas no son vehículos eléctricos livianos. Algunos de estos vehículos pueden parecer vehículos eléctricos livianos, pero son más potentes, más rápidos o más pesados.

¿En dónde va cada vehículo?

¿Tiene alguna duda?

5. ¿Le preocupan los vehículos eléctricos livianos o accionados por humanos en las aceras, los senderos pavimentados, los carriles para bicicletas o las calles? *

- ◯ No, no tengo ninguna duda
- ◯ Sí, tengo dudas

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33%

¿En dónde va cada vehículo?

¿En dónde va cada vehículo?

Ahora que entendemos las definiciones, háganos saber sus inquietudes sobre las operaciones de los mismos en diferentes tipos de instalaciones

6. 

¿Cuál es su principal preocupación con respecto al uso de **vehículos accionados por humanos** en **las aceras**?

- ◯ Pueden ir demasiado rápido
- ◯ Circulación insegura
- ◯ Congestión en las aceras
- ◯ Vehículos estacionados que bloquean las aceras
- ◯ No hay preocupaciones

---

7. 

¿Cuál es su principal preocupación con respecto al uso de **vehículos eléctricos ligeros** en **las aceras**?

- ◯ Pueden ir demasiado rápido
- ◯ Circulación insegura
- ◯ Congestión en las aceras
- ◯ Vehículos estacionados que bloquean las aceras

◯ No hay preocupaciones

8. 

¿Cuál es su principal preocupación con respecto al uso de **vehículos eléctricos ligeros** en **senderos pavimentados**?

◯ Pueden ir demasiado rápido

◯ Circulación insegura

◯ Congestión en senderos pavimentados

◯ Vehículos estacionados que bloquean el sendero pavimentado

◯ No hay preocupaciones

9. 

¿Cuál es su principal preocupación con respecto al uso de **vehículos accionados por humanos** en **los carriles para bicicletas**?

◯ Congestión en el carril para bicicletas

◯ Conflictos con vehículos motorizados

◯ Puede ir demasiado despacio

◯ Pueden ir demasiado rápido

◯ Vehículos estacionados que bloquean el carril

◯ No hay preocupaciones

10. 

¿Cuál es su principal preocupación con respecto al uso de **vehículos eléctricos ligeros** en **los carriles para bicicletas**?

- ◯ Congestión en el carril para bicicletas
- ◯ Conflictos con vehículos motorizados
- ◯ Puede ir demasiado despacio
- ◯ Pueden ir demasiado rápido
- ◯ Vehículos estacionados que bloquean el carril
- ◯ No hay preocupaciones

---

11. 

¿Cuál es su principal preocupación con respecto al uso de **vehículos accionados por humanos** en **las calles**?

- ◯ Puede que no sigan las reglas de la carretera
- ◯ Conflictos con vehículos motorizados
- ◯ Puede ir demasiado despacio
- ◯ Pueden ir demasiado rápido
- ◯ Vehículos estacionados que bloquean las calles
- ◯ No hay preocupaciones

---

12. 

¿Cuál es su principal preocupación con respecto al uso de **vehículos eléctricos ligeros** en **las calles**?

- ◯ Puede que no sigan las reglas de la carretera
- ◯ Conflictos con vehículos motorizados
- ◯ Puede ir demasiado despacio
- ◯ Pueden ir demasiado rápido
- ◯ Vehículos estacionados que bloquean las calles
- ◯ No hay preocupaciones

Back Next

44%

¿En dónde va cada vehículo?

Comments

13. ¿Tiene otros comentarios que le gustaría compartir sobre "En dónde va cada vehículo"?

Back Next

56%

¿En dónde va cada vehículo?

¿Qué vehículo usa USTED?

Nos gustaría asegurarnos de escuchar a las personas que usan varios tipos de vehículos o que no usan ninguno. ¿De qué manera se moviliza?

14. 

En las **aceras**, ¿cómo se moviliza?:

- [ ] Camino
- [ ] Voy en bicicleta
- [ ] Conduzco una bicicleta eléctrica
- [ ] Conduzco un monopatín eléctrico
- [ ] Conduzco un vehículo accionado por humanos que no sea una bicicleta ni una bicicleta eléctrica
- [ ] Conduzco un vehículo eléctrico ligero que no sea un monopatín eléctrico
- [ ] Ando a caballo
- [ ] Ninguna de estas

---

15. 

