

Casper Trails, Path and Bikeway Plan Appendices

Appendix A - Public Input Summary

Appendix B - Recommended Bicycle Network Facility and Action Maps

Appendix C - Prioritized Projects and Bicycle Network Cost Estimates

Appendix D - Design Strategies for Achieving High Quality Facilities

Appendix E - Wayfinding Signage Protocol

Appendix A: Casper Area Trails, Path, and Bikeway Plan Public Engagement

I. Public Open House - May 30th 2013

This memorandum summarizes the public engagement and input since the inception of the Casper Area Trails, Path, and Bikeway Plan. Public input received to date will inform the development of Plan recommendations. Much of the information in this memorandum will be included in the final Plan report. Additional public engagement efforts will occur over the next several months, including a public meeting, an potentially focus groups.

A public open house was held on May 30th, 2013 to present an overview of the Plan development process and information on the different types of bicycle and pedestrian improvements. Input was sought on the Plan's goals and objectives, specific improvements that are needed to enhance walking and bicycling in the Casper Area, as well as how improvements should be prioritized. There were approximately 45 attendees from the public. The top and bottom five goals from this process are listed below. The top goals had a heavy focus on engineering (goals 1, 3, 4) but also considered encouragement (2) and education (5). The bottom goals included education, enforcement, encouragement, and evaluation goals. A common theme identified through this process, is a strong desire to improve the bicycle and walking infrastructure in the Casper area. This theme was also reflected in written comments in the Casper Area Trails, Path and Bikeway Plan online survey (discussed later).

Top Five Goals

1. Link sidewalks to other pedestrian facilities, such as urban trails and pathways to create a connected and convenient pedestrian network.
2. Increase the amount of bicycling and walking in the Casper Area
3. Integrate bicycling and walking considerations into all roadway planning, design, construction, and maintenance
4. Improve accessibility for bicyclists and pedestrians around/through barriers such as intersections, freeways, discontinuous streets, and flood prone areas.
5. Educate all road users to share the road and interact safely

Bottom Five Goals

1. Establish a committee for non-motorized mobility to evaluate Plan implementation
2. Enforce traffic laws to improve the safety and comfort of all road users
3. Establish information programs to promote bicycling for all purposes
4. Develop a comprehensive way-finding sign program to direct bicyclists using the bicycle network to destinations, along lower stress neighborhood routes and off-street paths, and around barriers
5. Prioritize bicycle and pedestrian improvements and identify funding sources and mechanisms that address highest priorities first.

Participants voted on top priorities for improving bicycling and walking conditions in the Casper Area. Below are listed the top three priorities for both walking and bicycling (a tie occurred for third place in bicycling so four are listed). The prioritized improvements for walking again reflect a strong desire to focus on engineering, through improved and new sidewalks. The improvements for bicycling reflect a similar focus on engineering though a desire for additional connectivity and improved roadway crossings.

Prioritizing Improvements - Walking

1. Construct missing sidewalk sections
2. Repair/replace existing sidewalks in poor condition
3. Improved roadway crossings
4. Improved connections to trails access points
5. Improved access to transit stops

Prioritizing Improvements - Bicycling

1. Improved connections to trails access points
2. Improved roadway crossings
3. Improved access to Downtown Casper
3. Signage to help direct bicyclists and walkers
5. Improved access to Casper College
5. Bicycle parking

Rank	Goal	Votes
1	Link sidewalks to other pedestrian facilities, such as urban trails and pathways to create a connected and convenient pedestrian network.	23
2	Increase the amount of bicycling and walking in the Casper Area	17
3	Integrate bicycling and walking considerations into all roadway planning, design, construction, and maintenance	17
4	Improve accessibility for bicyclists and pedestrians around/through barriers such as intersections, freeways, discontinuous streets, and flood prone areas.	15
5	Educate all road users to share the road and interact safely	14
6	Increase the number of trail access points connected to on-street bicycle facilities and develop safe, visible transitions and roadway crossings at these locations	14
7	Foster and promote a culture where bicycling and walking are viable and acceptable forms of transportation	13
8	Improve the safety of pedestrians and bicyclists of all ages and abilities	10
9	Provide safe and convenient bicycle access to all parts of the community through a signed network of on- and off-street facilities, and low-speed shared streets	10
10	Increase bicycle parking throughout the Casper Area, particularly where demand is highest (e.g. downtown Casper, schools, shopping areas)	7
11	Complete the sidewalk network and other pedestrian facilities within the vicinity of schools	6
12	Provide dedicated funding for bicycle and pedestrian development and maintenance	6
13	Enhance pedestrian linkages to transit stops to maximize connections between origins and destinations	5
14	Prioritize bicycle and pedestrian improvements and identify funding sources and mechanisms that address highest priorities first.	5
15	Develop a comprehensive way-finding sign program to direct bicyclists using the bicycle network to destinations, along lower stress neighborhood routes and off-street paths, and around barriers	3

16	Establish information programs to promote bicycling for all purposes	2
17	Enforce traffic laws to improve the safety and comfort of all road users	1
18	Establish a committee for non-motorized mobility to evaluate Plan implementation	0

Prioritizing Improvements	
Walking	
Construct missing sidewalk sections	16
Repair/replace existing sidewalks in poor condition	13
Improved roadway crossings	10
Improved connections to trails access points	8
Improved access to transit stops	7
Improved access to Casper College	5
Improved access to Downtown Casper	4
Signage to help direct bicyclists and walkers	4
Improved access to schools	3
Improved access to parks	3
bicycle parking	2
More curb ramps	1
Improved access to shopping areas	0
Bicycling	
Improved connections to trails access points	21
Improved roadway crossings	16
Improved access to Downtown Casper	9
Signage to help direct bicyclists and walkers	9
Improved access to Casper College	7
bicycle parking	7
Improved access to shopping areas	3
Improved access to schools	2
Improved access to parks	2
Improved access to transit stops	0
More curb ramps	0
Construct missing sidewalk sections	0
Repair/replace existing sidewalks in poor condition	0

2. Online Survey Results

An online survey was used to identify public attitudes and perceptions about bicycling and walking, major barriers, what aspects of the existing network currently work or don't work, and identify specific locations or streets needing improvement. The survey was available online from May 8, 2013 through June 19th, 2013. Information from the survey will be used to inform the program, policy, and bicycle network recommendations that are included in the Plan. It is important to note that this survey was self-selected; therefore the results are not statistically significant.

One hundred and forty eight (148) surveys were completed, of which 42 were only partially completed, representing a 74.6% full response rate. The most frequently cited concerns expressed by survey respondents regarding walking and biking in the Casper area include:

- Inattentive/reckless motorist behavior
- Lack of connections of bicycle and walking network
- Lack of safe street crossings
- Lack of off-street and dedicated on street pathways

A summary of survey response highlights is provided below. Following the highlights are summary tables and charts illustrating the results of each survey question in the order that they appeared in the online survey form. Write-in responses to questions are included following the tables and charts.

HIGHLIGHTS

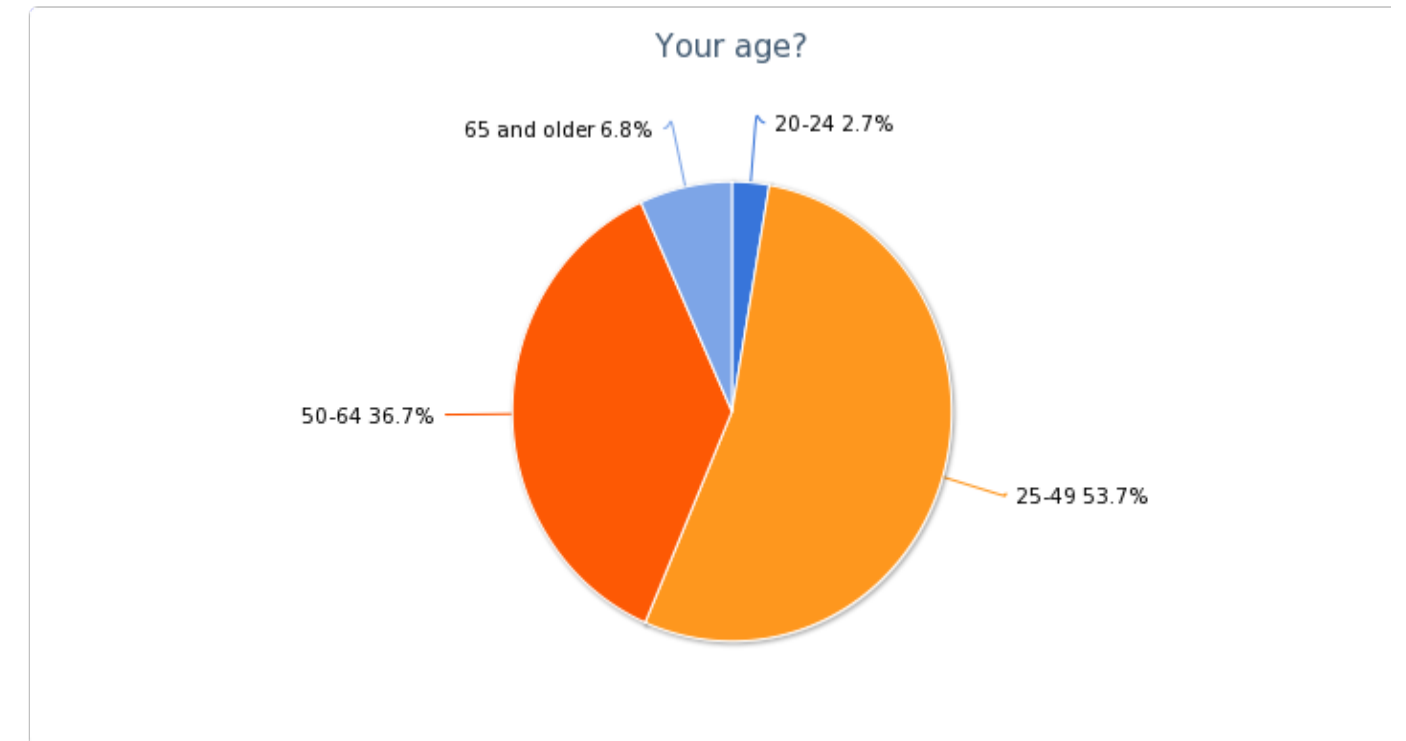
- A total of 147 respondents participated the survey.
- The average age of respondents was 36.7.
 - A 53.7% majority of respondents were between ages 25 and 49.
- The survey created three tracks for respondents, based on the their bicycling and walking habits.
 - 15.9% of respondents reported walking in the Casper area
 - 13.1% of respondents reported bicycling in the Casper area.
 - 69.7% of respondents reported both walking and bicycling in the Casper area
 - Only 1.4% of respondents responded that they neither walked nor bicycled.
 - Common reasons identified as making walking unpleasant included:
 - Reckless or inattentive drivers
 - Lack of sidewalks or gaps in sidewalk network
 - Drivers not stopping for pedestrians in crosswalks
 - Common factors of deciding whether or not to ride a bicycle included:
 - There are not enough bicycle lanes
 - Drivers are disrespectful or aggressive towards bicyclists
 - I don't feel safe riding a bicycle around cars and trucks
- Respondents were asked what they liked most about bicycling in Casper, common responses included:
 - It's healthy.
 - The networks of off street paths and trails.
 - I am within bicycling distance of many destinations.
- Bicycle respondents represented a mix of confidence levels as well as facility preferences.
 - Confident cyclist who rides in mixed traffic on any type of street, including busy streets (39.5%)
 - Recreational cyclist who rides mainly on trails and paths or calm residential streets (29.4%)
 - Cautious cyclist who tries to avoid busy streets even where there are bicycle lanes, or will ride on a sidewalk or path to get to a destination on a busy street (22.7%)
 - Confident cyclist who rides on busy streets only where there are bicycle lanes (8.4%)
- Respondents who walk within the Casper area were asked why they walk and how frequently

- The most frequent reasons included walking to: exercise, relax, and walk the dog.
- The least frequent reasons included walking to: the bus, school, and work.
- 23.1% of respondents indicated that they had children under the age of 15
 - 32.1% of respondents indicated that their children walked unaccompanied by adults in the Casper area.
 - Common factors respondent parents considered when considering whether or not to allow their children to walk place included:
 - Street crossings are unsafe
 - Drivers are unsafe or unaware of pedestrians
 - Speeding traffic
 - 37.9% of respondents indicated that their children bicycle unaccompanied by adults in the Casper area.
 - Common factors respondent parents considered when considering whether or not to allow their children to bicycle on their own included:
 - I don't want them riding a bicycle around cars and trucks
 - Drivers are disrespectful or aggressive towards bicyclists
 - There are not enough shared use trails
- Respondents were asked which improvements would most encourage them to walk more, common responses included:
 - More complete network of streets, paths, trails
 - More respectful/aware motorists
 - More separation between sidewalk and moving vehicles
 - Easier/safer street crossings
- Respondents were asked which improvements would make Casper a great place to bicycle, common responses included:
 - More off-street paths and trails
 - More bicycle lanes
 - Better on-street connections between trails
- Respondents were asked which programs or information sources would improve their bicycling experience, common responses included:
 - Education for motorists on how to respectfully share the road
 - On-line Bicycle Maps
 - Community events (e.g. bicycle-to-work)
 - Information about the best routes to get to my destinations

Casper Area Trails, Path, and Bikeway Plan

.....Introduction Here.....

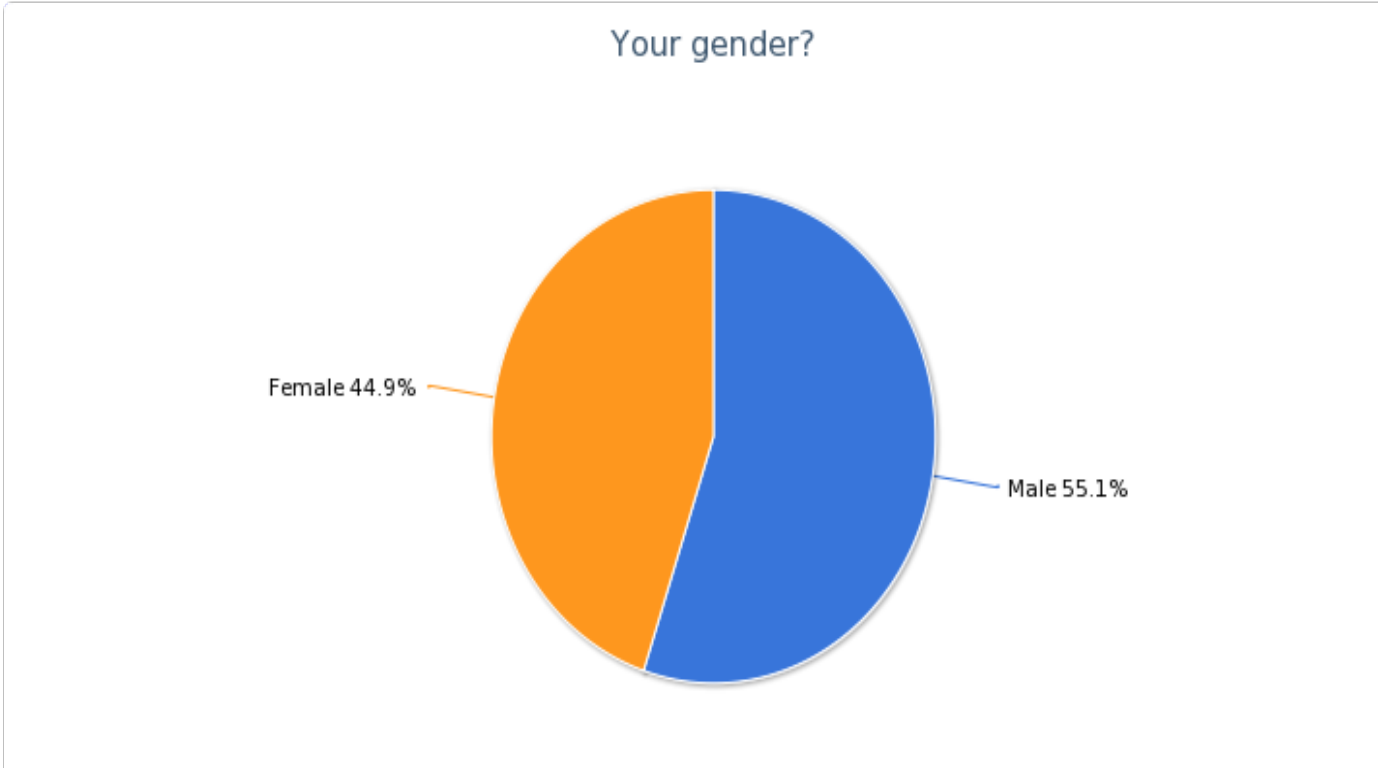
Your age?



Value	Count	Percent
under 15	0	0.0%
15-19	0	0.0%
20-24	4	2.7%
25-49	79	53.7%
50-64	54	36.7%
65 and older	10	6.8%

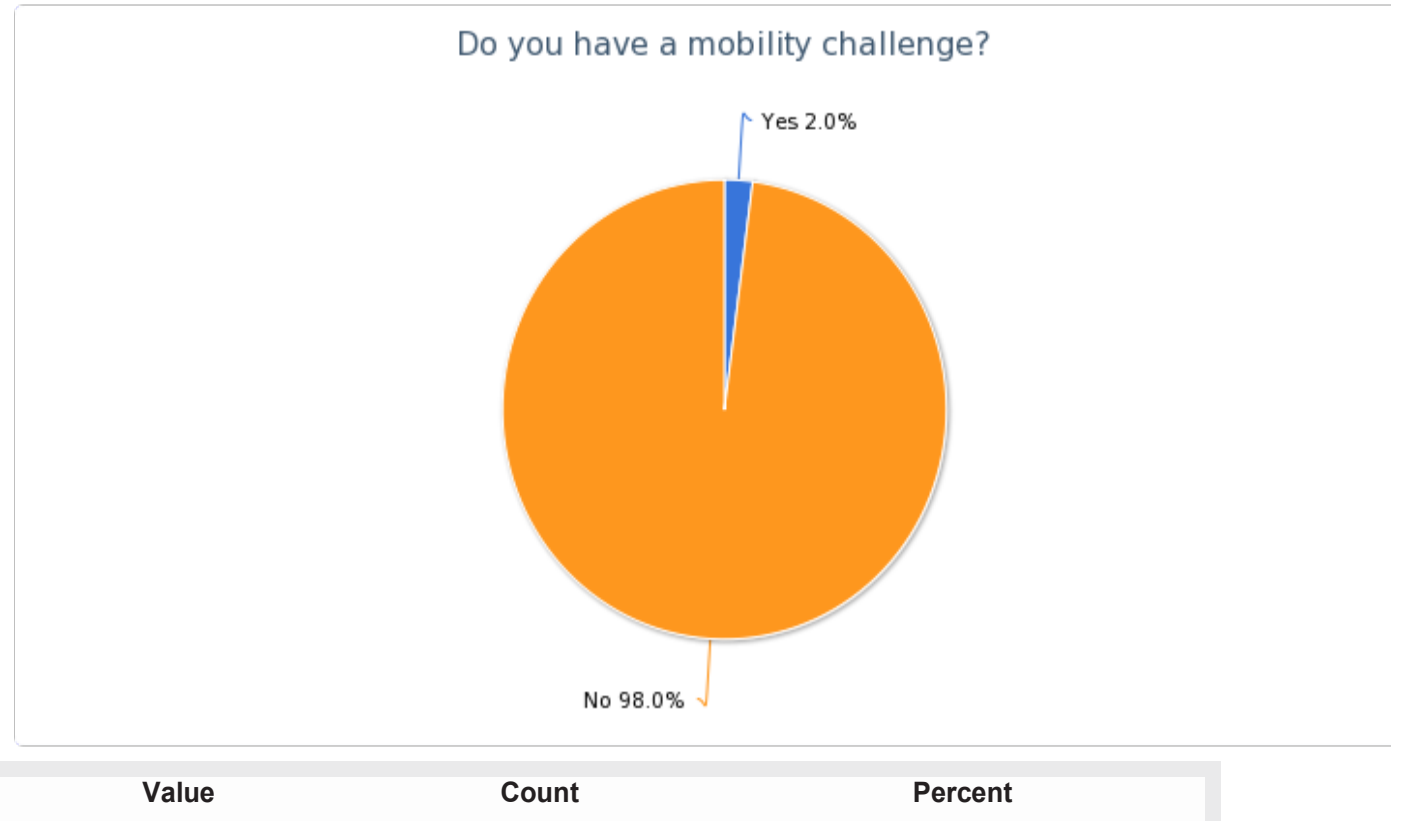
Statistics	
Total Responses	147
Sum	5,397.0
Avg.	36.7
StdDev	14.2
Max	65.0

Your gender?

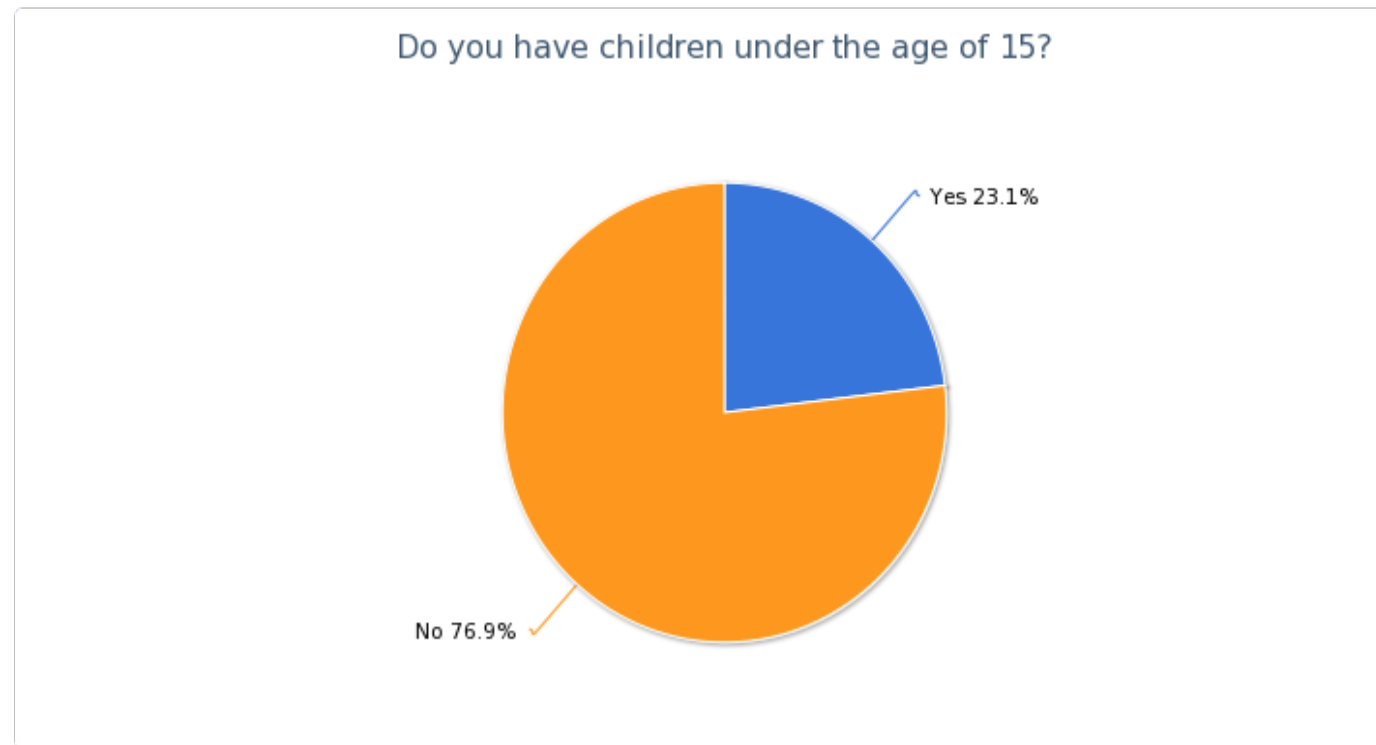


Do you have a mobility challenge?

Do you have a mobility challenge?

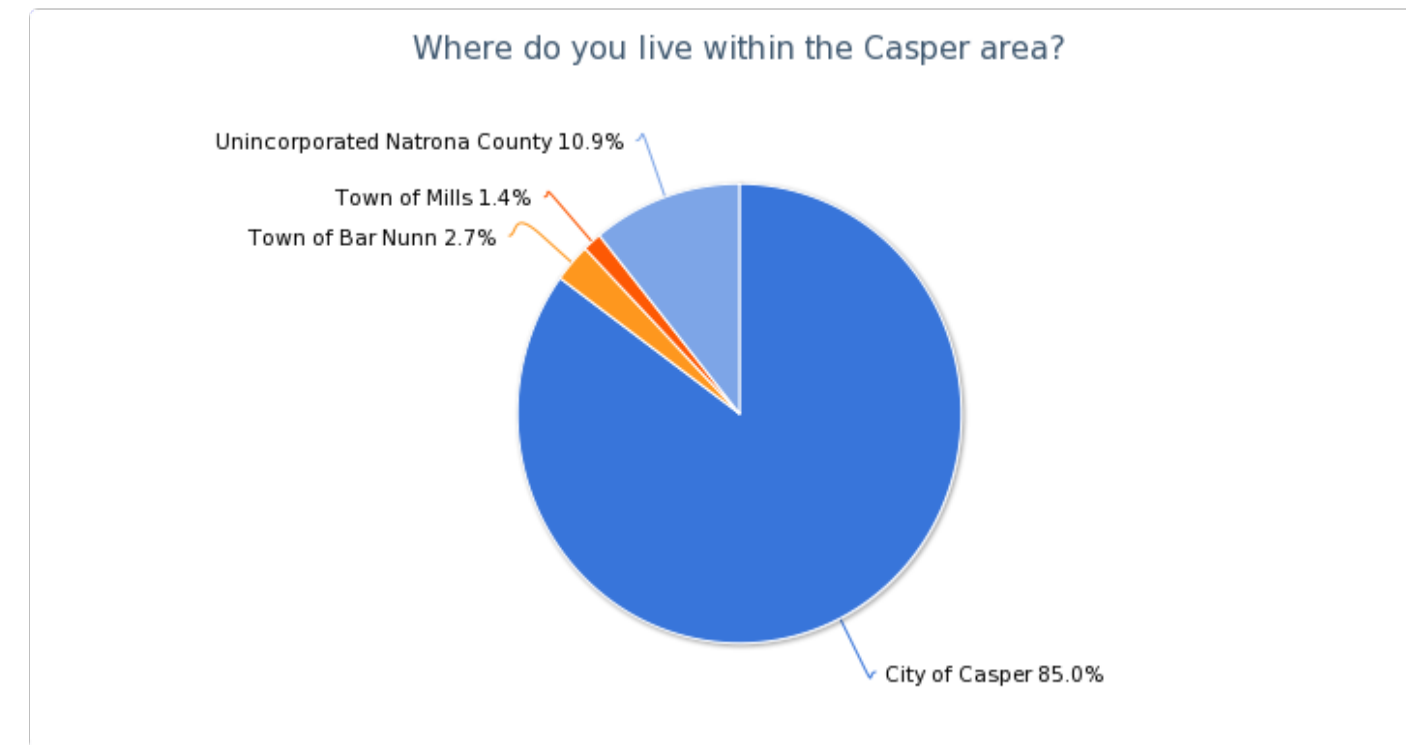


Do you have children under the age of 15?



Value	Count	Percent
Yes	34	23.1%
No	113	76.9%

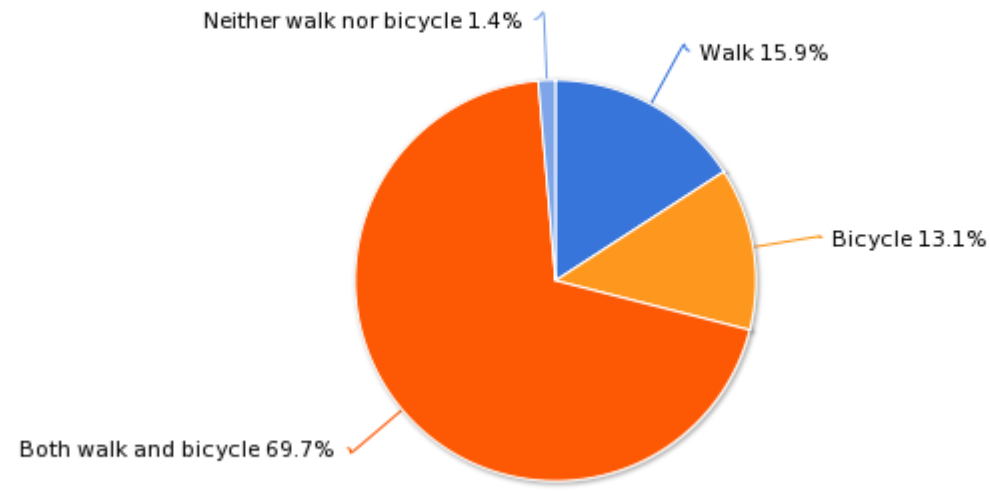
Where do you live within the Casper area?



Value	Count	Percent
City of Casper	125	85.0%
Town of Bar Nunn	4	2.7%
Town of Mills	2	1.4%
Town of Evansville	0	0.0%
Unincorporated Natrona County	16	10.9%
Not sure	0	0.0%

Statistics

Do you walk and/or bicycle in the Casper Area? (Note: the way you answer this question will determine whether you are asked questions only about walking or bicycling, or about both walking and bicycling)



Value	Count	Percent
Walk	23	15.9%
Bicycle	19	13.1%
Both walk and bicycle	101	69.7%
Neither walk nor bicycle	2	1.4%

Statistics

Total Responses	145
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If you WALK in the Casper Area, please tell us why and how often for each purpose.

