

CHAPTER 5

FACILITY RECOMMENDATIONS



5.1 RECOMMENDED MAJOR STREET NETWORK (MSN) IMPROVEMENTS

This Plan includes a variety of recommended major street network improvement projects. These projects are needed to meet the anticipated traffic demands for the year 2030. This section summarizes these projects.

5.1.1 MSN Projects from the 2001 Transportation Plan

A list of recommended major street network (MSN) projects that were recommended as part of the *Greater Bozeman Area Transportation Plan – 2001 Update* and their status as of this plan update are listed in this section. The 2001 update of the Transportation Plan included 40 recommended MSN projects. Of these projects, 4 were completed, 6 are partially completed, and 30 have not been completed. Of the either partially completed or not completed projects from the previous plan, 32 projects have been included in this update of the plan (either as committed or as recommended projects). The various 40 projects recommended from the previous plan and their resultant status is shown below in **Table 5-1**.

Table 5-1
MSN Projects from 2001 Transportation Plan & Status for 2007 Plan

MSN Location No.	Location of Past MSN Project	Past Recommendation	Status for this Plan Update
1	N. 19 th Ave. – Baxter Ave. to Springhill Rd.	Widen to a 5-lane urban arterial (includes widening overpass)	Partially Completed, modified and included herein as MSN-1
2	S. 19 th Ave. – College St. to W. Main St.	Widen to a 5-lane urban arterial.	Not Completed, modified and included herein as CMSN-1
3	S. 19 th Ave. – Kagy Blvd. to College St.	Widen to 5-lane urban arterial.	Not Completed, modified and included herein as CMSN-1
4	Kagy Blvd. – S. 19 th Ave. to Willson Ave.	Widen to 3-lane urban arterial.	Not Completed, modified and included herein as MSN-2
5	S. 3 rd Ave. – Graf to Kagy Blvd.	Widen to 3-lane urban arterial.	Not Completed, modified and included herein as MSN-3
6	Rouse Ave. – Main St. to Story Mill Rd.	Widen to 3-lane urban arterial	Not Completed, modified and included herein as MSN-4
7	College St. – Main St. to S. 19 th Ave.	Widen to 5-lane urban arterial.	Not Completed, modified and included herein as MSN-5
8	College St. – S. 19 th Ave. to S. 8 th Ave.	Widen to 3-lane urban arterial.	Not Completed, modified and included herein as CMSN-2
9	Cottonwood Rd. – Stucky Rd. to Valley Center Rd.	Construct 3-lane urban arterial.	Not Completed, modified and included herein as MSN-6
10	Fowler/ Davis – Stucky Rd. to Valley Center Rd.	Construct 2-lane urban arterial.	Partially Completed, modified and included herein as MSN-7
11	Hulbert – Valley Center Rd. to Cottonwood Rd.	Construct 2-lane urban collector.	Not Completed, modified and included herein as CMSN-3
12	Deadman's Gulch / Cattail Street – N. 19 th to Cottonwood Rd.	Construct 2-lane urban collector.	Not Completed, modified and included herein as MSN-8
13	Kagy/Stucky – S. 19 th to Cottonwood Rd.	Construct 2-lane urban arterial.	Not Completed, modified and included herein as MSN-9
14	Durston Rd. – N. 19 th Ave. to Cottonwood Rd.	Widen to 3-lane urban arterial.	Partially Completed, modified and included herein as CMSN-4
15	Oak St. – N. 19 th Ave. to Cottonwood Rd.	Construct 3-lane urban arterial.	Partially Completed, modified and included herein as MSN-10

MSN Location No.	Location of Past MSN Project	Past Recommendation	Status for this Plan Update
16	Graf – S. 3 rd Ave. to S. 19 th Ave.	Connect with paved 2-lane urban collector.	Not Completed, modified and included herein as MSN-11
17	S. 11 th Ave. – Kagy Blvd. to Graf	Connect with 2-lane urban collector.	Not Completed, modified and included herein as MSN-12
18	N. 11 th Ave. – Durston Rd. to Baxter Lane	Connect with a 2-lane urban collector.	Not Completed, modified and included herein as MSN-13
19	N. 15 th Ave. – Durston Rd. to Baxter Ln.	Connect with a 2-lane urban collector.	Partially Completed, will now only extend to Tschache Lane
20	N. 27 th Ave. – Durston Rd. to Valley Center Rd.	Connect with 2-lane urban collector.	Partially Completed
21	Kagy/Bozeman Trail – Highland Blvd. to I-90	Upgrade to 2-lane rural arterial and realign.	Completed TCC #47
22	W. Babcock St. – Main St. to Ferguson Rd.	Widen to 3-lane urban collector.	Completed
23	W. Babcock St. – 11 th Ave. to 19 th Ave.	Upgrade to 2-lane urban collector.	Not Completed, modified and included herein as MSN-14
24	Lincoln Rd. – S. 11 th Ave. to S. 19 th Ave.	Upgrade to 2-lane urban collector.	Completed
25	Sourdough Rd. – Kagy Blvd. to Goldstein Rd.	Upgrade to a 2-lane rural collector.	Completed
26	South Church	Upgrade to 2-lane urban collector.	Not Completed, modified and included herein as MSN-15
27	W. Main St. – 7 th Ave. to 19 th Ave.	Install raised median, landscape median where possible.	Not Completed, modified and included herein as MSN-16
28	Frontage Rd. – N. 7 th Ave. to Belgrade.	Widen to 3-lane rural arterial, with right turn lanes at major intersections.	Not Completed, modified and included herein as MSN-17
29	Springhill Rd. – Frontage Rd. to Sypes Canyon Rd.	Widen to 3-lane rural arterial.	Not Completed, modified and included herein as MSN-18
30	Baxter Lane – N. 11 th Ave. to 19 th Ave.	Upgrade to 2-lane urban collector.	Not Completed, modified and included herein as CMSN-5
31	Baxter Lane – N. 19 th Ave. to Cottonwood Rd.	Upgrade to 2-lane urban arterial.	Not Completed, modified and included herein as CMSN-6
32	Haggerty Ln. – Main St. to Kagy Blvd.	Upgrade to 2-lane urban collector.	Not Completed, modified and included herein as MSN-19
33	Airport Interchange	Create a new interstate interchange to serve the airport and connect the interchange to the Frontage Rd. with 2-lane rural arterial.	Not Completed, modified and included herein as MSN-20
34	Jackrabbit Ln. – Gallatin Gateway to Four Corners.	Widen to 3-lane rural arterial.	Not Completed, modified and included herein as MSN-21
35	Jackrabbit Ln. – Four Corners to I-90	Widen to 3-lane rural arterial with right turn lanes at the major intersections.	Not Completed, modified and included herein as MSN-22
36	I-90 Underpass – U.S. 10 to Valley Center Rd.	Upgrade underpass to rural collector standard.	Not Completed
37	Griffin Dr. Railroad Underpass	Construct a railroad underpass.	Not Completed, modified and included herein as MSN-23
38	Cedar St.	Upgrade Cedar St. to a 2-lane urban collector standard and connect to Rouse Ave.	Not Completed, modified and included herein as MSN-24
39	Ferguson Ave. – Main St. to Valley Center Rd.	Connect with a 2-lane urban collector.	Not Completed, modified and included herein as MSN-25
40	Highland Trail Improvements – S. Kagy Blvd.	Construct a trail from Kagy along the Highland Ridge and connects to Goldenstein Rd.	Not Completed

5.1.2 Committed Major Street Network (CMSN) Projects

Committed projects are only listed if the project will affect capacity and/or delay characteristics of a roadway facility and/or intersection. This distinction is necessary since some committed improvement projects, likely to occur within the next five years, are not listed here since they will not have an effect on the traffic model. Committed improvements listed are only considered if they are likely to be constructed within a five-year timeframe (i.e. year 2007 through the year 2012), and a funding source has been identified and is assigned to the specific project.

CMSN-1: 19th Avenue (Babcock Street to Kagy Boulevard):

This project consists of reconstructing 19th Avenue from the intersection with Babcock Street south to the intersection with Kagy Boulevard to meet 5-lane principal arterial standards. This project comes from the high traffic volumes found on this roadway and the expected growth in the Bozeman area. This segment is approximately 1.25 miles long.

CMSN-2: College Street (19th Avenue to 8th Avenue):

This project consists of reconstructing College Street from the intersection with 19th Avenue east to the intersection with 8th Avenue to meet minor arterial standards. This section of West College has already exceeded the volume of traffic it was projected to carry in 2020. Planned improvements to South 19th Avenue and increased development in the South 19th Avenue corridor will only further increase traffic demand on this facility. This facility also lacks bicycle and pedestrian facilities, therefore, this project will improve not only safety and capacity for motorized vehicle but for bicycle and pedestrians as well.

CMSN-3: Hulbert Road (Love Lane to Jackrabbit Lane):

Hulbert Road will be paved from the intersection with Love Lane west to the intersection with Jackrabbit Lane. This segment is approximately 2 miles long and is classified as a collector roadway. This project also consists of paving Hulbert Road west from the intersection with Jackrabbit Lane to the Gallatin Heights Major property boundary. This segment is approximately 0.5 miles long and is a local roadway.

CMSN-4: Durston Road (Fowler Road to Ferguson Road):

This project consists of constructing a new roadway between Fowler Road and Ferguson Road. It is apparent from recent development activity that the areas served by this minor arterial roadway may cause the predicted volumes to be exceeded along this corridor. This project will improve the safety and capacity for motorized vehicles as well as bicycles and pedestrians.

CMSN-5: Baxter Lane (7th Avenue to 19th Avenue):

This project consists of reconstructing Baxter Lane from the intersection with 19th Avenue east to the intersection with 7th Avenue to meet minor arterial standards. Baxter Lane is positioned to become a major commercial route due

to zoning on the south side of the road from 19th Avenue to 7th Avenue. By 2020 it has been projected that this roadway will carry more than double the vehicles per day than what it currently carries. This project will improve the safety and capacity for motorized vehicles as well as bicycles and pedestrians.

CMSN-6: **Baxter Lane (19th Avenue to Harper Puckett Road):**

This project consists of reconstructing Baxter Lane from the intersection with Harper Puckett Road east to the intersection with 19th Avenue to meet minor arterial standards. Continued development in the northwest quadrant of the City insures that this improvement will be needed. This project will improve the capacity and safety of this corridor.

CMSN-7: **Baxter Lane (Harper Puckett Road to Jackrabbit Lane):**

Baxter Lane will be paved from the intersection with Harper Puckett Road west to the intersection with Jackrabbit Lane. This segment of Baxter lane is classified as a minor arterial roadway.

CMSN-8: **Harper Pucket Road:**

Harper Pucket Road will be paved from the intersection with Cameron Bridge Road south to the approximately 0.5 miles south of Valley Center Road. This segment is approximately 1.5 miles long and is classified as a minor arterial roadway.

CMSN-9: **Durston Road:**

Durston Road will be extended approximately one mile from the current western termination point through Black Bull Run Subdivision and Middle Creek Parklands Subdivision to intersect with Jackrabbit Lane. Durston Road will also be paved from the current western end of asphalt location at the Bozeman City limits to the end of its extension. This segment of Durston Road is classified as a minor arterial roadway.

CMSN-10: **Valley Center Road:**

This project consists of paving Valley Center Road from the intersection with Jackrabbit Lane west to the Gallatin Heights Major property boundary. This segment is approximately 0.5 miles long and is a local roadway.

CMSN-11: **Cameron Bridge Road:**

Cameron Bridge Road will be paved from the intersection with Jackrabbit Lane east to the intersection with Harper Puckett Road. This segment is approximately 3 miles long and is classified as a collector roadway.

CMSN-12: **Monforton School Road:**

Monforton School Road will be abandoned at the campus of Monforton School via a new cul-de-sac, and a new road will be re-routed to line up across from Cobb Hill Road at Huffine Lane. It is recommended herein that the relocated Monforton School Road be changed to a collector road functional classification (see **Figure 9-1**).

- CMSN-13: **Spain Bridge Road:**
Spain Bridge Road will be paved from the intersection with Penwell Bridge Road south to the intersection with Airport Road. This segment is approximately 2 miles long and is classified as a minor arterial roadway.
- CMSN-14: **Penwell Bridge Road:**
This project consists of paving a one mile stretch of Penwell Bridge Road east from the intersection with Dry Creek Road. Another stretch of Penwell Bridge Road will also be paved from the intersection with Spain Bridge Road to East Gallatin River. Penwell Bridge Road is a local roadway.
- CMSN-15: **Tayabeshockup Road:**
Tayabeshockup Road will be paved south from the intersection with Bozeman Trail Road. This segment is approximately 2 miles long and is classified as a collector roadway.
- CMSN-16: **Valley Center Drive:**
This project consists of upgrading Valley Center Drive from the intersection with Jackrabbit Lane to the intersection with Love Lane to a two-lane urban arterial standard. This section will consist of one travel lane in each direction, 6-foot shoulders on each side, curb and gutter, turn-lanes at major intersections, and sidewalks. This project is approximately 2 miles long.

5.1.3 Recommended Major Street Network (MSN) Projects

During the preparation of this Plan, a number of MSN projects were identified. Estimated project costs are included for each recommended project. These costs are “planning level” estimates and do not include possible right of way, utility, traffic management, or other heavily variable costs.

The following list of MSN projects are **not** in any particular order with respect to priority:

- MSN-1: **N. 19th Avenue (Interstate 90 to Springhill Road)**
This project consists of widening N. 19th Avenue from Interstate 90 to the intersection with Springhill Road to a 5-lane urban arterial standard. This project includes widening the I-90 overpass along N. 19th Avenue. This roadway is currently a principal arterial roadway south of I-90 and a minor arterial roadway north of I-90. This project serves as a long-term need that will be necessary to accommodate future development patterns in the region and serve north-south traffic flow. It is expected that a minimum of two travel lanes in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and raised median will be required.
Estimated Cost: \$9,500,000
- MSN-2: **Kagy Boulevard (S. 19th Avenue to Willson Avenue)**
This project consists of widening Kagy Boulevard from the intersection with S. 19th Avenue to the intersection with Willson Avenue to a three-lane urban

arterial. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalks, and a raised median. This project serves as a long-term need that will be necessary to accommodate future development patterns in the region and serve east-west traffic flow around the southern portions of the city. Currently this section of Kagy Boulevard is a two-lane roadway with few left-turn bays.