En **los senderos pavimentados**, ¿cómo se moviliza?:

- [ ] Camino

- [ ] Voy en bicicleta
- [ ] Conduzco una bicicleta eléctrica
- [ ] Conduzco un monopatín eléctrico
- [ ] Conduzco un vehículo accionado por humanos que no sea una bicicleta ni una bicicleta eléctrica
- [ ] Conduzco un vehículo eléctrico ligero que no sea un monopatín eléctrico
- [ ] Ando a caballo
- [ ] Ninguna de estas

---

16. 

En **los carriles para bicicletas**, ¿cómo se moviliza?:

- [ ] Voy en bicicleta
- [ ] Conduzco una bicicleta eléctrica
- [ ] Conduzco un monopatín eléctrico
- [ ] Conduzco un vehículo accionado por humanos que no sea una bicicleta ni una bicicleta eléctrica
- [ ] Conduzco un vehículo eléctrico ligero que no sea un monopatín eléctrico
- [ ] Ninguna de estas

---

17. 

En **calles sin carriles para bicicleta**s, ¿cómo se moviliza?:

- [ ] Voy en bicicleta
- [ ] Conduzco una bicicleta eléctrica

- [ ] Conduzco un monopatín eléctrico
- [ ] Conduzco un vehículo accionado por humanos que no sea una bicicleta ni una bicicleta eléctrica
- [ ] Conduzco un vehículo eléctrico ligero que no sea un monopatín eléctrico
- [ ] Conduzco
- [ ] Ando a caballo
- [ ] Ninguna de estas

Back Next

67%

¿En dónde va cada vehículo?

Demografía

La Ciudad recopila información demográfica para ayudar a mejorar los programas, determinar los posibles obstáculos en la participación y garantizar que todas las personas de nuestra comunidad tengan acceso a su gobierno local. La información demográfica nos ayuda a evaluar a qué comunidades estamos llegando de manera efectiva y a quiénes podemos necesitar para trabajar más arduamente y abarcar temas importantes. Todas las preguntas son opcionales y cualquier información recopilada se mantendrá completamente anónima.

18. ¿Cuál es su afiliación con la Colorado State University?
Marque todo lo que corresponda

- ☐ Estudiante de grado
- ☐ Estudiante de posgrado
- ☐ Estudiante visitante
- ☐ Cuerpo docente
- ☐ Personal
- ☐ No hay afiliación actual
- ☐ Me niego a especificar

---

19. ¿Tiene una discapacidad o un problema de salud que afecte las decisiones de viaje que toma en Fort Collins?
Marque todo lo que corresponda

- ☐ Movilidad o destreza (p. ej., caminar, subir escaleras)
- ☐ Visual (p. ej., ciegos o con baja visión)
- ☐ Sordos o con problemas de audición
- ☐ De habla o comunicación

- [ ] Cognitivo
- [ ] Sin discapacidad
- [ ] Me niego a especificar

---

20. Rango de edad:

- ◯ 14 años o menor
- ◯ 15-19 años
- ◯ 20-29 años
- ◯ 30-39 años
- ◯ 40-49 años
- ◯ 50-59 años
- ◯ 60-69 años
- ◯ 70 años o más
- ◯ Me niego a especificar

---

21. Rango de ingresos del grupo familiar:

- ◯ Menos de $10,000
- ◯ $10,000-$14,999
- ◯ $15,000-$24,999
- ◯ $25,000-$34,999
- ◯ $35,000-$49,999
- ◯ $50,000-$74,999
- ◯ $75,000-$99,999
- ◯ $100,000-$149,999
- ◯ $150,000-$199,999
- ◯ $200,000 o más
- ◯ Me niego a especificar

22. Género

Marque todo lo que corresponda

- [ ] No binario
- [ ] Mujer
- [ ] Hombre
- [ ] Transgénero
- [ ] Dos espíritus
- [ ] Prefiero identificarme por mi cuenta:
- [ ] Me niego a especificar

23. Raza/etnia

Marque todo lo que corresponda

- [ ] Indígena estadounidense/nativo(a) de Alaska
- [ ] o(a)
- [ ] Afroamericano(a)/negro(a)
- [ ] Asiático(a)/asiático(a) americano(a)
- [ ] Origen hispano/latino/español
- [ ] De Medio Oriente/norafricano(a)
- [ ] Nativo(a) de Hawái u otra isla del Pacífico
- [ ] Blanco(a)
- [ ] Prefiero identificarme por mi cuenta:

*

- [ ] Me niego a especificar

Back Next

78%

¿En dónde va cada vehículo?