	Frequently (5 or more days/week)	Occasionally (1-4 days/week)	Rarely (1-2 days/month)	Never	Responses
I walk to the bus	0.0% 0	1.5% 1	7.6% 5	90.9% 60	66
I walk to the park	12.0%	39.8%	37.3%	12.0%	83

I walk the dog	10 34.0%	33 27.8%	31 4.1%	10 34.0%	97
I walk for exercise or personal fitness	33 53.7%	27 38.0%	4 8.3%	33 0.8%	121
I walk to relax	37 38.1%	36 37.1%	20 20.6%	4 4.1%	97
I walk to reach destinations for running errands, shopping or entertainment	12 14.5%	23 27.7%	28 33.7%	20 24.1%	83
I walk to school	4 5.4%	4 5.4%	4 5.4%	62 83.8%	74
I walk to work	5 6.3%	8 10.1%	10 12.7%	56 70.9%	79
I walk to see friends/family	11 12.8%	24 27.9%	23 26.7%	28 32.6%	86
Other	5 10.6%	6 12.8%	9 19.1%	27 57.4%	47

Generally speaking, what factors make it DIFFICULT or UNPLEASANT for you to WALK in the Casper Area? Please select up to 3 factors from the list, in order of importance (1 being most important)

Item	Total Score ¹	Overall Rank
Reckless/inattentive drivers	93	1
No sidewalks or many gaps in sidewalk network	76	2
Drivers not stopping for pedestrians in crosswalks	72	3
Weather/climate	59	4
Lack of direct connections to my destination	58	5
Cracked or broken sidewalks	49	6
Places I need to go are not within walking distance	48	7
I don't find anything difficult or unpleasant about walking in Casper/Mills/Evansville/Bar Nunn Area	34	8
No space or not enough space to walk on bridges	34	9

Item	Total Score ¹	Overall Rank
Worries about personal security (from crime, stray dogs)	33	10
Heavy traffic	32	11
Inconvenient street crossings (long wait times, indirect)	29	12
Sidewalks are too close to moving vehicles	26	13
High vehicle speeds	17	14
Unattractive/unappealing streets (no trees, large parking lots along sidewalk, buildings without windows to the street, neglected properties)	16	15
Poor/inadequate lighting	7	16
Lack of signage or other information that tells me where I am	3	17
Lack of facilities for people with disabilities (such as curb ramps)	1	18
Not enough time given to cross intersections	0	19
I have mobility limitations (poor health, use of wheelchair or walking aid)	0	20
Total Respondents:		

¹ Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

.....SUMAMRY NARATIVE.....

Please list any **SPECIFIC LOCATIONS** (e.g., street and nearest intersection or destination such as the name of a school, park, medical service, bus stop) in the Casper Area that need improvements to make Walking safer and more comfortable.

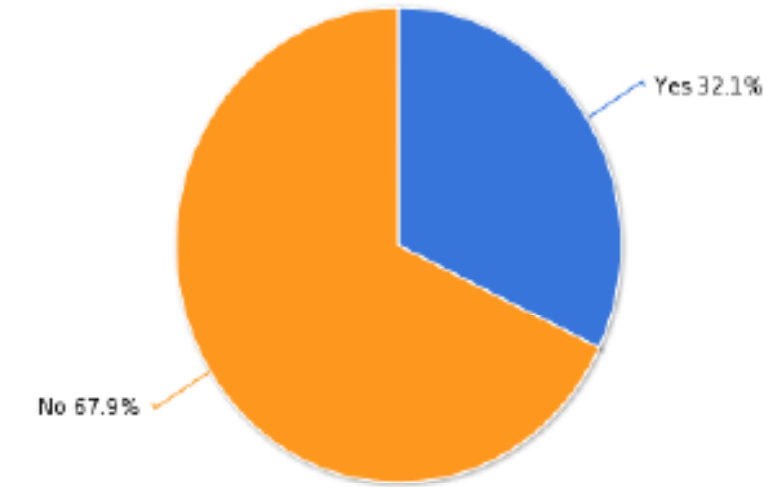
Location-1.

Comments (all comments represent one response)

- 12th St
- 12th and Bretton
- 13th & Wy. Blvd.

Do your children walk unaccompanied by an adult within the Caspar Area?

Do your children walk unaccompanied by an adult within the Caspar Area?



Value	Count	Percent
Yes	9	32.1%
No	19	67.9%

If you have **CHILDREN** who already **WALK** places on their own or wish to **WALK** places on their own, which factors do you consider most when deciding whether you should allow them? Please select up to three choices, in order of importance to you. (1 being most important)

Item	Total Score ¹	Overall Rank
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Item	Total Score ¹	Overall Rank
Street crossings are unsafe	22	1
Drivers are unsafe or unaware of pedestrians	22	2
Speeding traffic	19	3
Too much traffic	17	4
There are not enough sidewalks	10	5
Schools discourage my children from walking	9	6
Distances are too great, it would take them too long to walk to the places they want to go	9	7
Weather	7	8
There are not enough trails and paths	7	9
I do not feel they are safe from crime	4	10
I don't walk, therefore my children don't walk	0	11
Hills	0	12

Total Respondents:

¹ Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

Item	Total Score ¹	Overall Rank
Showers and lockers at work	0	12
More wide outside lanes (easier to share lane with cars)	0	13
Better accommodations for bicyclists at intersections (signal detection, dedicated space, more signal time to clear intersection)	0	14
Better bicycle access to bus stops	0	15

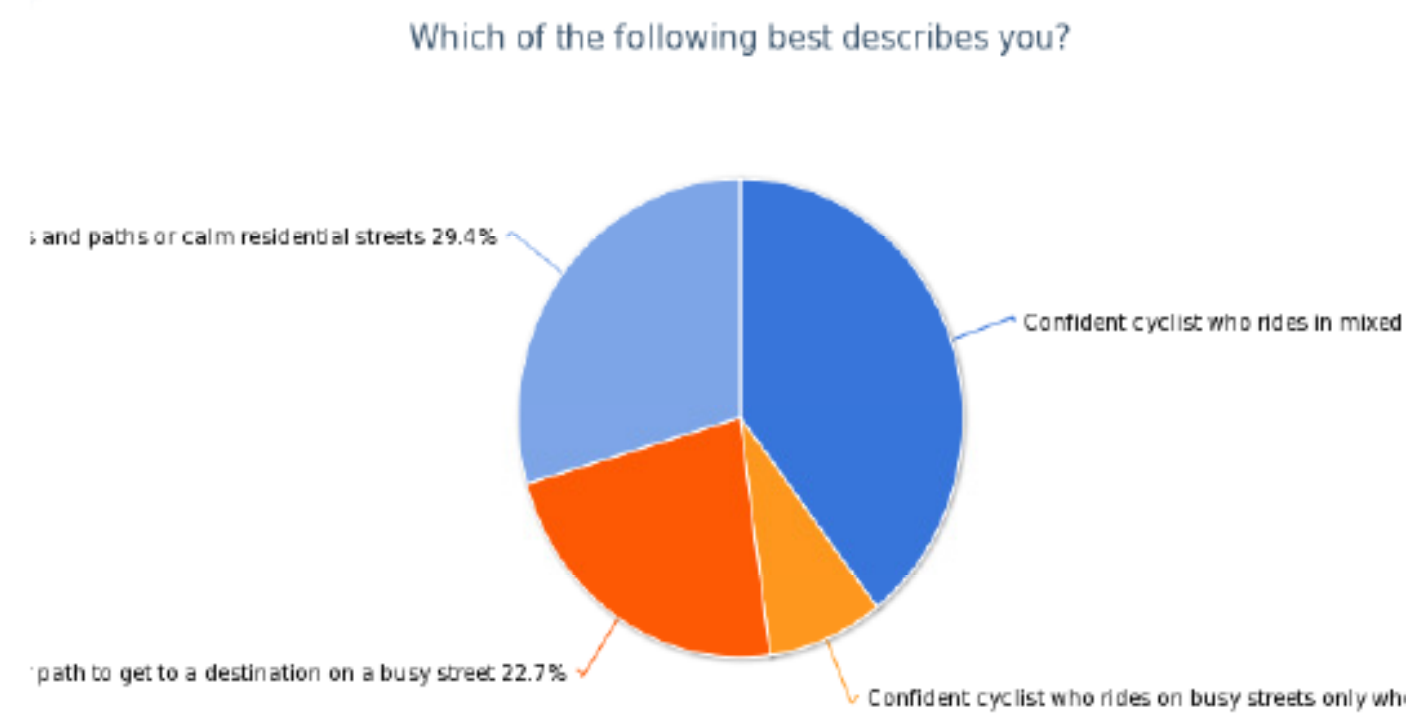
Total Respondents:

¹ Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

Which of the following improvements would make the Casper Area a place you would consider BICYCLING in? Please select up to three choices in order of importance to you. (1 being most important).

Item	Total Score ¹	Overall Rank
None of the above	21	1
More off-street paths and trails	19	2
More bicycle lanes	11	3
More complete network of bicycle routes on low speed, low traffic residential streets	8	4
Better on-street connections between trails	8	5
More bicycle lanes that are separated from traffic by a physical barrier	8	6
More signage that makes it easier to follow preferred bicycle routes	3	7
Paved shoulders	3	8
Better bicycle parking/storage	2	9
Increased maintenance (street sweeping/repair of roads)	2	10
Increased enforcement of traffic laws	1	11

Which of the following best describes you?



Value	Count	Percent
Confident cyclist who rides in mixed traffic on any type of street, including busy streets	47	39.5%
Confident cyclist who rides on busy streets only where there are bicycle lanes	10	8.4%
Cautious cyclist who tries to avoid busy streets even where there are bicycle lanes, or will ride on a sidewalk or path to get to a destination on a busy street	27	22.7%
Recreational cyclist who rides mainly on trails and paths or calm residential streets	35	29.4%
Someone who doesn't ride a bicycle, but would if it were safe and/or convenient	0	0.0%
I don't ride a bicycle and don't think I ever will	0	0.0%

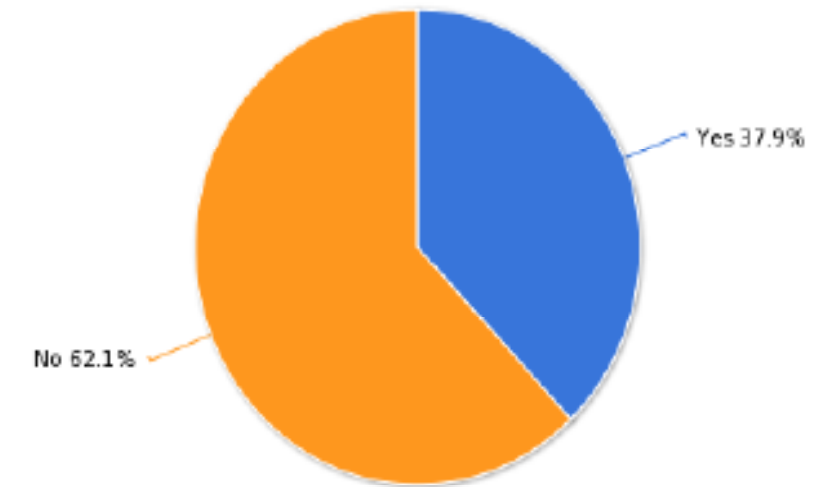
Which factors do you consider when deciding whether or not to ride a BICYCLE in the Casper Area? Please select up to three choices, in order of importance to you. (1 being most important)

Item	Total Score ¹	Overall Rank
There are not enough bicycle lanes	124	1
Drivers are disrespectful or aggressive towards bicyclists	114	2
I don't feel safe riding a bicycle around cars and trucks	85	3
There are too many barriers that make bicycling inconvenient (freeways, railroad, river, lack of street connectivity)	71	4
Weather	58	5
There are not enough shared-use trails	51	6
Road surfaces are poor (potholes, cracks, debris, etc.)	45	7
None of the above	21	8
Distances are too great, it would take me too long to bicycle to the places I need to go	20	9
I don't know of a bicycle route to my destination where I feel safe	18	10
I have too much to carry	14	11
Trail surfaces are poor (gravel, cracks, debris, etc.)	10	12
Lack of secure bicycle parking	9	13
Changing clothes is inconvenient	8	14
I have small children	8	15
Hills	7	16
I do not feel personally safe from crime	2	17
I own a bicycle but it's not in good riding condition	0	18
I am physically limited from riding a bicycle	0	19
I don't have a bicycle, or my bicycle is in poor condition	0	20
Total Respondents:		

¹ Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

Do your CHILDREN BICYCLE unaccompanied by an adult within the Casper Area?

Do your CHILDREN BICYCLE unaccompanied by an adult within the Casper Area?



Value	Count	Percent
Yes	11	37.9%
No	18	62.1%

If you have CHILDREN who already BICYCLE on their own or wish to BICYCLE on their own, which factors might discourage you from allowing them to do so? Please select up to three choices, in order of importance to you. (1 being most important)

Item	Total Score ¹	Overall Rank
I don't want them riding a bicycle around cars and trucks	42	1
Drivers are disrespectful or aggressive towards bicyclists	15	2
There are not enough shared-use trails	14	3
Distances are too great, it would take them too long to bicycle to the places they want to go	11	4
There are not enough bicycle lanes	9	5

Item	Total Score ¹	Overall Rank
None of the above	9	6
Weather	5	7
There are no safe places for them to bicycle near where we live	5	8
There are too many barriers that make bicycling inconvenient (freeways, railroad, river, lack of street connectivity)	3	9
Their bicycle is not in good riding condition	3	10
Road surfaces are poor (potholes, cracks, debris, etc.)	3	11
Schools discourage my children from bicycling	2	12
Lack of secure bicycle parking	2	13
Hills	1	14
I don't bicycle, therefore my children don't bicycle	1	15
I do not feel they are safe from crime	0	16
Trail surfaces are poor (gravel, cracks, debris, etc.)	0	17
They are physically limited from riding a bicycle	0	18
They don't have a bicycle	0	19
Total Respondents:		

¹ Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

Which of the following improvements would make the Casper Area a great place to BICYCLE? Please select up to three choices in order of importance to you. (1 being most important).

Item	Total Score ¹	Overall Rank
More off-street paths and trails	165	1
More bicycle lanes	160	2
Better on-street connections between trails	69	3
More complete network of bicycle routes on low speed, low traffic residential streets	49	4
Paved shoulders	47	5
More bicycle lanes that are separated from traffic by a physical barrier	46	6
More wide outside lanes (easier to share lane with cars)	43	7
Better accommodations for bicyclists at intersections (signal detection, dedicated space, more signal time to clear intersection)	39	8

Item	Total Score ¹	Overall Rank
Increased enforcement of traffic laws	34	9
Increased maintenance (street sweeping/repair of roads)	22	10
Better bicycle parking/storage	11	11
Showers and lockers at work	3	12
Better bicycle access to bus stops	3	13
More signage that makes it easier to follow preferred bicycle routes	2	14
Total Respondents:		

¹ Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

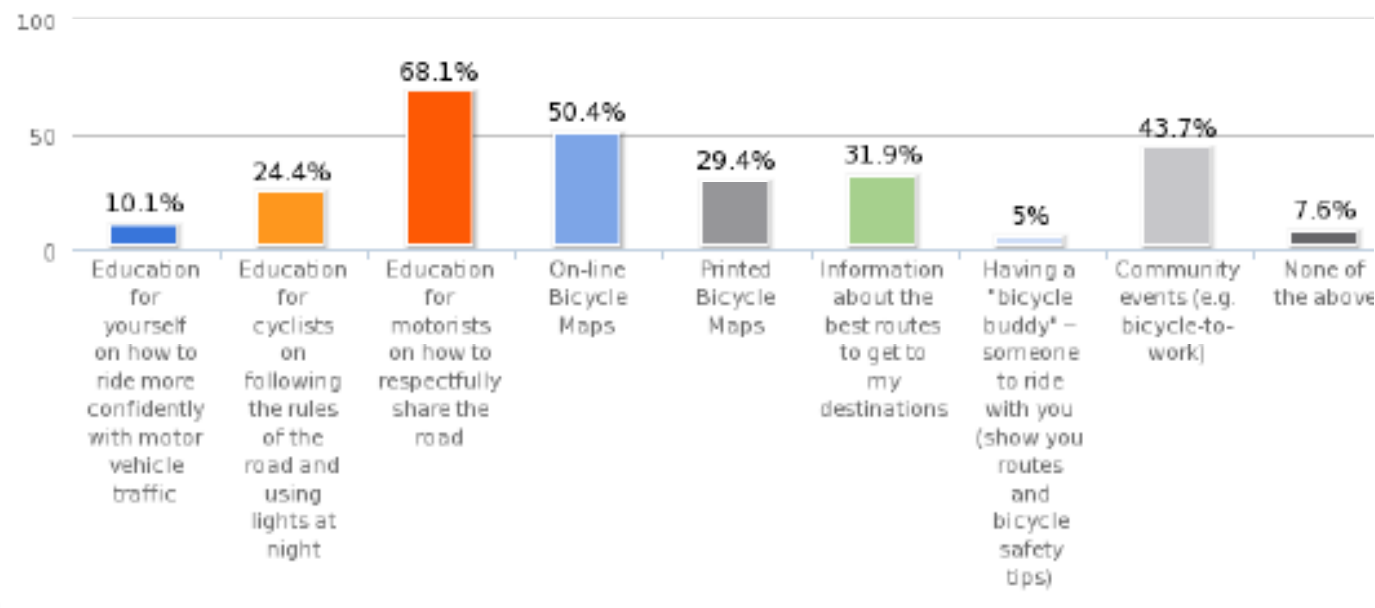
What do you like most about BICYCLING in the Casper Area? Please select up to three choices in order of importance to you. (1 being most important).

Item	Total Score ¹	Overall Rank
It's healthy	232	1
The network of off street paths and trails	122	2
I am within bicycling distance of many destinations	97	3
It's economical	83	4
I feel like I am helping the environment	59	5
It is a quick way to get around	31	6
The network of on-street bicycle facilities (e.g. bicycle lanes, paved shoulders)	21	7
Road surfaces are well maintained	12	8
Crossing roadways is safe and easy	3	9
Motorists respect bicyclists on the roadways	1	10
None of the above	0	11
Total Respondents:		

¹ Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

Which of the following programs or information sources would improve your BICYCLING experience in the Casper Area? (Select all that apply)

Which of the following programs or information sources would improve your BICYCLING experience in the Casper Area? (Select all that apply)



Value	Count	Percent
Education for yourself on how to ride more confidently with motor vehicle traffic	12	10.1%
Education for cyclists on following the rules of the road and using lights at night	29	24.4%
Education for motorists on how to respectfully share the road	81	68.1%
On-line Bicycle Maps	60	50.4%
Printed Bicycle Maps	35	29.4%
Information about the best routes to get to my destinations	38	31.9%
Having a "bicycle buddy" - someone to ride with you (show you routes and bicycle safety tips)	6	5.0%
Community events (e.g. bicycle-to-work)	52	43.7%
None of the above	9	7.6%

Statistics	
Total Responses	119

Which if the following improvements would encourage you to WALK more often? Please select up to three choices in order of importance to you. (1 being most important).

Item	Total Score ¹	Overall Rank
I am unlikely to walk more often	27	1
More complete network of sidewalks, paths, trails	17	2
More respectful/aware motorists	12	3
Easier/safer street crossings	8	4
Increased enforcement of traffic laws	3	5
More street trees	3	6
Seeing more people walking	3	7
More separation between sidewalk and moving vehicles	3	8
Increased maintenance of sidewalks, paths, trails	2	9
Better lighting	1	10
More direct connections between destinations	0	11
More curb ramps at intersections	0	12
Better connections to a bus stop	0	13

¹ Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

Which of the following improvements would encourage you to WALK more often? Please select up to three choices in order of importance to you. (1 being most important).

Item	Total Score ¹	Overall Rank
Easier/safer street crossings	5	1
More separation between sidewalk and moving vehicles	3	2
More complete network of sidewalks, paths, trails	3	3
Better connections to a bus stop	1	4
Seeing more people walking	0	5
I am unlikely to walk more often	0	6
Better lighting	0	7

Item	Total Score ¹	Overall Rank
Increased enforcement of traffic laws	0	8
More direct connections between destinations	0	9
Increased maintenance of sidewalks, paths, trails	0	10
More street trees	0	11
More curb ramps at intersections	0	12
More respectful/aware motorists	0	13
Total Respondents:		

¹ Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

Which of the following improvements would make the Casper Area a place you would consider BICYCLING in? Please select up to three choices in order of importance to you. (1 being most important).

Item	Total Score ¹	Overall Rank
More bicycle lanes that are separated from traffic by a physical barrier	6	1
Better accommodations for bicyclists at intersections (signal detection, dedicated space, more signal time to clear intersection)	3	2
More off-street paths and trails	3	3
Showers and lockers at work	0	4
Better bicycle parking/storage	0	5
Increased enforcement of traffic laws	0	6
None of the above	0	7
Increased maintenance (street sweeping/repair of roads)	0	8
More wide outside lanes (easier to share lane with cars)	0	9
More complete network of bicycle routes on low speed, low traffic residential streets	0	10
Better on-street connections between trails	0	11
Paved shoulders	0	12
More bicycle lanes	0	13
More signage that makes it easier to follow preferred bicycle routes	0	14
Better bicycle access to bus stops	0	15

3. Online Survey - Written Comments

The following pages represent the raw (unedited) comments from the Casper Area Trails, Path, and Bikeway Master Plan online survey. While answers were open ended and varied greatly, several prominent themes emerged.

Enforcement and Education

A concern that was present throughout all written response questions was that of personal safety while walking or bicycling. The most common comment in this regard was that motorists in the Casper area are either inattentive, reckless, or don't follow traffic regulations. Several suggestions were made including additional enforcement of regulations and education of motorists.

Engineering

Lack of Connectivity - Another concern that persisted throughout all written comment sections was the lack of connectivity in the bicycle and pedestrian network. When discussing walking respondents frequently cited a lack of, or inadequate, sidewalks and crosswalks. Respondents discussing bicycling had positive feedback about existing infrastructure including the Platte River Trail and mountain biking trails on Casper Mountain but expressed desire for additional infrastructure.

Facilities Requests - Respondents identified several types of bicycle and walking facilities that they wished to see more of. The most frequently requested facilities included additional dedicated bicycle lanes, off-street path ways, and cross walks.

Other Requests - In addition to facilities requests, respondents also expressed a desire for separation from motorists. Common requests included additional trees and street beautification.

What changes would encourage you to walk more in the Casper Area?
A path
Although I love the river trails, I will not walk them by myself unless in very visible areas.
Better connections to other Casper trail systems and more trail systems to main attractions.
Better crossings on the rail trail.
Better policing of traffic laws and keeping pets under control
Better side walks
Cautious drivers, see above.
Connection of all the paths so you can get from one to the other without dodging cars
Connectivity of the bicycle paths and parkway trail.
Downtown: heated sidewalks for winter Improved sidewalks More sidewalks
Education. Separation from cars. Dedicated lanes.
Extend the PRP farther East & West.
Force people to shovel their sidewalks, and keep their yards clear of the sidewalk.
Friendlier interaction with motorists.
I can't think of anything.
I don't really have the time available to walk more.
I don't walk much, by nature.
I walk very often, and do not need any encouragement.
I walk/bicycle whenever I can
If there were more hiking trails like the ones at Crossroads.
Increased lighting for safety
Less traffic
Less traffic, more pathways. I'd walk or bike to work if I lived closer.
Less wind
Less wind? More time on my hands.
Lighting. Clean the paths regularly.
Make the wind stop. :)
More Trails to run on like the ones at crossroads or something along wyoming blvd and CY
More activity and and people walking. Dogs on leashes.
More bike lanes or dedicated walking/bike paths. More street trees.
More bike/walking trails.
More comprehensive trail system that extends around the city. Connects the parks etc.
More laws concerning front lawns and too many vehicles parked on the street.
More paths between subdivisions, more routes to shopping areas.
More paths.
More paths. Would like to see one on Casper mountain road from the college to Outer-drive
More pathways
More pathways in busier retail areas like the McMurry Business Park.
More pathways.
More people walking. More restaurants and bars downtown, close to where I live.
More shade trees More off street paths More trail connectivity Longer trail routes

More sidewalks
More sidewalks along or close to streets and bridges.
More sidewalks and paths
More signals and pathways completed.
More walking paths.
N/A
None
Pathway around Outer Drive
Safer/respectful drivers. "Blue Light" call centers (direct lines to police) for safety
Sidewalks that are properly maintained.
Sidewalks to the path
Trails on mtn marked
Trees that provide shade on the walkway.
Vehicles stopping for others would make me walk more on eastside
Wider sidewalks, better lighting.
Younger age and physical ability--not possible for this old guy.
additional off street paths.
better connections to parks
better traffic enforcement, esp. at intersections
law enforcement increased.
more pathways
more side walks
start going towards the mountain
How are there so many areas in Casper that have no sidewalks? Sidewalks that do exist are right next to the street and vehicles frequently park blocking the sidewalk.
Encourage and enforce leash law. Maintain sidewalks and walkways, removing/cutting back bushes, fixing broken concrete
A network of trails that help access the main trail system from other parts of the city would be beneficial.
More dog friendly trails and parks separate from bicyclists. Casper is not a dog friendly area. I like to walk and run with my dogs sometimes and I keep them on leash, but Morad is too small an area and bicyclists ride too fast when on the path with dogs around. I have one dog that is blind and one that is deaf so I have to be vigilant--keep them on leash at all times. A bicyclist actually hit my blind dog while at Morad. I didn't have time to warn the cyclist that my dog was blind and couldn't see him.
more curb ramps so children can be pushed in strollers. Also in neighborhoods if it is their trash day walking is very difficult to stay on the sidewalk.
I would enforce leash laws. I have had dogs bite me and attack my dog which is always on a leash. I'm about ready to start carrying a baseball bat with me.
We walk regardless of many conditions, but it would be more enjoyable with more MUPs (multiple use paths).

Complete network of sidewalks that are wide and maintained. Ramps at all intersections that are grooved with audio signals for the blind. Painted crosswalk markings on the road and flashing lights for oncoming traffic. Passing a legal pedestrian right-of-way on all streets that is seriously enforced by local police.

I would like to see a mixed trail system. In Fort Collins and Grand Junction, they have a small gravel trail next to the cement trail. Running on cement is hard on your feet.

I live at 21st and Missouri. It would be nice if there were more walking paths that connect to each other in that area.

More beautification downtown. More activities, restaurants etc. There's such a great network of paths already, it would be so awesome if they could just be connected. Like a way to get from Mike Sedar down to three crowns and then connect to downtown. There's really no way to get from the riverpark area to downtown, you have to cross poplar and there's no great place to do it. Or you have to go on the north side of the river and get off at 1st street.

Better lighting and even surfaces would make evening walks safer. (I usually carry a flashlight.) Some of the streets are very narrow, so I don't know that it's appropriate to ask citizens not to block sidewalks. I doubt it would be enforced.

Lately this year I have been seeing more people out walking than ever before- Maybe I just didn't notice it before, but it can really motivate a person to follow a trend.

Sidewalks or paths that lead and connect to other paths that take you the core of Casper. I live on South side of Casper...south of WY Blvd/Mtn. Road. There are no sidewalks or paths.

Increased enforcement or traffic laws to ensure motorists are driving in a courteous manner around cyclists and pedestrians.

Be able to get across the dike at Yesness pond in the winter--now there is too much drifted snow across it. Could the weeds south of it be cut? Have the west trail completed at Yesness pond. This would provide a trail if the dike is drifted in. Right now it has a big gully in it that I can't get through without a lot of help.

Ask homeowners to shovel the snow from their sidewalks, and if they don't, enforce and fine them. In addition, fine homeowners who don't pull weeds and maintain their yards.

Enforcement of crosswalk laws. A few "sting" type operations by CPD would help bring attention to this.

I do not like the new crossing systems put in the downtown. I think they should change to WALK even if the button is not pushed. (There is always people waiting to cross downtown and they don't push the button usually, so the WALK sign does not come on)

Have restrooms available year-round in parks and along the trails. For women this can be a big issue that keeps them from going as long and as far as they might like to.

My location is Sunrise V. A good Connection to Yesness park and Casper College would increase my walking. Expanding the number of bus stops would help as many destinations are distant. I prefer walkable development instead of the strip mall type.

WAY better crosswalks, sidewalks that weren't right next to traffic (such as the one on the south side of second street between beverly and country club and between the eastside Safeway and Wyoming Blvd.-and speaking of 2nd and Wyoming Blvd...there should be a skywalk there to SAFELY cross), but there are many just as bad. North Casper doesn't even have sidewalks in a lot of places so people walk down the middle of the street, dodging speeding cars...which is another problem...

Honestly, I doubt any changes will get me to walk more with weather and distance being the main obstacle.

If city workers are too busy to remove the snow, there are most likely private individuals that could or would contract with the city in order to provide snow removal services.

Sidewalks would be nice. Some neighborhoods have none at all and those that do have sidewalks right next to the street. I never feel safe walking around town.

Better separation between the road and sidewalks (green spaces). People not parking cars on or across sidewalks.

(1)Enforcement of traffic laws. (2)Wider sidewalks with a parkway between the street and the sidewalk as found in the older parts of Casper.

More complete/safe connections to trails. I work off the corner of 1st & Poplar, which is right across the street from the river and walking trail, but the intersection's light cycle doesn't allow a lot of time or safety for a person to cross to get to the trail.

If my house was located a little closer (with in 5 blocks/1/2 mile) to a grocery or convenience store.

Clearing of the entire pathway of snow in winter. Home owners clearing their sidewalks of snow in winter.

Connecting our subdivision to the walking path by Morad park possibly by a walking overpass across CY. It is very hard to cross the street and pretty unsafe.

Detached walks, bike lanes, street trees, or anything else that adds distance between the vehicles and myself.

The only one I could think of that keeps me from walking is the lack of sidewalk on the over pass on Poplar St. The city put in an incomplete sidewalk over the railroad tracks. It stops around the top.

Traffic law enforcement (cars parking sidewalks, stopping at cross walks, going slowly when passing walkers), more walking/bicycle paths (across bridges) and throughout town.

More trees and more amenities on the West side of Casper that could be walking distance from PV, more direct trails with direct crossing. CY is the most direct route, yet, there is not sidewalk and not pedestrian bridge over WY Blvd

Road maintenance and proper lighting for increased security in the downtown area for after hours walking ie. when the movies are out and just enjoy downtown window shopping.

What do you like/not like about bicycling in the Casper Area (please be specific)?