Estimated Cost: \$4,700,000

MSN-3: **S. 3rd Avenue (Graf Street to Kagy Boulevard)**

This project consists of widening S. 3rd Avenue from the intersection with Graf Street to the intersection with Kagy Boulevard to a three-lane urban arterial roadway. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, sidewalks, and a raised median. This project serves to accommodate development in the region and serve north-south traffic flow around the southern portions of the city.

Estimated Cost: \$3,300,000

MSN-4: **Rouse Avenue (Main Street to Story Mill Road)**

This project consists of widening Rouse Avenue from the intersection with Main Street to the intersection with Story Mill Road to a three-lane urban arterial. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalks, and a raised median. This project serves to accommodate increasing traffic volumes along Rouse Avenue and serve traffic flow around the northern portions of the city. Currently Rouse Avenue is a two-lane roadway with few left-turn bays. An Environmental Assessment (EA) has been prepared for this recommended project that identifies specific constraints and known design issues.

Estimated Cost: \$10,000,000

MSN-5: **College Street (Main Street to 19th Avenue):**

This project consists of reconstructing College Street from the intersection with Main Street east to the intersection with 19th Avenue to a five-lane urban arterial roadway. It is expected that a minimum of two travel lanes in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and a raised median will be required. This section of West College has exceeded the volume of traffic it was projected to carry. During peak hours, traffic is backed up from 19th Avenue to Huffine Lane and beyond. This project will improve the safety and capacity for motorized vehicles as well as bicycles and pedestrians.

Estimated Cost: \$3,300,000

MSN-6: **Cottonwood Road / Harper Puckett Road (Stucky Road to Valley Center)**

This project consists of widening Cottonwood Road from the intersection with Stucky Road north to its current termini and constructing an extension to Cottonwood Road from its current northern termini to Baxter Lane. It is also recommended that Harper Puckett Road be widened from the intersection with Baxter Lane north to the intersection with Hidden Valley Road and that

an extension be constructed north to intersect with Valley Center Road. This project should be constructed to a five-lane urban arterial standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalks, and a raised median. This project is necessitated by the future development patterns in the region and will serve north-south traffic flow around the western edge of the city.

Estimated Cost: \$24,300,000

MSN-7: **Fowler/Davis Road (Stucky Road to Valley Center Road)**

This project consists of upgrading Fowler Road and Davis Road from the intersection with Stucky Road to the intersection with Valley Center Road to a three-lane urban arterial standard. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalks, and a raised median. New links will have to be constructed along this corridor between Oak Street and Babcock Street and between Garfield Street and Stucky Road. This project is necessitated by the future development patterns in the region and will serve north-south traffic flow around the western portion of the city.

Estimated Cost: \$21,100,000

MSN-8: **Deadman's Gulch / Cattail Street (27th Avenue to Cottonwood Road)**

This project consists of upgrading Cattail Street from the intersection with 27th Avenue west to its current termini point to a two-lane urban collector roadway. A new link between the current western termini point of Cattail Street and Cottonwood Road should be created to two-lane collector standards complete with one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project is necessitated by the future development patterns in the region and will serve east-west traffic flow around the northern portion of the city.

Estimated Cost: \$4,100,000

MSN-9: **Stucky Road (S. 19th Avenue to Gooch Hill Road)**

This project consists of upgrading Stucky road from the intersection with S. 19th Avenue west to the intersection with Gooch Hill Road to a two-lane urban collector roadway. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project is necessitated by the future development patterns in the region and will serve east-west traffic flow around the southern edge of the city.

Estimated Cost: \$8,400,000

MSN-10: **Oak Street (Fowler Lane to Cottonwood Road)**

This project consists of constructing a new link along Oak Street from the intersection with Fowler Lane west to Cottonwood Road. This section should be built to a five-lane urban arterial standard and should include two travel lanes in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalks, and a raised median. This project is necessitated by the future

development patterns in the region and will serve east-west traffic flow around the northwestern portion of the city.

Estimated Cost: \$4,900,000

MSN-11: **Graf Street:**

Graf Street is to be extended from its current western termini to connect to 19th Avenue. This extension would be approximately 0.6 miles long and should be built to meet two-lane collector standards. This extension is an important connection for public safety purposes, allowing fire service to meet their response time requirements in areas where they currently cannot.

Estimated Cost: \$1,800,000

MSN-12: **S. 11th Avenue (Kagy Boulevard to Graf Street extension)**

This project would connect S. 11th Avenue between Kagy Boulevard and the future extension of Graf Street as described in **MSN-11**. This roadway should be built to a two-lane urban collector standard which should include one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. A new link between Opportunity Way and the Graf Street extension would need to be constructed under this project. This project will serve to create a north-south link for the southern portion of the city.

Estimated Cost: \$2,000,000

MSN-13: **N. 11th Avenue (Durstun Road to Baxter Lane)**

This project consists of upgrading N. 11th Avenue from the intersection with Durstun Road to the intersection with Baxter Lane. A new link between Durstun Road and Oak Street would need to be constructed under this project. This roadway should be built to a two-lane urban collector standard which should include one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project will serve to create an additional north-south link along the north-central part of the city.

Estimated Cost: \$2,300,000

MSN-14: **W. Babcock Street (11th Avenue to 19th Avenue)**

W. Babcock Street should be upgraded to a two-lane urban collector standard between the intersection with 11th Avenue and the intersection with 19th Avenue. This would include one travel lane in each direction, bike lanes on each side, curb and gutter, boulevards, parking, and sidewalks.

Estimated Cost: \$1,400,000

MSN-15: **Church Street (Main Street to Kagy Boulevard):**

This project consists of reconstructing Church Street from the intersection with Main Street south to the intersection with Kagy Boulevard to a two-lane urban collector standard. This would include one travel lane in each direction, bike lanes on each side, curb and gutter, boulevards, parking, and sidewalks. The need for this project comes from increased traffic due to

growth in the South Bozeman area as well as the county area south of Bozeman. This project will improve the safety and capacity for motorized vehicles as well as bicycles and pedestrians.

Estimated Cost: \$4,300,000

MSN-16: **W. Main Street (7th Avenue to 19th Avenue)**

This project consists of installing a raised or landscaped median at appropriate locations along W. Main Street between the intersection with 7th Avenue and the intersection with 19th Avenue. This project will help to increase traffic flow via access control and improve safety along this corridor.

Estimated Cost: \$600,000

MSN-17: **Frontage Road (N. 7th Avenue to Belgrade)**

The Frontage Road between N. 7th Avenue to Belgrade should be upgraded to a three-lane rural arterial roadway. This includes one travel lane in each direction and a two-way center turn lane. This project is necessitated by the future development patterns in the region and will serve as a link between the Belgrade and Bozeman areas. Roadway shoulders should be included to facilitate bicycle travel.

Estimated Cost: \$21,100,000

MSN-18: **Springhill Road (Frontage Road to Sypes Canyon Road)**

Springhill Road from the intersection with the Frontage Road to the intersection with Sypes Canyon Road should be widened to a three-lane rural arterial roadway. This includes one travel lane in each direction and a two-way center turn lane. This project is necessitated by the development on the western side of the city and north of the interstate. This project will serve to provide a north-south connection along the northwest side of the city.

Estimated Cost: \$4,400,000

MSN-19: **Bozeman Trail/Haggerty Lane (Main Street to Kagy Boulevard)**

Bozeman Trail should be upgraded to a two-lane urban collector roadway from the intersection with Kagy Boulevard north to the intersection with Haggerty Lane. Haggerty Lane should also be upgraded to a two-lane urban collector roadway from the intersection with Bozeman Trail northwest to the intersection with Main Street. A two-lane urban collector roadway includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project is necessitated by the future development in the region and will serve as a north-south link along the southeastern portion of the city.

Estimated Cost: \$5,000,000

MSN-20: **East Belgrade Interchange**

This project consists of constructing a new I-90 interchange to serve the airport and Belgrade areas. A northern interchange connection is to be made to connect with the Frontage Road. A southern connection to the interchange should be made to connect to Alaska Road. The interchange connections

should be constructed to two-lane rural arterial standards complete with one travel lane in each direction. This project is necessitated by the future development in the region and the need for more adequate connection to the airport. Non-motorized facilities should be developed in association with this project as this interchange will serve important cross connectivity north and south of Interstate 90.

Estimated Cost: \$34,400,000

MSN-21: **Gallatin Road (Gallatin Gateway to Four Corners)**

It is recommended that Gallatin Road be widened to a three-lane rural arterial between Gallatin Gateway and Four Corners complete with one travel lane in each direction and a two-way center turn lane. This project is necessitated by the development in the region and the increasing traffic volumes along this corridor. This project will serve as a vital north-south link for the area and will increase the overall safety of the roadway.

Estimated Cost: \$12,300,000

MSN-22: **Jackrabbit Lane (Four Corners to Frank Road)**

It is recommended that Jackrabbit Lane be widened to a five-lane arterial between Four Corners and Frank Road, complete with two travel lanes in each direction and a two-way center turn lane or raised median. This project is necessitated by the development in the region and the increasing traffic volumes along this corridor. This project will serve as a vital north-south link for the area and will increase the overall safety of the roadway.

Estimated Cost: \$29,200,000

MSN-23: **Griffin Drive Railroad Underpass**

This project consists of constructing a railroad underpass along Griffin Drive. The railroad crossing separates the northeastern portion of the city and creates a problem for emergency vehicle access and traffic congestion when the train blocks the current at-grade crossings.

Estimated Cost: \$7,800,000

MSN-24: **Cedar Street / Oak Street**

This project consists of upgrading Cedar Street to a three-lane urban arterial. An eastern extension of Oak Street from its intersection with Rouse Avenue to connect to Cedar Street and a southern extension of Cedar Street connecting to Main Street at the intersection with Highland Boulevard should also be constructed under this project. This project would also require two grade separated railroad crossings. A three-lane urban arterial includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalks, and a raised median. This project is necessitated by the future development patterns in the region and will serve to access development area on the eastern side of the city and relieve neighborhood "cut-thru" traffic issues in the northeast neighborhood area.

Estimated Cost: \$13,700,000

- MSN-25: **Ferguson Avenue (Durstion Road to Valley Center Road)**
This project consists of extending Ferguson Avenue from its current northern termini point north to intersect with Valley Center Road. This roadway should be constructed to a two-lane urban collector standard which includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project is necessitated by the future development patterns in the region and will serve north-west traffic flow around the western portion of the city.
Estimated Cost: \$7,800,000
- MSN-26: **Highland Boulevard (Main Street to Kagy Boulevard)**
This project consists of widening Highland Boulevard from the intersection with Main Street to the intersection with Ellis Street to a five-lane urban arterial standard, and from the intersection with Ellis Street south to the intersection with Kagy Boulevard to a three-lane urban arterial standard. This roadway is currently a minor arterial roadway with one travel lane in each direction. This project serves as a long-term need that will be necessary to accommodate future development patterns in the region and serve north-south traffic flow. It is expected that a minimum of two travel lanes in each direction from Main Street to Ellis Street, one travel lane in each direction from Ellis Street to Kagy Boulevard, bike lanes on each side, curb and gutter, boulevard, sidewalk, and a raised median will be required.
Estimated Cost: \$7,600,000
- MSN-27: **Kagy Boulevard (Highland Avenue to Bozeman Trail)**
This project consists of widening Kagy Boulevard from the intersection with Highland Avenue to the intersection with Bozeman Trail to a three-lane urban arterial standard complete with one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and a raised median. This roadway is a two-lane roadway and is classified as a principal arterial. This project serves as a long-term need that will be necessary to accommodate future development patterns in the region and serve east-west traffic flow.
Estimated Cost: \$4,600,000
- MSN-28: **Stucky Road / Elk Lane Extension**
This project consists of constructing an extension of Stucky Road west from the intersection with Gooch Hill Road to the future intersection of Elk Lane and Love Lane. This segment should be constructed to a two-lane collector standard complete with one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project is necessitated by the future development patterns in the region and will serve east-west traffic flow around the southwestern edge of the city.
Estimated Cost: \$2,900,000
- MSN-29: **Valley Center Drive (Love Lane to Valley Center Underpass)**
This project consists of upgrading Valley Center Drive from the intersection with Love Lane to the intersection with the Valley Center Underpass to a two-

lane urban arterial standard. This section will consist of one travel lane in each direction, 6-foot shoulders on each side, curb and gutter, turn-lanes at major intersections, and sidewalks. This project is necessitated by the future development patterns in the region and will serve to access development area on the northwestern side of the city.