¡Gracias!

Como agradecimiento por su tiempo, puede recibir un crédito de viaje de $5 para Spin y la oportunidad de ganar una bicicleta, un monopatín eléctrico o una patineta.

24. Si quiere recibir un crédito de viaje de $5 para Spin, ingrese su correo electrónico.

25. Si quiere tener la oportunidad de ganar una patineta, una bicicleta o un monopatín eléctrico, ingrese su correo electrónico.
Para ser elegible para participar en el sorteo, debe ingresar un correo electrónico válido y seleccionar el sorteo en el que desea participar en la pregunta siguiente. Los ganadores se elegirán al azar entre todas las participaciones después del 30 de septiembre de 2024. Los ganadores recibirán una notificación por correo electrónico y deberán aceptar el premio en un plazo de 7 días o se sorteará un nuevo ganador

26. ¿En qué sorteo desea participar?

- ◯ Tarjeta de regalo de $500 para Recycled Cycles
- ◯ Monopatín eléctrico Segway Ninebot G30 (valorado en $700)
- ◯ Tarjeta de regalo de $200 para Market Skateshop O tarjeta de regalo Visa

Back Submit

¿En dónde va cada vehículo?

¡Gracias!

El cuestionario está completo. Gracias por su tiempo.

~City of Fort Collins

100%

City of Fort Collins

STRATEGIC
TRAILS PLAN

J

APPENDIX J:
Additional Resources

ADDITIONAL RESOURCES

Ciabotti, et. Al, 2023. Trails as Resilient Infrastructure Guidebook. U.S. Department of Transportation, Federal Highway Administration.

Economic Benefits of Greenways and Trails, Trails and Greenways Clearinghouse of the Rails to Trails Conservancy.

Pedestrian And Bicycle Infrastructure: A National Study of Employment Impacts, Heidi Garrett-Peltier, University of Massachusetts, Political Economy Research Institute, (2011)

The Economic Impact of Local Parks, National Recreation and Parks Association (2022)

White, E.M., D.B. Goodding, and D.J. Stynes. 2013. Estimation of National Forest Visitor Spending Averages from National Visitor Use Monitoring: Round 2. Gen. Tech. Rep. PNW-GTR-883. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station

Economic Impact of Mountain Biking in the Grand Mesa, Uncompahgre & Gunnison National Forests, Maples and Bradley, Outdoor Alliance (2018)

Recreation Spending & BLM Sagebrush Lands Western Values Project, Pew Charitable Trust, ECONorthwest (2014)

Sea to Sky Mountain Biking Economic Impact Study Western Canada Mountain Bike Tourism Association, Headwaters Economics (2006)

Impact of Trails Hub Compilation of studies and reports on the impacts of a variety of trails from OHV to mountain biking to Rail Trails, including economic impact (American Trails, 2022)

The Business of Trails: A Compilation of Economic Benefits (American Trails, 2023)

Snapshot of the Economic Impact of Outdoor Recreation Economic impacts of outdoor recreation in the West (2012)

Economic Benefits of Trails Compilation of studies and reports quantifying economic benefits of trails in Pennsylvania and across the country (We Conserve PA)

Brown, JD and Helen Santiago Fink. 2022. Planning for Biophilic Cities. American Planning Association, PAS report 602

Wallace, Dr. George N. Law Enforcement and the Authority Resource. Colorado State University

West, A., Brookshire, K., Ciabotti, J., Bryson, M., & Gelinne, D. (2022). Advancing Trails to Support Multimodal Networks. Pedestrian and Bicycle Information Center.