Too many hills! What can you do about that?
All the hills are good exercise and many times it is faster to travel by bike than car.
Being along the river.
Can't get to a long enough trail. It is very difficult with children.
Do not like riding in traffic. Disconnected trails.
Don't like the drivers. Don't like cigarette butts thrown at me.
I do not bicycle.
I have not bicycled in the Casper area.
I like the bicycling paths. Don't like the rood traffic.
I like the single track areas by crossroads park
I like using the Platter River Trail System.
I love biking Casper, some people are inconsiderate though
I love some of the dirt trails and paved trails through wooded areas and by the river
Lack of connection of key spots. Breaks in trails (Rail Trail for e.g.), Casper College etc.
Lack of respect from motorists.
Like the path. Scary to ride on the roads with traffic
Limited bike lanes and lack of paths leading to shopping areas
Many streets are too narrow or do not have shoulders.
Motorist not aware of the laws about sharing the road with bicyclists. Roads aren't wide enough.
Motorists often do not watch for bicycle riders and pull out in front of the bicycles.
Need pathway around Outer Drive
Need transit routes across town - E-W
No safe access to bike/walking trail from wolf Creek
No safe routes without fighting traffic. Need more off street trails.
Poorly maintained pavement Gravel and sand on pavement. Loose dogs.
Riding on the bike path to work.
Same as above
Same as the walking, traffic has no respect for walkers/bikers.
See 18
See number 18
Some days in winter are tough, that's about it.
The paths
The road conditions are AWFUL! More bike lanes
There are many tricky intersections such as CY and Poplar.
There are no bike paths on the road ways except for the centennial area. Include all areas.
Traffic. Scary. They don't know how to react or give a cyclist room
Unattentive and disrespectful drivers
Unattentive motorist
Wind

none
safety is an issue
tails and pathways
there is not enough bike lanes
I love the bike trail that goes from the soccer fields to PV. I would like a safer place to cross by Fort Caspar Museum though.
I can ride to work about as fast as driving. The trail system makes going across town nice-not having to think much about traffic. My direct route is on Casper mtn road N of Outer Drive. Narrow shoulder, fast traffic. Could be improved with a shoulder or path. I think Casper drivers are less used to cyclists & pedestrians so don't watch for them as much.
There are many nice places to bicycle. I wish that there were more shoulders on roads, ie. Robertson Road from CY to Poison Spider. Use a street sweeper to clean the shoulders more regularly on roads that are popular for cyclists.
The current Platte River Bike/walk path is EXCELLENT! More paths of this sort connecting other parts of town would be better.
I always feel like I ride in "survival mode" around Casper. There is zero enforcement of traffic laws. Crosswalks are dangerous as motorists never stop for foot/cycle traffic.
-I fear for my safety when sharing roads with Casper motorists. (Even with bike lanes!) -Vehicles don't always yield at crosswalks or often jam through intersections on red lights. +The town is small enough that most places are accessible by bike.
Traveling by bicycle allows for a healthy, environmentally friendly way to commute. When cycling, I always wear bright yellow and orange riding jerseys as well as use a headlight and tail light on my bike because of the disrespectful driving habits of motorists. On Hat 6 Road, large diesel trucks will pass as close as they can and wait until the are right beside cyclists before they accelerate quickly to produce a large, LOUD plume of black exhaust to intimidate and frustrate cyclists. While this is the area where drivers are most frequently disrespectful, it happens all over town with people who are unaware of cyclists and careless when they pass.
I don't bike in Casper because I feel the roads are to unsafe. People in cars don't feel the need to share their road space.
The Mtn. bike trails up on Casper Mountain are amazing as is the river trail and the mountain biking trails North of north casper by the river. It would be nice to have some more bike lanes, and some main streets that can act as bike thoroughfares to get from East to West.
Some motorists feel like we don't belong on the road, I pay taxes too. I also feel that motorists using cell phones cause me more close calls than anything else.
The Ft. Casper, 13th - Wyo. Blvd. Crossing is on the wrong side of both 13th and Wyo Blvd. the north and west corners are safer and more convenient. I love the trail from PV to Beverly.
There are possible opportunities to construct a system of mountain bike trails for exercise and recreation in and around the city.
I love the river trail and hope that it someday goes to EKW park. A bike lane along Poplar Street would be nice. More bike lanes in general would be good. Traffic is respectful of bikes going up Casper Mountain but not always within Casper on the streets.
I bike anywhere on almost any street or path and that works okay. The biggest thing is that motorists don't pay attention and for the most part don't think bikes should be on the road. I think better education of the general public would be great.

There is no functional network of streets that provide a safe route through the city. The streets that I use are in serious disrepair, most of them are filled with post-apocalyptic potholes and cracks. The dedicated path network is disconnected and have limited functionality for transportation. The paths are not direct and they do not connect in a sensible way. The path's surfaces are also not maintained to an adequate standard, and they are insufficiently lighted at night. There are also no hazardous weather shelters, bicycle maintenance stations, restrooms, or emergency phones along the path network. The speed limit is too high on residential streets, and the current speed limit is rarely followed or enforced. Drivers have not been educated on how to share the road with cyclists (this is of utmost importance!!!). Many of the traffic signals are weight triggered which is not compatible with bicycles. Most of the businesses in town lack street parking for bicycles. Locations that have bicycle parking, i.e. the library, have a rack that does not accommodate a d-lock and therefore is unusable. The instruction for cars passing bicycles is vague and in need of clarification.

Need a safe way to transition the platte river parkway from Mills across river to Fort Caspar, also need a river crossing in Paradise Valley to Dempsey Acres. Another crossing from N. McKinley to PRP would be great also.

Many motorists are not aware of or do not allow for a safe passing distance (3 feet) for cyclists.

Careless drivers. I ride everyday to work which is close as I live downtown and work downtown. I ride on the sidewalks in downtown and I know it is against the law, but to ride in the street during work hours is insane. I am respectful and careful of other pedestrians.

I would like to see more paths created (dirt and paved) I think Casper drivers are RUDE and unsafe towards cyclists.

Very, very few bike lanes. I am a confident biker, but I still fear that motorists are clueless when it comes to knowing how bikers should act in traffic. (i.e., motorists are used to seeing bicyclists on sidewalks, and don't know what to do when a bicyclist uses turn lanes and hand signals like they're supposed to)

Enjoy the trail system. It does need repair. Biking on the streets is a bit sketchy because of the lack of crosswalks, signage, and education for drivers/cyclists.

Casper has great potential for a bike friendly community! The motorists here are terrible. There are times I feel scared in my vehicle let alone on a bike. I think a severe crack down on basic traffic laws would help people drive "nicer". I think the police should set the example. Most times they don't.

TOO MUCH BROKEN GLASS!!! The tunnel on McKinley that goes under the railroad tracks is ALWAYS littered in garbage and broken glass. It's one of the only routes to where we go, so we end up dodging glass shards that seems to always flatten our tires no matter how hard we try to avoid it. Aside from that, I do not like bicycling in Casper because of the rude, angry drivers, and the bicycle UNFRIENDLY businesses. Who wants to battle traffic, bad crosswalks, lack of connectivity of trails and broken glass only to find out your destination has no place to lock up your 800-1000 dollar bike. The Platte River Parkway is great, but it doesn't take you where you NEED to go.

The weather honestly is the biggest deterrent to riding in Casper. Long stops at traffic lights that don't "see" a cyclist at the light are a drag. Lack of bike lanes, narrow shoulders, lack of respect from motorists all are big factors while riding in Casper.

I hope more trails will be installed. I hope there will be more connections among the several fragments of trails around town. I wish those people who have opposed trails (like the Garden Creek trail and the Elk Horn Creek trail plans) would stop being selfish and simply become supportive for a more culturally valuable town.

I'm a lazy rider don't like the hills & most places I go is too far to bike. Live on west side, work on east

I ride a road bike and the paths wind so much that you cannot train properly. The path is made for leisure/recreational riding not for endurance training. Hat Six is a great area to ride but there is no shoulder and the traffic speed is extremely high. We ride long distances and there are very few shoulders on roads wide enough to safely be on a bicycle with traffic. Many parts of Wy Blvd have too many traffic lights now and the shoulders have been narrowed. The city has made Wy Blvd difficult for cars to get around let-alone bicyclists.

Feel very safe in my neighborhood whether I'm walking during day or after dark. Less traffic than larger cities. Ride the side streets or trails & try to stay off main streets if possible.

I use the available recreational trails often for biking, but would like to see bike lanes on Second St. and in other places so that biking could be more than recreational. This may be a chicken or the egg situation, but I feel that if you develop these lanes/trails people will use them.

I like that I can get almost anywhere in town on my bike using paths but I would like it to be easier to get to the paths. Many street don't even have sidewalks.

I love to ride and love Casper, but I am forced to stay off road ways due to safety. Drivers just do not pay attention nor do they know that bicyclist have a right to the road as well. It is just dangerous. The bike lane on Center St. isn't even safe. I has hit right in front of the Wonder Bar. I have been riding on roads where I was as far right as I could and got honked at constantly until I was forced off the road.

I far prefer biking on the pathway, to avoid traffic. Not that I'm so safety concerned, it is just much more pleasant.

The aggressive drivers who speed, don't recognize walkers, ignore walking lanes across streets. Ironically, police officers are in this category.

I love riding my bike! I think Casper is learning to drive with cyclists but we have a long way to go. Paved shoulders would be amazing on Wyoming boulevard. I think signage gets annoying and will be disregarded after time. Polite cyclists who are defensive will ultimately change things.

I feel fairly confident riding my bike to work (I take the highway almost the entire stretch), but I notice a lot of motorists aren't on the lookout for me and often try to turn without stopping for me.

I bike for endurance riding, so I frequently ride along the old Glenrock highway as well as 20/26, and occasionally motorists tend to not realize just how close they are to me while they drive. It's scary when a car flies by at 70 mph and kicks little rocks up along the back of your legs. Most of the time, people are good about sharing the road (when possible), but all it takes is one unaware motorist to make the bike trip miserable... I still love bicycling in and around Casper and will continue to do so for as long as I can.

Casper does have a lengthy cycling /walking trail. The trail encourages my kids and I to get out. Casper is behind times for sharing the road with Cyclist. Not enough access for walking and cycling.

Drivers can be rude. Wider lanes of traffic or better yet separated bike lanes to keep a safe distance from cars.

I had a driver try to scare me and try to come as close as possible on Collins and yelled for me to get off the road while trying to get to the paths.

Like: Platte River Parkway! Not like: From the East side, I can't ride easily to Bryan Stock Trail - the start of the Parkway. PLEASE try to get something connected from beyond Evansville. Also, on the streets drivers would just as soon run us over.

Doesn't feel safe. Hostile motorists. Bike lanes, etc. are done as an afterthought, and not well thought out.

Rails to Trails and Pathway. Wish they were connected better. Also wish there was more convenient connectivity to CY Ave, current route is way longer than it needs to be to get to sidewalk for safe cycling to grocery store.

like- pretty easy to get around dislike- feel very unsafe in traffic; no respect from drivers

My family and I love the Platte River Parkway and all the new trails in town. However, I live on the West side of town (Wolf Creek). Although our subdivision is great, we cannot get to the trail system at this time. I believe Outer Drive and CY Ave are unsafe for walkers and bicyclists and we have no connection to get to the downtown area. There are no sidewalks on CY Ave going west from outer drive. We would love to be connected to the rest of town.

People not walking on the right side of trails, or not paying attention when they are walking or not keeping children from running out into middle of trails when bikes are coming

Access to the bike path from my home is not convenient. I choose to drive with my bike to the bike path. I live in the county and must cross CY Ave (Hwy 220) to access the closest bike path which is 5 miles away.

I like riding when there are bike lanes. I am a cyclist and I often cycle to work and to run errands, and I feel much safer riding when there are bike lanes.

I like the pathway, I hate riding through the dog park, i dont know if the second path is going to help we will still have to stop get around people and their dogs there

Bike trails are not connected. I can't get anywhere in town on my bike without riding in the street. Motorists show no respect for cyclists in Casper. I refuse to ride on the street in Casper

I live off of East 2nd in an area where I can access most of the places I need to get to by bicycle. Until my driver's license issues are resolved, a bicycle is my primary form of transportation. I enjoy biking, even on my days off in the area.

I have't started yet, but I have noticed that car drivers don't "see" bikers so it would be nice to have bike lanes throughout town. Also more walking/bike paths

Too many motorists think that bicycles do not have any right being on the motorist's road. I have ridden a road bike in and around Casper (as well as other areas) for over 20 years, and Casper motorists still scar the s*** out of me. When I have complained to the CPD about specific incidences, there has never been any response.

I run I don't do this. I would like my son to be able to and the connections between the path and getting to and from there is not kid friendly.

The proliferation of Goat's Heads in the path has led to so many punctured tires that I no longer use the bike paths. Proper weed abatement/spraying would take care of this problem.

Same problem as walking. Living in South Casper if I bike than I am forced to ride along City streets that are marked 40-50 mph. Very scary for cyclists.

I hate that I see 90% (literally) of people texting and driving. I will ride against traffic until that changes. No bike lanes, nobody follows rules of 3 feet between car and cyclist.

This is not a bicycle friendly town. There are people here that love to bicycle to work but they share the road with cars.

Lack of bike lanes and paths. Lack of wide shoulder for riding in. Either way you are too close to traffic and drivers are not courteous to bikers.

Ease of accessibility. Good streets and paths. Don't like having to cross or ride along side heavy traffic.

I like the trails system. However connecting the north/south trails to the main "rails to trails" section without riding on the street would make riding/avoiding busy streets more pleasant.

My biggest complaint are drivers can be aggressive and disrespectful of cyclists. The parkway is really helpful for getting around town on a bike. There not enough bike racks in the downtown area. They seem concentrated on 1st st. Half the time I ride downtown, I have to lock my bike to a sign post.

I enjoy the close proximity of my residence and any place I desire to go. I bicycle to work and do so every day.

What changes would encourage you to bicycle more in the Casper Area?
A pathway on the mountain road from garden creek to the collage
Access to ride a bike laterally through Casper.
As above.
Better connectivity to trails and more bike paths.
Better crossing on the rail trail and better connection of the rail trail and the river trail.
Bicycle lanes and barriers between the street and bicycle lane on bridges.
Bicycle routes.
Bike Lanes and share the road signs to encourage everyone to place nice.
Bike lanes and shoulders
Cautious drivers, see above.
Connecting us to the Morad park trail.
Connections of the paths would be my point
Connectivity
Connectivity, bike racks, respect from drivers.
Construction of trails in and around Casper.
Dedicated bike lanes and motorist education.
Dislike speeding and inconsiderate motorist
Driver education. Cyclist need to obey traffic rules too.
ENFORCE TRAFFIC LAWS!
Educating the general public on bike safty. EX: like the motorcycle information on awareness.
Fewer hills! Seriously, separated bike paths.
I bike 5 days a week already.
I bike a lot. Changes would just give me more options.
I cycle almost everyday of the year
If motorists were more cautious around cyclists.
If there were a good connection from the East side to the Platte River Parkway.
Improve the connectivity to the bike path from within the city of Casper.
Improving access from S. of Outer Drive, Casper Mtn road area.
Longer and more paths along the north platte river.
Maintained roadways and bikeways. Encourage and enforce leash law.
Make seperate bike areas so cars can't run bicyclists over.
More bicycle lanes.
More bike lanes
More bike lanes and areas for bicycles.
More bike lanes and paths
More bike lanes and wider shoulders.
More bike lanes for safety
More bike lanes or larger shoulders for riding
More bike lanes, biking trails, signage at intersections.
More bike lanes, more pathways away from traffic.
More bike lanes.

More bike lanes. More driver awareness.
More complete paths like the ones that they have in Colorado. Better shoulders to ride on
More connectivity from residential streets to the pathway system
More connectivity with convenient crossings that are direct to destinations or link neighborhoods
More designated pathways
More general bike lanes and paths.
More off street trails.
More paths and ideas of where to ride that range from easy to difficult.
More paths that are not on the city roads
More trail systems through the whole city!
More trails
More trails
More trails and dedicated bike lanes.
More trails like the one along the river that are off street and nicely graded.
More trails.
Need a safe passage from Mills towards Zero Road, too much traffic.
Nothing I bike whenever I want to.
Same as above
See 19
See answer to question 24.
Sidewalks or bike lanes would be great, but I will bike regardless.
Some real enforcement of motorists respecting cyclist.
The more trails the more I ride
Would like more north-south trails
connect Wolf Creek to the trail system
more connectivity of the paths
more trails
more trails to connect Mt. view area to Casper's trail systems
none
not much I bike often
My wife claims that I already bike too much :) I feel that just seeing more and more people riding will encourage even more and more people to follow trend. And hopefully with HELMETS!!!!
Making the edge of highway 20/26 a bike lane, designated by paint. I would also like to see the rail trail concrete extended past where it ends on the east side of Yellowstone
My biggest complaint is how motorists treat me when I am on my bike. I have experienced kindness as well but it is those occasional yells, honks and near brushes that I remember the most. They put my life in jeopardy and I have no recourse. Enforcement of laws or raising of public awareness would be a huge help. A hotline to call and report would be nice as well followed by a warning of some kind. Nothing punitive unless multiple offenses occur towards the same rider. I don't want to start a war between cyclists and cars. I, as a cyclist would lose.
wider bike lanes or separate bike lanes better enforcement and stiffer penalties for drivers endangering cyclists

I can't bicycle because I was in a bicycle accident when riding the MS 150 in Wyoming and had a TBI. That is why I walk 7 days a week at Yesness pond with my husband and dog. Please make it more accessible for me.

I would ride a lot more if I felt safer that drivers were aware of bicyclists, I think an ad campaign would help. Another good change would be a new law/mandate that every road in Casper that is going into construction plan on constructing a bike lane. This would spread out the costs of adding bike lanes to roads. Rapid City, SD is one example that is doing this right now.

More of a bicycle "culture" that encourages bicycle usage. More people on bicycles, community encouragement from discounts or specials if ride your bicycle to a destination such as to city hall to pay a bill, a restaurant, grocery store, rec center etc. Wider shoulders and bike lanes on roads would definitely help also. Traffic lights that "see" cyclists better would also help.

bike lanes, maybe improved and/or more bike trails, and online maps illustrating the bike routes.

Additional bike lanes and a widespread "share the road" campaign could make Casper a more bike friendly community.

More off street paths More trail connectivity Longer trail routes Bike to work days More bike parking options

Drivers need to be educated on the rights of cyclists to use the road and how to navigate with and around bicycles. A maximum 15 MPH speed differential for drivers passing cyclists, as well as, a mandatory minimum safe passing distance of three feet rule need to be established in the driver code. Establish a residential network of well-paved and plowed streets with reduced speed limits and appropriate markings, street paint and signage, that are usable for safe bicycle transportation throughout the city. Adjust the current path network to be usable for functional transportation through the city, and develop new paths that are fully connected and additionally include hazardous weather shelters, bicycle maintenance stations, restrooms, and emergency phones. Require the police to enforce the current right-of-way and speed limit rules!!

I am going to ride regardless. I did have a short term work assignment near the airport and I could not figure out how to ride there without endangering life and limb.

Perhaps there could be signage put up-"share the road". Enforcement of traffic laws. Educate motorists and cyclists about the rules of the road. I see bicycles on the sidewalks; I see bicycles riding against traffic; it's no wonder motorists are confused about where bicyclists belong.

An underpass linking the the Platte river Walkway crossing 15th& Wyoming BLVD. And an overpass to Cross CY&Wyoming BLVD.

Adding dedicated bicycle roads adjacent to roads like Casper Mt. Road, CY/Hwy 220, Hat Six, Poplar, Salt Creek, etc.... would be ideal--again, paths tend to wind around and are more for recreational riding. Clearly marking bicycle lanes and educating and marketing to the public about bicycling in Casper would be a helpful start. Semi-tractor trailers need educating as well. Many do not move over when they can and many honk their horns at bicyclists unnecessarily.

More bike lanes, eg the city is practicing road work on Fairgrounds Rd, lots of room and still not bike path to connect CY to the Fairgrounds!!

If police would enforce litter laws in Casper. I get sick of seeing so many people litter on purpose. How is this not noticed? There NEEDS to be more room on Wyoming blvd between CY and Casper MTN road.

Clearly marked alternative routes with bike lanes (such as along 4th St instead of 2nd); better marking of bike lanes with paint and signage. More bike racks.

More trails. Better weather. Quite frankly, I love going into Colorado, Utah, South Dakota and other locations for some great bicycle trails.

Traffic enforcement at crosswalks. Public awareness campaign about motorists sharing the road. Improvement on trail network.

Cleaner paths (no garbage and broken glass), better crosswalks, and discipline for aggressive drivers.

Again, until drivers are willing to be more attentive and courteous on the roadways, I won't be biking.

Creating either bike lanes or paths along the Mtn. Road and even WY Blvd would be a great addition to anyone living South/East/West to be safer and easier for biking!

More "off road" trails. I am a mountain biker. More bike racks. Better connectivity of current bike/walking paths.

Bike lanes! Every time a new road or construction is undertaken, there should be bike lanes added. Even as a motorists, it feels safer having wider roads whether some one is walking or cycling in the extra lane.

More trails, it seems that there are way more mountain bikers in the area lately and less road bikers, look at the ride for silence almost everyone there is part of the Fat Fish and very few Casper Wheelmen were represented, I think more trails in town would be used by all these new mountain bikers

Traffic that isn't always trying to challenge me. Most motorists are courteous and attentive. Cell phone users are horrible, some motorists are just jerks. Fix that and the weather and I'll ride everywhere. Some cyclists need to be educated as well, some bring trouble to us all.

More paths to more destinations. I am blessed to have the bike path near my home and to have my employment near the path also.

I would like to know what trails are on mtn. I am a single female & I LOVE the mtn but don't explore too much being by myself but sure there is much more on the mtn for me to enjoy

Provide continuous bike facilities throughout the community. No comprehensive approach so far. Think about destinations, and how people can get from residential areas to those destinations. Provide more separation from traffic. No east/west connections, most trails are north/south following drainages. Provide more river crossings (especially in North Casper and on West end of town).

Again, the connectivity is lacking. For instance, it would be so great to bike from downtown to the east or west side for shopping. But from the platte river path going west, there's no way to get up to the wal-mart area except to exit onto Wyoming Blvd. and that can be very intimidating for people. On the east side, there's this great rail trail path that goes along Midwest avenue and then all of a sudden it just ends under the freeway at Walsh. It looks on the map like it continues but there's no signage and no good way to get across the street. So if you want to get to the east side shopping areas, you have to go back up to second street and across which is terrible.

Better involvement in enforcing traffic laws by CPD. An encouragement for cyclists to report traffic scofflaws to CPD for enforcement (I currently feel that CPD really won't follow up on reports unless there is an injury).

What do you like/not like about walking in the Casper Area (please be specific)?

Casper is too spread out to walk most places. I would prefer to bike.
Closeness to cars. Yelling jerks.
Cold. Wind.
Crossing heavy traveled roads is worrisome and stressful.
Distances between destinations too far
Do not feel safe on the walking trail system
Dog poo and homeless are discouraging.
Don't like walking next to Noisy traffic.
Drivers who have no respect for others. Positive: Love the area and feel safe.
Existing routes are well maintained.
Feel very safe in my neighborhood whether I'm walking during day or after dark.
I do like walking because it is usually in a beautiful area.
I don't have any problems with walking except careless drivers.
I enjoy the paths, especially the PRP and the Rails to trails path.
I enjoy walking and have ample trails near my home for the distance I prefer to walk.
I generally do not feel safe unless I am in the downtown area.
I have no where to walk but around my small neighborhood because we are isolated in Wolfcreek.
I like that we have a great path, it's not busy & people are generally friendly
I like the Platte River Parkway and the other paths put in by the City
I like the fresh air. I do not like the traffic.
I like the pathway, I wish it was longer
I like the wide open spaces
I love the parkway and paths in the city
I love the trails along the river.
I prefer running vs walking for health reasons.
I really like the Platter River Trails and Rails to Trails system
I really like the downtown tree area-it is protected from the w-i-n-d!!
I'm actually a runner and love the convenience of three crowns path from my house
I'm close to work and it's nice when the weather is nice. But you can't walk everywhere.
It's relatively safe. I run early in the morning and feel comfortable.
Itsslow
Jerks in cars and trucks who think they own the road.
Lack of adequate sidewalks that are maintained.
Lack of defined/safe routes to schools and entertainment
Like having not much traffic at 6AM
Love the Platte River Parkway trail and the annual CINCH walks.
Lower Mills has no side walks
Need a better connection between the Platte River Trails and the East Casper trail/path system
No safe access to bike/walking trails from Wolf Creek
Not enough networking of paths, trails around town

Off street paths
People who let there bushes grow over the sidewalk, people parking on sidewalk.
The lack of sidewalks and paths
The lack of sidewalks on main routes
The motorists often do not stop for walkers in crosswalks including police vehicles.
The paths are great they get me where I need to go. There could be a few more paths.
The pathway is a great way to excercise!
There is no shoulder or pathway on the mountain road
Unattentive motorist
Unmaintained sidewalks and walkways. Dogs that are loose.
Very much like Platte River Trails and extensions. Not enough other trails that connect in.
Walking around Casper is pleasant as there are usually sidewalks to walk on.
What paths are here are good to use
Wind
Wind. Not enough trees on some parts of trails, distance to destinations
Winter weather often makes it difficult
it is scenic
motorcycles need to take more responsibility. they weave around cars and put pedestrians at risk.
(1)It seems to me that there a vast number of motorists who have a complete disregard for pedestrians and cyclists(and probably other motorists as well). Just plain old enforcement of traffic laws is needed. (2)The majority of sidewalks in Casper are too narrow. I am estimating that they are less than 42" wide. My wife and I cannot easily walk side by side on most sidewalks, and we are NOT big people.
Many motorists do not respect crosswalks, it is often more dangerous in a crosswalk than anywhere else on my walk.
Dog owners do not obey leash laws or use dangerous retractable leashes on the bike path that pose risk of injury to runners.
I walk mainly in the early morning but when walking later I find it's impossible to get across many of the bridges(Poplar-crossig river and further on after crossing 1st) and it is hard to cross streets. Cars don't look for walkers so therefore there have been many near misses and they won't stop so walkers can cross the street (almost everywhere)
I don't like how traffic is very close to sidewalks, especially on the river trail through town. I am a runner and being that close to exhaust fumes is bad for my lungs.
I've never been physically good for walking, but I learned many years ago that bike riding was good for my recreation and physical well being.
Other than sidewalks, there are not enough trails or paths which could be used for walking or biking. Now the available trails are strictly recreational. .
Cars are often parked in their driveways overhanging the sidewalk requiring pedestrians to walk across the yard or out into the street to get around. E. 2nd Street from Wyoming Blvd. east does not have a solid walk way after passing Wal-Mart and the mall.
I can walk where ever I choose and feel safe near my home. I live a mile south of the hospital in a quiet neighborhood.
The weather, of course can be a big factor, but I think overall it is the lack of sidewalks to get from one subdivision to the core City streets.

Walking does not feel safe because there is not adequate separation/barriers between sidewalks and motorists.

People who don't take care of their houses or have way too many vehicles on the street. It is really depressing.

I have lived in Casper for 8 yrs & love all the walking path & the trails on Casper Mtn. The trails on mtn could be marked much better!

Side walks are broken, cars are parked across sidewalk paths, many areas have no sidewalks and it is dangerous crossing intersections because of speeding traffic and majority of people pay no attention to pedestrians. I try to walk in summer as much as possible but distance will always be an issue here; however I do live fairly close to downtown and the walk there is excellent.

CY Middle School does not have any crosswalks for students or adults. It is dangerous to cross from Wolf Creek to CY Middle School across Wyoming Boulevard.

There is a good system of walking paths, it would be nice to see them connected. More paths, varied locations.

I only walk to locations close by, such as the grocery store one block away. I ride my bike anywhere farther.

Many streets do not have sidewalks, and my family has to walk in the street. The sidewalks that do exist are in serious disrepair, and often there are large gaps or they do not connect with other sidewalks or intersections. Speed limits are too high on residential streets, and the current speed limit is almost never followed or enforced.

- Not enough shade trees along most of Casper's paths. Makes running/walking in the summer uncomfortable.
+ Most areas in town are a short bike ride away. - Motorists often yell or hoot at me when I'm on paths. - The wind!!! + Weather is mild enough to be out almost year round...except for the wind!!

Walking on the trail system is a great perk for Casper. Walking the downtown area can be efficient and enjoyable. The eastside development is not walkable at all.

I love the river trail and the ones that run in the drainage areas, as well as even the short ones in neighborhoods. I don't like the sidewalks right along the busiest roads - a parkway along the street would be welcome.

I run outside more than walk, but it depends on where I'm at. It's all related to motorists, but there is no quick fix except to avoid intersections. I just hate stopping at intersections and waiting for cars, it's such a momentum killer. Otherwise, it just becomes the weather's responsibility to cooperate that makes me interested in walking/running :)

I don't like traffic not paying attention to crosswalks. "Stop when occupied" seems to be more of a suggestion than rule.

I like the fact that we are getting more and more walking trails that connect to each other. They feel much safer than walking in traffic.

There are plenty of places to walk in Casper without having to worry about traffic. It is a little more difficult to bicycle since you cover more ground and there are gaps in the paths and places where traffic is unsafe.

People not picking up after their dog, smokers on trails-and leaving their disgusting cigarette butts everywhere

The aggressive drivers who speed, don't recognize walkers, ignore walking lanes across streets. Ironically, police officers are in this category.

The Ft. Casper, 13th - Wyo. Blvd. Crossing is on the wrong side of both 13th and Wyo Blvd. the north and west corners are safer and more convenient.

I love specific areas (like the Wolcott historic district) and places with paths, such as the river, rails-to-trails path and two paths along drainage near KW. The main streets (12th, 15th, 2nd) are terrifying to ride bikes along, however, and walking is completely unpleasant -- to much traffic. It is loud, the exhaust is gross and drivers stare at you like you are insane.

It's a beautiful place to walk, and there are many paths around town to take if I wish to stay off of the roads.

There are not enough bicycle/walking lanes. Vehicle traffic makes it dangerous to walk/bike in many areas. I live west of Robertson Road on Hwy 220. It is problematic getting from my home to town by bike or on foot. The highway is the ONLY travel route and the shoulders are not wide enough to allow safe travel.

walking early in a.m. is good; also walking at night when carrying a pistol bad- drivers attitudes- stay out of our way; WE OWN THE ROADS!!!

I like the trails, wish there were more on the east and south side of town. It would be nice to have them go through all the neighborhoods.

I like that there are not many people on the path and I can get a good running pace and not dodge dogs and people. I don't like that they are not lit and I do not feel safe to run when the sun sets.

It's nice walking on residential streets but there are many areas of open unattractive parking lots and buildings downtown. The path that goes through the middle of town is great, but it's not marked well when it goes onto the sidewalk and then it just ends on the west side of downtown with no connection to anything in an unpleasant area in casper.

My biggest complaint is the lack of sidewalk clearing/snow removal during the winter months. Even walking to the bus stops after a winter storm is next to impossible because there is no active snow removal (particularly on East 2nd between Beverly and Outer Drive, for instance).

Not like: wind, bad weather, too few shaded areas, I'm too far from "services" (grocery stores, restaurants, etc.) to walk. Like: East side has nice sidewalks, and is safe.

My family and I love the Platte River Parkway and all the new trails in town. Thank you! However, I live on the West side of town (Wolf Creek). Although our subdivision is great, we cannot safely get to the trail system at this time. I believe Outer Drive and CY Ave are unsafe for walkers and bicyclists and we have no connection to get to the downtown area. There are no sidewalks on CY Ave going west from outer drive. We would love to be connected to the rest of town.