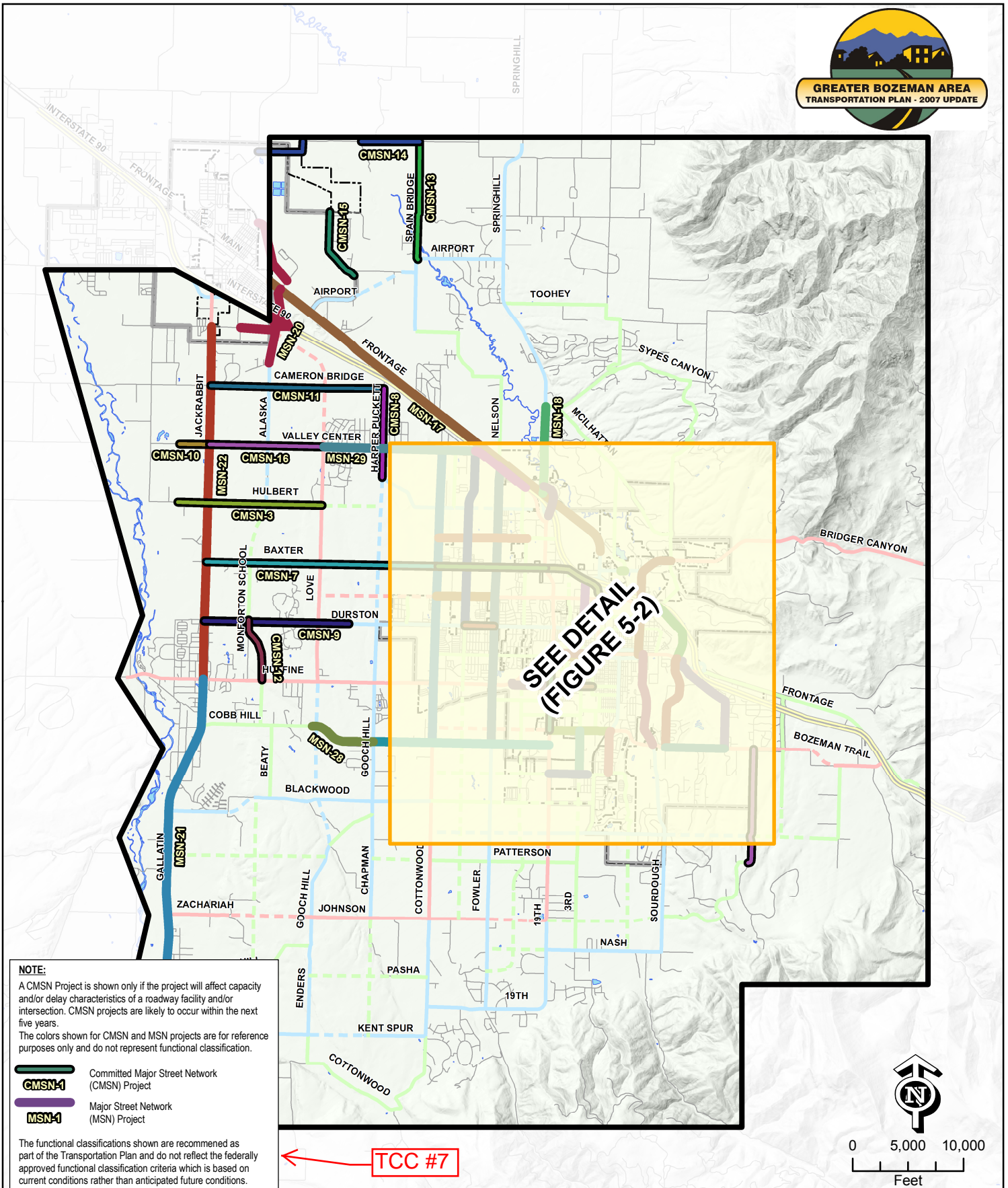
Estimated Cost: \$7,300,000

MSN-30:

Valley Center Drive (Valley Center Underpass to N. 27th Ave)

This project consists of upgrading Valley Center Drive from the intersection with the Valley Center Underpass to the intersection with N. 27th Avenue to a three-lane urban arterial standard complete with one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and a raised median. This roadway is a two-lane roadway and is classified as a principal arterial. This project is necessitated by the future development patterns in the region and will serve to access development area on the northwestern side of the city.

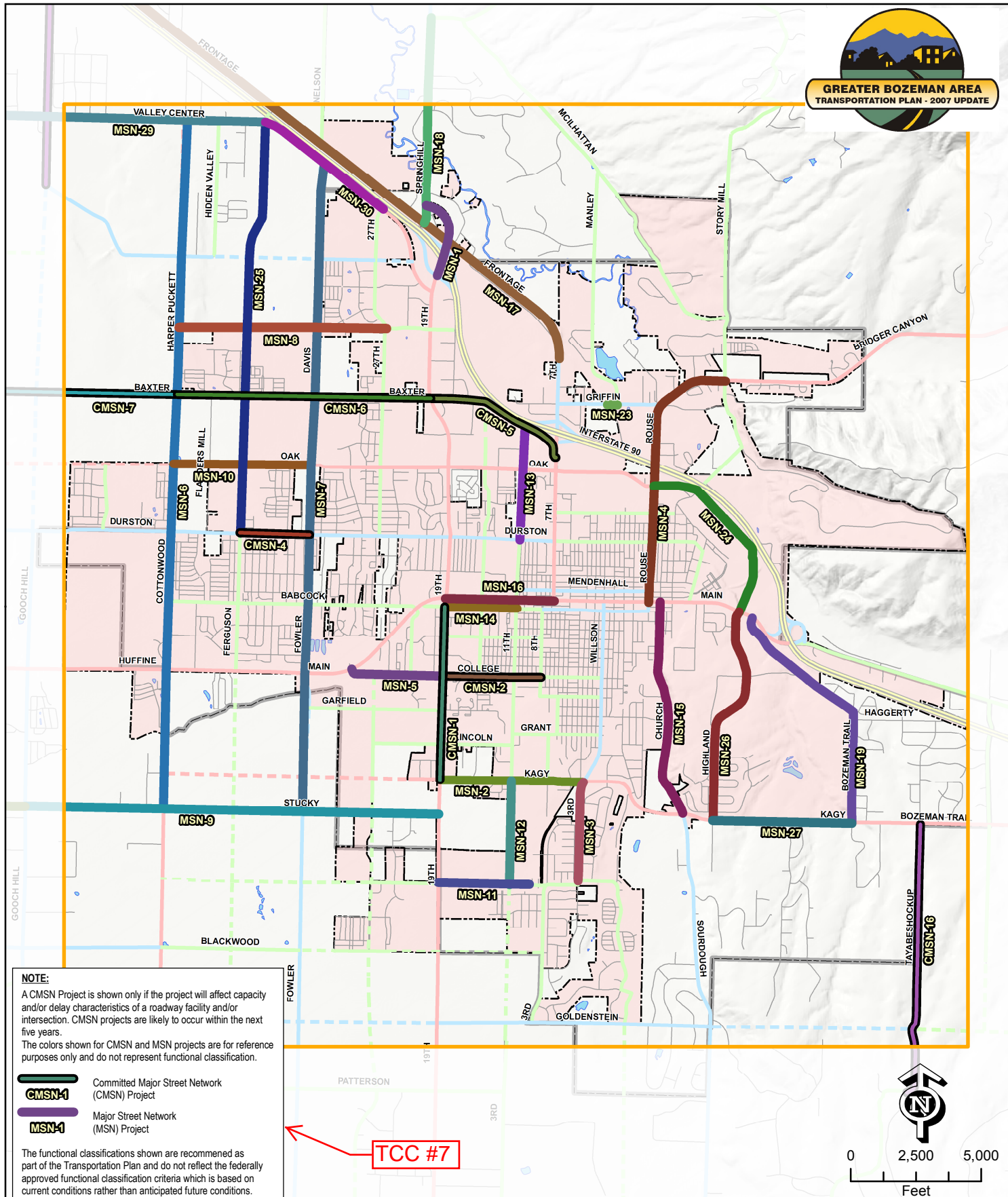
Estimated Cost: \$3,900,000



Greater Bozeman Area Transportation Plan
(2007 Update)

Major Street Network (MSN) Recommended Improvements Figure 5-1





NOTE:
A CMSN Project is shown only if the project will affect capacity and/or delay characteristics of a roadway facility and/or intersection. CMSN projects are likely to occur within the next five years.
The colors shown for CMSN and MSN projects are for reference purposes only and do not represent functional classification.

- CMSN-1** Committed Major Street Network (CMSN) Project
- MSN-1** Major Street Network (MSN) Project

The functional classifications shown are recommended as part of the Transportation Plan and do not reflect the federally approved functional classification criteria which is based on current conditions rather than anticipated future conditions.

TCC #7



0 2,500 5,000
Feet



- Legend**
- Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector
 - Future Principal Arterial
 - Future Minor Arterial
 - Future Collector
 - Detail Area
 - City Boundary
 - Urban Boundary
 - Local Roadway

Greater Bozeman Area Transportation Plan
(2007 Update)

Major Street Network (MSN) Recommended Improvements Figure 5-2

5.2 RECOMMENDED TRANSPORTATION SYSTEM MANAGEMENT (TSM) IMPROVEMENTS

In addition to MSN project recommendations this plan includes a variety of smaller transportation system management (TSM) projects. For the purposes of this Plan, an improvement project was classified as a TSM project if the estimated cost of the project was less than \$500,000. This section summarizes these projects.

It should be noted that the Montana Department of Transportation are currently reconfiguring the signal timings for all traffic signals within the City of Bozeman. This effort will improve the level of service for several intersections that are currently operating at an unacceptable level.

5.2.1 TSM Projects from the 2001 Transportation Plan

A total of 49 TSM projects were recommended in the 2001 update of the Transportation Plan. The status of these projects were reviewed to determine which have been completed, which are no longer valid, and which projects should be included as part of this plan update. Of the 49 projects, 24 were completed, 7 are partially completed, and 18 were not completed. The complete listing of the 49 projects, and their subsequent status for this 2007 Update to the Transportation Plan, are listed in Table 5-2.

Table 5-2
TSM Projects from 2001 Transportation Plan & Status for 2007 Plan

TSM Location No.	Location of Past TSM Project	Past Recommendation	Status for this Plan Update
1	North 7 th Ave. & Oak St.	Modify the traffic signal to include protected left turns for the north and south approaches.	Completed
2	3 rd Ave. & Villard St.	Install stop signs on the north and south approaches to the intersection and trim limbs to improve the sight distance.	Completed
3	7 th Ave. & Mendenhall St.	Restripe the east approach to include a designated right-turn lane.	Not Completed, modified and included herein as TSM-1
4	Wilson Ave., Olive St. to Main St.	Remove parking from the east side of the street and stripe two northbound lanes.	Not Completed, modified and included herein as TSM-2
5	Main St. & Rouse Ave.	Add a designated right-turn lane on the south approach by restricting parking along the east side of Rouse within a half block of the intersection.	Completed
6	Rouse Ave. & Babcock Street	Install an 8-inch wide solid white line between two travel lanes or install a raised channelization between the two travel lanes. Bulb-out the curb on the northeast corner to create a single eastbound traffic lane.	Completed
7	Grand Ave. & Koch St.	Install stop signs on the north and south approaches.	Completed
8	Kagy Blvd. & Fairway	Remove vegetation on the northeast and southwest corners.	Completed
9	Kagy Blvd. & Sourdough Rd.	Remove the vegetation along Kagy.	Completed
10	Kagy Blvd. & Highland Blvd.	Remove vegetation on the south side of Kagy.	Completed

TSM Location No.	Location of Past TSM Project	Past Recommendation	Status for this Plan Update
11	Frontage Rd., Bozeman to Belgrade	Conduct a speed limit study and modify the speed limit accordingly.	Not Completed
12	Frontage Rd., Bozeman to Belgrade	Eliminate the passing zones on the Frontage Rd. that are in the vicinity of driveways and all intersections.	Partially Completed
13	Jackrabbit Lane	Conduct a speed study and modify the speed limit accordingly.	Not Completed
14	S. 3 rd Ave. & Goldenstein Rd.	Install a right turn lane or ramp on south approach.	Completed
15	Main St. & 11 th Ave.	Increase the radius on the southwest corner to improve intersection geometrics.	Not Completed, modified and included herein as TSM-3
16	Galligator Corridor.	Acquire this old railroad bed on the southeast side of town for use as a portion of the ped/bike trail system.	Completed
17	N. 19 th Ave. & Springhill Rd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
18	N. 19 th Ave. & Deadman's Gulch Ct.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
19	N. 19 th Ave. & Tschache Ln.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
20	N. 19 th Ave. & Beall St.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
21	S. 19 th Ave. & Koch St.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, modified and included herein as CTSM-1
22	S. 19 th Ave. & Kagy Blvd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
23	S. 19 th Ave. & Stucky Rd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
24	Highway 191 & Cottonwood Road	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
25	Highway 191 & Fowler Lane	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
26	Rouse Ave. & Griffin Dr.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
27	Rouse Ave. & Oak St.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
28	Rouse Ave. & Peach St.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, modified and included herein as TSM-4
29	Main St. & Wallace Ave.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
30	Main St. & Haggerty Ln.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Partially Completed, modified and included herein as TSM-5

TSM Location No.	Location of Past TSM Project	Past Recommendation	Status for this Plan Update
31	College St. & 23 rd Ave.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, modified and included herein as TSM-6
32	College St. & S. 11 th Ave.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, modified and included herein as CTSM-2
33	College St. & Willson Ave.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, modified and included herein as CTSM-3
34	Willson Ave. & Garfield St.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, modified and included herein as TSM-7
35	Kagy Blvd. & S. 11 th Ave.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, modified and included herein as CTSM-4
36	Kagy Blvd. & Sourdough Rd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Partially Completed, modified and included herein as TSM-8
37	Kagy Blvd. & Highland Blvd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Partially Completed, modified and included herein as TSM-9
38	Oak St. & Ferguson Rd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, modified and included herein as TSM-10
39	Oak St. & Cottonwood Rd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, modified and included herein as TSM-11
40	Baxter Ln. & Ferguson Rd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
41	Baxter Ln. & Cottonwood Rd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, modified and included herein as TSM-12
42	27 th Ave. & Valley Center Rd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Partially Completed
43	Durston Rd. & 27 th Ave.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Partially Completed, modified and included herein as TSM-13
44	Hulbert & Valley Center Rd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, not carried forward in Plan update
45	N. 19 th Ave. & I-90 South Ramps	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed
46	N. 19 th Ave. & I-90 North Ramps	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Completed TCC #48
47	Nelson Road & Frontage Rd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, modified and included herein as TSM-15
48	Sacajawea Peak & Frontage Rd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Not Completed, modified and included herein as TSM-16
49	Gallatin Field & Frontage Rd.	Add left turn lanes to the intersection as necessitated by the growing traffic demand. Install traffic signal, roundabout, or other adequate traffic control when warrants are met.	Partially Completed, modified and included herein as TSM-17

5.2.2 Committed Transportation System Management (CTSM) Improvements

Committed projects are typically only listed if the project will affect capacity and/or delay characteristics of a roadway facility and/or intersection. This distinction is necessary since some committed improvement projects, likely to occur within the next five years, are not necessarily listed here since they will not have an effect on the traffic model. Those committed improvement projects not included in the traffic model, as well as those extending out beyond the five-year timeframe, are listed elsewhere in this *Transportation Plan*.

CTSM-1: **S. 19th Avenue / Koch Street**

This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device to the intersection of S. 19th Avenue and Koch Street. S. 19th Avenue is currently a 3-lane principal arterial roadway at this location. Koch Street is a two-lane collector roadway east of the intersection and a two-lane local roadway west of the roadway. This intersection currently has stop control along Koch Street. This project will improve traffic flow and safety at this intersection.

CTSM-2: **College Street / 11th Avenue**

This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device to the intersection of 11th Avenue and College Street. Both College Street and 11th Avenue are two-lane collector roadways at this location. This intersection is currently a 4-way stop control and backs up at peak hours significantly. Volumes for this intersection area approaching those predicted for 2020, and with increasing development to the immediate west and south of the City, warrants will likely be met in the very near future. This project would improve the traffic flow and safety at this intersection.