City of Fort Collins

STRATEGIC
TRAILS PLAN

K

APPENDIX K:

Estimates of Probable Cost by Unit & Construction Year

Cost Range by Target Construction Year			
	Estimated 2030 Cost	Estimated 2040 Cost	Estimated 2050 Cost
Trail Design	$53-$64 per linear foot $280,000-$337,000 per mile	$71-$86 per linear foot $376,000-$453,000 per mile	$96-$115 per linear foot $506,000-$609,000 per mile
Trail Construction	$126-$514 per linear foot $660,000-$2,710,000 per mile	$169-$691 per linear foot $890,000-$3,650,000 per mile	$227-$929 per linear foot $1,200,000-$4,900,000 per mile
Trail Total (Design + Construction)	$940,000-$3,047,000 per mile	$1,266,000-$4,103,000 per mile	$1,706,000-$5,509,000 per mile
Grade-Separated Crossing per unit (Road or RR)	$2,300,000-$11,800,00	$3,100,000-$15,800,00	$4,100,000-$21,200,000
Grade-Separated Crossing (Water - avg. 70 LF)	$1,165-$1,360 per linear foot	$1,565-$2,530 per linear foot	$2,100-$3,400 per linear foot

City of Fort Collins

STRATEGIC
TRAILS PLAN

L

APPENDIX L:

Summary of Recommendations

City of Fort Collins
STRATEGIC
TRAILS PLAN

FORT COLLINS STRATEGIC TRAILS PLAN SUMMARY OF PLAN RECOMMENDATIONS

Recommendation	STP Page
Asset Management	
Annually update the inventory and maintenance assessment geodatabases.	24
Develop and deploy a GIS-based asset management system for paved trails that identifies infrastructure lifecycle replacement intervals such as how often to replace adjacent crusher fines path.	24
Identify trail maintenance staffing needs and opportunities for volunteers to support with trail upkeep.	24
Conduct routine inspections of grade separated crossings	24
Create a program to install new and/or restore existing gravel paths adjacent to paved trails	24
User Experience	
Develop a trails amenity plan.	33
Continue implementation of the 2015 Bicycle Wayfinding Plan and apply to proposed trails as they are constructed.	33
Identify opportunities for co-locating signs where appropriate, such as with Natural Areas.	33
Environmental Stewardship	
Park Planning and Development to administratively formalize an "Environmental Stewardship for Trail Development Policy" within six months of plan adoption.	39
Trail Safety and Education	
Trail Safety Education Campaign – Develop a contemporary and ongoing multimedia safety education campaign that addresses common concerns and provides safety education, messaging, and resources, including guidance specific to the types of allowed e-bikes, allowed speeds, and consumer education.	61
Courtesy and Etiquette Signs - Use existing sign design or develop new design and increase sign frequency along the trail system reflecting key safety messages of multimedia campaign.	61
Warning Signs and Striping Improvements - Create consistency, refresh centerline striping, and install warning signs at bridges, underpasses, and trail junctions.	61
Continue coordination with FC Moves to include path patrols and routine trail pop-up events to provide trail user safety education. Explore opportunity to expand this program to Park and Natural Areas rangers and the Volunteer Ranger Assistant program.	61

Recommendation	STP Page
Develop the FoCo Trails Program to expand community familiarity and transparency into the City's trails system.	61
Irrigation Ditches & Trail Development	
Focus trail development where the City has a shareholder interest and greater influence; work through existing City representatives on irrigation ditch company boards to coordinate with companies on potential trail development.	66
Focus future trail development efforts along corridors that are identified as "likely agreeable to trail development" on the Irrigation Ditch Viability Map.	66
Engage ditch company managers and boards in early discussions on potential trail development and determine how projects can be developed to provide shared benefits.	66
Focus on ditch/trail corridors that connect community resources such as residential areas, retail hubs, community or recreation centers, parks, open spaces.	66
As pre-development work commences on proposed trails, assess environmental impact of co-locating a trail adjacent to an irrigation ditch's existing alignment. Some irrigation ditches may provide a wildlife habitat and migration corridor. Determine if impact can be avoided and/or minimized or mitigated.	66
Evaluate return on investment of opportunities to take on or share ditch maintenance responsibilities in exchange for constructing a trail within the ditch corridor.	66
Prior to trail construction, develop formal agreements that address both trail development and management/maintenance. Define parameters for development and use of trails that do not impact the ditch or canal's original functions.	66
Establish agreed-upon design guidelines for the trail at the outset of negotiations with ditch companies.	66

City of Fort Collins

STRATEGIC
TRAILS PLAN

M

APPENDIX M:

Trail Safety Messages

RIDE RESPONSIBLY

Help make the trail safe and enjoyable for everyone.