I like that Casper seems fairly safe and it has the path. I would like to see more continuous pathways. Casper is getting more runners/joggers, keep that in mind.

Motorists do not give pedestrians right of way, even at signed cross walks. There is a crosswalk at 21st and Shattuck near my home that I have used every day for the last 20 months. I have never had a vehicle stop while I wait to cross...even police vehicles. Traffic enforcement is non existent in Casper.

motorist are disrespectful and aggressive to walkers and cyclists. sidewalks are covered in glass and debris, and too close too motorists to feel safe. nearly impossible to cross a street, even with a crosswalk. the immediate downtown area isn't so bad with the crosswalks, but it's illegal to ride your bike on the sidewalks and there is no room on the street, so i avoid it anyway. the rest of casper has terrible/dangerous crosswalks.

Difficult to walk in Casper with large percentage of windy days--perhaps paths with trees for wind blockage. Wind combined with snow makes icy streets/sidewalks. The path from PV to N. Casper or Post Office is great for running routes. I really appreciate that the city keeps this path cleared in the winter!

I don't like limited sight for motorists over hills when walking with kids. On 21st cops come flying over hills with very short notice. If we (four in the family) were crossing, we'd have no chance to avoid an accident or a serious scare.

South of downtown between Second and 15th and Durbin and McKinley, the sidewalks are uneven and cracked and there are few street lights. Sometimes people park on the sidewalks.

Garbage cans that block the sidewalk...most citizens park the can on the sidewalk rather than on the road at the curb.

No access over river or rail spur on Popular St.. Cycling north to south (and vice versa) of I-25 is next to impossible.

I like the long trail that follows the river, but I don't like how some main streets don't have sidewalks or safe ways to cross bridges (i.e. the two bridges on Poplar between English and Yellowstone)

I don't like traffic being disrespectful to pedestrians. I like the Platte River Parkway but it's not near my house so I have to drive to get there.

It is dangerous to walk in Casper. Specifically, all intersections should have a protected left turn so cars do not feel the need to hurry and turn on unprotected green lights.

I dont do eastside, i do mainly westside. HOwever as a driver for eastside, I feel there shld be similar light flasher like the one by the golfcourse on eastside by all those apts like quilruns, kwhs and the senior home. I have seen wayy too many ppl cross that without looking to make sure cars are at complete stops inlcuding kids !!!

4. Online Survey - Locations That Need Improvements For Safer and More Comfortable Walking

The following pages represent the raw (unedited) comments from the Casper Area Trails, Path, and Bikeway Master Plan online survey. Respondents were asked to list up to five specific locations (e.g., street and nearest intersection or destination such as the name of a school, park, shopping area, medical service, bus stop) which they felt needed improvements in order to make walking safer and more comfortable. Commonly identified streets included; I 2th Street, I 3th Street, Cy Avenue, Poplar Street (especially the bridge), Wyoming Boulevard, and Casper Mountain Road.

1st Response
12th St
12th and Bretton
13th & Wy. Blvd.
15th and McKinly
15th&wyoming blvd
17th and Poplar
1st and Yellowstone
21st & WY Blvd.
21st and Shattuck
2nd Street (between Country Club and Walsh)
2nd street mall to triangle plaza
4th street west of Country Club
5th St
All intersections
Beverly between 15th and 21st on the West side.
Bridge over the Platte near Ramada
CY & 15th
CY Middle School
CY and Coffman/KitCarson
Casper College
Casper Mountain Road
Casper Mtn road S of C.College
Casper Mtn. Road
Cole Creek Rd./20-26
College Drive, by the campus
Corner of Outer Drive and CY Ave.
Crossing Second St.
Dean Morgan
Down town
Downtown Rail trail to Three crowns trail across Poplar
Downtown, Beech Street
E. 12th street from McKinley to Wyo Blvd
East A Street
East side, Walmart, Mall, etc.
F Street between Center Poplar
F street Platt River bridge
Fun Valley Park
Intersection of CY Ave (Hwy 220) & Robertson Road
Kimball/2nd/Yellowstone
Long Path and 8th
Midwest street between Spruce and downtown area

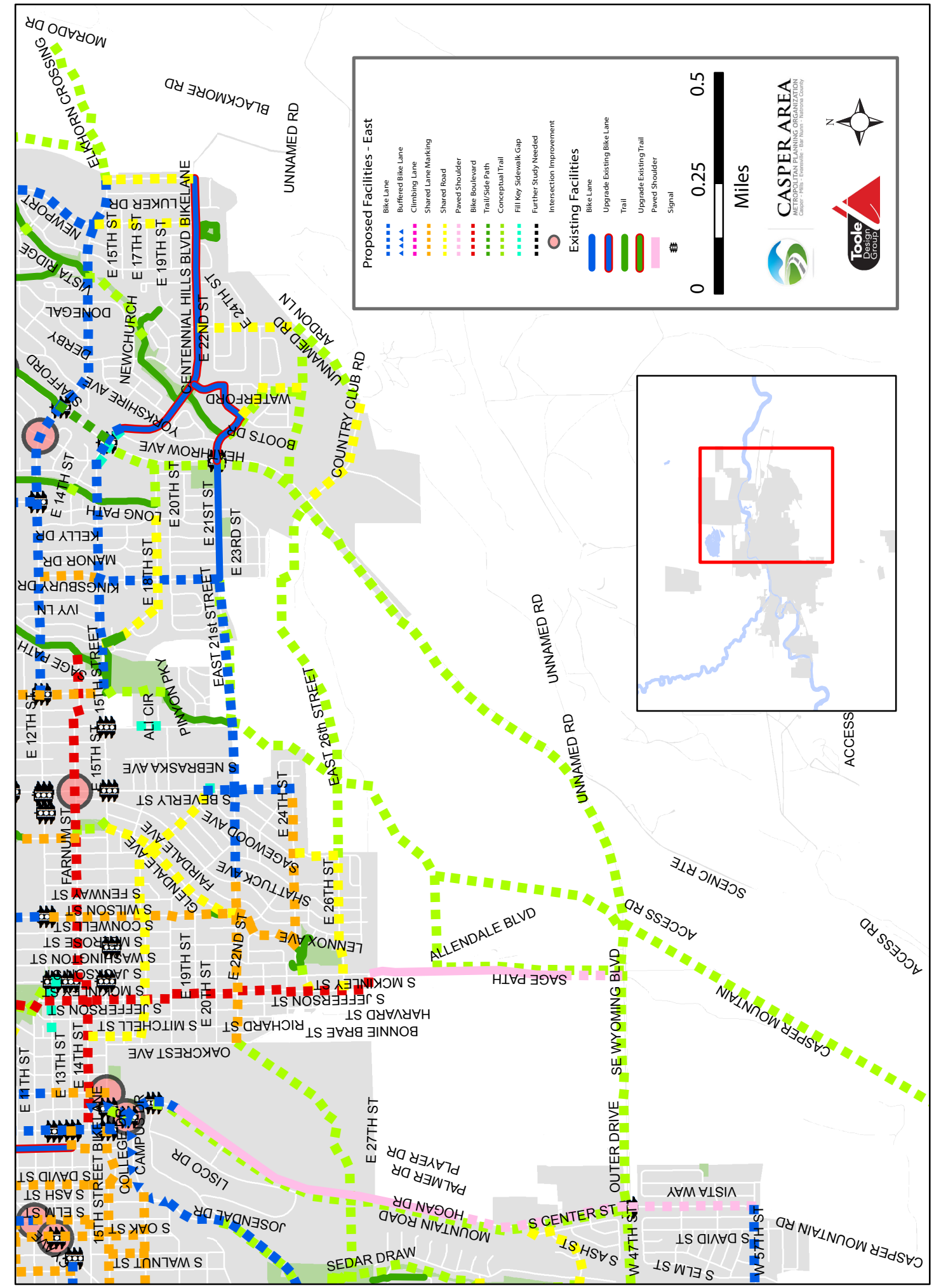
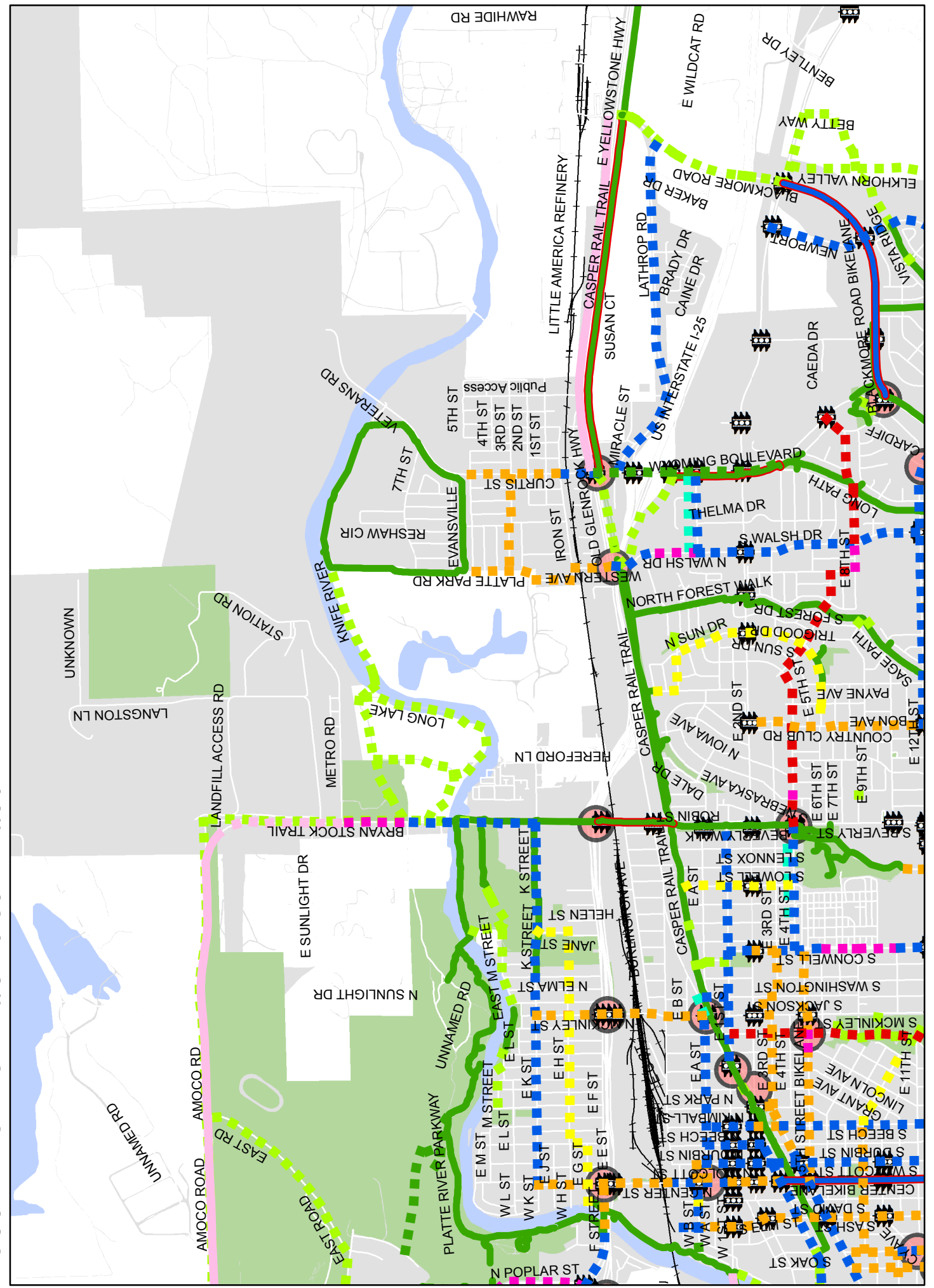
Midwest/Poplar
N. Center Street
Near Willard Elementary School
North Poplar St.
On Beverly between 21st and 15th
Pine and 13th st
Poplar Bridge over river
Poplar Bridge over train tracks
Poplar Street Bridge
Poplar Street and 1st Street intersection
Poplar Street bridge over rail tracks
Poplar street bridges
Sage Creek Drainage path
Salt Creek Highway
Second and McKinley
Second and Wyoming
South of Nic, Kimball, Third, Fourth St., Etc.
Walking trail
West side Walmart
Wolfcreek
Wy Blvd - westside of Casper
Wy Blvd between CY and Casper Mt. Rd
Wyoming BLVD crossing near 15th or 21st
Wyoming Blvd, near CY Middle School
Wyoming Boulevard and Collins
Wyoming Boulevard by Fair grounds
Yellowstone highway through Mills
Yesness Pond walkway
bridge on poplar
by the quil run apt
entire length of East 2nd St
mills
mills and mtn view
most streets
outer drive
poplar bridge over railroad
poplar/Midwest
wolf creek

2nd Response
12th & WY Blvd.
12th Street near South Mitchell
12th and Beverly
12th and Jamaica
13th and Oak up to 13th and Center
15th and Nottingham
21st, between Beverly & Missouri
2nd and Park
B Street and Center
Beverly and 2nd
Beverly to Bryan Stock Trail
CY & 14th
CY Ave to PV
CY and Poplar
CY&Wyominb BLVD
CYMS & WY BLVD intersection
College Diver across from fire station
Crossing Collins/13th to access path - only 1 crosswalk the entire length.
Farnum/14th
Kelly Walsh track
Midwest by Stalkups
No safe way to get to trail north of platte from South of Platte on Poplar
Oak Crest, south of Grant Elementry School along golf course
Outer Drive to CY Middle School
Poplar and Midwest ((West Yellowstone) to get to Platte River Commons
Poplar bridge over R.R. Tracks
Poplar street at midwest
Rail to Trial Connections downtown
Robertson Road
South of Nic, Kimball, Third, Fourth St., Etc.
Street street area (around Dean Morgan)
The trail from the golf course to morad park trail
Trail following drainage route from 15th st (at Bon Ave) to 2nd St
Trail near Ft Casper, Platte River Bridge
WY Blvd
Walking Path, 15th street crossing by Quail Run
Wy blvd
Wyoming Blvd and 3 Crowns
Wyoming Blvd and CY Ave
amoco road
casper mountain road
midwest
side streets along CY Ave.
W. Public Blvd from Carriage

3rd Response
12th and Oak up to 12th and Center
12th west of country club
13th Strret - between King Blvd and Wyoming Blvd - NO SIDEWALK
2nd Street Corridor
Bridge by 3 Crowns on Poplar
Bryan Stock and "K"
Carriage and WYO Blvd
Casper mt road from College
Casper Mtn Road to Outer drive - No shoulder on road
Conwell
CY Ave between poplar and 12th
Downtown
fort casper intersection from pathway
incomplete pathway
Mills!!!
My neighborhood
Rails to Trails from NIC to Veterans
Road by Muni Golf Course that runs in front of Grant school
Robertson Rd. (Oregon Trail area)
salt creek hwy from bar nunn to the convenience store
WY Blvd & Fairgrounds Rd
Yellowstone
4th Response
12th Street East to Far East Casper
1st Street Corridor
Crossing Wyoming Blvd at 13th street
downtown area
Jackson
North Jackson or North McKinley and Yellowstone
polar and cy
Poplar and 1st Street

Appendix B - Recommended Bicycle Network Facility and Action Maps

Recommended Facilities - East



Proposed Facilities - East

- Bike Lane
- Buffered Bike Lane
- Climbing Lane
- Shared Lane Marking
- Shared Road
- Paved Shoulder
- Bike Boulevard
- Trail/Side Path
- Conceptual Trail
- Fill Key Sidewalk Gap
- Further Study Needed
- Intersection Improvement

Existing Facilities

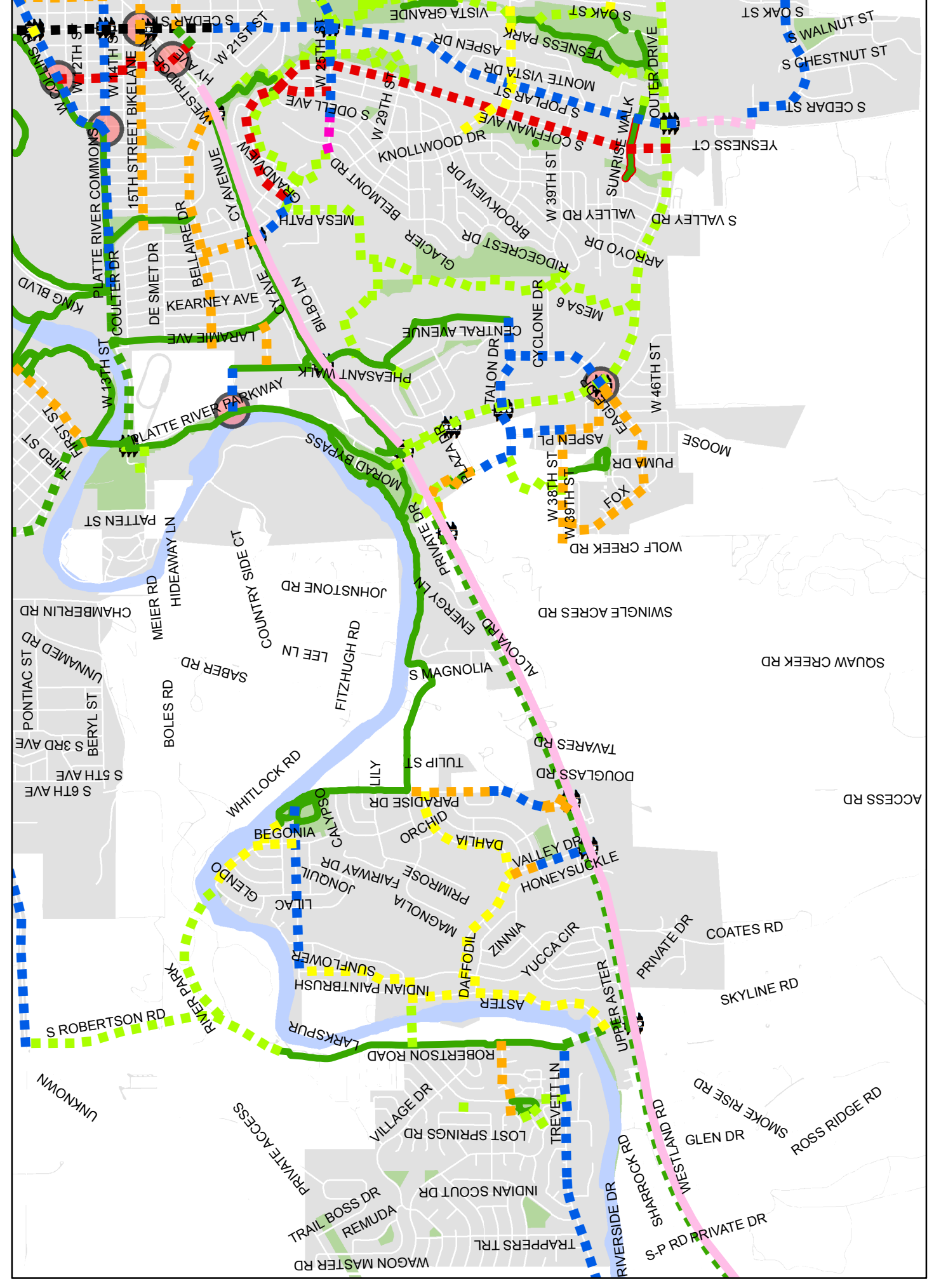
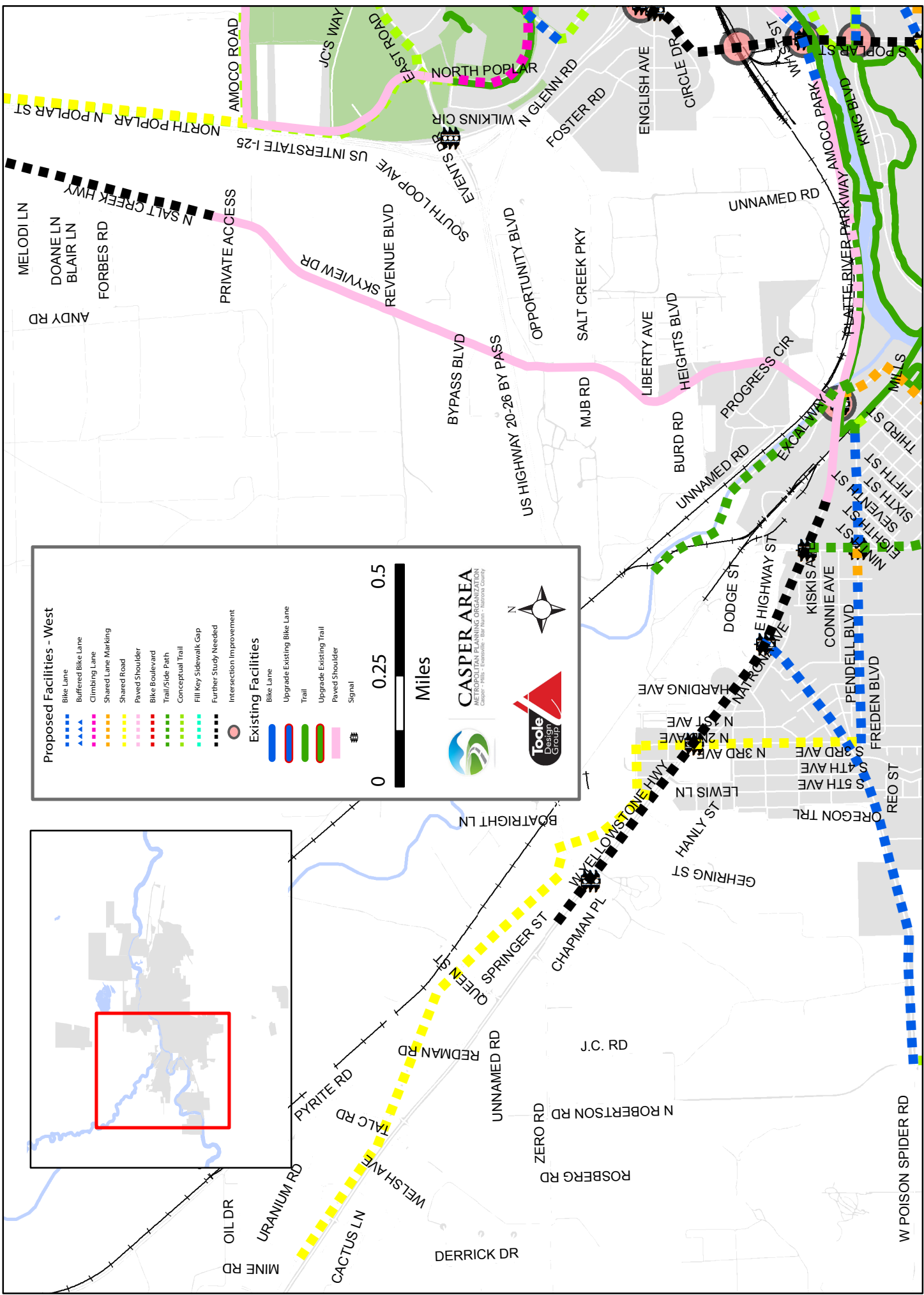
- Bike Lane
- Upgrade Existing Bike Lane
- Trail
- Upgrade Existing Trail
- Paved Shoulder
- Signal

0 0.25 0.5 Miles

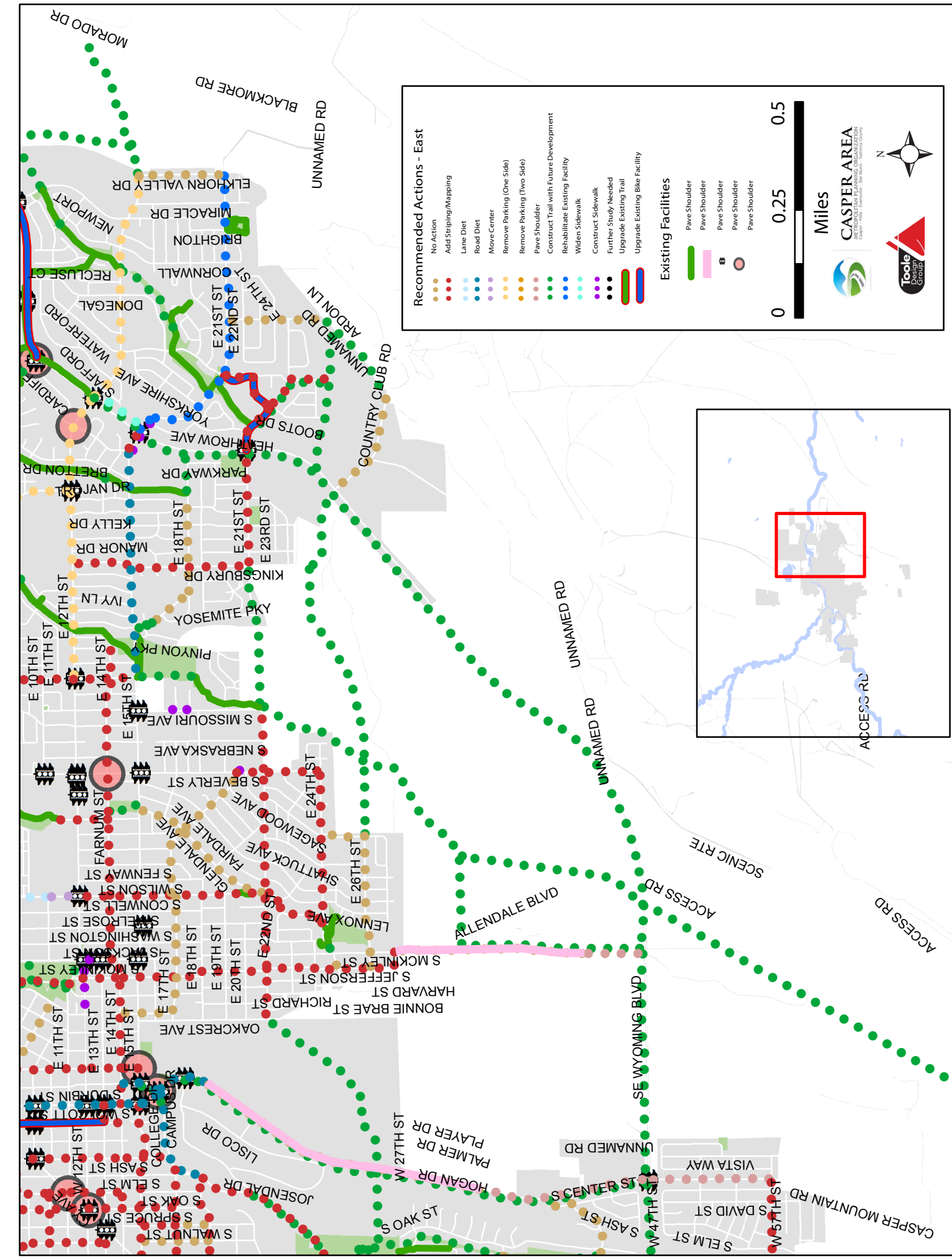
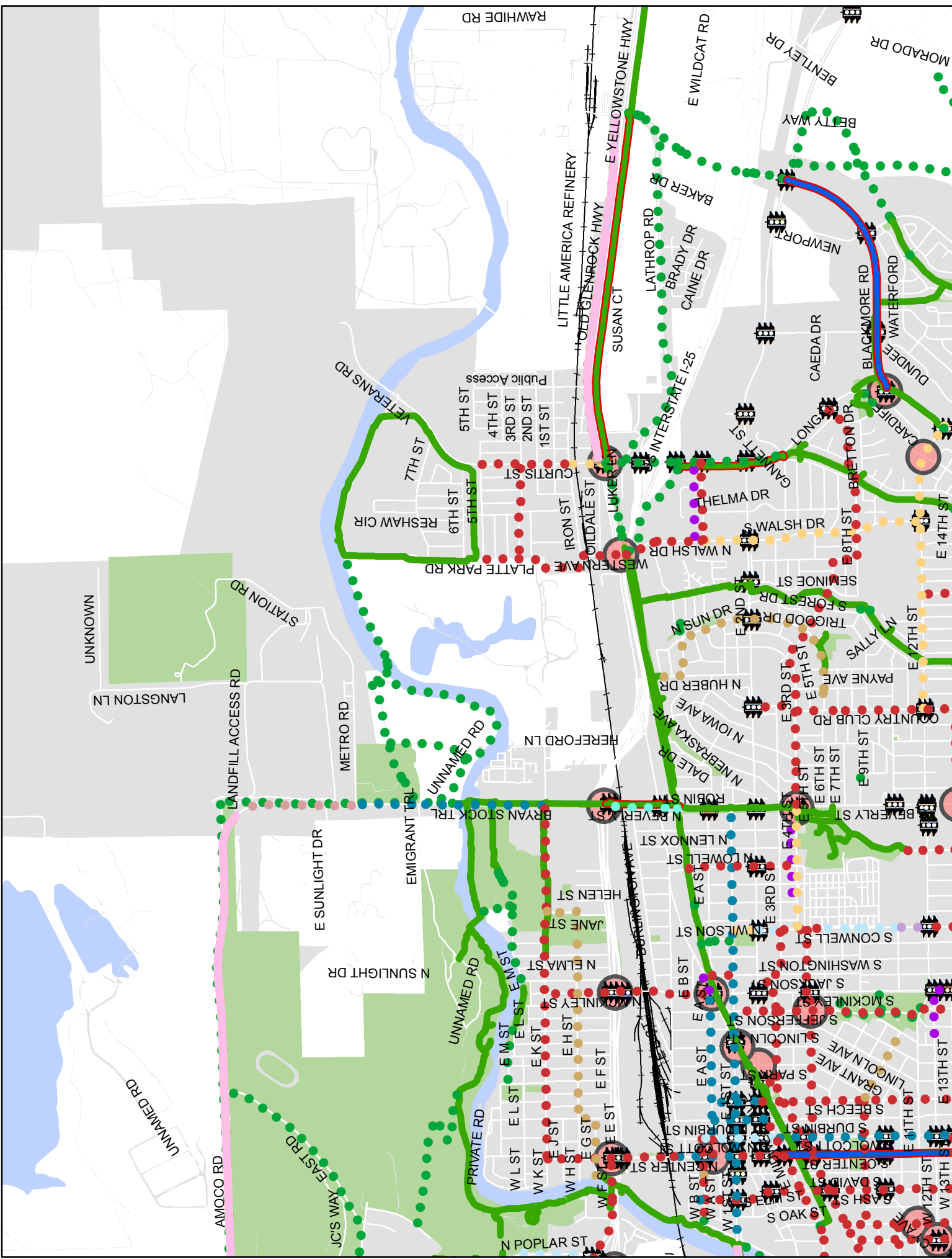
CASPER AREA METROPOLITAN PLANNING ORGANIZATION
PLANNING AND TRANSPORTATION DIVISION
2022-2023 BICYCLE PLAN FOR THE CASPER AREA