CTSM-3: **College Street / Willson Avenue**

This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device to the intersection of College Street and Willson Avenue. College Street is a two-lane collector roadway west of the intersection and a two-lane local roadway east of the roadway. Willson Avenue is a two-lane minor arterial roadway at this location. This intersection currently has stop control along College Street. This project will improve traffic flow and safety at this intersection.

CTSM-4: **11th Avenue / Kagy Boulevard**

This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device to the intersection of 11th Avenue and Kagy Boulevard. Kagy Boulevard is a three-lane roadway west of 11th Avenue and a 2-lane roadway east of 11th Avenue and is classified as a principal arterial. 11th Avenue is a 2-lane roadway classified as a collector. This intersection currently has stop control along 11th Avenue. Recent development proposals (primarily south of Kagy Boulevard as well as the hospital) and increasing traffic volumes indicate that the need for this signal improvement will soon be

warranted. This intersection is a major access point for the MSU campus. This project will improve traffic flow and safety at this intersection.

CTSM-5: **27th Avenue / Oak Street**

This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device to the intersection of 27th Avenue and Oak Street. Oak Street is a three-lane principal arterial at this location; 27th Avenue is a two-lane collector roadway. This intersection currently has stop control along 27th Avenue. Recent development proposals and increasing traffic volumes indicate that the need for this signal improvement will soon be warranted. This project will improve traffic flow and safety at this intersection.

CTSM-6: **College Street / 19th Avenue**

This project is consists of constructing additional northbound and southbound thru lanes. It is expected that this project will be completed in conjunction with CMSN-1 which calls for 19th Avenue to be upgraded to a five-lane corridor at this location. This intersection is a signalized intersection and has a LOS failure during both AM and PM peak hours. The poor performance of this intersection is a result of the intersection and 19th Avenue corridor being undersized to adequately handle the large amounts of traffic that pass through.

Estimated Cost: \$350,000

5.2.3 Recommended Transportation System Management (TSM) Improvements

During the preparation of this Plan, a number of TSM projects were identified. Estimated project costs are included for each recommended project. These costs are “planning level” estimates and do not include possible right of way, utility, traffic management, or other heavily variable costs.

The following list of TSM projects are **not** in any particular order with respect to priority:

TSM-1: **7th Avenue / Mendenhall Street**

It is recommended that the intersection of 7th Avenue and Mendenhall Street be re-striped to include a designated westbound right-turn lane. This is a signalized three-legged signalized intersection that current analysis shows has a poor LOS along the east approach. A designated right-turn lane on this approach will help improve the traffic flow characteristics of this intersection.

Estimated Cost: \$15,000

TCC #11

TSM-2: **Willson Avenue (Olive Street to Main Street)**

It is recommended that parking be removed from the east side of Willson Avenue at the intersection with Olive Street. It is also recommended that two northbound lanes be striped from this intersection to the intersection with

Main Street. This intersection experiences stacking problems that cause increased delay and poor LOS.

Estimated Cost: \$30,000

TSM-3: **Main Street / 11th Avenue**

It is recommended that the radius on the southwest corner be increased to improve the intersection geometrics. This corner causes maneuvering difficulties for larger vehicles turning right off of Main Street to travel south on 11th Avenue.

Estimated Cost: \$50,000

TSM-4: **Rouse Avenue / Peach Street**

This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device when warrants are met to the intersection of Rouse Avenue and Peach Street. The intersection is a skewed four-legged intersection with stop control on Peach Street. This intersection currently has a failing LOS on the eastbound leg during the PM peak hour. It should be noted that the Rouse Avenue Environmental Assessment recommends that a traffic signal be installed at this location.

Estimated Cost: \$330,000

TSM-5: **Main Street / Haggerty Lane**

It is recommended that the intersection of Main Street and Haggerty Lane be modified to include a designated northbound right-turn lane, a northbound left-turn lane, and an eastbound right-turn lane. This intersection currently has stop control on Haggerty Lane. A designated westbound left-turn lane exists at this intersection. Current analysis of this intersection shows a LOS failure due to the northbound movement.

Estimated Cost: \$475,000

TSM-6: **College Street / 23rd Avenue / Technology Boulevard**

It is recommended that left-turn lanes be added to the intersection of College Street and 23rd Avenue / Technology Boulevard as necessitated by the growing traffic demand. The intersection is a four-legged intersection with stop control on 23rd Avenue / Technology Boulevard. This intersection frequently has delay problems during peak traffic periods due to the inability of vehicles to make left-hand turns, particularly southbound left-turns. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.

Estimated Cost: \$350,000

TSM-7: **Willson Avenue / Garfield Street**

It is recommended that left-turn lanes be added to the intersection of Wilson Avenue and Garfield Street as necessitated by the growing traffic demand. The intersection is a four-legged intersection with stop control on Garfield Street. This intersection frequently has delay problems during peak traffic periods due to the inability of vehicles to make left-hand turns. A traffic

signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.

Estimated Cost: \$350,000

TSM-8: Kagy Boulevard / Sourdough Road / Church Street

This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device when warrants are met to the intersection of Kagy Boulevard and Sourdough Road / Church Street. This intersection currently has stop control on Sourdough Road and Church Street. Current LOS analysis shows that this intersection fails during AM and PM peak hours due to excessive delay along the northbound and southbound approaches.

Estimated Cost: \$330,000

TSM-9: Highland Boulevard / Kagy Boulevard

This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device when warrants are met to the intersection of Highland Boulevard and Kagy Boulevard. Highland Boulevard is currently a two-lane minor arterial roadway and Kagy Boulevard is a two-lane principal arterial. This intersection currently has stop control along Highland Boulevard. A modern roundabout will help to improve traffic flow and safety at this intersection.

Estimated Cost: \$330,000

TSM-10: Oak Street / Ferguson Road

It is recommended that left-turn lanes be added to the intersection of Oak Street and Ferguson Road as necessitated by the growing traffic demand. The intersection will become a four-legged intersection with stop control on Ferguson Road. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met. This project is expected to serve future need in the area and should be completed in conjunction with MSN-10 and MSN-25.

Estimated Cost: \$350,000

TSM-11: Oak Street / Cottonwood Road

It is recommended that left-turn lanes be added to the intersection of Oak Street and Cottonwood Road as necessitated by the growing traffic demand. The intersection will become a four-legged intersection with stop control on Cottonwood Road. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met. This project is expected to serve future need in the area and should be completed in conjunction with MSN-6 and MSN-10.

Estimated Cost: \$350,000

TSM-12: Baxter Lane / Cottonwood Road / Harper Puckett Road

It is recommended that left-turn lanes be added to the intersection of Baxter Lane and Cottonwood Road / Harper Puckett Road as necessitated by the growing traffic demand. The intersection will become a four-legged

intersection with stop control on Cottonwood Road / Harper Puckett Road. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met. This project is expected to serve future need in the area and should be completed in conjunction with **MSN-6** and **MSN-10**.

Estimated Cost: \$350,000

TSM-13: Durston Road / 27th Avenue

It is recommended that left-turn lanes be added to the intersection of Durston Road and 27th Avenue as necessitated by the growing traffic demand. The intersection is a three-legged intersection with stop control on 27th Avenue. Durston Road is a minor arterial roadway and 27th Avenue is a collector roadway. This intersection experiences delay problems associated with the difficulty of vehicles being able to make left-turns during peak hours. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.

Estimated Cost: \$350,000

TSM-14: Hulbert Road / Jackrabbit Lane

It is recommended that left-turn lanes be added to the intersection of Hulbert Road and Jackrabbit Lane as necessitated by the growing traffic demand. The intersection is a four-legged intersection with stop control on Hulbert Road. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.

Estimated Cost: \$425,000

TSM-15: Nelson Road / Frontage Road

It is recommended that a left-turn lane be added to Nelson Road at the intersection with the Frontage Road as necessitated by the growing traffic demand. The intersection is a three-legged intersection with stop control on Nelson Road. The Frontage Road is a minor arterial roadway and Nelson Road is classified as a collector. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.

Estimated Cost: \$200,000

TSM-16: Sacajawea Peak / Frontage Road

It is recommended that left-turn lanes be added to the intersection of Sacajawea Peak and Frontage Road as necessitated by the growing traffic demand. The intersection is a three-legged intersection with stop control on Sacajawea Peak. The Frontage Road is a minor arterial roadway and Sacajawea Peak is classified as a local. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.

Estimated Cost: \$425,000

- TSM-17: **Gallatin Field / Frontage Road**
It is recommended that a traffic signal, roundabout, or other adequate traffic control device be installed at the intersection of Gallatin Field and Frontage Road when warrants are met. This is a three-legged intersection with stop control on Gallatin Field. There currently are designated left-turn lanes on each approach leg of this intersection.
Estimated Cost: \$330,000
- TSM-18: **College Street / 8th Avenue**
It is recommended that a traffic signal, roundabout, or other adequate traffic control device be installed at this intersection when warrants are met. This intersection is currently four-way stop controlled and analysis shows a failing level of service due to excessive delay at the intersection.
Estimated Cost: \$330,000
- TSM-19: **West Babcock/Main Street**
It is recommended that the intersection signal timing/phasing be reconfigured to provide a dedicated left-turn phase along the Babcock leg. This intersection currently has a failing LOS due to the eastbound and westbound movements. If the LOS does not improve to an acceptable level by changing the signal timing/phasing, then this intersection should be reevaluated to determine other possible traffic control measures.
Estimated Cost: \$35,000
- TSM-20: **Highland Boulevard / Ellis Street**
This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device when warrants are met to the intersection of Highland Boulevard and Ellis Street. Highland Boulevard is currently a two-lane minor arterial roadway and Ellis Street is a two-lane local roadway. This intersection currently has stop control along Ellis Street.
Estimated Cost: \$330,000
- TSM-21: **Kagy Boulevard / Willson Avenue**
The existing intersection should be modified to add a designated southbound right-turn lane. This intersection currently operates at a LOS of D or lower during the AM and PM peak hours. If conditions do not improve at this intersection, it should be reevaluated to determine other potential traffic control solutions.
Estimated Cost: \$140,000
- TSM-22: **Durston / 25th Avenue**
It is recommended that left-turn lanes be added to the intersection of Durston Road and 25th Avenue as necessitated by the growing traffic demand. The intersection is a four-legged intersection with stop control on 25th Avenue. Durston Road is a minor arterial roadway and 25th Avenue is a local roadway. This intersection experiences delay problems associated with the difficulty of vehicles being able to make left-turns during peak hours. A traffic signal,

roundabout, or other traffic control device should be added to this intersection when warrants are met. This intersection serves as a major access to Emily Dickinson School and as such, there are increases in traffic volumes and pedestrian traffic at this location.

Estimated Cost: \$350,000

TSM-23: **Babcock Street / 11th Avenue**

It is recommended that crosswalks be painted on all legs of the intersection of Babcock Street and 11th Avenue. This intersection is a block south of Bozeman High School and experiences high pedestrian traffic. This is a four-legged intersection with stop control on Babcock Street.

Estimated Cost: \$50,000

TSM-24: **Highway 191 Speed Zone Study**

It is recommended that a speed zone study be completed to determine if the 50 mph speed zone can be extended north to Axtell Anceney Road and south to Cottonwood Road along Highway 191. It is also recommended that signage be installed at both ends of the speed zone to indicate “congested area next 2 miles” or “dangerous intersection ahead”. Also, determine if the speed differential can be eliminated between cars and trucks along the remainder of Highway 191 by posting a day speed of 65 mph and night speed of 60 mph.

Estimated Cost: \$30,000

TSM-25: **Highway 191 / Mill Street**

It is recommended that a traffic signal with a pre-emptive traffic device be installed at the intersection of Mill Street and Highway 191 to allow the Gallatin Gateway Fire Department safer and speedier access to the highway. The west side of this intersection serves an elementary school, fire station, the Gallatin Gateway Community Center, and businesses and homes in town, as well as the Gallatin River and a network of rural roads. To the east, it serves the Post Office, and businesses and residences. Although the intersection is currently at a LOS C for the A.M. and P.M. peak hours, expected future growth could diminish the LOS to a failing grade.

Estimated Cost: \$330,000

TSM-26: **Highway 191 / Axtell Anceney Road**

It is recommended that designated turn lanes complete with appropriate length turn bays be installed at the intersection of Highway 191 and Axtell Anceney Road as necessitated by the growing traffic demand. This is a three-legged intersection with stop control on Axtell Anceney Road. Designated turn lanes will help increase the safety level and traffic flow at the intersection.

Estimated Cost: \$425,000

TSM-27: **Highway 191 / Zachariah Lane**

It is recommended that designated turn lanes complete with appropriate length turn bays be installed at the intersection of Highway 191 and Zachariah

Lane as necessitated by the growing traffic demand. This is a four-legged intersection with stop control on Zachariah Lane. Designated turn lanes will help increase the safety level and traffic flow at the intersection.

Estimated Cost: \$425,000

TSM-28: Highway 191 / Cottonwood Road

It is recommended that designated turn lanes complete with appropriate length turn bays be installed at the intersection of Highway 191 and Cottonwood Road as necessitated by the growing traffic demand. This is a four-legged intersection with stop control on Cottonwood Road. Designated turn lanes will help increase the safety level and traffic flow at the intersection.

Estimated Cost: \$425,000

TSM-29: Access Management Plan on Highway 191

Eliminate excessive curb cuts and access points on Highway 191 by restricting access as much as possible to major intersections with turn lanes. Require developers to provide frontage road access via intersections with turn lanes instead of multiple curb cuts. It is further recommended that a formal access control study be undertaken in hopes of preparing an access control management plan for this corridor.

Estimated Cost: \$250,000

TSM-30: Highway 191 / Huffine Lane

It is recommended that a pre-emptive traffic device be installed at the intersection. A pre-emptive traffic device would allow for safer and speedier access for the Gallatin Gateway Fire Department.

Estimated Cost: \$25,000

TSM-31: 7th Avenue / Kagy Boulevard

This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device to the intersection of 7th Avenue and Kagy Boulevard. 7th Avenue is a two-lane collector roadway north of the intersection and a two-lane local roadway south of the intersection. Kagy Boulevard is a two-lane principal arterial roadway at the intersection. This intersection currently has stop control along 7th Avenue. Recent development proposals and increasing traffic volumes indicate that the need for this signal improvement will soon be warranted. This intersection is a major access point for the MSU campus. This project will improve traffic flow and safety at this intersection.