City of Fort Collins

KEEP RIGHT,

PASS LEFT

Stay to the right and only pass
on the left when it's clear.

City of Fort Collins

GIVE A HEADS-UP

Use a bell or say

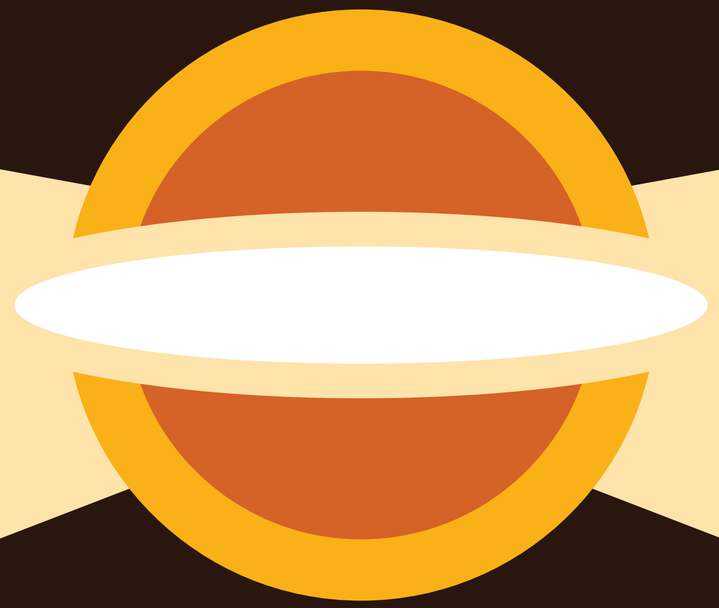
"ON YOUR LEFT!"

before passing.

City of Fort Collins

BE SEEN

A front and rear reflector are required.