Toole Design Group

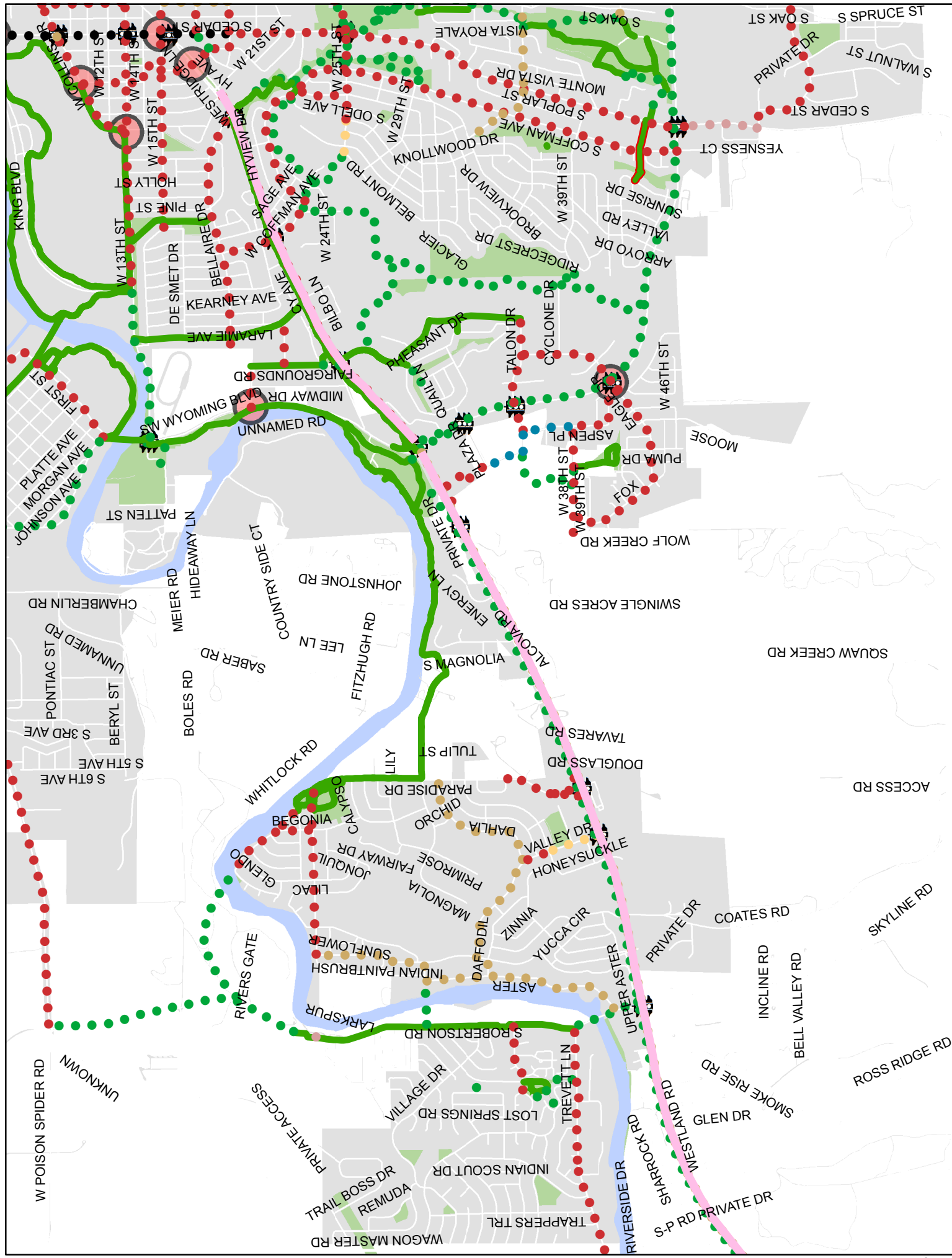
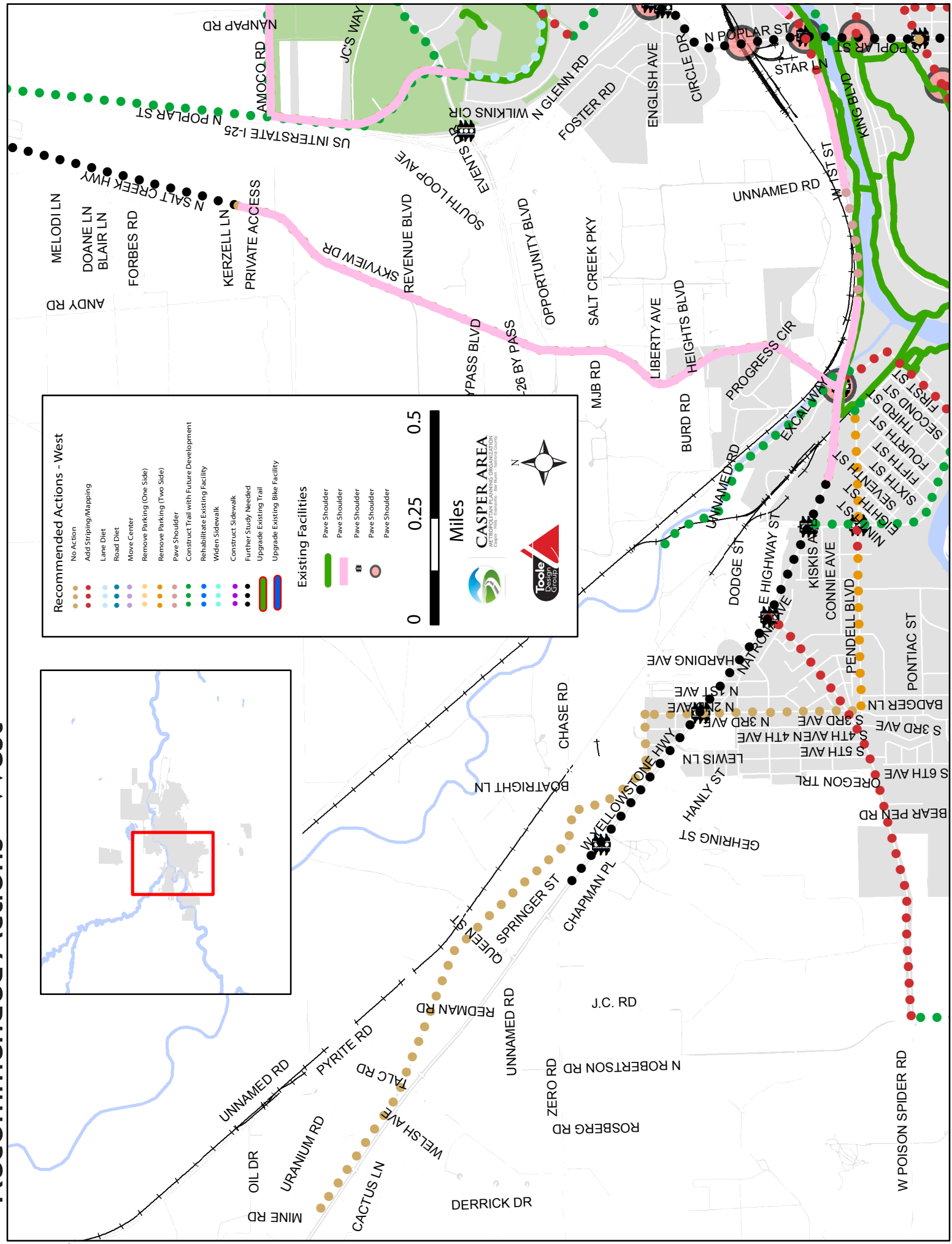
Recommended Facilities - West



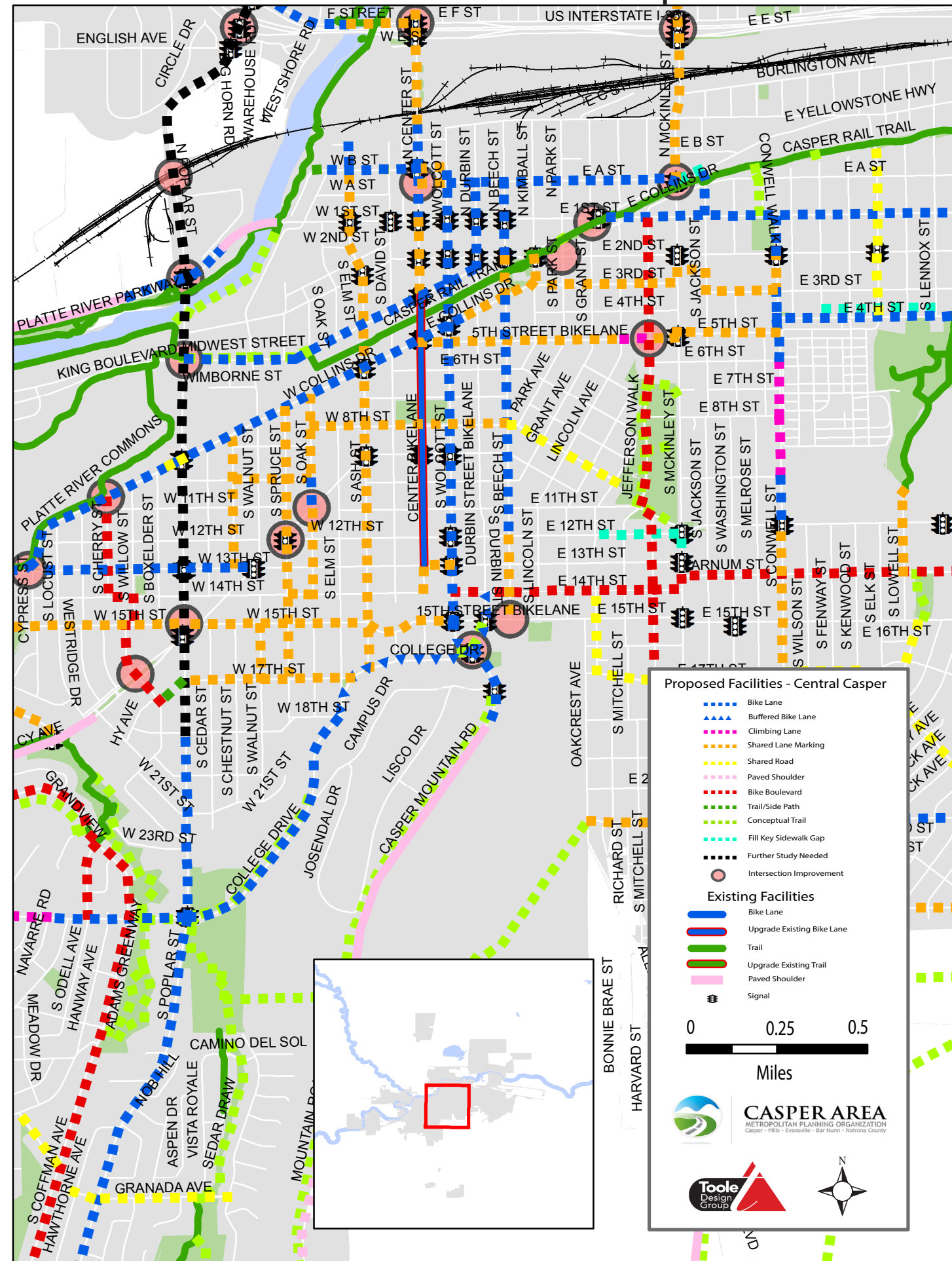
Recommended Actions - East



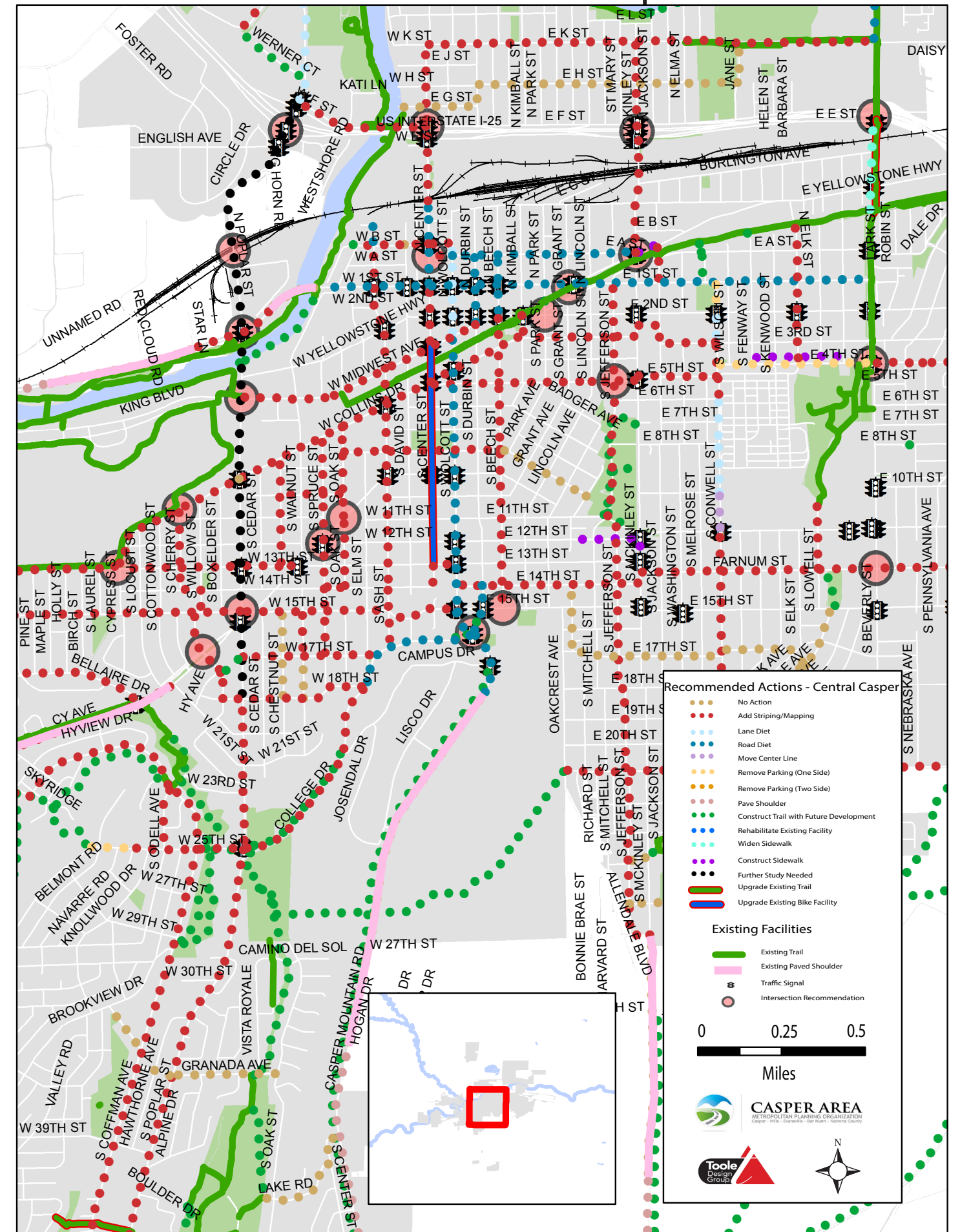
Recommended Actions - West



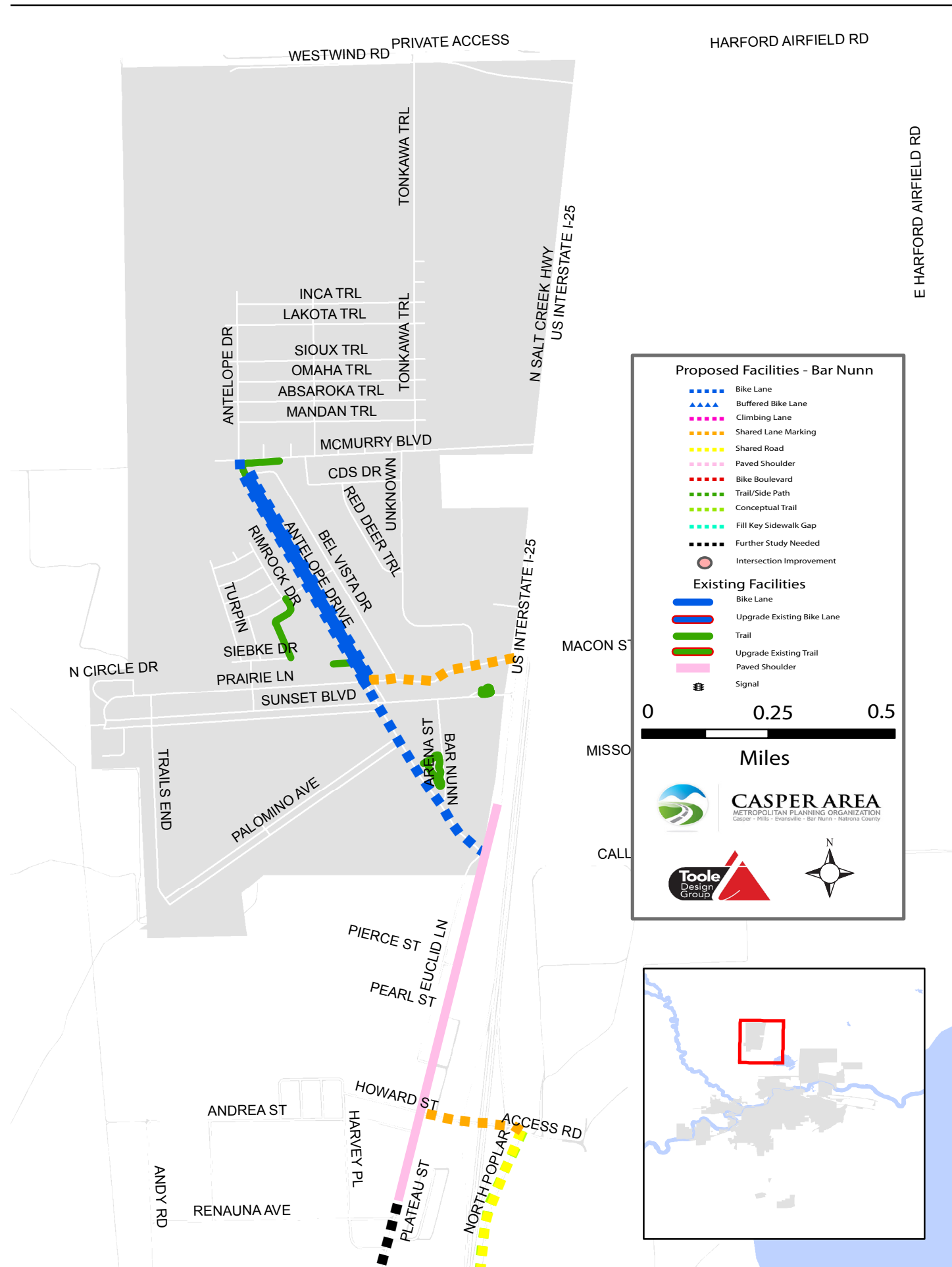
Recommended Facilities - Central Casper



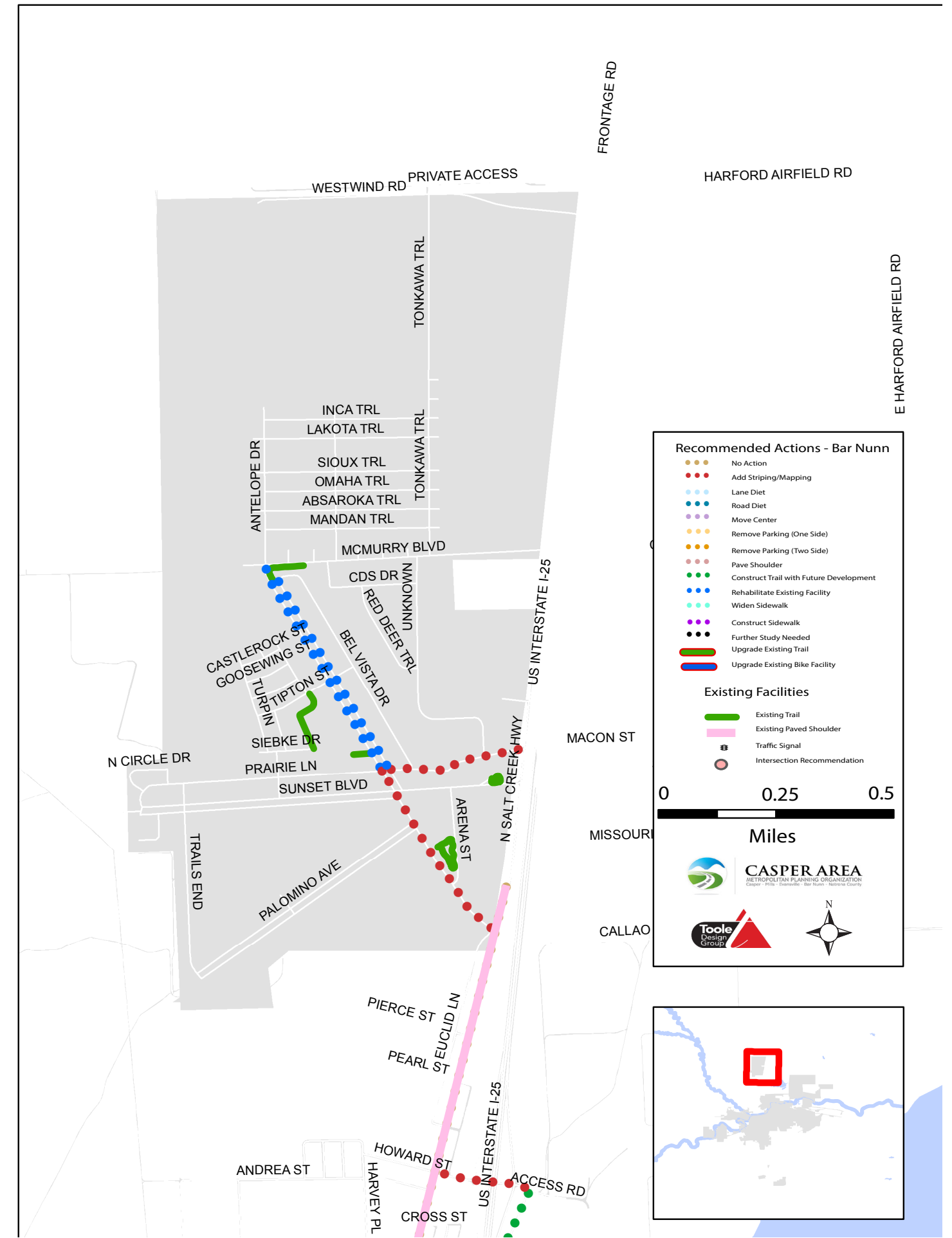
Recommended Actions - Central Casper



Recommended Facilities - Bar Nunn



Recommended Actions - Bar Nunn



Appendix C: Prioritized Projects and Bicycle Network Cost Estimates

This appendix provides prioritized lists of recommended improvements to the bicycle and pedestrian network in the Casper Area. Separate lists are provided for bicycle projects, sidewalk projects and intersections that were identified as needing assessment, and potential improvements. Planning-level cost estimates have been calculated for recommended bicycle facility projects only. It should be noted that the prioritized lists of improvements provided below are likely to change over time as opportunities arise, conditions change, and funding becomes available or unavailable. Therefore, these lists should be revisited every two to three years as part of the Plan evaluation process.

I. Prioritized Bicycle Projects and Planning-level Cost Estimates

Recommended bicycle projects were prioritized using a number of variables that address three main factor categories: Safety, Connectivity, and Demand. Prioritization factors and variables were discussed by the Advisory Committee convened to provide input on this Plan, as well as input received from the public. Table 1 shows how individual variables were weighted in the GIS-based analysis which resulted in the prioritized list shown in Table 2.

Table 1: Bicycle Project Prioritization Factors and Variables

Factors	Variable Weight
Demand	
Elementary/Middle School/High School within 0.5 mi	5%
Lower Density Employment Centers within 2.0 mi	3%
Higher Density Employment Centers within 2.0 mi	7%
Neighborhood Parks within 0.5 mi	3%
Regional Parks within 1.0 mi	7%
College within 2.0 mi	10%
SUBTOTAL	35%
Connectivity	
Existing On Street Facilities within 0.5 mi	5%
Trail Intersections within 0.5 mile	15%
Trail Intersections within 1.0 mile	5%
SUBTOTAL	25%
Safety	
Barriers within 0.25 mi	10%
Crashes within 0.5 mi	20%
Population Under 18 (block group)	10%
SUBTOTAL	40%
TOTAL	100%

Prioritized List of Recommended Bicycle Projects and Associated Cost Estimates

Table 2 shows near-term projects that are to be implemented within the first five years of Plan implementation. Table 3 shows medium-term projects (expected to be implemented within 10 years) and Table 4 shows long-term projects (expected to be implemented beyond 10 years).

Table 2

<i>Project Name</i>	<i>Facility Type</i>	<i>Score</i>	<i>Mileage</i>	<i>Per Mile Cost</i>	<i>Estimated Project Cost</i>
Near Term Projects					
trail from Poplar/17th to Boxelder	Path	80.00	0.08	\$ 304,128.00	\$ 23,991
E 14th St/ Farnum from Wolcott to Sage Path	Bike Boulevard	79.05	1.88	\$ 133,000.00	\$ 250,074
Lowell from Highland apth to Farnum St	Shared Lane Markings	78.54	0.21	\$ 45,680.00	\$ 9,378
Fairside from Wyoming Blvd to Fairgrounds	Bike Lane	78.50	0.17	\$ 109,040.00	\$ 18,262
Durbin from College Dr to E 14th Street	Buffered Bike Lane	77.50	0.15	\$ 182,960.00	\$ 28,186
Cherry/14th/Willow/Boxelder from Collins to CY	Bike Boulevard	77.43	0.64	\$ 133,000.00	\$ 84,489
Midwest Ave from Poplar to Durbin	Bike Lane	76.80	0.79	\$ 109,040.00	\$ 85,896
Eagle Dr from Talon to Wyoming Blvd	Bike Lane	76.52	0.41	\$ 109,040.00	\$ 44,620
Poplar from 19th to 1st	Further Study	76.18	1.14	N/A	N/A
Beech from E A St to E 15th St	Mixed	76.16	1.10	\$ 77,370.00	\$ 85,199
S Chestnut/W 10th Shared Lanes	Shared Lane Markings	76.13	0.53	\$ 45,680.00	\$ 24,380
13th from Collins to CY	Bike Lane	75.89	0.51	\$ 109,040.00	\$ 55,196
McKinley from E K St to E A St	Shared Lane Markings	75.81	0.67	\$ 45,680.00	\$ 30,561
Talon/Aspen from Plaza to W 38th	Bike Lane	75.80	0.44	\$ 109,040.00	\$ 47,731
Aspen/W 38th from Wolf Creek to Eagle Dr	Shared Lane Markings	75.75	0.74	\$ 45,680.00	\$ 33,665
Glendale Ave from E 15th to Conwell	Shared Road	75.15	0.62	\$ 6,000.00	\$ 3,716
Talon from CY Ave to Plaza	Shared Lane Markings	75.00	0.33	\$ 45,680.00	\$ 14,968
W 8th from Oak to Beech	Shared Lane Markings	75.00	0.50	\$ 45,680.00	\$ 22,645
E 5th/Sun Dr/Bruhn/Huber from Country Club to Rail Trail	Shared Road	74.91	1.08	\$ 6,000.00	\$ 6,474
N Center from W B Street to W K Street	Shared Lane Markings	74.82	0.51	\$ 45,680.00	\$ 23,198
W 17th from Poplar to College Dr	Shared Lane Markings	74.50	0.42	\$ 45,680.00	\$ 19,203
E 1st St from Yellowstone to Beverly	Bike Lane	74.49	0.90	\$ 109,040.00	\$ 98,424
E 3rd/Collins/Kimball from Durbin to Jefferson	Shared Lane Markings	74.35	0.57	\$ 45,680.00	\$ 26,004
E 3rd from Jefferson to Conwell	Shared Lane Markings	73.91	0.41	\$ 45,680.00	\$ 18,782
E A St from Wolcott to Collins	Bike Lane	73.91	0.58	\$ 109,040.00	\$ 63,071
Near Term Projects Total			15.36		\$ 1,118,112