TCC #35

TSM-32: Truck Route Alternatives

Study possible routes that would allow commercial trucks to by-pass Mill Street when accessing Highway 191. Possible routes include Gateway South, Axtell Gateway, and /or Axtell Anceney.

Estimated Cost: \$30,000

- TSM-33:** **Mill Street Speed Zone Study**
Conduct a Speed Zone study to determine if the 25 mph speed zone can be extended to the west at the intersection with Cottonwood Road, Axtell Gateway Road, and Gateway South Road. Also, determine if Gateway South Road from the intersection with Mill Road should be a 35 mph speed zone for 3 miles.
Estimated Cost: \$30,000
- TSM-34:** **Implement Huffine Lane Access Control Plan**
The MDT has an adopted Access Control Plan in place for Huffine Lane that delineates allowed access spacing, frontage road locations, and future signalization of intersections. As improvements and/or developments are considered along this corridor, reference should be made to the Access Control Plan for allowable traffic mitigation improvements.
Estimated Cost: N/A
- TSM-35:** **Implement Jackrabbit Lane Access Control Plan**
The MDT has an adopted Access Control Plan in place for Jackrabbit Lane that delineates allowed access spacing, frontage road locations, and future signalization of intersections. As improvements and/or developments are considered along this corridor, reference should be made to the Access Control Plan for allowable traffic mitigation improvements.
Estimated Cost: N/A
- TSM-36:** **Development Review/Coordination Efforts**
It is desirable to have a formal mechanism by which Streamline board and staff can participate in the development revise process. This will allow for continued coordination of proper bus stop location and identification of appropriate bus bay design and locations. The goal is to be able to participate in the formal review such that knowledge is disseminated to all affected parties pertinent to transit growth opportunities (routes, destinations, etc) and how those opportunities interface with private development infrastructure.
Estimated Cost: N/A
- TSM-37:** **Formalize Transit Representation on TCC**
It is recommended that a member of Streamline (board or staff) have a formal, allocated seat on the Bozeman Transportation Coordinating Committee (TCC).
Estimated Cost: N/A

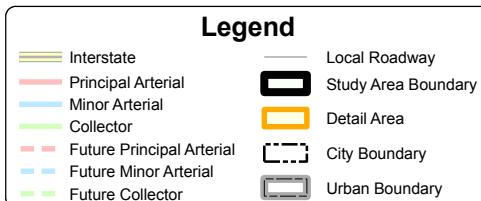
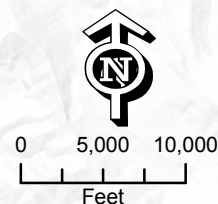
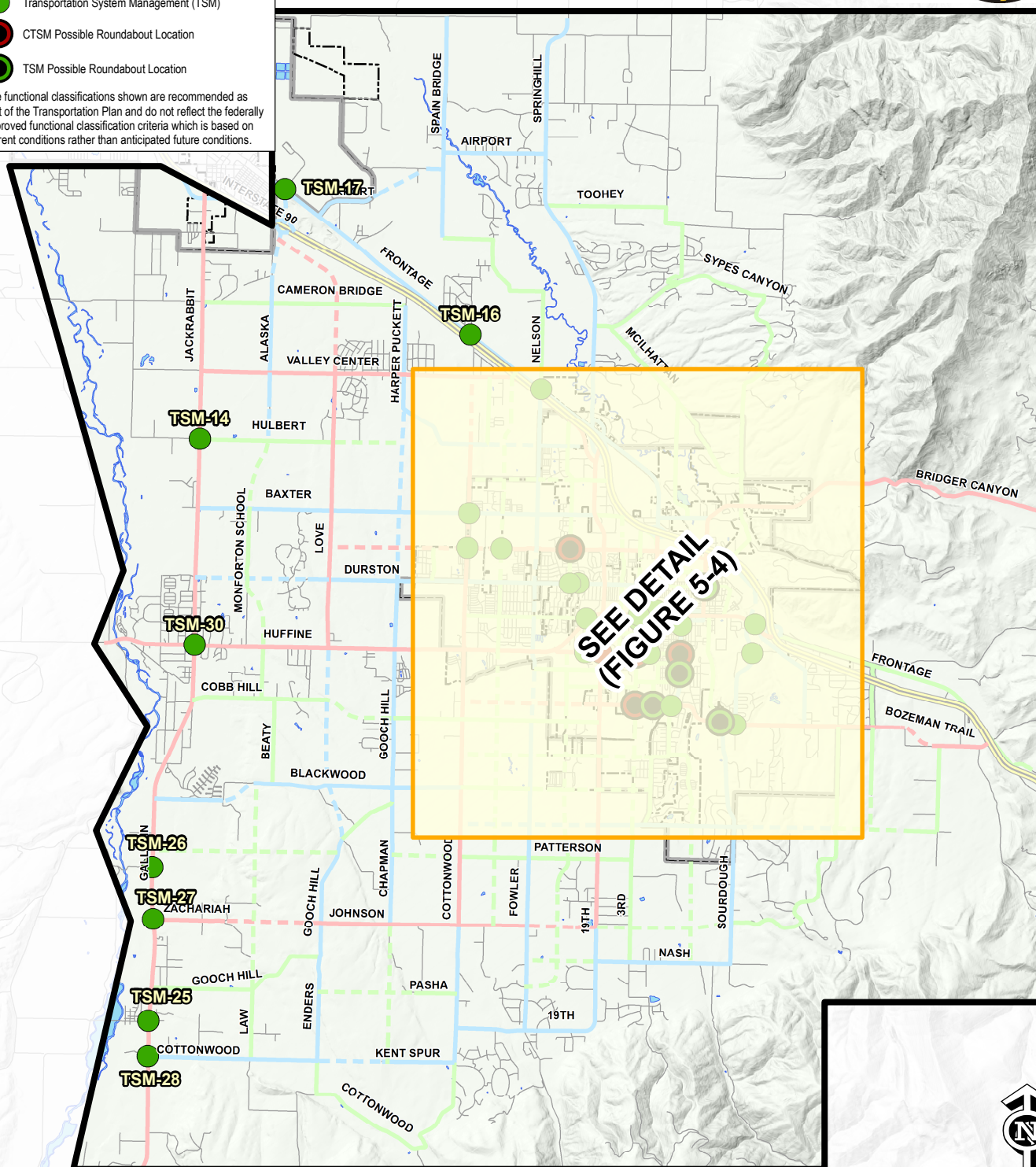
NOTE:

A CTSM Project is shown only if the project will affect capacity and/or delay characteristics of a roadway facility and/or intersection. CTSM projects are likely to occur within the next five years.

- Committed Transportation System Management (CTSM)
- Transportation System Management (TSM)
- CTSM Possible Roundabout Location
- TSM Possible Roundabout Location

The functional classifications shown are recommended as part of the Transportation Plan and do not reflect the federally approved functional classification criteria which is based on current conditions rather than anticipated future conditions.

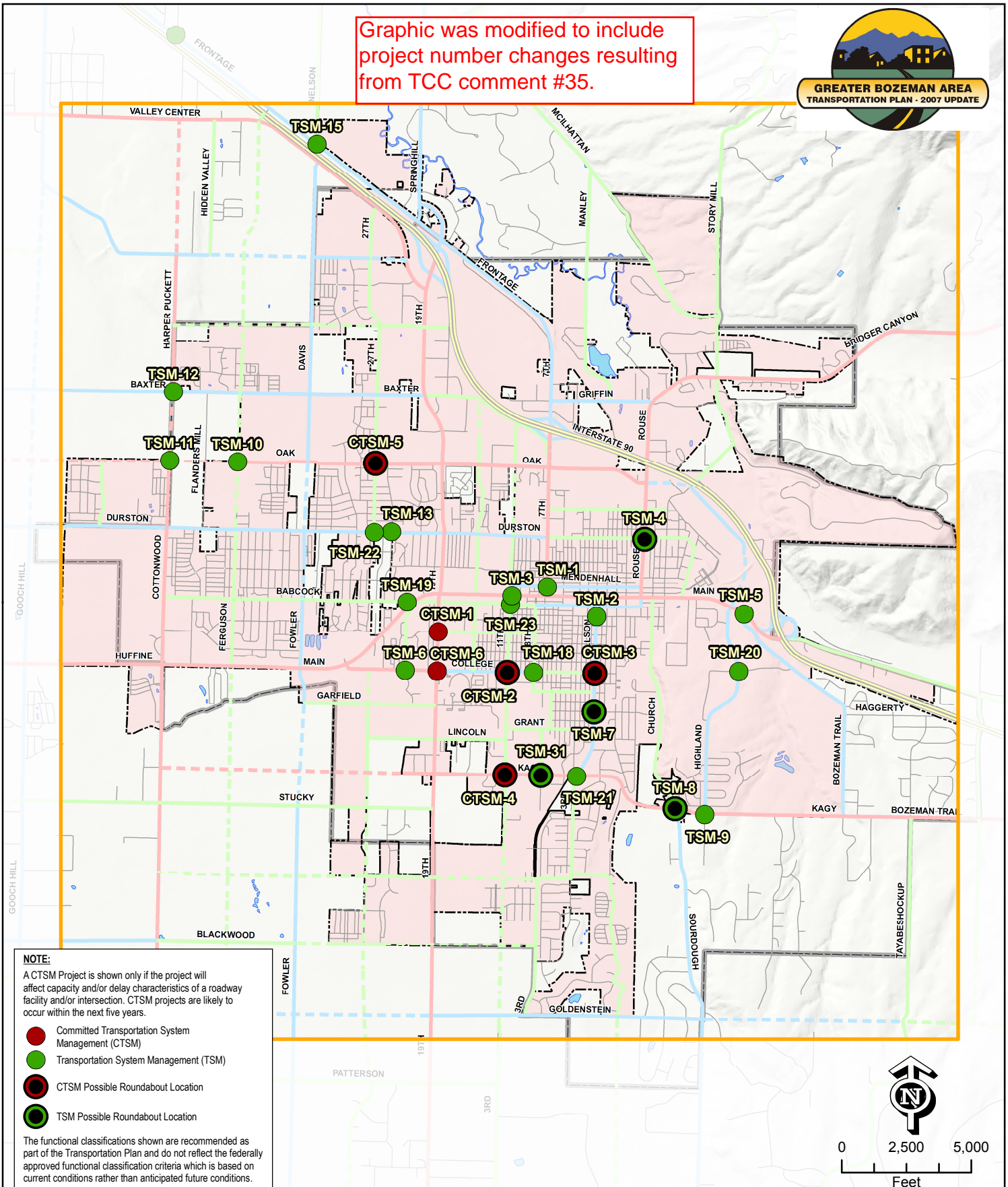
Graphic was modified to include project number changes resulting from TCC comment #35.



*Greater Bozeman Area Transportation Plan
(2007 Update)*

**Transportation System Management
(TSM) Recommended Improvements**
Figure 5-3

Graphic was modified to include project number changes resulting from TCC comment #35.



Greater Bozeman Area Transportation Plan
(2007 Update)

Transportation System Management (TSM) Recommended Improvements

Figure 5-4



5.3 RECOMMENDED PEDESTRIAN FACILITY IMPROVEMENTS

All residents within the Bozeman area are pedestrians whether walking the dog, walking to the store or work, or from a vehicle to a final destination. The following recommended pedestrian facility improvements were developed from the public involvement process and observations on the major street network (collector and arterial streets). Each proposed facility should be designed in accordance with the Americans with Disabilities Act (ADA) design standards and with the dimensions found in the street standards in **Chapter 9**. Planning level cost estimates have been provided for the recommended pedestrian facilities in this section. More detailed engineering level cost estimates should be undertaken at the time implementation for each project as individual challenges vary and material costs can escalate significantly over time. The cost estimates included in this section only account for the marginal cost of adding pedestrian facilities and do not include the cost of right-of-way acquisition (if applicable), or for major grading associated with roadway widening. Estimates assume a 5 foot wide sidewalk of 4 inch thickness for collector streets and a 6 foot wide sidewalk of 6 inch thickness for sidewalks along arterials.

5.3.1 Bozeman Specific Safe Routes to School Projects

Technical Safe Routes to School assessments of six of Bozeman's elementary schools were completed in the spring of 2008. These schools were, Hawthorne, Emily Dickinson, Irving, Longfellow, Morning Star, and Whittier Elementary Schools. The recommended 'engineering' related projects focused mainly on the local streets surrounding the schools and some crossings of collectors and arterials. Where applicable, Safe Routes to School (SRTS) projects that have been recommended on collectors or arterials have been identified with a 'SRTS' tag in the notes field of the recommended bicycle and pedestrian facilities tables. The School Improvement Plans for the six elementary schools are available within the Bozeman Engineering and Planning Departments and online at the City of Bozeman's website. These documents should be reviewed prior to any construction activities on local streets in Bozeman.

5.3.2 Sidewalks

The following streets within the Bozeman Area in **Table 5-3** have no pedestrian facilities for the identified segments. These corridors have been identified by their existing pedestrian need or anticipated future need. Cost estimates are provided in **Table 5-3** for sidewalk construction only, but in most cases full street improvements will also be necessary.