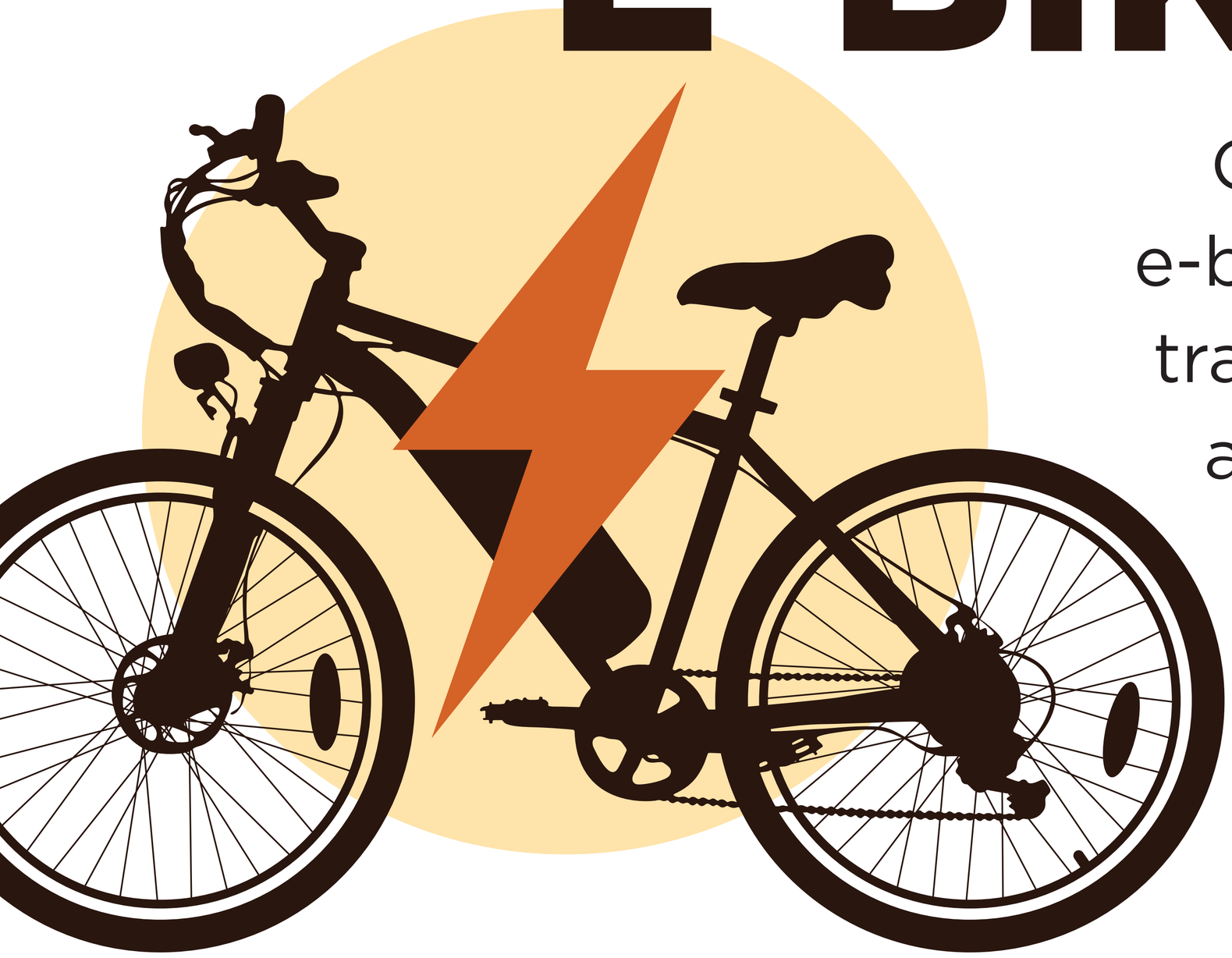
City of Fort Collins

SLOW DOWN

Ride with care in busy areas and always yield to people on foot.

City of Fort Collins

KNOW YOUR E-BIKE



Only Class 1 and 2 e-bikes are allowed on trails. Slow down and announce yourself when passing.

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WATCH FOR OTHERS

Be extra careful around blind corners, underpasses, and bridges—oncoming walkers and riders are just around the bend.

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LEASH AND SCOOP

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Keep pets leashed and always clean up after them.

BRING A BUDDY

It's safer
to travel with a
companion after dark.

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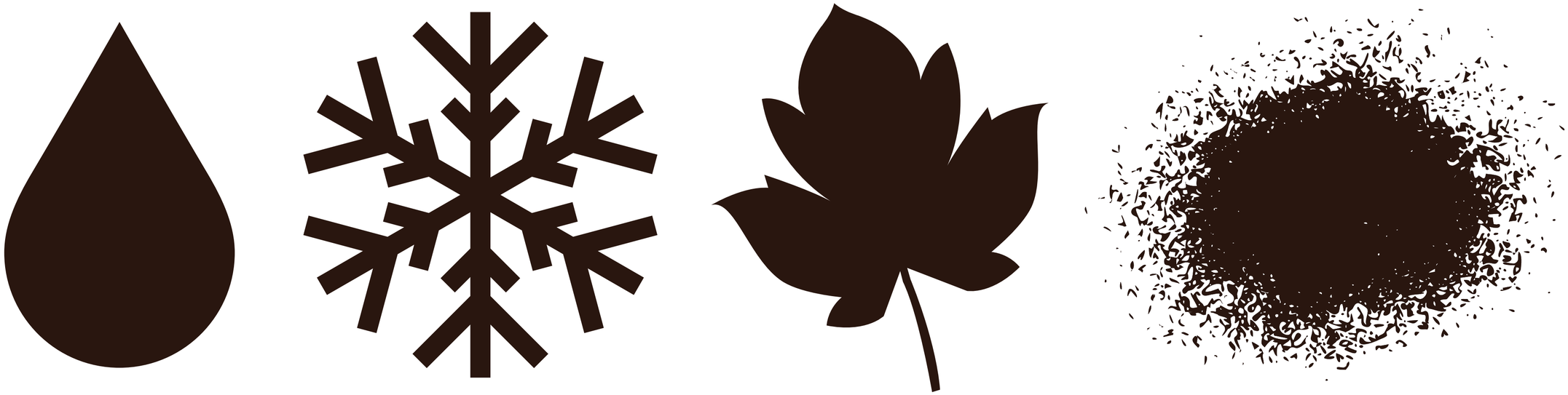
MIND THE CONDITIONS



Rain, snow, ice, leaves, and sand can make trails, bridges and underpasses slippery—ride and walk with care.

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RESPECT THE CONE

Stay off closed trails and follow all detours—they're there for your safety.

City of Fort Collins

SHARE THE SPACE

Wildlife lives here too—stay alert and give animals space.

City of Fort Collins