Table 3

Mid Term Projects					
W 15th St from Shiridan to Wolcott	Shared Lane Markings	73.65	1.47	\$ 45,680.00	\$ 67,162
Walnut/Spruce/Oak Shared Lanes from Collins to 17th	Shared Lane Markings	73.54	1.37	\$ 45,680.00	\$ 62,644
Wolcott from E B St to E 15th St	Bike Lane	73.13	1.14	\$ 109,040.00	\$ 124,473
Talon from Aspen to Central	Bike Lane	73.08	0.46	\$ 109,040.00	\$ 50,542
Divine Ave from Beech to Bonnie Brae Ave	Shared Road	73.06	0.31	\$ 6,000.00	\$ 1,877
W F Street from Poplar to Center	Mixed	72.88	0.42	\$ 77,370.00	\$ 32,534
E 5th from Collins to Conwell	Shared Lane Markings	72.74	0.90	\$ 45,680.00	\$ 41,225
Collins from 13th to Wolcott	Bike Lane	72.68	1.27	\$ 109,040.00	\$ 138,772
Ash from W B St to College Drive	Shared Lane Markings	72.34	1.26	\$ 45,680.00	\$ 57,600
Kingsbury from 15th to 21st	Bike Lane	72.23	0.47	\$ 109,040.00	\$ 51,396
W 1st Street from Star to Pronghorn	Bike Lane	72.00	0.27	\$ 109,040.00	\$ 29,661
Poplar from 19th to 25th	Bike Lane	71.54	0.47	\$ 109,040.00	\$ 50,705
Bellaire from Brigham Young to CY Ave	Shared Lane Markings	71.23	0.94	\$ 45,680.00	\$ 42,994
Casper from Fairgrounds to Brigham Young	Shared Lane Markings	71.18	0.17	\$ 45,680.00	\$ 7,952
Blue Spruce/E 18th from end to Long Path	Shared Road	71.03	0.57	\$ 6,000.00	\$ 3,441
Center from Midwest to W B St	Mixed	70.88	0.43	\$ 77,370.00	\$ 33,574
Durbin St from E A St to Midwest Ave	Bike Lane	70.85	0.22	\$ 109,040.00	\$ 24,299
Collins from King to 13th	Bike Lane	70.56	0.64	\$ 109,040.00	\$ 69,284
Hickory from CY to Coffman	Bike Lane	70.42	0.22	\$ 109,040.00	\$ 24,328
Jefferson from E 1st to E 14th	Bike Boulevard	70.29	0.95	\$ 133,000.00	\$ 126,451
Odell from 25th to Coffman	Bike Boulevard	70.00	0.20	\$ 133,000.00	\$ 26,456
E 13th/Center Shared Lane Marking	Shared Lane Markings	70.00	0.14	\$ 45,680.00	\$ 6,477
Elk from Rail Tail to E 4th St	Shared Road	70.00	0.44	\$ 6,000.00	\$ 2,629
Kit Carson from Bellaire to CY Ave	Shared Lane Markings	69.45	0.21	\$ 45,680.00	\$ 9,541
E 4th from Conwell to Beverly	Bike Lane	69.44	0.48	\$ 109,040.00	\$ 52,655
Poplar W F Street to W 1st Street	Further Study	68.82	0.80	N/A	N/A
Bonnie Brae/E 17th/Amherst from E 14th to Beverly	Shared Road	68.77	1.27	\$ 6,000.00	\$ 7,635
College Drive from Poplar to Wolcott	Bike Lane	68.65	0.68	\$ 109,040.00	\$ 74,016
25th from Poplar to Ridgcrest	Mixed	68.32	0.49	\$ 77,370.00	\$ 37,939
G St/Durbin St/H St/Jane St Shared Road from end to E K Street	Shared Road	68.31	1.25	\$ 6,000.00	\$ 7,523
E 21st from Beverly to Kingsbury	Bike Lane	67.70	0.82	\$ 109,040.00	\$ 89,888
College Drive from Wolcott to W 18th	Buffered Bike Lane	67.52	0.41	\$ 182,960.00	\$ 74,918
Legion from Walsh to Wyoming	Bike Lane	67.17	0.31	\$ 109,040.00	\$ 34,307
Casper Mountain Road from existing paved shoulder to Durbin	Bike Lane	67.02	0.22	\$ 109,040.00	\$ 23,521
E 15th/Centennial Hills Blvd from Country Club to Centennial Ct	Bike Lane	66.80	1.06	\$ 109,040.00	\$ 116,064
Conwell from E 1st to E 12th	Mixed	66.79	0.78	\$ 77,370.00	\$ 60,102
W A St/W B St Shared Lanes and Bike Lanes from Nichols to Wolcott	Mixed	66.78	0.37	\$ 77,370.00	\$ 28,763
Walsh from Yellowstone to E 12th	Mixed	66.57	1.23	\$ 77,370.00	\$ 94,914
E 3rd/Wanton/E 8th from Beverly to Wyoming	Mixed	66.42	1.79	\$ 77,370.00	\$ 138,701
Conwell from E 12th St to Alta Vista Park	Shared Lane Markings	66.14	1.05	\$ 45,680.00	\$ 48,170
Country Club Road from E 2nd to E 15th	Shared Lane Markings	65.78	0.93	\$ 45,680.00	\$ 42,537
Paradise from CY to Magnolia	Mixed	65.28	0.77	\$ 77,370.00	\$ 59,734
Valley/Mariigold from Indian Paintbrush to Paradise	Shared Road	64.97	1.12	\$ 6,000.00	\$ 6,691
Aster from Daffodil to Robertson	Shared Road	64.12	1.36	\$ 6,000.00	\$ 8,171
First/Van Horn from W 1st Street to Wyoming Blvd	Shared Lane Markings	63.84	0.69	\$ 45,680.00	\$ 31,565
Beverly from Amherst to E 24th St	Bike Lane	61.89	0.34	\$ 109,040.00	\$ 37,233
Curtis from interstate to Gannett	Path	61.54	0.42	\$ 304,128.00	\$ 127,757
Kingsbury from 12th to 15th	Shared Lane Markings	61.29	0.23	\$ 45,680.00	\$ 10,642
Coffman from Wyoming to Skyridge	Bike Boulevard	61.00	2.14	\$ 133,000.00	\$ 284,289
Fox/Eagle Dr from Wyoming to 38th	Shared Lane Markings	60.87	0.84	\$ 45,680.00	\$ 38,561
Curtis from Yellowstone to interstate	Path	60.29	0.29	\$ 304,128.00	\$ 88,279
E 12th from Country Club to Wyoming	Bike Lane	59.16	1.14	\$ 109,040.00	\$ 124,297
Robertson from CY to Trevett	Path	59.06	0.27	\$ 304,128.00	\$ 82,346
E 21st from Oakcrest to Beverly	Mixed	59.02	0.98	\$ 77,370.00	\$ 76,200
E K St from Center to Beverly St	Bike Lane	58.54	1.40	\$ 109,040.00	\$ 153,091
Valley from Amrigold to CY	Mixed	58.53	0.30	\$ 77,370.00	\$ 23,568
E12th from Wyoming to Elkhorn Valley	Bike Lane	58.00	0.94	\$ 109,040.00	\$ 102,682
Wyoming from E 12th to E 15th	Path	58.00	0.23	\$ 304,128.00	\$ 71,231
Fairwood Common from 21st to end	Shared Road	55.14	0.38	\$ 6,000.00	\$ 2,280
Newport from E 12th to E 21st	Shared Road	55.05	0.39	\$ 6,000.00	\$ 2,331
Poplar from Wyoming to College Dr	Bike Lane	54.62	1.43	\$ 109,040.00	\$ 156,244
Mid Term Projects Total			44.62		\$ 3,504,860

Table 4

Long Term Projects					
Jefferson from E 14th to McKinley/27th	Bike Boulevard	54.38	1.19	\$ 133,000.00	\$ 158,768
Curtis from 6th to Yellowstone	Mixed	53.10	0.51	\$ 77,370.00	\$ 39,172
Riverbend from Begonia to Indian Paintbrush	Bike Lane	52.69	0.66	\$ 109,040.00	\$ 71,516
Centennial Village/Waterford from Gosfield to end	Shared Road	51.24	0.29	\$ 6,000.00	\$ 1,754
Green Meadows/Granada from Brook View to Oak	Shared Road	50.82	0.60	\$ 6,000.00	\$ 3,571
Western Ave from Platte Park Rd to Yellowstone	Shared Lane Markings	50.12	0.62	\$ 45,680.00	\$ 28,161
Buckboard from Robertson to Whispering Springs	Shared Lane Markings	50.00	0.31	\$ 45,680.00	\$ 14,214
E 24th from Glendale to Beverly	Shared Lane Markings	48.75	0.59	\$ 45,680.00	\$ 26,883
E 26th/Sagewood from Jefferson to E 24th	Shared Road	48.56	0.70	\$ 6,000.00	\$ 4,190
Rio Vista/3rd St from Western Ave to Curtis	Shared Lane Markings	48.36	0.38	\$ 45,680.00	\$ 17,456
E 25th from Jefferson to McKinley	Shared Road	47.98	0.06	\$ 6,000.00	\$ 376
Elkhorn Valley from E 12th to E 21st	Shared Road	46.42	0.34	\$ 6,000.00	\$ 2,054
Continue trail on CY Avenue to Southwest	Path	45.69	3.23	\$ 304,128.00	\$ 981,098
Begonia/Bufalo from Pathfinder/Riverbend to End	Shared Road	45.32	0.49	\$ 6,000.00	\$ 2,967
Poplar from Wilkins to W F Street	Climbing Lane	45.10	0.91	\$ 45,680.00	\$ 41,612
Pendell from 3rd to Northwestern	Mixed	41.85	1.19	\$ 77,370.00	\$ 92,054
W 1st Street	Paved Shoulder	39.40	0.44	\$ 218,664.36	\$ 96,147
Wilkins from Poplar to corner (proposed conceptual trail)	Bike Lane	37.00	0.16	\$ 109,040.00	\$ 16,918
Poplar from 1000' S of Wyoming Blvd to Marks Way	Paved Shoulder	35.38	0.28	\$ 218,664.36	\$ 61,249
Lathrop from Curtis to Blackmroe	Bike Lane	34.29	1.36	\$ 109,040.00	\$ 148,218
Bryan Stockl Trail from Metro to E K St	Mixed	33.62	0.76	\$ 77,370.00	\$ 58,466
Newport from E 2nd to E 12th	Bike Lane	30.96	0.89	\$ 109,040.00	\$ 96,557
Trevett from Robertson to end	Bike Lane	28.32	1.01	\$ 109,040.00	\$ 110,564
Country Club from Wyoming to Ardon	Shared Road	26.27	0.47	\$ 6,000.00	\$ 2,810
Center/Lake from Casper Mountain Road to trail	Shared Road	25.00	0.39	\$ 6,000.00	\$ 2,312
Access from Salt Creek to Poplar	Shared Lane Markings	23.00	0.26	\$ 45,680.00	\$ 11,694
Casper Mountain Road from existing paved shoulder to Goodstein	Paved Shoulder	22.63	1.17	\$ 218,664.36	\$ 255,677
Bryan Stockl Trail from existing paved shoulder to Metro	Paved Shoulder	22.00	0.46	\$ 218,664.36	\$ 100,104
Old Yellowstone Hwy west of existing paved shoulder near Salt Creek Hwy	Further Study	14.25	1.93	N/A	N/A
Poplar from Access to Amoco	Shared Road	14.00	1.29	\$ 6,000.00	\$ 7,755
Goodstein from Poplar to Casper Mountain	Bike Lane	13.54	0.92	\$ 109,040.00	\$ 100,168
Salt Creek Hwy between existing paved shoulders, South of Howard	Further Study	11.65	1.00	N/A	N/A
3rd Ave from Pendell to Paige	Shared Road	11.31	0.88	\$ 6,000.00	\$ 5,298
McKinley from 27th to Allendale	Paved Shoulder	10.86	0.24	\$ 218,664.36	\$ 53,567
Antelope/Bel Vista from Salt Creek to McMurry	Bike Lane	9.48	1.77	\$ 109,040.00	\$ 193,222
Prairie from Salt Creek to Antelope	Shared Lane Markings	9.32	0.39	\$ 45,680.00	\$ 17,704
Poison Spider from Roberston to Yellowstone	Bike Lane	8.43	1.78	\$ 109,040.00	\$ 193,742
Paige/Old Yellowstone from 3rd to Nuclear	Shared Road	3.70	2.55	\$ 6,000.00	\$ 15,289
Long Term Projects Total			32.45		\$ 3,033,307

Bicycle Project Cost Calculations and Assumptions

Cost calculations assume that bicycle facility improvements are made on both sides of the street with the exception of shared use paths and sidepaths, and that any pavement costs are independent of bicycle facility. Cost estimates do not include design unless specifically stated in assumptions. Design costs, which includes construction planning, public process, facility design, and other background work required to implement the project, can generally be estimated at 15% to 20% of the facility construction cost. Projects requiring a higher level of public process may have higher design costs. Lastly cost estimates involving major construction do not include contingency costs, which typically are estimated at 15 to 25% of the construction costs. Table 5 shows the calculations and assumptions for each type of recommended bicycle facility. Costs are based on local cost bid information and industry standards. Cost calculations and additional assumptions are provided in Table 5.

Maintenance costs have not been included in cost calculations. Maintenance costs include routine sweeping of bike lanes, replacement of signs when damaged or no longer retroreflective (typically a sign is replaced every 10 years), restriping pavement markings, and replacing bike lane and shared lane marking symbols. Because striping is typically done using inlaid thermoplastic, it is expected to have a 10 to 15 year life span. Thermoplastic symbols are expected to have a life span of 3 to 10 years depending on whether they are placed within the path of motor vehicle tires.

Table 5

Facility	Calculation	Cost Assumptions
Add bike lanes (with parking)	Facility Unit Cost = \$6/LF * 5280 feet * 2 lines * 2 sides + \$350 per bike symbol * 20 symbols/mile * \$350 * 2 sides	Assumes 2 bicycle lane lines and 20 bike and arrow symbols per mile are added on each side of the roadway to create the bicycle lane. \$350 per bike and arrow symbol includes the material (thermoplastic) and installation costs.
Add buffered bike lane (with parking)	Facility Unit Cost = (3 lines * 5280 * \$6/LF * 2 sides) + (880 LF diagonal lines * 2 * \$6/LF) + (20 symbols/mile * \$350 * 2 sides)	Assumes a 30" diagonal stripe every 15 feet between two continuous parallel lines both sides of street plus inside bike lane/parking lane stripe, 20 bike and arrow symbols per mile both sides. \$350 per bike and arrow symbol includes the material (thermoplastic) and installation costs.
Add bike lanes (no parking)	Facility Unit Cost = \$6/LF * 5280 feet * 1 line * 2 sides + 20 symbols/mile * \$350 * 2 sides	Assumes 1 bicycle lane line and 20 bike and arrow symbols per mile are added on each side of the roadway to create the bicycle lane. \$350 per bike and arrow symbol includes the material (thermoplastic) and installation costs.
Add buffered bike lane (no parking)	Facility Unit Cost = (2 lines * 5280 * \$6 * 2 sides) + (880 LF diagonal lines * 2 * \$6) + (20 symbols/mile * \$350 * 1 side)	Assumes a 30" diagonal stripe every 15 feet between two continuous parallel lines both sides of street, 20 bike and arrow symbols per mile both sides. \$350 per bike and arrow symbol includes the material (thermoplastic) and installation costs.
Climbing lane (with parking)	Facility Unit Cost = \$6/LF * 5280 feet * 3 lines + \$350 per bike symbol * 20 symbols/mile * \$350 + \$350 per shared lane marking symbol * 20 symbols/mile	Assumes 2 bicycle lane lines and 20 bike and arrow symbols per mile are added on one side of the roadway to create the bicycle lane. \$350 per bike and arrow symbol includes the material (thermoplastic) and installation costs. Assumes parking lane lines added to one side of street and 20 shared lane marking symbols per mile are added on each side of the roadway to create the shared lane pavement marking facility. \$350 per bike and arrow symbol includes the material (thermoplastic) and installation costs.
Climbing Lane (no parking)	Facility Unit Cost = \$6/LF * 5280 feet * 1 line + \$350 per bike symbol * 20 symbols/mile + \$350 per shared lane marking symbol * 20 symbols/mile	Assumes 1 bicycle lane line and 20 bike and arrow symbols per mile are added on one side of the roadway to create the bicycle lane. \$350 per bike and arrow symbol includes the material (thermoplastic) and installation costs. Assumes 20 shared lane marking symbols per mile are added on one side of the roadway to create the shared lane pavement marking facility. \$350 per shared lane pavement marking includes the
Add shared lane markings (no parking)	Facility Unit Cost = \$350 per shared lane marking symbol * 20 symbols/mile * 2 sides	Assumes 20 shared lane marking symbols per mile are added on each side of the roadway to create the shared lane pavement marking facility. \$350 per bike and arrow symbol includes the material (thermoplastic) and installation costs.
Add shared lane markings (with parking)	Facility Unit Cost = \$6/LF * 5280 feet * 2 lines + \$350 per shared lane marking symbol * 20 symbols/mile * 2 sides	Assumes parking lane lines added to both sides of street and 20 shared lane marking symbols per mile are added on each side of the roadway to create the shared lane pavement marking facility. \$350 per bike and arrow symbol includes the material (thermoplastic) and installation costs.
Mixed facilities (combination of bike lanes, climbing lanes and shared lane markings)		Assumes an average of per mile bike lane and shared lane marking costs with and without parking.
Bicycle Boulevard	Facility Unit Cost: 3 mini traffic circle * \$10,000 each + 20 intersections * 50 LF of striping * \$6/LF + 80 shared lane markings at \$350 each + 40 sign assemblies at \$300 each + 1/2 (1 pedestrian signal for every 2 miles of facility * \$100,000) + 1/2 (1 median crossing island every 2 miles of facility * \$100,000)	Assumes 10 blocks per mile, centerline strip for the first 50 feet of each residential street intersection, assumes the use of shared lane markings with 4 markings per block and an average of 2 sign assemblies per block, one pedestrian signal and one median crossing island (for unsignalized arterial crossings) for every 2 miles of facility, 3 mini-traffic circle for traffic calming (average - some streets will need more, others less). Other costs may include 5% for landscaping, 10% for drainage, 5% for traffic control and 10% for utility adjustments.
Paved shoulder	Facility Unit Cost = 489 CY * \$158/ CY asphalt + 323 CY * \$40/CY aggregate	Assumes 5 ft paved shoulder comprised of 6" crushed rock at \$40 CY and 4" asphalt at \$158 CY. Other costs included are 5% for landscaping, 10% for drainage and E&S, 5% for traffic maintenance, 10% for utility adjustment, 25% contingency and no parking signs.
Bike Route Signing	Facility Unit Cost = \$300 per sign assembly * 10 * 2 sides	Spacing of bike signs is flexible based on Engineering judgement & current practices. This calculation assumes up to 10 bike route/wayfinding signs per mile installed on both sides of bicycle route. In some cases the number of signs per mile may be more or less than 10. Unit cost includes one sign, post and installation. Some wayfinding sign assemblies may have more than one sign, and therefore would be higher cost.
Trail/Sidepath (new)	Facility Unit Cost = 12 ft wide path * 5,280 (63,360 square feet) * \$4/SF for excavation, base course and concrete + 20% for engineering	Assumes excavation, base aggregate, and concrete for 12 ft wide, 5" concrete sidepath, one side of street plus 20% of construction costs for engineering. Total project costs may also include the following additional costs as percentage of construction cost: 5% landscaping; 5% Maintenance of traffic; 5% Utility Adjustments.

II. Prioritized Sidewalk Projects

The prioritized list of sidewalk projects shown in Table 7 entail constructing sidewalk where there are presently gaps. These projects were prioritized using the factors and variables shown in Table 6, which are similar to what were used for bicycle projects with some notable differences including:

- Addition of bus stops as a variable under Connectivity
- Reduction in buffer distances used due to fact that people are willing to walk shorter distances compared to the distance they may be willing to bike.

Table 6

Factors	Variable Weight
Demand	
Elementary/Middle School/High School within 0.5 mi	8%
Higher Density Employment Centers within 1.0 mi	10%
Neighborhood Parks within 0.25 mi	5%
Regional Parks within .5 mi	7%
College within 1.0 mi	10%
SUBTOTAL	40%
Connectivity	
Trail Intersections within 0.5 mile	10%
Bus Stops within 0.25 mile	15%
SUBTOTAL	25%
Safety	
Crashes within 0.10 mi	25%
Population Under 18 (block group)	10%
SUBTOTAL	35%
TOTAL	100%

Table 7

Project Name	Prioritization Score	Feet (Approximate)
Path from Casper Rail Trail to Fenway Street	80	49
Wyoming Boulevard from Wyoming/CY Avenue to Outer Road	78.55	1359
Northwest crossing of Wyoming Boulevard and Cy Avenue	78.1	192
Connector Path from Birch Street to Meadow Park	68	49
Crossing of Cy Avenue at Talon Drive	65	125
Paradise Valley Parks Path Improvements	58	337
Melrose St sidewalks from E A St to E 1st St (upgrade to sidepath)	55	435
Beverly from 750 Feet south of Bryan Evansville to Casper Rail Trail (upgrade to sidepath)	53.98	2123
7th Street Connector from Jefferson St to McKinley St	53.5	432
Path from Casper Rail Trail to E A/Melrose St	52.27	154
College Drive from W 15th St through intersection with Casper Mountain Drive	49	682
Meadowlark Link trail from Pheasant Drive to Central Drive (1200 feet north of Talon Drive) (upgrade to sidepath)	48	268
Path from Camellia Street end to Paradise Valley Pool	47	208
Bruhn Way from N Sun Drive to Provence Court	44.55	506
E 18th Street Improvements from Long Creek Path to Outer Drive	43.83	805
Werner Court from Poplar to Wilkins Circuit	43.75	1323
Sidewalk improvements from Northwestern Drive/1st Street south to existing trail	43	230
Path from Northeastern Ave 200 feet northwest of 4th street to existing path	43	90
11th Street Connector from S Mitchell St to McKinley St	42.2	515
Platte River Parkway improvements south of I-25/Platte River Crossing	41	40
Bruhn Way from N Sun Drive to Provence Court Alternate Configuration	41	147
Path South of Sunrise Shopping Center from Coffman Street to Poplar Street (upgrade to sidepath)	35.4	610
Centennial Park Path from Centennial Park to Wyoming Boulevard Path	35	526
Frog Pond Connector (Washington Park 400 feet North of E 10th St) from Jefferson St to McKinley St	32	435
8th Street Connector from Nebraska Ave to 8th Street end east of Beverly Streets	30	144
Lillian Lane Path from Trigood Drive to Sage Creek Path	29.2	145
Trail from Casper Events Center to National Historic Trails Center (upgrade to sidepath)	27.8	634
Buckboard Walk from Whispering Springs Lane to Buckboard Park	26.4	425
Kelly Walsh High School Connector Trail from Sage Creek Path to High School	25	104
Buckboard Walk from Trevett Lane to Buckboard Park	23.2	630
Whispering Springs Walk from Cold Springs Road to Herrington Drive	23	208
Path from Cottonwood Estates to Buckboard Park	23	160
Long Lake Path Improvements	17	58

III. Prioritized Intersections in Need of Assessment/Improvement

There are a number of intersections where improvements would further enhance bicycle and/or pedestrian level of comfort (Table 8). These locations were identified during field assessments. In some cases a specific recommendation has been provided while in others where a solution is not readily apparent, or future improvements are planned, but not fully designed, further study is needed.

Table 8

Intersection Location	Comment/Recommendation
Fairside and Wyoming	Further study needed for constructing pedestrian crossing
Farnum and Beverly	restrict left turns, add crossing island
E 1st and Yellowstone	Assess/adjust pedestrian signal phase
15th and Beech	Connects to YMCA. Already striped E/S. Need curb ramps at crossing. Could add crossing island on west side of interection
Westridge/Boxelder and CY	Add SW + ramps or refuge area to nose of median on each side
15th and Poplar	Needs further study
McKinley and Yellowstone	Widen sidewalk on south side. Improve crossing on west side by installing stop bar, marked crosswalk.
Eagle and Wyoming	Assess/adjust pedestrian signal phase for children walking to CY Middle School
McKinley and I-25	Add lighting to underpass
Midwest and Poplar	Assess for full signal or pedestrian signal
Oak and CY	lots of kids crossing at this location, Add crossing island on west approach where marked crosswalk is
E 2nd and Park	Encourage pedestrians to cross E 2nd at Kimball st. Consider restricting left turns at Gran and installing crossing island within RRFB
W F and Center	Upgrade crosswalks and curb ramps
Walsh and Yellowstone	Signalize
W 1st and Poplar	Narrow travel lanes to extend bike facility to intersection
Poplar at Rail Crossing	Add ped/bike accommodation
Jefferson and 5th	Advanced crossing warning signs, high visibility crosswalk. Sharrow centered in lane to make N bound cyclists more visible to eastbound motorists
Cherry and Collins	Add crossing island w/ road diet
13th and Collins	Add crossing and connection to trail
Beverly and E 4th	Enlarge curb ramps and queuing space on east side of intersection to better accommodate sidepath users
CY and W 12th	Move vehicle stop bar on east approach back. Realign curb ramps and create ped cut throughs on splitter islands to direct pedestrians crossing 12th to use splitter islands.
A and Center	Extend center lane; create median island at existing crossing
College and Wolcott	Need to accommodate left-turning bikes onto Wolcott either with left-turn pocket or direct bicyclists to two-stage turn (i.e. cross to SE corner of intersection, then proceed north on Wolcott)
Poplar and I-25	Upgrade crosswalks and curb ramps, BIKES MAY USE FULL LANE signage
Bryan Stockl and I25	Improve slip lane crossign for trail on east side
Curtis and Rail Trail	Improve transitions, crossings
12th and Carriage	Move crosswalk to crest of hill. Double side signs. Put signs at crosswalk.
Blackmore and Wyoming	BL ends in curb, Continue BL to intersection
Yellowstone and Salt Creek	High vis crosswalk (east). Restrict right turns onto Saltcreek. Pave shpoulder south of Yellowstone. Ass wayfinding to trail.

Appendix D: Design Strategies for Achieving High Quality Facilities for Users of All Ages and Abilities

This appendix provides an overview of the guidelines, standards and best practices applicable to designing high quality bicycle facilities that attracts ridership and maximizes safety.

I. Applicable National Standards and Guidelines for Bicycle Facility Design

The 2012 *AASHTO Guide for the Development of Bicycle Facilities* and 2009 Manual on Uniform Traffic Control Devices (MUTCD) are two publications that should be referenced to ensure that bicycle facilities are designed in a uniform manner. The AASHTO guide is not intended to set absolute standards, but rather to present sound guidelines that will be valuable in attaining good design sensitive to the needs of both bicyclists and other roadway users. The provisions in the Guide are consistent with and similar to normal roadway engineering practices. Guidelines that address signs, signals, and pavement markings for bicycle facilities should be referenced in conjunction with the MUTCD.

The 2009 MUTCD is a document issued by the Federal Highway Administration (FHWA) of the U.S. Department of Transportation (USDOT) to specify the standards by which traffic signs, road surface markings, and signals are designed, installed, and used. These specifications include the shapes, colors, fonts, sizes, etc., used in road markings and signs. In the United States, all traffic control devices must generally conform to these standards. The manual is used by state and local agencies and private design and construction firms to ensure that the traffic control devices they use conform to the national standard. While some state agencies have developed their own sets of standards, including their own MUTCDs, they must substantially conform to the federal MUTCD, and must be approved by the FHWA. The Wyoming Department of Transportation (WYDOT) uses the national MUTCD. The National Committee on Uniform Traffic Control Devices (NCUTCD) advises the FHWA on additions, revisions, and changes to the MUTCD.

Key provisions of the MUTCD related to bicycling include:

- Bicycle-related regulatory and warning signs
- Bicycle destination guide and route signs
- Pavement markings such as bike lane symbols and striping
- Trail signs

Significant changes in 2009 edition (from the 2003 Edition) include:

- New shared-lane pavement markings
- Bicycle lane regulatory signs no longer required
- Type 3 object markers for shared-use paths
- New bicycle destination guide and route signs
- New mode-specific guide signs for shared-use paths

The bicycle technical committee of the NCUTCD is currently developing and evaluating research and proposals for the following items:

- Bicycle signals
- Bicycle boxes
- Applications of the Rectangular Rapid Flashing Beacon to Trail Crossings
- Modifications to the Pedestrian Hybrid Beacon to accommodate bicyclists
- Combined right turn lane/bike lanes
- Barrier separated lanes/cycle tracks

Additional information can be found here: <http://www.ncutcdbtc.org/>

II. General Design Strategies for Achieving High Quality Bicycle Facilities

The quality of bicycle facilities has a direct impact on the experience of the bicyclists and will therefore have a tremendous influence on the ability of the facility to attract and sustain use. Well-maintained and high quality facilities have been demonstrated to attract higher levels of use than poorly maintained or low quality facilities. Likewise, interconnected systems with minimal gaps or interruptions are essential to a functioning bicycle system that supports and attracts high use.

Preference surveys and research studies have found widespread support and interest for bicycling with strong preferences given to the provision of high quality bikeways which provide the following elements:

- Separation from high volumes of fast-moving automobiles,
- Maneuverability within the bikeway to operate safely, and
- Space for cyclists to ride together in a social manner, side-by-side.

Bicycle Level of Service

The concept of level of service for bicyclists is relatively new compared to that of vehicle level of service. As such, it is important to note that there are limitations to the existing models which the designer should become familiar. It is anticipated that extensive research will be forthcoming to improve the reliability of the measurements now that the concept has been validated and incorporated into the Highway Capacity Manual (HCM) and AASHTO Guidelines. Level of Traffic stress is a more simplified approach to addressing the perceived level of comfort and safety of bicyclists. It focuses on providing routes between people's origins and destinations that do not require cyclists to use links or navigate intersections that exceed their tolerance for traffic stress.¹

Narrowing Vehicle Lane Widths to Better Accommodate Bicyclists

Providing additional lane width for the motorist has not proven to provide any safety benefit on low speed urban roadways², whereas extra space provided to the parked vehicle and the bike lane reduces

¹ Maaza C. Mekuria, Peter G. Furth, and Hilary Nixon, Low-Stress Bicycling and Network Connectivity, Mineta Transportation Institute, 2012.

² Potts, Ingrid, Harwood, Douglas and Richard Karen, "Relationship of Lane Width to Safety for Urban and Suburban Arterials, TRB 2007 Annual Meeting

the potential for a hazardous crash between a bicyclist and an opening vehicle door and creates enough space where a bicyclist could pass another bicyclist without having to encroach into the adjacent travel lane. The resulting bicycle lane is more comfortable and is more likely to attract use.

The use of narrower travel lanes as a strategy for improving capacity and safety on urban arterials where posted speeds are 35 mph or lower are consistent with the 2011 AASHTO Green Book, which states “lane width of 10 feet may be used in more constrained areas where truck and bus volumes are relatively low and speeds are less than 35 mph³”. This is backed up by recent research⁴ focused on the safety of travel lane widths varying between 10 and 12 feet for motorists operating on arterial roadways with posted speeds of 45 mph or less. This research found lane width had no impact on safety or capacity under the majority of urban conditions. The study resulted in a virtual elimination of the capacity reduction formula in the 2010 Highway Capacity Manual related to lane widths as it found little difference between 10, 11 and 12 foot lanes. Figure 1 shows a comparison of bicycle lane operating space based on different conditions.

The AASHTO Green Book is vague with regard to defining what percentage of truck and bus volume is “low”; however, there is guidance in research and pavement design guidelines that suggest 10% as a decision point⁵.

It should also be noted that wider lane widths may encourage motorist speeding. Adding bike lanes to these roadways where there is sufficient right-of-way can reduce speeding and increase safety in residential neighborhoods and near schools⁶.

Exceeding Minimum Guidelines for Bicycle Lane Width

There are also numerous safety and comfort benefits which can be provided to bicyclists by providing wider bicycle lanes. Wider bicycle lanes create space for bicyclists to pass other bicyclists with more comfort, create additional buffer space to parked vehicles (and opening doors), create additional maneuvering space to avoid surface defects or hazards, and allow bicyclists to operate side by side if desired to engage in conversation. The graphic below illustrates the comparative operating differences.

³ 2011 AASHTO Green Book, Urban Arterial Travel Lane Widths, page 7-29

⁴ Potts, Ingrid, Harwood, Douglas and Richard Karen, “Relationship of Lane Width to Safety for Urban and Suburban Arterials, TRB 2007 Annual Meeting

⁵ TRB Special Report 214 – Designing Safer Roads, 1987. It is important to note this report documented research proving wider travel lanes increased safety, but this research was only based on rural, 2 lane highways.