Table 5-3
Recommended Sidewalks

TCC #13 / City #1

Street	From	To	Dist.	Notes	Cost
W. Babcock St.	S. 19th Ave.	S. 11th Ave.	2,800 ft	Construct Sidewalks along entire segment.	\$150,000
Baxter Ln.	N. 19th Ave.	Davis Ln.	4,300 ft	Most of the north side and part of south side need construction.	\$300,000
Baxter Ln.	N. 15th Ave.	N. 7th Ave.	3,500 ft	Construct sidewalks on both sides	\$200,000

Street	From	To	Dist.	Notes	Cost
L St.	Story Mill Rd.	Railroad tracks	3,150 ft	Construct sidewalks on both sides	\$175,000
Manley Rd.	W. Griffin Dr.	Existing Sidewalk	1,800 ft	Sidewalk recommended on both sides	\$100,000
McIlhatten Rd.	Story Mill Rd.	Agusta Dr.	2,200 ft	Construct sidewalk on south side	\$60,000
N. 7th Ave.	Durston Rd.	Hemlock St.	1,400 ft	Multiple missing pieces of sidewalk. Wide driveways common. Short term: fill gaps Long term: redevelop N. 7th Ave with new streetscape, pedestrian lighting, boulevard planting strips, street trees, 7-foot minimum sidewalk.	\$65,000
N. 7th Ave.	Southern I-90 ramps	Red Wing Dr.	2,700 ft	Multiple missing pieces of sidewalk. Only western side of I-90 overpass has pedestrian facilities. Crosswalks should be added across all cross streets and freeway ramps.	\$120,000
N. Cottonwood Rd.	Huffine Ln.	W. Durston Rd.	5,300 ft	Construct sidewalks on both sides	\$475,000
N. Rouse / Bridger Drive	E. Cottonwood St.	Griffin Dr.	4,700 ft	Construct sidewalks on both sides	\$423,000
N. Rouse Ave.	E. Lamme St.	700 feet south of Peach St.	1,100 ft	Construct sidewalks on both sides	\$100,000
S. 19th Ave.	W. Babcock St.	Patterson	5,300 ft	Construct Sidewalks along entire segment, partially through S. 19th MDT project, partially through new development.	\$175,000
S. 3rd Ave. (and Graf St.)	W. Kagy Blvd.	Wagonwheel Rd (south of middle school)	5,000 ft	Road currently has an asphalt pedestrian zone with rumble strip on one side only. Sidewalk should be constructed to collector standard. Construct Sidewalk on one side minimum, both sides recommended. Two schools and shopping center would be connected to hundreds of homes.	\$135,000-\$270,000
S. Church Ave / Sourdough Rd.	E Story St.	E. Kagy Blvd.	6,400 ft	Roadway mostly without sidewalks, there are a few segments that have them, but they are overgrown and in need of maintenance.	\$350,000
Story Mill Rd.	L St.	Boylan Rd.	3,700 ft	Construct sidewalks on both sides	\$205,000
Story Mill Rd.	Boylan Rd.	McIlhatten Rd.	850 ft	Construct sidewalks on both sides	\$50,000
W. College St.	Huffine Ln.	S. 13th Ave.	5,600 ft	Sidewalk recommended for north side of the roadway. SRTS related.	\$250,000
W. Griffin Dr.	N. 7th Ave.	N. Rouse Ave.	3,900 ft	Construct sidewalks on both sides	\$350,000
W. Kagy Blvd.	S. 19th Ave.	S. 11th Ave.	1,600 ft	Construct sidewalks where missing along both sides. Most of segment lacks sidewalks. Only partially along vacant land.	\$70,000

TCC #36

TCC #14

5.3.3 Intersections/Crossings

The following intersections and/or crossing locations in **Table 5-4** have been identified to provide for improved pedestrian crossing opportunities. In addition to the intersection improvements shown in **Table 5-4**, the potential for mid-block crossings described as the Durston Mid-Block Crossing on West Side Trail and the Oak Street/Regional Park Mid-Block Crossings should be studied.

City #3

Table 5-4
Proposed Pedestrian Intersection Improvements

Intersection	Type	Notes	Cost
Downtown areas of Babcock and Mendenhall Streets	Curb Extensions	Install curb extensions on all/most intersections. Few traffic controls are present with many parked cars. Pedestrians have low visibility in a high pedestrian use area.	\$5,000 ea
E. Main St. & N. Broadway Ave TCC #18	Dedicated pedestrian signal, full traffic signal with pedestrian signal heads, or grade separated crossing.	The 'Main Street to the Mountains' trail ends here with major destination such as the new Library, and Lindley Park located across Main Street from other businesses and trail systems to the north. This crossing has high interest from non-motorized users and is currently not signalized. A grade separated crossing should consist of a 10-foot underpass beneath East Main Street with 10-foot paved shared-use path connecting to existing segment in Lindley Park. On north side, portions could be funded/constructed through development of vacant parcels.	Dedicated pedestrian signal: \$75,000; Pedestrian signal heads: \$2,500 (Signal heads only); Underpass: \$250,000-\$600,000 depending on design.
N. 7 th Ave & W Villard St	Dedicated Pedestrian Signal	This is a long crossing with no intersection control. Students will use it coming from the west side of 7 th to Whittier School. Pedestrian signal recommended when warrants are met, H.A.W.K. variety recommended. SRTS related.	\$75,000
S. 13 th Ave & W. College St	Dedicated Pedestrian Signal or Pedestrian Signal heads on full signal	Safe Routes to School (SRTS) connection between MSU student housing and Irving School. Also will assist MSU Student access to campus. SRTS related.	\$2,500 (Signal heads only) \$75,000 for ped signal
W. College St. & S. Willson Ave.	Pedestrian Signal heads on full signal	Traffic Signal with pedestrian signal heads recommended when warrants are met. All pedestrian phase for school students during school commute periods. SRTS related.	\$2,500 (Signal heads only)
W. College St. & S. 23 rd Ave.	Pedestrian Signal heads on full signal	If traffic signal is installed then pedestrian signal heads should be included. Will provide access to shared-use path on the south side of W College St.	\$2,500 (Signal heads only)
W. College St. @ Intersections between S. 8 th Ave. and S. 11 th Ave.	ADA Curb Ramps, Driveway Aprons, & Crosswalk Striping	The north side of College Street is inadequate as a pedestrian facility. Its proximity to Irving School, local neighborhoods and MSU make improvements necessary. SRTS related.	\$70,000
W. Garfield St & S. 19 th Ave	Dedicated Pedestrian Signal or Pedestrian Signal heads on full signal short-term. Grade Separation long-term	Help is needed at this intersection for pedestrians and bicycles trying to get to MSU from neighborhoods to the north and west of campus. A traffic signal with pedestrian signal heads would improve connectivity. Long-term campus plans call for a pedestrian/bicycle overpass of S 19 th Ave.	\$2,500 (Signal heads only)
W. Kagy Blvd & S. 11 th Ave	Pedestrian Signal heads on full signal	This intersection frequently has long delays for pedestrians and bicyclists. A traffic signal with pedestrian signal heads would improve connectivity.	\$2,500 (Signal heads only)
W. Kagy Blvd. & S. 7 th Ave.	Pedestrian Signal heads on full signal	If intersection has access control then use pedestrian refuge island with crossing at the west side of the intersection to stay away from right turning traffic	\$2,500 (Signal heads only)
W. Koch St & S. 11 th Ave	Stripe Crossing	Place Piano Key crossing with stop lines and accompanying signage.	\$15,000
W. Koch St & S. 19 th Ave	Pedestrian Signal heads on full signal	Install pedestrian signal heads with Traffic signal	\$2,500 (Signal heads only)
W. Oak St & N. Hunters Way	Refuge Island	Wide Crossing, Median exists, realign crossing or extend median. SRTS related.	\$1,500
W. Oak St. & N. 27 th Ave.	Refuge Island	Wide Crossing, Median exists, realign crossing or extend median. SRTS related.	\$1,500

5.4 RECOMMENDED BICYCLE FACILITY IMPROVEMENTS

Bicycle facilities vary dramatically from simply additional signage to separated paved facilities along exclusive rights-of-way. The following projects in **Table 5-5 through Table 5-9** have been identified through public involvement, existing and anticipated future travel demand, significant destinations for bicyclists, and the existing bicycle network. Planning level cost estimates have been provided for the recommended bicycle facilities in this section. More detailed engineering level cost estimates should be undertaken at the time implementation for each project as individual challenges vary and material costs can escalate significantly over time. The cost estimates included in this section only account for the marginal cost of adding bicycle facilities and do not include the cost of right-of-way acquisition (if applicable), or for major grading associated with roadway widening. Estimates assume appropriate signage, thermoplastic striping and stenciling (paint is significantly cheaper but less durable), additional paving (if applicable), curb and gutter, and other concrete work. For Shared Use paths, a 10 foot wide, 3inch thick asphalt section is assumed (city standard) if a 6 inch concrete section is used (also city standard) cost will roughly triple from estimate.

5.4.1 Bike Lanes

A bike lane provides a striped and stenciled lane for one-way travel on a street or highway. Many of the identified bike lanes will be completed through roadway improvements funded by new development. Some of the identified projects will need to be completed by the City of Bozeman, Gallatin County, or MDT through retrofit or as part of maintenance activities (striping and signage only). Additionally, any roadway to be built within the City of Bozeman that is a collector or arterial should have a bike lane constructed in accordance with the recommended roadway standards in **Chapter 9**.

Table 5-5
Recommended Bike Lanes

Projects removed
due to TCC #49

Street	From	To	Length (mi)	Notes	Cost
11th Ave.	College St.	Baxter Ln.	1.8	From Main to Durston width allows. Road missing between Durston Rd. and Oak St. Parking may need to be removed on one side of street from W. Curtiss to W. College or curb widening.	\$40,000 not including unbuilt part.
Babcock St.	W. Main St	S. Wallace Ave.	1.83	May require removal of parking or lane configuration changes.	\$65,000
Baxter Ln.	N. 15th Ave.	N. 7th Ave.	0.67	As new development occurs. Retrofit possible.	\$100,000
Baxter Ln.	N. 19th Ave.	Jackrabbit Ln.	5.69	Build BLs with any new construction. (Gallatin Green to Ferguson already exists)	\$900,000
Bozeman Trail Rd.	E. Kagy Blvd.	Haggerty Ln.	0.81	Adjoins new development.	\$320,000
Catamont St.	Valley Center Rd.	Harper Puckett Rd.	1.26	Build BLs with any new construction. (Davis to 27th already exists)	\$200,000

Street	From	To	Length (mi)	Notes	Cost
Cattail St.	S. 19th Ave.	Western extensions	1.29	Build BLs with any new construction.	\$200,000
Cottonwood Rd.	Huffine Ln.	Baxter Ln.	2	Add BLs when full width is constructed.	\$56,000
Cottonwood Rd.	Huffine Ln.	Blackwood Rd.	2.02	As new development occurs	\$315,000
Davis Ln.	Oak St.	Valley Center Dr.	2.2	Adjacent to Regional Park. Add bike lanes when full width is constructed.	\$340,000
Durston Rd.	Springbrook Ave.	Western Terminus	3.2	Build BLs with any new construction.	\$500,000
E. Main St.	S. Wallace	Virginia Dr.	2.17	Striping & Signage needed	\$15,000
Fowler Ln.	W. Oak St.	Blackwood Rd.	3.78	As new development occurs/ in conjunction with road projects. Improvements needed to E. side of St. only between Main and Durston.	\$425,000
Graf St.	S. 3rd Ave.	Cottonwood Rd.	2.79	Build BLs with all new segments	\$450,000
Griffin Dr.	N. 7th Ave.	Story Mill Rd.	1.24	As new development occurs	\$350,000
Haggerty Ln.	Bozeman Trail Rd.	E. Main St.	1.04	Adjoins new development.	\$400,000
Harper Puckett Rd.	Valley Center Rd	Baxter Ln.	2.73	Build BLs with any new segment. Retrofit built segments.	\$435,000
Highland Blvd.	Main St.	E. Kagy Blvd.	1.63	Should be installed with work on Highland & Hospital development	\$30,000
Huffine Ln.	Cottonwood Rd.	11th Ave.	2.76	Shoulder width allows. Signage/Striping only.	\$20,000
Kagy Blvd.	S. 22nd Ave.	Cottonwood Rd.	1.77	Build BLs with any new construction.	\$280,000
Kagy Blvd. / Bozeman Trail Rd.	S. 19th Ave.	I-90 Interchange	7.01	Mostly striping & signage only on Kagy, full road reconstruction on Bozeman Trail Road.	\$80,000 from 19 th to Highland, \$650,000 to I-90
L St.	Story Mill Rd.	N. Wallace Ave.	0.64	Build BLs with any new construction.	\$100,000
Manley Rd.	Exist bike lane	McIlhatten Rd.	1.1	As new development occurs	\$150,000
Mendenhall St.	N. 11th Ave.	N. Wallace Ave.	1.11	May require removal of parking or lane configuration changes.	\$37,000
N. 15th Ave.	Durston Rd.	W. Main St.	0.44	Add BLs	\$12,000
N. 15th Ave.	Oak St.	Baxter Ln.	0.48	Build BLs with any new construction.	80,000
N. 19 th Ave.	W. Main St.	Springhill Rd.	3	Retrofit possible from Main to Springhill. Signage and stenciling only.	\$20,000
N. 27th Ave. / Thomas Dr.	Durston St.	Valley Center Dr.	2.23	Some parts complete. Challenge is between Durston and Oak. St. is 40' wide. Parking on W. side of St. may need to be sacrificed. Two 5' BLs, two 11' driving lanes, one 8' parking lane	\$70,000
N. 7th Ave.	W. Griffin Dr.	W. Main St.	1.43	Slight lane narrowing in some places, mostly signage & Striping	\$40,000
N. Ferguson Ave.	Valley Center Rd.	Durston Rd.	2.91	Build BLs with all new segments	\$650,000
N. Rouse Ave.	Story Mill Rd.	E. Main St.	0.84	Include as part of MDT reconstruction	\$330,000
Oak St.	N. 7th Ave.	N. 19th Ave.	0.78	Signage and stenciling needed only	\$5,000