⁶ Studies vary on the effectiveness of narrowing travel lanes as a speed reduction strategy. A majority of studies available for review generally find narrower lanes lower average speeds 3-5mph, but a small number of studies have also found no change or slight increases in speeds.

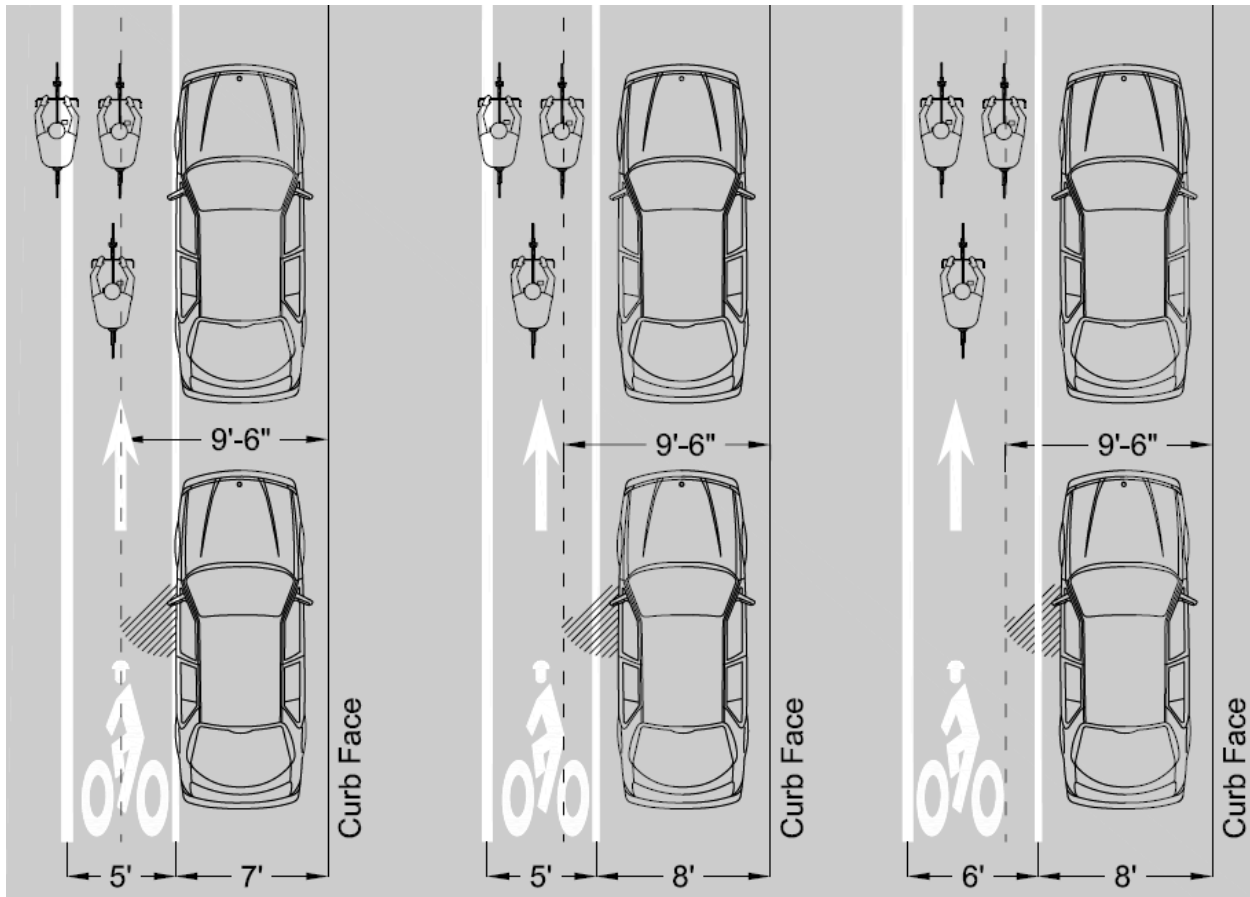


Figure 1: Comparative bicycle lane operating space

Consideration for Shared Lane Marking Placement within a Travel Lane

The placement of shared lane markings will require engineering judgment as lane widths, quantity of lanes, operating speeds, and presence of parking will vary from street to street. In particular, the width of the shared travel lane and the number of available travel lanes impact typical operating behavior of motorists and bicyclists. Shared lane markings should generally be used on arterial and non-arterial roadways with motor vehicle speeds 35 mph or less. On roadways with speeds of 30 to 35 mph, dedicated bike facilities such as bike lanes are the preferred treatment. The guidance provided below is supplemental to what is provided in the AASHTO Guide for Development of Bicycle Facilities.

Generally, the center of shared lane markings should be located a minimum of 11 feet from the curb or edge of roadway at locations where parking is permitted adjacent to the travel lane. Generally, the center of shared lane markings should be located a minimum of 4 feet from the curb or edge of roadway at locations where parking is prohibited.

It may be appropriate to move the shared lane marking towards the center of the travel lane (exceeding the MUTCD minimums) if engineering judgment determine that this placement will enhance the safety of the bicyclist operating within the travel lane. The shared lane marking may be moved towards the

center of the lane regardless of whether it is adjacent to parking or not. In most cases, it will be a combination of two or more of the following factors which will indicate that consideration should be given to moving the shared lane marking towards the center of the travel lane:

- Travel lane is less than 12 feet in width
- Speed of traffic
- Number of travel lanes (it may be desirable to place the shared lane marking towards the center of a narrower outside travel lane when a center turn lane is present or when there are multiple travel lanes in the same direction)
- Grade of roadway and expected bicyclist speed (center lane placement often works well when going downhill on streets with grade and higher bicycle speeds)
- Volume of traffic (may or may not be an issue – speed, grade, and number of lanes are more important)

Situations Where Travel Lanes Are Less than or Equal to 12 Feet in Width

Travel lanes of this dimension are too narrow for sharing side by side with vehicles. Shared lane markings should be placed in the center of the travel lane where travel lanes are less than 12 feet to encourage bicyclists to occupy the full lane and not ride too close to parked vehicles or the edge of the roadway. A BIKES MAY USE FULL LANE (R4-11) sign may be used to supplement the marking.

Situations Where Travel Lanes Are Between 12 Feet and 13 Feet in Width

Where travel lanes are 12-13 feet in width, the travel lane can appear shareable to roadway users if bicyclists operate on the right side of the lane resulting in unsafe passing maneuvers. It may be desirable to place the marking in the center, or close to the center of the lane to discourage these behaviors. A BIKES MAY USE FULL LANE (R4-11) sign may be used to supplement the marking.

Situations Where Travel Lanes Are Greater than or Equal to 13 Feet in Width

Where travel lanes are 13 feet or wider, motorists will generally be able to pass bicyclists within the same lane or will only need to slightly encroach on adjacent lanes to pass bicyclists. The Shared Lane Marking should generally be located in the right portion of the lane (per the MUTCD minimum requirements) with exceptions for locations adjacent to parking where it is desirable to encourage riding further from parked vehicles. Research has shown placing the marking in the center of travel lanes wider than 13 feet will likely result in poor compliance by bicyclists who will travel in the right portion of the lane which may undermine the effectiveness of shared lane markings in narrower lanes. A Share the Road sign (W11-1 AND W16-1P) may be used to supplement the marking.

Speed Management

Managing vehicle speeds on arterial and other roadways is essential to providing bicycle facilities that are likely to attract a broad range of bicyclist types. Speed management is a multi-disciplinary approach to controlling speeds using enforcement, design, and technology applications. Speed management should reflect the needs of multiple modes and respond to the street's surroundings. The benefits of speed management are safer roads with fewer incidents and less severe injuries. Speed management

techniques can be used regardless of the posted speed. Roadway vehicle volumes are a determining factor for choosing which speed management techniques are appropriate.

Roadways with Fewer than 20,000 Vehicles Per Day⁷

Roadways with average daily traffic volumes between 10,000 and 20,000 vehicles per day allow more flexibility in the types of speed management measures that can be implemented. Roadways with this level of traffic volume usually do not require the same level of capacity as a higher volume street, and are frequently overbuilt. These roadways typically are four lanes wide (two lanes in each direction), but may only need to be one lane in each direction. In addition to the speed management measures listed above, the following are effective for roadways with fewer than 20,000 vehicles per day:

- Four to three lane conversion (Road Diet), particularly effective on four lane undivided roadways. This measure provides one travel lane in each direction and a center median or turn lane. Roadways with average daily traffic volumes of 15,000 to 18,000 can usually be accommodated with this configuration. Roadways approaching 20,000 vehicles per day may also be accommodated by this configuration, but a capacity analysis is required. The additional width gained with road diets can be used for multiple improvements to the street depending on need such as medians, bike lanes, wider sidewalks and landscaping, on street parking, or some combination of each. Road diets also allow further pedestrian improvements at intersections such as curb bulb outs or pedestrian refuges.
- Single-lane urban roundabouts at appropriate intersections. A combination of road diet and single-lane roundabouts along a corridor is one of the most effective combinations of major street speed management measures.

Roadways with Greater than 20,000 Vehicles Per Day⁸

Roadways with greater than 20,000 vehicles per day need to maintain traffic capacity. Therefore, measures that significantly reduce capacity are not appropriate on these roadways because they might divert traffic to parallel roadways where an increase in traffic is undesirable. Roadways with greater than 20,000 vehicles per day will typically consist of two or more travel lanes in each direction, and have traffic signals at major cross roadways. The most effective speed management measures (which may be combined) for this tier of street are listed below.

- Signal coordination to a target speed of at least the posted speed limit.
- Reduce travel lane width to a maximum of 11-feet, and turn lanes may be reduced to 10-feet, as appropriate.
- Permanent speed feedback signs flashing "Slow Down" message when speed exceeds a preset limit (most effective when coupled with enforcement). Signs should be solar powered with ability to move from location to location.

⁷ Best Practices in Arterial Speed Management, Final Report prepared for City of Pasadena, Kimley-Horn and Associates, Inc. October 22, 2009.

⁸ Best Practices in Arterial Speed Management, Final Report prepared for City of Pasadena, Kimley-Horn and Associates, Inc. October 22, 2009.

- Speed Enforcement Corridors with regular targeted speed enforcement combined with a public awareness program.
- Multi-lane urban roundabouts at appropriate intersections. Approach and departure lanes can be designed for 15-20 mph. Most effective if used in multiple locations within the same corridor. Multi-lane roundabouts may not be desirable at intersections with high pedestrian or bicycle volumes.
- Pedestrian improvements at intersections including a combination of curb bulb outs, high visibility crosswalks, and smaller turning radii to decrease speeds of turning vehicles.
- Long-term speed management involves transitioning suburban roadways into urban thoroughfares. Urban contexts, and associated multimodal activity, tend to lower speeds. Elements of urban thoroughfares include buildings built to the edge of the street with ground floor uses that generate pedestrian activity, street trees, pedestrian-scaled intersection spacing, and on-street parking.

III. Bicycle Facility Design Strategies by Street Classification

Principal Arterial Roadways

The recommended bicycle network generally does not show on-street bicycle facilities along principal arterial roadways because of a number of inherent constraints (e.g. available right-of-way, traffic volumes and speeds). However, in some cases, there may be opportunities to integrate bicycle facilities along principal arterial corridors.

Existing Principal Arterial Roadways

Along some existing principal arterial corridors bicycles will generally be accommodated on off-street facilities such as sidepaths, where feasible and appropriate from a network development stand point. For example, the recommended network shows a sidepath along Wyoming Blvd in the Town of Mills. Sidepaths should be provided on both sides of the roadway, where possible, and should be designed for optimal safety per AASHTO guidelines and recommendations for sidepaths.

Future Construction and Reconstruction of Principal Arterial Roadways

On-street bicycle facilities should not be ruled out when principal arterial roadways are constructed or reconstructed in the future. Bicycle facilities such as buffered bike lanes and cycle tracks would provide high quality, safe bicycle accommodation along these higher speed, higher volume roadways, and generally at a lower cost than developing a sidepath facility. And given that principal arterial roadways are intended to have limited access to abutting land uses (i.e. minimal driveways), such bicycle facilities could be designed with minimal potential conflicts. In other cases, off street facilities may be the most appropriate means to accommodate bicyclists along principal arterial roadways.

Minor Arterial Roadways

A limited number of recommended bicycle improvements are on minor arterial roadways, including portions of Poplar St, 12th St, 1st St, Center St and Casper Mountain Rd. Recommendations largely call for bike lanes on these on portions of these roadways.

Existing Minor Arterial Roadways

Existing minor arterial roadways vary in terms of number of travel lanes, traffic volumes, and provision of on-street parking. In limited circumstances a bike lane can be striped without any other modifications to the existing roadway. In the majority of circumstances implementing bike lanes on existing minor arterial roadways will entail a combination of vehicle lane narrowing (i.e. lane diet), vehicle lane removal (i.e. road diet), or parking removal. The City of Casper has put bike lanes on several minor arterial roadways. Cross sections vary (some include



Narrow bike lanes next to parking on Blackmore Rd.

two-way center turn lanes, some do not), but in all cases the bike lane is 3 to 3.5 ft wide, which does not meet current AASHTO guidelines. The City may want to modify its roadway standards, or allow more flexibility in their application. For instance, in locations where parking demand is low space set aside for parking can be reallocated to provide wider bike lanes. Figure 2 shows a cross-section that resembles how Blackmore Rd has been constructed.

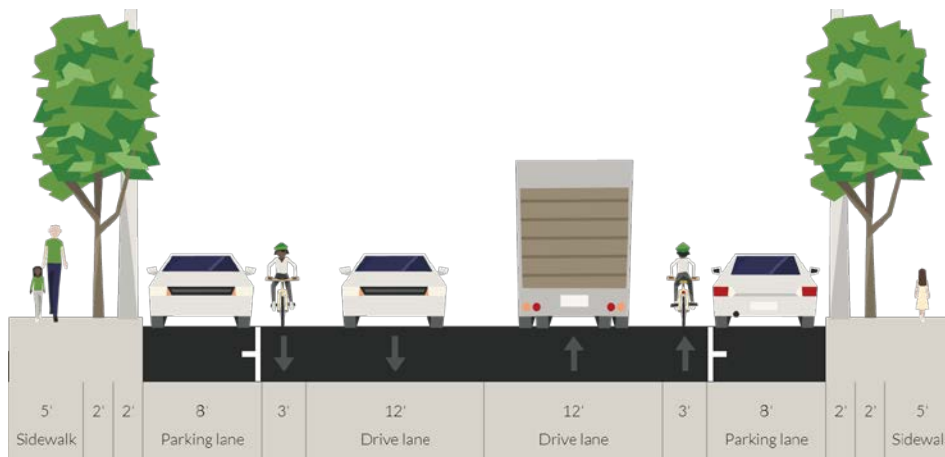


Figure 2: Example cross section of existing minor arterial where bike lanes have been installed

Future Construction and Reconstruction of Minor Arterial Roadways

In the future when minor arterials are constructed wider bike lanes should be provided. Figure 3 shows how the standard for minor arterial roadways may be modified to provide a more comfortable bike lane facility while requiring only an additional four feet of pavement width for 6 ft bike lanes.

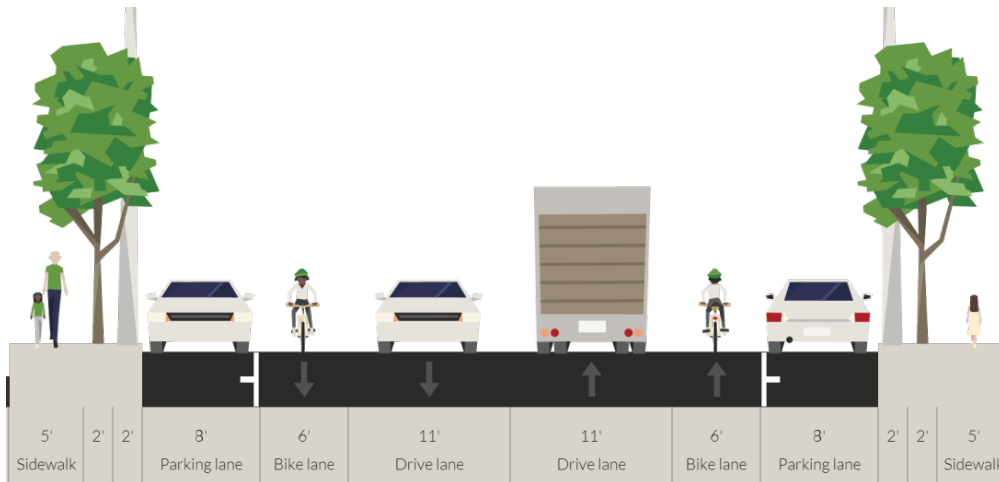


Figure 3: Modified minor arterial cross-section.

Collector Roadways

Collector roadways vary considerably in terms of the number vehicle lanes and vehicle traffic volumes, but generally have lower vehicle volumes and speeds. Several such as 15th St have two travel lanes and a two-way center turn lanes or two lanes with parking on both sides (Walsh St), while others have four travel lanes and parking on both sides such as Durbin St. Therefore a combination of strategies may be employed for implementing bicycle facilities on collector roadways, including removing a motor vehicle travel lane (e.g. reducing a four-lane street to a three-lane street-two through lanes and a center turn lane), removing a parking lane, or simply adding pavement markings where there is already sufficient space to do so.

Local Roadways

Local roadways offer great potential for provision of low stress bicycle facilities given the low traffic speeds and volumes common on these roadways. In many parts of the Casper Area that were developed several decades ago, the local roadway network is well-connected, which provides good connectivity for walking and biking.

Existing Local Roadways

A minimal amount of improvements are needed on local roadways that have been included in the recommended bicycle network. At a minimum, wayfinding signage should be installed along local roadway bicycle routes to help bicyclists navigate through areas where there are numerous decision points. On local roadways where there are higher volumes of bicyclists or motor vehicles, or where additional route guidance may be needed, shared lane markings should be installed. Traffic calming should be considered on local roadways where speeding is prevalent. Where recommended bicycle routes on local roadways intersect with arterial roadways it is important for bicyclists to be able to get across the arterial street safely. Guidance on appropriate crossing treatments is provided further below.

Future Construction and Reconstruction of Local Roadways

The American Planning Association (APA) states that transportation efficiency is “enhanced when there are consistent and adequate street connections that allow people and goods to move with as few

impediments as possible.” In addition, “proper street connectivity reduces miles travelled, increases non-motorized trips, and supports transit use.”⁹ The Institute of Transportation Engineers (ITE) stresses that improved connectivity helps keep short, local trips off arterials by providing an alternate, local route.¹⁰ The discontinuous local street system common in newer developments within the Casper Area forces local traffic onto arterial and collector roadways for local trips that should be served by local roadways, and discourages walking and biking. A well-connected network provides more direct routes for walking and biking. This creates opportunities for pedestrians and bicyclists to reach destinations within comfortable walking (1/4 mile) or bicycling (2 miles) distances. Furthermore, fire departments are generally strongly in favor of connectivity because it improves response time.

IV. Intersection and Roadway Crossing Treatments

This section provides guidance for intersection and mid-block crossing treatments, some of which are not in the AASHTO Guide or the MUTCD.

Crossings at Major Intersections

Improvements along bicycle boulevards, collector roadways, or local roadways for bicycling are unlikely to attract heavy use if cyclists cannot safely *and* comfortably cross major roadways. Intersection improvements on bicycle boulevards enhance cyclist safety by eliminating or raising awareness of potential areas of conflict between motorists and cyclists, and by reducing the delay cyclists experience at traditional intersections where no accommodations have been made for cyclists.

Many arterial roadways are challenging to cross, particularly during peak travel periods. In order to make it possible for bicyclists to travel throughout the Casper Area, there must be safe places to cross major roadways. The section below describes the types of treatments that are recommended to help bicyclists cross these major roadways. Selection of the appropriate roadway crossing treatment depends on a number of factors:

- Roadway width/number of lanes
- Motor vehicle traffic volumes
- Motor vehicle speed
- Sight-distance
- On-street parking
- Presence of traffic signals at the intersection or at nearby intersections
- Satisfaction of necessary and relevant traffic warrants

The positioning of the bicyclists, particularly longer bikes or bikes with trailers, and crossing times are important considerations for designing a crossing that can get cyclists across a busy roadway safely and comfortably. There are a number of intersection treatments available that can aid cyclists in crossing busy intersections including signalization, crossing islands, high visibility crosswalks, and flashing warning beacons.

⁹ American Planning Association, Policy Guide on Smart Growth, 2002.

¹⁰ Institute of Transportation Engineers. 2006. Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities

Signals

Signalized intersections allow bicyclists to cross arterial roadways without needing to select a gap in moving traffic. Traffic signals make it easier to cross the street, though it is important to make improvements to reduce conflicts between bicyclists and turning vehicles. Signals may increase delay for motor vehicles and must meet MUTCD warrants. It is important to note that bicyclists may be counted as pedestrians or vehicles. It is recommended that the warrant should be checked with bicycles counted as vehicles and then as pedestrians to determine the potential need from both perspectives in cases where warrant satisfaction is borderline.



Pavement marking that indicates to bicyclists optimal positioning for signal detection.

Traffic Signal Timing and Detection

Where bicycle facilities intersect with arterials or other roadways where signals require actuation, signal detection systems need to be calibrated to explicitly detect bicyclists. Section 9D.02 of the 2009 MUTCD states: “On bikeways, signal timing and actuation shall be reviewed and adjusted to consider the needs of bicyclists.” Accommodating bicyclists at actuated intersections is one relatively cost-effective way in which a city can make significant strides to improve the safety and level of service provided to bicyclists. It is recommended the city review its signal timing policy and revise as necessary to accommodate bicyclists at all intersections located on the bicycle network as it is implemented, and develop a protocol for assessing concerns from bicyclists regarding detection or additional time to cross at other locations.

Detection

Detection should be provided at signalized intersections where there are designated bicycle facilities to accommodate the range of cyclists and user types expected. Specifically, an adult commuter cyclist may prefer in-lane detection, while a child biking to school may prefer to ride on the sidewalk and use the pedestrian push-button. It should not be expected that on-road users will be required to leave the roadway to actuate a signal.

Push Buttons

The use of pedestrian push-buttons for bicycles as the only detection method is not desirable for several reasons:

- The required clearance time for pedestrians is significantly longer than for bicyclists, which would increase the delay for motorists on conflicting approaches at times when only bicyclists are present.
- Pedestrian signal timing is excessive for cyclists because the flashing don't walk interval is timed for slow pedestrian speeds not bicyclist speeds.
- Push-button placement is designed for pedestrians, including disabled pedestrians on the sidewalk. Bicyclists would have to access the sidewalk, which may be particularly difficult for

bicyclists making a left or through movement on multi-lane approaches and at locations where there is no path to the sidewalk from the roadway.

- It is unreasonable to expect a bicyclist to have to dismount and carry their bike to the sidewalk at all intersections to become a pedestrian. They are unlikely to do so and this may result in bicyclists crossing against the light where they are not detected or they may be caught on the change interval where the timing is inadequate for them to cross the roadway leaving them in danger of being struck by crossing vehicles.

Video and Inductive Loop Detection

- Video cameras used for detection have programmable detection zones, distinct detection zones can be programmed for bicyclists in a bike lane or shared lane. This zone should be supplemented with bicycle detection pavement markings and signs per the MUTCD.
- Where inductive loop detectors are used they should be set to the highest sensitivity level possible without detecting vehicles in the adjacent lanes. This higher sensitivity will increase the likelihood of a bicycle being detected. Consideration should be given to adding a delay on a detector where there are concerns of false calls. For locations with shared lanes, a supplemental loop may be provided at the stop bar as an alternative to increasing the sensitivity of an existing loop. For locations with a separate bike facility, a loop detector should be provided in the bike lane. A Type D or Type Q is preferred to detect bicycles because they can be set at a higher sensitivity level while still rejecting vehicles in an adjacent lane. *Note: Some high performance bicycles may be more difficult to detect; however, it has been the experience of many agencies (Caltrans, City of Portland, City of Seattle among them) that standard inductive loop detectors can detect other items on the bicycle or bicyclist such as the chain ring, chain, wheel hubs, shoe cleats, or even a small piece of bailing wire intentionally attached to the wheel rim strip.*
- Install bicycle detector pavement markings and signs as recommended in the MUTCD to notify bicyclists of the optimum location to be detected. Field checks of the loop detector with a bicycle rim should confirm the location with the highest probability of bicycle detection and a bicycle detector symbol should be applied at that location.

Bicycle Signals

Bicycle signals potentially provide clearer direction to bicyclists crossing signalized intersections that they may enter an intersection. Bicycle signals can be designed to call a green signal phase through the use of loop detectors (or other passive detection such as video or radar) or push button. Bicycle signal heads and a separate bicycle signal phase should be considered at intersections and trail crossings with very high volumes of cyclists or locations where it is desirable to provide separate phasing for the bicyclists, (e.g., a contra-flow bike lane).

Presently the MUTCD has no provision for bicycle signals; however bicycle signals are under experimentation in many jurisdictions. It is expected that bicycle signals will be incorporated in the next edition of the MUTCD.



Bicycle Signal

Rectangular Rapid Flashing Beacons

Rectangular rapid flashing beacons (RRFB) are installed at unsignalized street crossings or mid-block crossing to assist pedestrians and bicyclists in crossing the street. Rectangular rapid flashing beacons have proven to be effective devices at uncontrolled intersections for increasing motorist yielding rates and reducing pedestrian-vehicle crashes at crosswalk locations. The rapid flashing beacon device consists of a pair of rectangular, yellow LED beacons that employ a stutter-flash pattern similar to that used on emergency vehicles. The beacons are often mounted below a standard pedestrian crossing warning sign and above the arrow plaque. The beacons are pedestrian activated (pushbutton or passive detection) and placed on both sides of the street. If a median exists at the crossing location, a third and fourth beacon may be placed in the median, which, studies show, significantly increases motorist yield rates. Advanced pedestrian warning signs can also be used with the rapid flashing beacon. If traffic volumes are too high, or there are too many lanes (generally more than 4 travel lanes), a pedestrian hybrid beacon or full signal may be warranted. Research has shown higher motorist yielding rates for RRFBs versus standard flashing beacons; since these devices have been granted interim approval by FHWA, they are not included in the 2009 MUTCD due to late approval status, however, request to study is not required with interim approval to install these devices. A written request must be submitted to the FHWA to participate in the Interim Approval.



Rapid Flashing Beacon

Pedestrian Hybrid Beacons (a.k.a.: HAWK Signal - High Intensity Activated Crosswalk)

This signal is intended to allow pedestrians and bicyclists to stop traffic to cross high volume arterial roadways. The signal may be used in lieu of a full signal that meets any of the 9 warrants in the MUTCD as well as at locations which do not meet traffic signal warrants where it is necessary to provide assistance to cross a high volume arterial. The MUTCD provides suggested minimum volumes of 20 pedestrians or cyclists an hour for major arterial crossings (excess of 2,000 vehicles/hour). It is recommended that this signal be considered for arterial crossings in the bicycle network and for trail crossings if other engineering measures prove inadequate to create safe crossings. Pushbuttons should be "hot" (respond immediately)¹¹, be placed in convenient locations for bicyclists, and abide by other ADA standards.



Pedestrian Hybrid Beacon

¹¹ An exception may be when a HAWK signal needs to be coordinated with other signals that are timed sequentially.

Passive signal activation, such as video or infrared may also be considered. While this type of signal is intended for pedestrians, it would be beneficial to retrofit it, as the City of Portland, Oregon has done, with bicycle detection and bicycle signal heads on major cycling networks to provide adequate guidance. Depending upon the detection design, the city may have the option to provide different clearance intervals for bicyclists and pedestrians. The provision of bicycle signal heads would require permission to experiment from FHWA.

Other Crossing Treatments

Crossing Islands

Crossing islands (also known as median refuge islands) facilitate crossings of multiple lane and/or high-volume arterials by providing space in the center of the roadway, allowing the pedestrian or bicyclist to focus on one direction of traffic at a time (two-stage crossing). Median islands (or crossing islands) are constructed at the center of a road to physically separate the directional flow of traffic, and to provide pedestrians and bicyclists with a place of refuge while reducing the crossing distance between safety points.



Crossing island on 13th St

Arterial roadway intersections that have low demand for left-turn movements can be potential candidates for adding median islands. Median islands can be constructed on these roadways by using the available center turn lane area, or by removing parking from one side of the street and shifting the travel lanes. Median islands are likely to be a medium- or long-term improvement on roadways where significant channelization changes are needed to provide enough space for the median island.

The newest AASHTO Guidelines outline design considerations for median crossing islands:

- Median islands are beneficial to install on roadways that have high traffic volumes, roadways that are too wide for full roadway crossing, and roadways with more than three travel lanes.
- Minimum width for storage on the median is 6 feet. 10 feet accommodates a bike with trailer.
- Island should be large enough for multiple people to be on the island at once e.g. strollers, bicyclists, pedestrians etc.
- Angling the refuge area at approximately 45 degrees is recommended to direct those crossing to face towards on-coming traffic.

Crossing Markings

The crossing markings used for bicyclists may differ depending on if the crossing is at a signalized or unsignalized location. For signalized locations bicycle pavement markings through intersections indicate the intended path of bicyclists through an intersection or across a driveway or ramp. They guide bicyclists on a safe and direct path through the intersection, and provide a clear boundary between the paths of through bicyclists and either through or crossing motor vehicles in the adjacent lane. MUTCD Section 3B.08 requires dotted lines the same width and color to bind the bicycle crossing space. Other

treatments include multiple shared lane markings, chevrons, or colored pavement (green). These treatments may not be applicable for crossings in which bicycles are expected to yield priority, such as when the street with the bicycle route has Stop or Yield control at an intersection. At these types of locations high visibility crosswalks may be used to create a visibly prominent crossing location for pedestrians, which also benefits bicyclists. High visibility crosswalks should be used in combination with



Shared lane markings and dashed lines are used to guide bicyclists through the intersection

advanced pedestrian/bike crossing warning signs. Other treatments that may be used in combination with high visibility crosswalks include curb extensions (to shorten crossing distances, crossing islands, and advanced yield markings. And at mid-block locations they may be used in combination with raised speed tables, however these are not recommended on higher speed and volume arterial roadways.