Street	From	To	Length (mi)	Notes	Cost
Oak St.	Davis Ln.	Western terminus	1.76	As new development occurs	\$275,000
Peach St.	N. 7th Ave.	N. Rouse Ave.	0.7	Remove parking on N. side install bike lanes.	\$33,000
S. 11th Ave.	W. Grant St.	W. Kagy Blvd.	0.34	Striping & Signage only	\$10,000
S. 11th Ave.	W. Kagy Blvd.	Goldstein Rd.	1.77	Build BLs with any new construction.	\$275,000
S. 23rd Ave.	W. Main St.	W. College St.	0.5	Resize lanes, prohibit parking	\$15,000
S. 27th Ave.	College St.	Southern terminus	1.51	Build BLs with any new construction.	\$240,000
S. 3rd Ave.	Sacajawea School	Goldenstein Ln.	0.52	Add BLs	\$60,000
S. 8th Ave.	W. Main St.	W. Cleveland St.	0.7	Narrow median and add bike lane	\$280,000
S. Church Ave.	Kagy Blvd.	E. Mendenhall St.	1.67	Build BLs with roadway reconstruction.	\$700,000
S. Ferguson Ave.	Huffine Ln.	Southern terminus	2.02	Build BLs with all new segments	unknown
S. Willson Ave.	Kagy Blvd.	Main St.	1.33	Narrow travel lanes to add Bike Lanes	\$90,000
Story Mill Rd.	L St.	McIlhatten Rd.	0.97	As new development occurs	\$75,000
Tamarack St.	N. 7th Ave.	N. Wallace Ave.	0.86	Retrofit BLs. Possible signage/striping/parking removal.	\$25,000
Valley Center Rd.	N. 19th Ave.	Jackrabbit Ln.	6.35	Build BLs with any new construction, retrofit existing improved roadway with signage and striping.	\$950,000
W. College St.	Main St.	Willson Ave.	1.84	Possible retrofit on some areas. College from main to S. 11th will have to be reconstructed at some point.	\$700,000
W. Garfield St.	Research Dr.	S. 19th Ave.	0.68	Mostly striping and signage	\$17,000
W. Garfield St.	Cottonwood Rd.	Fowler Ave.	1.04	Build BLs with any new construction.	\$160,000
W. Grant St.	S. 6th Ave.	S. Willson Ave.	0.32	Continue existing bike lane. May require removal of parking on one side of St.	\$8,500
W. Kagy Blvd.	S. 22nd Ave	Cottonwood Rd.	1.77	Build BLs with any new construction.	\$275,000
W. Lincoln St.	S. 11th Ave	Cottonwood Rd.	2.53	Build BLs with any new construction, retrofit existing improved roadway with signage and striping.	\$330,000

5.4.2 Shared Roadways

Shared roadways are any on-street facility where bicycles share the travel lanes with automobiles. Typically, these facilities occur on local roadways or on roadways with low traffic volumes and speeds. Currently, the City of Bozeman's bike route network identified in **Chapter 2** makes up all of the shared roadways in the study area. Additional treatments to these roadways constitute a 'Bicycle Boulevard.' Treatments include turning stop signs to favor bicyclists, pavement markings, wayfinding signage, traffic diverters and other types of traffic calming. The level of treatment varies between facilities and is dictated by traffic conditions and safety. Proposed bicycle boulevards should be implemented with pavement stenciling (shared lane markings), 'City of Bozeman Bike Route' signs, and appropriate

wayfinding signage ('Downtown', 'Trails', 'MSU Campus', etc.). Traffic calming should only be applied to bicycle boulevards where traffic speeds or volumes are excessive.

It is recommended that pilot bicycle boulevards be implemented on the existing Bike Routes of Lamme Street from North 11th Avenue to Broadway, on West Koch Street between South 23rd Avenue to South Tracy Avenue, and on a proposed bike routes on North Wallace Avenue from end to end at the trailheads and on South 6th Avenue from West Babcock Street to West Grant Street.

New bike routes are also identified in Table 5-6.

N. Wallace project
removed due to
TCC #2

Table 5-6
Designate as Bike Routes

Street	From	To	Length (mi)	Notes	Cost
Clifften Dr.	W. Babcock St.	Durston Rd.	0.53	Good Connection near park.	\$1,000
Lamme St.	N. 11 th Ave.	N. Broadway Ave.	1.28	Bicycle Boulevard Test. Estimate is for signage and stenciling only	\$11,000
S. 6 th Ave.	W. Babcock St.	W. Grant St.	1.24	Bicycle Boulevard Test. Estimate is for signage and stenciling only	\$10,000
W. Koch St.	S. 23 rd Ave.	S. Tracy Ave.	1.5	Bicycle Boulevard Test. Estimate is for signage and stenciling only	\$13,000
Western Dr.	Durston Rd.	W. Babcock St.	0.51	Less traffic and no parking as compared to North Hunters Way.	\$1,000

5.4.3 Shoulder Bikeways

Roadway shoulders can offer many of the benefits of bike lanes without the same level of infrastructure cost associated with bike lane stencils and signage. Roadway shoulders are ideal for rural roadways where bicyclists are present. Roadway shoulders should be a minimum of 4 feet wide with 6 feet recommended. If a rumble strip is necessary it should be as close to the white (fog) line as possible and have regular skips to allow bicyclists to leave the shoulder to avoid obstructions or obstacles if necessary. Roads that are recommended for shoulder bikeways are listed in Table 5-7.

Table 5-7
Recommended Expanded Shoulder (Minimum of 4-feet)

Street	From	To	Length (mi)	Notes	Cost
Blackwood Rd.	Cottonwood Rd.	US 191	4.74	In conjunction with road improvements.	\$500,000
Cameron Bridge Rd.	Jackrabbit Ln.	Harper Puckett Rd.	2.97	In conjunction with road improvements.	\$315,000
Cottonwood Rd.	Blackwood Rd.	Terminus	10.34	In conjunction with road improvements.	\$1,100,000
Enders Rd.	S. Cottonwood Rd.	Gooch Hill Rd.	1.51	In conjunction with road improvements.	\$160,000
Fort Ellis Rd.	Bozeman Trail Rd.	Frontage Rd.	0.91	In conjunction with road improvements.	\$100,000
Fowler Ln.	Blackwood Rd.	S. 19 th Ave.	3.53	In conjunction with road improvements.	\$370,000

Street	From	To	Length (mi)	Notes	Cost
Frontage Rd.	N. 7th Ave.	Study Boundary (near Belgrade)	7.32	In conjunction with road improvements.	\$770,000
Frontage Rd. (N. Side of I-90)	E. Main St.	Bozeman Trail Rd.	1.97	In conjunction with road improvements.	\$200,000
Goldenstein Ln.	S. 19th Ave.	Sourdough Rd.	1.99	Area developed. County controlled. Rural character.	\$200,000
Gooch Hill Rd.	Durston Rd.	US 191	7.65	In conjunction with road improvements.	\$800,000
Jackrabbit Ln.	Huffine Ln.	Study Area Boundary	6.7	4-8 foot shoulders recommended. Shoulder should go into Belgrade as bike lane – not within Study Area.	\$700,000
Johnson Rd.	Fowler Rd.	Gooch Hill Rd.	3.01	In conjunction with road improvements.	\$315,000
Love Ln.	Valley Center Dr.	Huffine Ln.	4.02	In conjunction with road improvements.	\$425,000
Mcilhattan Rd.	Story Mill Rd.	Sypes Canyon Rd.	3.02	In conjunction with road improvements.	\$315,000
Monforton School Rd.	Huffine	Baxter Ln.	2.01	In conjunction with road improvements.	\$200,000
Nash Rd.	S. 19th Ave.	Sourdough Rd.	1.97	In conjunction with road improvements.	\$200,000
Patterson Rd.	S. 3rd. Ave.	Cottonwood Rd.	2.51	In conjunction with road improvements.	\$260,000
S. 3rd Ave.	Goldenstein Ln.	Bristol Ln.	2.92	In conjunction with road improvements.	\$315,000
Sourdough Rd.	E. Kagy Blvd.	Nash Rd.	3.59	Area Developed. County controlled. Rural Character	\$375,000
Springhill Rd.	Frontage Rd.	End of pavement	6.08	In conjunction with road improvements. Do not re-install rumble strip. If rumble strip is to be kept, keep it as far left as possible and use bike-friendly design.	\$640,000
Stucky Rd.	S. 19th Ave.	Gooch Hill Rd.	3.01	As new development occurs/with future county road improvements	\$315,000
US 191	Huffine Ln.	Study Area Boundary	8.29	Ensure 4-ft minimum shoulder (outside of rumble strip area) in conjunction with any road improvements.	\$870,000

5.4.4 Shared-Use Paths

A shared-use path provides bicycle travel on a paved right-of-way completely separated from any street or highway. Many shared-use paths in the Bozeman Area follow roadway rights-of-way with varying amounts of separation. Shared-use paths in the City of Bozeman are designed to be ten feet wide. **Table 5-8** lists the recommended shared-use paths to complement the existing network. Long-term connectivity to trails outside the study area boundary, specifically towards Three Forks and Manhattan, should be factored into future planning efforts and design concepts as the Bozeman to Belgrade trail is realized. This need is further discussed in the Gallatin County Interconnect Plan.

TCC #15

Table 5-8
Recommended Shared-Use Paths

Street / Route	From	To	Length (mi)	Notes	Cost
Arnold St.	S. 19th Ave.	Termination of existing St.	0.69	Elementary School Connection	\$87,000
Bridger Canyon Dr.	I-90	'M' Trailhead	4.67	Access to popular trailhead.	\$1,000,000
Cambridge Dr.	S. 19 th Ave.	Existing path	0.63	Middle School Connection	\$80,000
Cameron Bridge Rd.	Harper Puckett Rd.	Jackrabbit Ln.	2.97	Bozeman to Belgrade trail alternative	\$375,000
Catamont St.	Harper Puckett	Stream Corridor	0.61	Bozeman to Belgrade trail alternative	\$300,000
College St.	Huffine Ln.	S. 11th Ave.	1.2	Part of Existing CTEP funding request	\$280,000
E. Kagy Blvd.	Highland Blvd.	Bozeman Trail Rd.	1	Build as development occurs, both sides.	\$250,000
E. Valley Center Rd.	Stream Corridor	Jackrabbit Ln.	1.25	Bozeman to Belgrade trail alternative	\$150,000
Ford Court	Stream Corridor	Harper Puckett Rd.	0.99	Connector for Chief Joseph Middle School	\$125,000
Fowler Ave.	Oak St.	S. 19th Ave.	7.05	Goal of GVL T to reach Hyalite Rd.	\$1,500,000
Harper Puckett Rd.	Baxter Ln.	Cameron Bridge	3.7	Bozeman to Belgrade trail alternative	\$900,000
Huffine Ln.	Ferguson Ave.	W. College St.	0.24	Part of Existing CTEP funding request	\$70,000
Huffine Ln.	Four Corners	Ferguson Ave.	3.71	Build as development occurs, both sides.	\$800,000
Jackrabbit Ln.	Huffine Ln.	Study Area Boundary	6.52	East side only	\$800,000
N. 19th Ave.	Durston Rd.	I-90	varies	Fill in gaps.	Varies.
Oak St.	N. 7th Ave.	N. Rouse Ave.	0.74	Improve or build to Shared Use Path Standard. Links fairgrounds, to points East and West.	\$220,000
S. 11th Ave.	Opportunity Way	Southern terminus (future)	1.18	Parts already built. MSU connection from South.	\$240,000
S. 19th Ave.	Goldenstein Ln.	College St.	2.52	Connection to MSU. College St. to Kagy Blvd. being built in 2009	\$220,000
S. Alaska Rd.	Cameron Bridge Rd.	I-90	1.1	Bozeman to Belgrade trail alternative - to be integrated with proposed interchange (see MSN 20).	\$130,000

Oak Street between Gooch Hill and N 19th Avenue was removed due to TCC #54

Street / Route	From	To	Length (mi)	Notes	Cost
Story Hill Rail Trail	Village Downtown Blvd.	Big Gulch Dr.	1.2	8 to 10-foot Paved Shared-Use trail connecting N. Broadway Ave. to Big Gulch Dr. via abandoned rail corridor. Two missing bridge spans will need to be installed, the first consisting of 150 feet over three active rail lines, the second a 300 foot gap over I-90. Due to oversize load requirements on I-90 the trail bed will need to be raised and new abutments constructed at these crossings. MDT's "Adopt a Bridge" program may be able to supply period truss bridges suitable for bike and pedestrian traffic.	\$350,000 for trail and abutments, \$150,000 for "adopt a bridge" relocation and modifications, \$800,000-\$2,000,000 for new manufactured bridges.
Stream Corridor	Vaquero Pky.	E. Valley Center	1.74	Connects from future regional park to the North.	\$220,000
W. Garfield St.	Cottonwood Rd.	S. 11 th Ave.	2.5	Identified in MSU campus plan as future bicycle/pedestrian corridor.	\$600,000
W. Kagy Blvd.	S. 19 th Ave.	S. 3 rd Ave.	1	Connection to MSU/Stadium	\$250,000

TCC #5

5.4.5 Bicycle Parking Recommendations:

Adequate bicycle parking is as equally important as the quality of bicycle facilities on the road. The recommendations for bicycle parking are separated into three categories. First, the optimal type of bicycle rack is recommended, followed by locations that are deficient in bicycle parking, and lastly by recommendations for the UDO and County subdivision regulations to ensure future development is adequate with regard to bicycle parking.

Recommended Bicycle Rack Types

The Bozeman area has existing bicycle parking that varies dramatically in design and usability. The following guidelines are intended to aid selection of an appropriate rack design and still allow for more exotic or artistic rack designs provided they are designed correctly.

Bicycle Racks must be of a design that meets the requirements below:

Rack Type

The intent of the rack standards section is to ensure that required bicycle racks are designed so that bicycles may be securely locked to them without undue inconvenience and will be reasonably safeguarded from accidental damage.

Bicycle racks must hold bicycles securely, and meet the following criteria:

- ◆ Support the frame of the bicycle and not just one wheel
- ◆ Allow the frame and one wheel to be locked to the rack when both wheels are left on the bike

- ◆ Allow the frame and both wheels to be locked to the rack if the front wheel is removed
- ◆ Allow the use of either a cable or U-shaped lock
- ◆ Be securely anchored
- ◆ Be usable by bikes with no kickstand
- ◆ Be usable by bikes with water bottle cages
- ◆ Be usable by a wide variety of sizes and types of bicycle

Bicycle Parking Location

- ◆ Bicycle parking must be located within 50 feet on an entrance to the building. Bicycle parking should be permanently secured to a paved surface and be located such that it will not become buried by snow removal operations. Covered bicycle parking is recommended wherever possible.
- ◆ Bicycle parking may be provided within a building, but the location must be easily accessible.
- ◆ Bicycle Rack Design and Installation
- ◆ Bicycle racks and the area required for parking and maneuvering must meet the following standards.
- ◆ Bicycle parking spaces must be at least 6 feet long and 2 feet wide, and in covered situations the overhead clearance must be at least 7 feet.
- ◆ An aisle for bicycle maneuvering must be provided and maintained beside or between each row of bicycle parking. This aisle must be at least 5 feet wide.
- ◆ Each required bicycle parking space must be accessible without moving another bicycle.
- ◆ Areas set aside for bicycle parking must be clearly marked and reserved for bicycle parking only.

Recommended Bicycle Racks:

“Inverted U” or “Staple” Rack – This type of rack is typically secured to a concrete base and is very secure and easy to use.

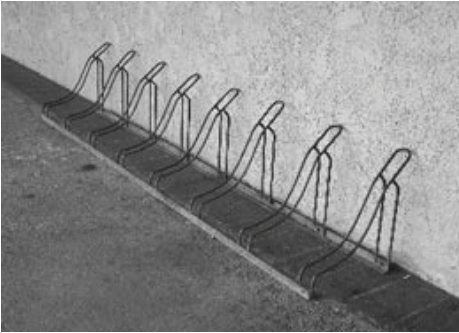


Coat Hanger Rack – This rack if used properly can support a bicycle at two points and can operate fixed to a concrete base or can be moved where needed.

Post and Loop or ‘Lollypop’ Rack – This rack has many of the same characteristics as the Inverted U rack, but is more compact. This type of rack can be installed in series (shown) or along a curb line in the sidewalk furnishing zone.



Discouraged Bicycle Racks



Wheelbender Rack – This rack only supports the wheel of the bicycle and can cause serious damage to the bicycle if twisted while secured in the rack. This rack also does not work with all types of locks.

Comb Rack – This rack suffers from many of the same shortcomings as the wheelbender type rack where only the front or rear wheel of the bicycle is supported. Many users of this rack type lift their bicycle over the top and rest the frame on the rack to allow use of a bicycle lock.



Wave Rack – To properly use this rack the cyclist places the bicycle through the 'wave' pattern where it is only supported at one point. Bicycles parked in these racks are unstable and frequently tip over. Many cyclists park their bicycle sideways in this rack to gain stability, thereby reducing the capacity by 60-80 percent.

Locations Deficient in Bicycle Parking

The following locations are high-use areas that lack adequate numbers of bicycle parking spaces:

**Table 5-9
Bicycle Parking Needed**

Location	Notes
New City Library	Racks are constantly overflowing even in inclement weather. Additional high-quality bicycle parking needed near main entrance of structure.
County Courthouse	Two racks available, additional short-term parking is needed for the public, long-term secure parking is needed for employees.
Downtown Bozeman	Overall numbers of racks are insufficient to meet demand. New racks of the existing design should be installed on Main Street and all cross-streets where space permits.
MSU Library	A new bicycle parking area is recommended near the front entrance to the library.
Hawthorne School	Upgraded bicycle parking is needed with additional racks and a concrete base
Irving School	Upgraded bicycle parking is needed with additional racks and a concrete base
Longfellow School	Upgraded bicycle parking is needed with additional racks and a concrete base

Recommended Bicycle Parking Ordinance (City of Bozeman)

It is proposed that the City of Bozeman incorporate the following into the Unified Development Ordinance section 18.46.040 E. The existing Mixed-Use Zoning District should also reference this section.

Bicycle Parking Required

Minimum Requirements - The number of spaces shown in the accompanying tables shall be provided.

Short Term Bicycle Parking - Bicycle parking meant to accommodate visitors, customers, and others expected to depart within two hours

Table 5-10
Short Term Bicycle Parking Requirements

Use Type	Required Bicycle Parking Spaces
Bank, financial institutions	10 percent of required auto parking
Church	10 percent of required auto parking
Community or recreation center	15 percent of required auto parking
Medical and dental offices	15 percent of required auto parking
Manufacturing and industrial uses	1 per 5,000 sq ft of floor space
Motels, Hotels	1 per 10 rooms
Commercial Office	The greater of 2 or 20 percent of required auto parking
Restaurants, cafes, bars and similar uses	10 percent of required auto parking
Retail store and service establishments	10 percent of required auto parking
Schools Elementary and/or Junior High	1 per 5 students
Schools a. Senior High b. Business or similar school	1 per 10 students
Theater, Auditorium or similar	The greater of 10 spaces or 5 percent of seating capacity

Long Term Bicycle Parking - Bicycle parking meant to accommodate employees, students, residents, commuters, and others expected to park more than two hours. This parking is to be provided in a secure, weather-protected manner and location.

Table 5-11
Long Term Bicycle Parking Requirements

Use Type	Required Bicycle Parking Spaces
Residential Categories Multifamily Single Family	The greater of 2, or 1 per unit (if no garage is available) None
Commercial Office	The greater of 2 or 10 percent of required auto parking
Restaurants, cafes, bars and similar uses	The greater of 2 or 5 percent of required auto parking
Retail store and service establishments	The greater of 2 or 5 percent of required auto parking

The guidelines for bicycle rack type and location should be inserted in the UDO also to aid developers in rack selection and siting.

Recommended Bicycle Parking (Gallatin County)

It is proposed that Gallatin County incorporate the same bicycle parking requirements as stated above into existing zoning districts where commercial uses are permitted. Additionally, Gallatin County should incorporate bicycle parking requirements into any proposed zoning districts or County-wide zoning efforts for commercial areas. Only those bicycle parking requirements pertaining to allowed uses for each zoning district should be included for that district.

5.5 RECOMMENDED EQUESTRIAN FACILITY IMPROVEMENTS

The *Greater Bozeman Area Transportation Plan* acknowledges that equestrians are users of the transportation system and does not make any recommendation to restrict equestrian access on trails, paths, or roadways where governing body deems appropriate. Equestrian facilities, similar to bicycle and pedestrian facilities, can serve both recreational and transportation uses. This document acknowledges several key destinations for equestrians within the study area including the Gallatin County Fairgrounds, parts of Montana State University, Equine Boarding/Training Facilities, and several popular trailhead facilities.

Planning efforts and facility recommendations for equestrian users are expected to be summarized in an update or addendum to the Bozeman Parks, Recreation, Open Space, & Trails (PROST) Plan, and the Gallatin County Interconnect Plan. Equestrian facility improvements shall complement, be consistent with, and implement equestrian facilities as identified in any officially adopted recreation and/or trails plan.

City #4



TCC #1



County #6



Recommend Study Area Bicycle Network Improvements

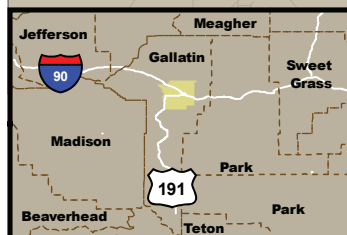
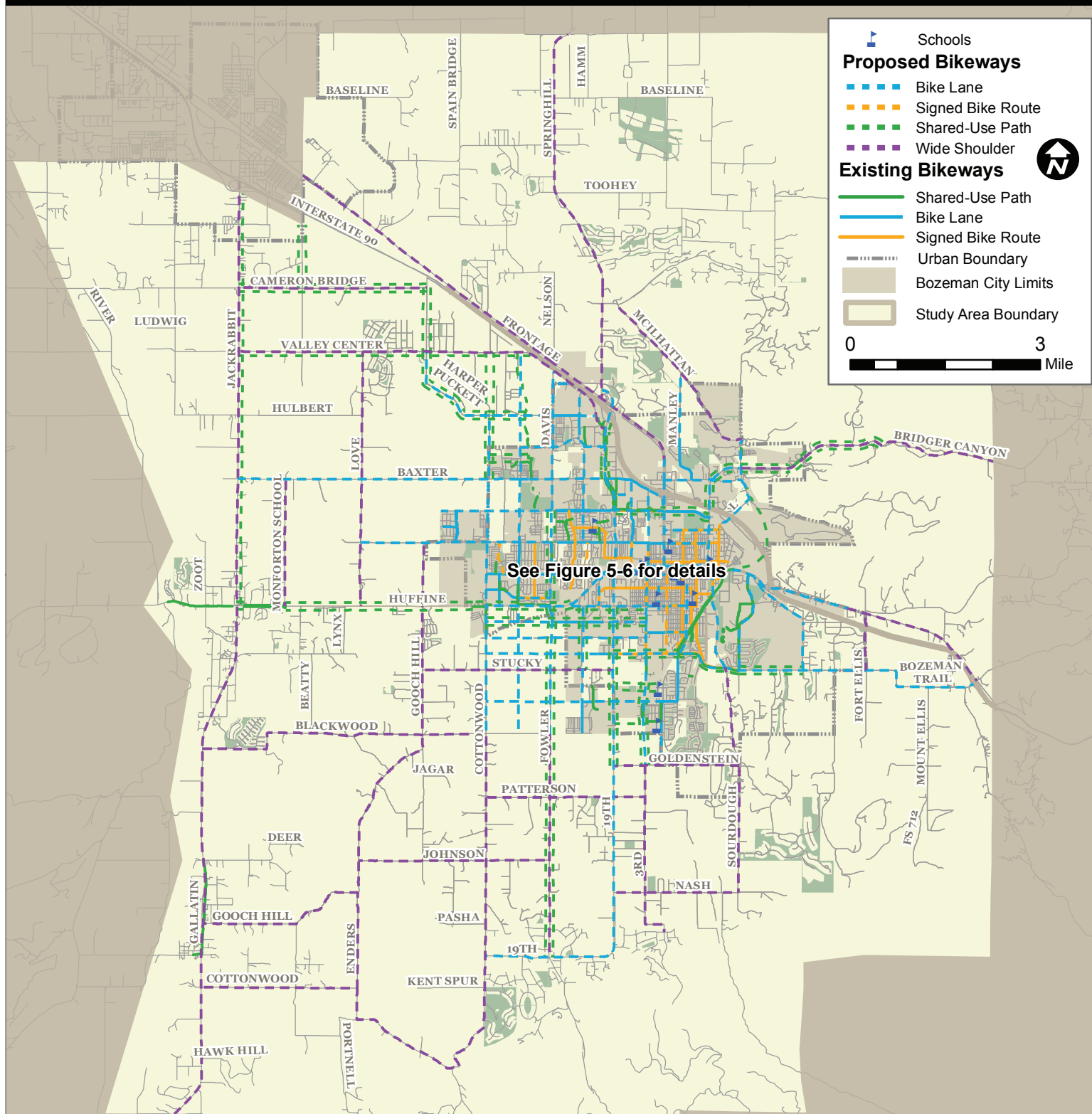


FIGURE 5-5
Recommend Study Area Bicycle Network Improvements
January 2009

Data Provided by: City of Bozeman, Alta Planning & Design
Map Prepared by: Alta Planning+Design January, 2009

Greater Bozeman Area
Transportation Plan



alta
PLANNING + DESIGN

Recommended Bozeman Pedestrian Network Improvements

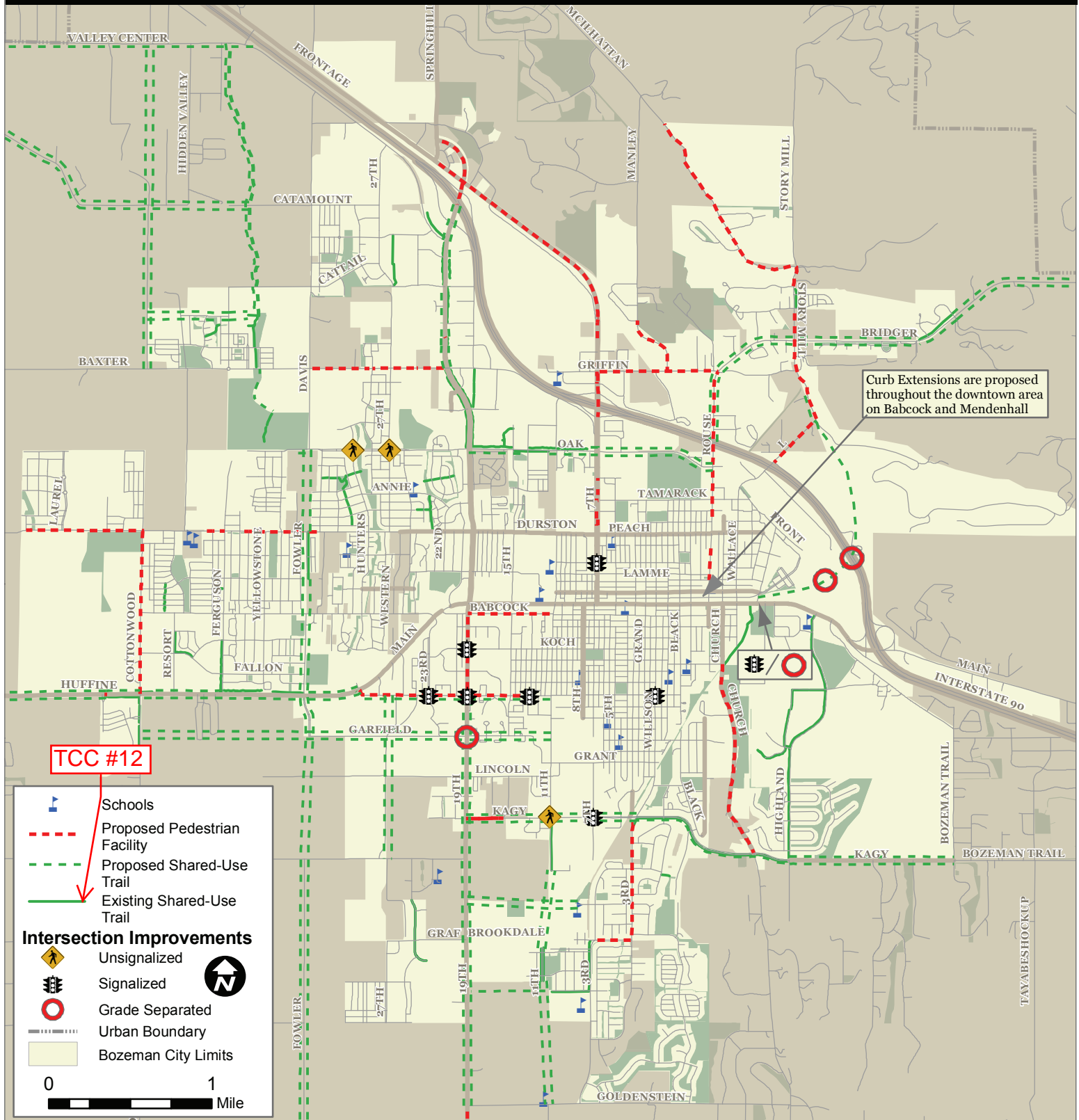


FIGURE 5-7
Recommended Bozeman Pedestrian Network Improvements
January 2009

Data Provided by: City of Bozeman, Alta Planning & Design
Map Prepared by: Alta Planning+Design January, 2009

Greater Bozeman Area
Transportation Plan