Advanced Yield Markings

Advanced yield markings in conjunction with “Yield Here To Pedestrian” signs have proven to be effective at reducing multiple threat crashes at uncontrolled, marked crosswalk locations. A multiple threat crash results when a car in one lane stops to let the pedestrian cross, blocking the sight lines of the vehicle in the other lane of a multi-lane approach which advances through the crosswalk and hits the crossing pedestrian(s). The MUTCD (2009) requires the use of “Yield Here To Pedestrians” (R1-5, R1-5a) sign if yield lines (shark’s teeth) are used in advance of a marked crosswalk that crosses an uncontrolled multi-lane approach. “Yield Here To Pedestrians” sign may also be used without the installation of advanced yield lines. If yield lines and “Yield Here To Pedestrians” signs are used in advance of a crosswalk, they should be placed together and 20 to 50 feet before the nearest crosswalk line; parking should be prohibited in the area between the yield line and the crosswalk. “Yield Here To Pedestrian” signs may be used in conjunction with the “Pedestrian Crossing” (W11-2) warning sign but must be on a preceding post and not block the road user’s view of the W11-2 sign. This application should be considered at trail crossings, pedestrian hybrid beacon crossings, and bicycle boulevard crossings of arterials. It is recommended the bicycle symbol be incorporated onto the signs. If a pedestrian hybrid beacon is used at a crossing location, then a “Crosswalk Stop On Red” (R10-23) should be used per Section 2B.53 of the MUTCD.



Advanced yield markings with R1-5a sign.

High-visibility Pedestrian/Bicycle Crossing Warning Signs

High-visibility bicycle and pedestrian warning signs are recommended at trail crossings. These signs can increase driver awareness of bicyclists and pedestrians, especially at mid-block locations where bicyclists and pedestrians may not be expected. These signs will be most effective when combined with other treatments, such as marked crosswalks, curb extensions, median islands, etc. Signs should be used judiciously—too many signs can cause visual clutter and lead to non-compliance. This sign is incorporated into the 2009 MUTCD.



High-visibility trail crossing warning sign

Crossings at Off-Set Intersections

Several designs have been developed to facilitate crossing of intersections with “legs” that do not line up directly across from one another. These include bicycle left-turn lanes that create a designated space for two-way left turns using pavement markings, left-turn with raised median that creates a single protected left turn using a raised curb median, and a sidepath. Left turn lanes should be a minimum six feet wide and 8 feet in length so that bicyclists can be completely separated from the travel lanes.



Median with Bike Left Turn Pocket



Sidepath Connecting Offset T-Intersections



Median Bike Left Turn Lanes

Greater detail on all of crossing design treatments can be found in the documents mentioned above, as well as other sources such as PedSafe, BikeSafe and the National Association of City Transportation Officials (NACTO) website.

Sight Distance Improvements

Sight-distance obstructions can increase the risk of bicyclists being struck by vehicles at roadway and driveway crossings. Locations may have on-street parking, landscaping, light poles, bus stop shelters, and other features obstructing the line of sight between drivers and bicyclists. While these features can make a street more attractive and serve other valuable functions, they should be placed in locations that do not obscure drivers’ views of bicyclists.

Restricting parking within a certain distance of an intersection—typically 30 feet—helps to maintain sight distance. At certain locations, it may be appropriate to restrict parking further to achieve the desired improvement in sight distance.

Contrasting Green Color Pavement

The use of contrasting green color is used primarily to highlight areas with a potential for bicycle-vehicle conflicts, such as intersections or merge areas where turning vehicles must cross a through bike lane. Generally, color has been applied to sections of bike lanes that previously had been delineated by dotted white lines. Examples of the use of color are shown in Figures 4 and 5. Providing clear pathway of travel guidance for bicyclists across wide intersections and at transition areas between shared-use pathways and on-street facilities can aid in bicyclist comfort and alert motor vehicles about where to

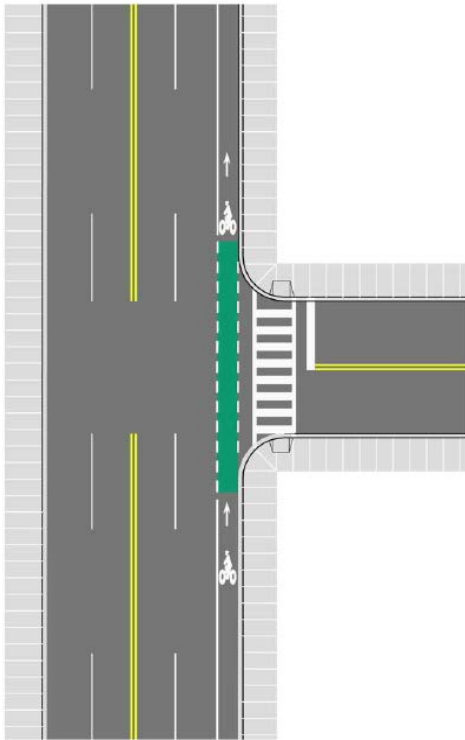


Figure 4: Green Bike Lane through Intersection

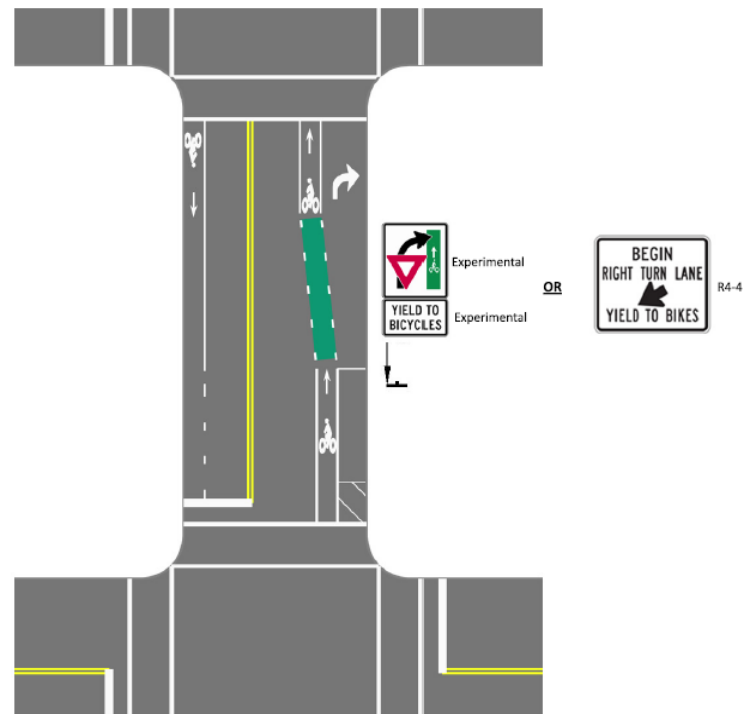


Figure 5: Green Bike Used to Cross Right-turn Lane

expect cyclists in the roadway.

MUTCD Status: The use of contrasting color was issued Interim Approval status by FHWA on April 15, 2011. The use of contrasting green color has been shown through experimentation to increase awareness of bicyclist but has thus far not been shown to reduce crash rates in conflict areas. A written request must be submitted to the FHWA to participate in the Interim Approval.

Design guidance and application from the interim approval state:

- The color green is designated as the color for bicycle facilities. The material used for green color can be paint, colored asphalt or concrete, other marking materials with the proper chromaticity and slip resistance

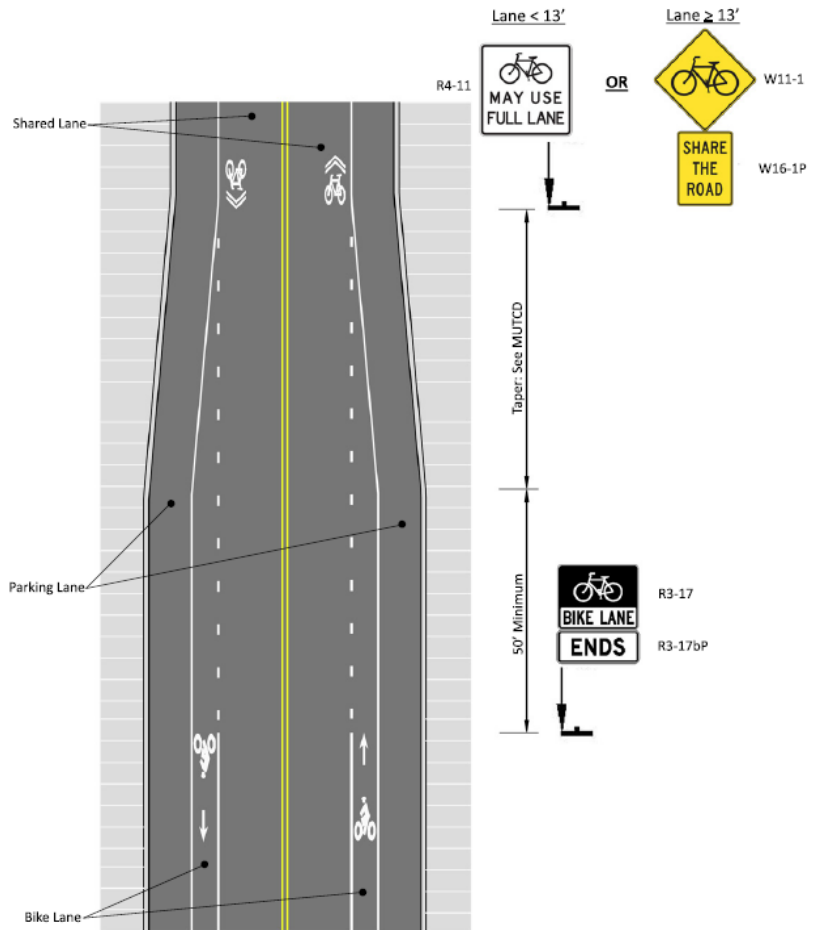
- Green pavement marking may be used within a bicycle lane or within an extension of a bicycle lane to enhance the conspicuity of the lane or extension
- If a pair of dotted lines is used to extend a bicycle lane across an intersection or driveway, or a ramp, green colored pavement may be installed between these lines as a supplement to the lines

Bicycle Facility Transitions

It is often necessary to use different bicycle facilities to provide bicycle access within the same roadway corridor due to existing roadway conditions, surrounding land uses, available right-of-way, and other factors. Where this condition occurs, it is important to provide transitions between different facilities. These transitions can be made safer and more understandable for bicyclists and motorists with appropriate and consistent treatments such as spot directional signs, warning signs, pavement markings, curb cuts, etc. Transitions should be provided as a part of the bicycle facility design process. Where possible, provide additional space where trails intersect roadways, particularly at signalized locations where multiple trail users are likely to be waiting to cross the street. Curb ramps at trail crossings and other on-street access points should be assessed and widened where they are narrower than the trail width and/or where the volume of trail users is high.

Where a shared use path crosses or terminates at an existing road, it is important to transition the path into the system of on-street bicycle facilities and sidewalks. Care should be taken to properly design the terminus to transition the bicycle traffic into a safe merging of intersecting facilities. Appropriate signing is necessary to warn and direct both bicyclists and motorists regarding these transition areas. Each roadway crossing is also an access point, and should, therefore be designed to facilitate movements of path users who either enter the path from the road, or plan to exit the path and use the roadway.

At locations where bike lanes terminate to become shared lanes it may be desirable to provide a transition to a marked shared lane for a brief distance, even if it is not desirable to mark a continuous shared lane for the remainder of the roadway. The placement of the shared lane marking should conform to guidance provided above. It is recommended that a SHARE THE ROAD sign (W11-1 and W16-1P) be used for shared lane situations where the lane is wider than 13 feet and BIKES MAY USE FULL LANE (R4-11) signs be used for narrower lane widths. The taper terminating the bike lane should also conform to the MUTCD (Figure 3B-14, 2009 MUTCD) shown here.



Appendix E: Wayfinding Protocol and Best Practices

This appendix provides guidance for establishing a comprehensive bicycle wayfinding signage system.

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Introduction

Wayfinding signs provide information about destinations, direction and distance to help bicyclists determine the best routes to take to major destinations. Signs provide information that helps bicyclists understand and use the bicycle on-street and path network without the use of a map. Directional signs also provide additional messaging to motorists to expect bicycles on the roadway. The presence of signs encourages bicycling on designated corridors because users feel the signs will direct them to the best route for getting to their destination based on directness and safety/comfort. The recommended bicycle network consists of many neighborhood streets that have low volumes of traffic and low vehicle speeds, but can also be circuitous. Wayfinding signs, along with crossing improvements where these routes meet arterial streets, may be all that is required to establish these these streets as comfortable routes that attract broad ridership.

Current Practice in the Casper Area

A limited number of BIKE ROUTE signs have been placed along some corridors in the Casper area (e.g. along W Yellowstone Hwy in the Town of Mills) This type of signage provides limited information to the rider and has generally fallen out of favor by communities attempting to increase bicycle ridership. In the Casper area it has been used on high volume/traffic roadways where the less confident bicyclist is unlikely to ride.

Policy and Regulatory Framework

Standards and guidance for the use of signage for bicycle purposes is provided by the following documents:

Manual on Uniform Traffic Control Devices (MUTCD) Guidelines

The Manual on Uniform Traffic Control Devices (MUTCD 2009 edition) includes standards for:

- Sign design for directional bicycle signs;
- Sign installation such as minimum height of signs above ground and horizontal placement from edge of the roadway or path; and
- Symbols and appropriate abbreviations for destination names.

The most recent update to the MUTCD in 2009 introduces new sign types and provides additional right-of-way placement guidelines for directional signs.



Existing bike route sign on W Yellowstone Hwy

American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities

The AASHTO Guide provides supplemental information to the MUTCD. The guide explains the use and benefits of different sign types for bicycle wayfinding.

Americans with Disabilities Act (ADA) Guidelines

The ADA Standards for Accessible Design offers guidance on sign assembly placement to maintain the proper vertical and horizontal clearance for pedestrians. These guidelines will apply in locations where sign assemblies need to be placed adjacent to or in the sidewalk.

Sign Types

Bicycle route signs are signs that guide bicyclists along designated contiguous bikeways. The bikeways may consist of on- and/or off-street bicycle facilities. The signed bikeways create a bicycle route and a network of bicycle routes creates the bicycle route system.

The bicycle route sign system, or wayfinding system, is the system of signing bikeways in a consistent, standardized fashion. Bicycle route sign systems are designed for bicyclists who are familiar with the city's landmarks and districts, but unfamiliar with the preferred route to their intended destination(s). The sign system provides bicyclists with direction, destination and distance information. Generally three different categories of signs are provided in order to assist the bicyclist (listed below).

1. **Decision and Spot Decision Signs (D1):** at decision points where two or more routes intersect or where guidance is required
2. **Named Route Signs (M1):** along designated named routes
3. **Route Designation or Confirmation Signs (D11):** to confirm a route choice and provide guidance at a turn in a route



2009 MUTCD Figure 9B-4

Decision Signs (D1-1c series)

Decision signs mark decision points where two or more bicycle routes intersect. Decision signs are installed on the approach to an intersection. Signs include direction, destination and distance (in miles) information.

Sign Placement in the Right-of-Way: Place 30+ feet on the approach to a decision point or intersection of another signed bicycle route. To allow for comfortable merging across travel lanes for left

turns place the decision sign at the appropriate distance from the intersection based on the number of lanes that a bicyclists must merge across:

- No merge: 30 feet
- One lane merge: 100 feet
- Two lane merge: 200 feet

Sign Specs: 36"X6", white on green and retro-reflective.

Sign Placement on Post: Directional sign organization at a given decision point will be based on the following guidelines:

1. Install D1-1c signs on the approach to intersections where signed routes intersect and where routes lead directly to the intended destination. The bicycle route system can connect business districts, schools, parks, neighborhoods and other important locations that are directly on designated routes.
2. The number of destinations provided on a given post is not to exceed three. This allows for proper vertical clearance to be maintained. Three signs per post is also about the maximum amount of information that can be read by a passing bicyclist.
3. The number of signs on a given post pointing in the same direction is not to exceed two. Limiting destinations to two in one direction is necessary to provide space for destinations in other directions, because this sign type will be installed at intersecting routes.
4. The sign with the nearest destination should go at the top of the assembly with the most distant destination at the bottom. If destinations are equal in distance, the sign with an up arrow should be placed on top. This arrangement allows for the nearest destination to "fall off" the top of the sign and subsequent destinations to move-up as the bicyclists approaches.
5. When directional blades are placed on named routes or they direct users directly to named routes, named route signs (M1-8a and supplementary signs) may be placed on the same sign post below the D1-1c sign(s). Placing multiple sign types on one post will reduce the number of posts used as well as provide all necessary information for bicyclists in one location.



Decision and named route signs from Seattle. On paths, both sign types are used to mark the route and provide direction to destinations on and off the path.

Sign Content: Destination and directional information will be unique on most signs. Determining destinations is important to the function of the network. Distance information will be determined by the spacing of decision points and destination locations.

1. Identify and Rank Destinations:
 - Develop a list of all destinations and rank them in a hierarchy. For example:
 - Primary: paths, bridges, business districts, neighborhoods, regional parks, downtown
 - Secondary: Institutions, transit stations, other municipalities
 - Tertiary Destinations: other public institutions/facilities, airport, designated bicycle streets
 - The ranking will help determine the sign content at a given decision point within the network.
2. Provide distance measurements in tenth of a mile increments such as 4.3, 1.2. This allows for detailed destination information in denser urban areas. If mileage on a sign is a whole number, do not include the tenth mile placeholder. For example use “4” rather than “4.0”
3. If a bike route terminates at a location where there is no destination use the name of the final cross street or bike route as the destination.

Directional Spot Signs (D1-1b series)

Spot signs are similar to directional signs but provide direction and destination information only. Use D1-1b signs when a destination is off the signed route or when getting to the route requires additional wayfinding. Spot signs may include the words “To” and “Via” where necessary and may vary in width to accommodate limited space in the right of way. Spot signs do not need to be followed by a confirmation sign.

Spot signs may be used where:

1. Guidance to signed bicycle routes from adjacent roadways, sidepaths etc. or access to important facilities such as a path is needed.
2. Guidance from signed bicycle routes when important destinations are a short distance off the signed route. In such cases, a directional sign may indicate the best access point from the signed route to the destination. Use additional spot signs to guide bicyclists to that destination.



D1-1b

2009 MUTCD Figure 9B-4



Spot sign along bicycle route in Seattle.

Named Route Signs (M1-8 series)

Install M1-8 or M1-8a signs along named regional on-road routes and paths to assist users in wayfinding along named routes or to confirm that the user is on the desired route. Use M1-8 or M1-8a with supplementary signs such as directional arrows (M5 and M6 series) and the words “North”, “South”,

“East”, “West”, “To”, “End”, “Begin”, etc. (M3, M4 series). The M1-8 series of signs are small in size and are a cost effective way to mark bicycle routes. There are pros and cons to the use of route numbers or route names. If a route already has a colloquial name, use the colloquial name and not an arbitrary number to avoid confusion. Route names are encouraged because they can often provide additional contextual information such as destination information i.e. Smith Street Bike Route will likely follow Smith Street and Smith Street passes by X, Y and Z locations. Route numbers do not provide this context and require a bicyclist to look at a map to understand where the route goes. In areas where signed bike routes are dense, the use of numbers can be confusing because a bicyclist may have to ride on several numbered routes to get to a destination. Numbered routes can work well for cross jurisdiction travel, on routes that do not already have a colloquial name or on routes with many turns where a colloquial name is not clear. On an M1 sign, route numbers can be more visible than text from a distance.



2009 MUTCD Figure 9B-4

Sign Specs: Size: 12”X18”, white on green and retro-reflective. The letters on signs should be 2 to 1.5 high for best visibility.

Sign Placement in the Right-of-Way:

On-path M1-8 or M1-8a signs may be used:

1. At path entrances and exits
2. 30’-50’ after every controlled intersection or street crossing; or
3. Every ¼ mile to mile where there is a gap in signage. Spacing will depend on the density of the street network
4. At transitional locations (such as path-to-road transitions) or in cases where bicyclists will be transitioning to sidewalks



A modified M1-8a sign at the entrance to a shared use path.

On-street M1-8 or M1-8a signs may be placed:

5. 30+ feet before a turn with an M5 or M6 arrow (follow decision sign guidelines for placement at the approach to an intersection)
6. 30-60 feet after the turn to confirm the path
7. At decision points where needed
8. Within proximity to a named route (within a few blocks), similar to a spot sign. Named route signs can be used in conjunction with a supplementary sign such as an arrow and “To”. When farther than a few blocks off the designated route, decision signs can be used to direct users to named route

Sign placement on post: M1-8 or M1-8a signs can be mounted on the same post, below regulatory, warning or destination signs.

1. M1-8 or M1-8a signs may be placed back-to-back or back-to-back with regulatory or warning signs.
2. When multiple M1-8 or M1-8a signs are placed on the same post, they can be stacked depending on height and visibility. The current route should be the top sign.

Route Designation, Turn and Confirmation Signs (D11-1c series)



D11-1c

2009 MUTCD Figure 9B-4

These signs confirm that a bicyclist is on the correct route. The sign is used in two ways:

1. Route Confirmation Sign: Signs are placed on the far side of an intersection following the directions indicated by decision signs and at intervals along the route to confirm that the bicyclist is still on the correct route.

2. Turn Sign: at turns in a route with an arrow (M5 or M6 series sign).

In this case D11-1c and an arrow sign are placed on the approach to an intersection. Confirmation signs will include destination information generally with the text "To" the location indicated on the directional sign. When a confirmation sign is used on a named route, an M1-8 or M1-8a sign may be placed below the confirmation sign.

Sign Specs: 24" X 18", white on green and retro-reflective.

Street Name Signs

Install street name signs at path /roadway intersections. This

helps path users find path entrances and identify cross streets along paths. Placing bicycle and pedestrian legends on the path name sign indicates to motorists that the information on the sign can be disregarded.



Trail Name Sign (SNS)

A path name sign can be added to street name sign assemblies at intersections of paths and roadways.

Supplemental Signs

Supplemental signs provide additional information to D11-1 or M1 series signs. Cardinal direction signs (M3 series) and alternate route signs (M4 series) are placed above the M1 series. Arrow signs in the M5



2009 MUTCD Figure 9B-4

and M6 series are placed below D11-1 and M1 signs to provide directional information.

General Sign Components

The following guidelines outline general rules for the signs

1. For all signs use upper and lower case letters
2. Use Clearview Series C font. This differs from Colorado Department of Transportation standards and is approved for use by the Federal Highway Administration. It strikes a balance between visibility and maximum characters per sign.
3. Use two-inch high capital letters. This size is visible from approximately 80 feet
4. For destination names that are too long to fit on one line, use intuitive abbreviations
5. Do not use periods in the abbreviations of destination names
6. Avoid the use of diagonal arrows when possible
7. Use graffiti film on bicycle route signs that are lower to the ground, particularly on paths. This will increase the longevity of the signs.

Sign Placement Guidance

Guidance on signage placement is important to providing a legible sign system. Predictable and uniform placement of directional signs at traffic controlled intersections and at intervals helps to provide proper guidance particularly if a turn in a route is to occur.

For bicyclists, a good baseline distance required to read a sign and determine an action is 30 feet from the intersection. Additional engineering judgment is required when placing directional signs to allow for visibility of the sign with parking and vegetation and other possible obstructions.

Roadways

Turn Signs:

1. Follow placement guidelines for decision signs.

Confirmation Signs:

2. 30-60 feet on the far side of the intersection after decision points, preferably within sight of the decision sign.
3. 30-60 feet after stop controlled or signalized intersections.
4. Or after every 1/4 mile to mile of unsigned segment along designated on-street routes depending on the density of the street grid.

Sign content:

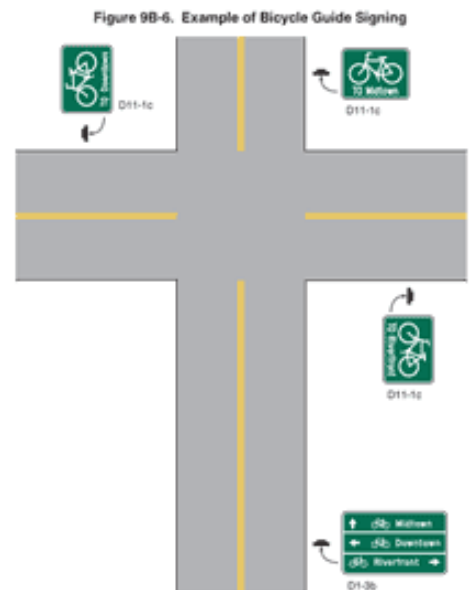


Figure 9B-6 from the 2009 MUTCD provides general lateral placement of D1-1 and D11-1 signs at an intersection.

1. If there are two destinations in one direction, a confirmation sign may include two lines of text. This may require reduction of the bicycle symbol.

Sign mounting height is also outlined in the MUTCD ([section 2A.18](#)), however, due to speed and sight line differences between bicyclists and motor vehicles, minimum post heights are recommended for bicycle signs.

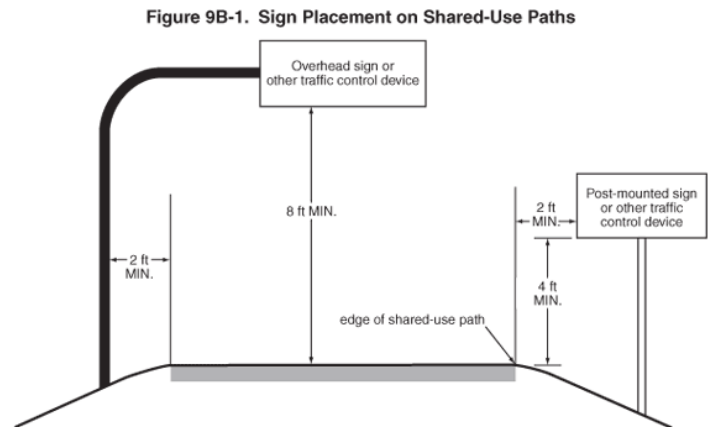
Mounting height guidance:

1. Sidewalk Clearance: 7 feet of clearance from the bottom of the sign to the ground should be allowed. If there are multiple signs per post, and the lowest sign is lower than 7 feet, the lowest sign cannot stick-out more than 4 inches into the sidewalk. If bicycles use the sidewalk the clearance height should be 8 feet.
2. If there is no sidewalk and few obstructions such as parked cars, optimum vertical height for bicycle signs is 7 feet from the bottom of the sign.

Shared Use Paths

Horizontal, lateral and vertical installation of bicycle signs differs for shared-use paths and roadways. For paths follow lateral and vertical sign placement guidelines in the MUTCD guidelines for signs placed along shared-use paths ([Figure 9B-1](#)):

1. 8 foot minimum vertical clearance
2. 2 foot clearance from edge of path to edge of sign
3. 4 foot minimum distance between ground and bottom edge of sign



Signing of the Bicycle Network

The Casper Area Trails, Path and Bikeway Plan recommends a bicycle network that consists of improvements on over 100 miles of roadway. The type and phasing of improvements may vary depending on a number of criteria, including expected user volumes, roadway constraints, vehicle volumes and speeds, feasibility, destinations served, and relative importance in the overall network. Wayfinding is an important component of establishing the network. Wayfinding signs may be used alone, i.e. signed route, or in combination with other treatments such as pavement markings (e.g. bike lanes and shared lane markings). The phasing of signing and other bicycle network improvements do not need to occur at the same time. For example, for some lower speed/lower volume roadways installation of wayfinding signage may precede the striping of bike lanes, and in this sense could be used as an interim step toward implementing additional recommended treatments. The network consists of numerous segments defined as shared road/lane where signage is all that is needed to establish the route and attract riders. Over time, it may make sense to add additional signed routes to the network. The decision to develop a signed route versus installing a bike lane or shared lane marking may be based on the following criteria:

- Alternate routes parallel, and within close proximity (less than a half mile) to a route with bicycle facilities
- Lower volume streets
- Spur routes, or routes that may span a relatively short distance and terminate at a specific destination or loop back into the main route

Best Practices

The cities of Chicago and Seattle provide examples of best practices for bicycle wayfinding. Below are descriptions of their wayfinding systems.

Chicago

The City of Chicago has implemented an extensive directional sign system for bicycles using destination-based signage for the on-street bicycle network. The MUTCD D11-1c and D1-1c series signs were developed by the City of Chicago in an effort to consolidate the amount of signage required by the 2003 MUTCD for bicycle wayfinding using the D11-1, D1-1 and supplemental signs. The D11-1c provides specific destination information, such as “To Evanston” in lieu of the general “BIKE ROUTE” text of the D11-1 sign. This is helpful in distinguishing different routes in a dense bicycle route network. The D11-1c is used by the City of Chicago as a confirmation sign to confirm a route



2003 MUTCD guidelines for directional bicycle signs. Right: Chicago developed the D1-1c sign to consolidate direction, destination and distance information onto one sign.



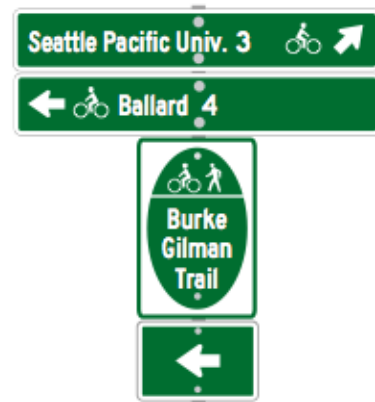
Decision signs preceding an intersecting signed bike route in Chicago.

selection. The sign is to be placed on the far side of an intersection after a route choice had been made. The D1-1c consolidates direction, destination and distance information onto one small sign. Several D1-1c signs can be installed together at the approach to a decision point to provide information on multiple routes. The D11-1c and the D1-1c were developed by the City of Chicago and later incorporated into the 2009 edition of the MUTCD.

Seattle

The city of Seattle also has a directional sign system for bicycles. Modeled after the Chicago system, the Seattle system also uses the D11-1c and D1-1c series of signs. Because Seattle has an extensive off street path system, additional signs were required to distinguish named routes. The M1-8 series of signs are used in Seattle to mark named routes. These signs are installed along named routes with supplementary signs from the M2, M3, M4, M5 and M6 series. M1 signs are also installed at decision points on paths with D1-1c or D11-1c signs (see figure).

Many of Seattle's paths are named. In order to include the colloquial route name on the M1-8a sign, adjustments were made to the sign. The route number was replaced with route name within the main body of the sign. The space at the top of the sign was used for a logo. This complete sign system helps bicyclists get to destinations throughout the city and provides guidance to and along named bicycle routes.



Casper Area Application

The bicycle network recommended in the CATPBP may consist of two general categories of signed routes:

- **Named Routes:**
 - Paths such as the Platter River Trail
 - Recreational loops or a loop that combines path segments with on-street segments.
 - Downtown Bike Loop
- **Un-named Network Routes:**
 - Routes between destinations such as transit, schools, business districts, major employment centers, parks or major path access points.

The two route types will work in unison to provide bicyclists with a navigable system along designated bicycle routes.