

# Shared Use Paths Inventory and Detailed Maintenance Plan

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Provided to the Revenue and Transportation Interim Committee



## EXECUTIVE SUMMARY

During the 64<sup>th</sup> Legislature, House Bill 604 was passed, requiring collection of information, and reporting by Montana Department of Transportation (MDT) on trails and paths created under the Montana Footpath and Bicycle Trail Act of 1975. Section 1 of HB604 states of following:

The department of transportation shall:

(1) compile an inventory of all multiuse trails or other paths within state-maintained federal-aid highway rights-of-way that are separated from motorized vehicular traffic by open spaces, pavement, markings, or barriers and that are usable for transportation purposes by pedestrians, runners, bicyclists, skaters, equestrians, and other nonmotorized users;

(2) develop a plan for maintaining and repairing the trails and other paths described in subsection (1), including estimated costs for maintenance and repair;

(3) provide a report of the inventory and maintenance plan to the revenue and transportation interim committee and to the 65th legislature.

It is important to note that this Shared Use Paths Inventory and Detailed Maintenance Plan is a living document. It does not address projects currently in development or future planning. Costs will change as new projects are constructed and agreements are implemented or modified.

The inventory of the multiuse trails or paths, hereafter referred to as shared use paths, includes all paths existing as of the summer of 2015 as defined by HB604. The shared use paths were separated into the ten Maintenance Divisions in the state.

In general, the state has a little over 180 miles of shared use paths (*excluding structures and intersections*) consisting of asphalt paths, concrete paths, gravel paths, and some striped bike lanes connecting two separated paths. Below is a breakdown of the miles of shared use paths that are within state maintained federal-aid highway right-of-way. A more detailed description of the types of shared use paths can be found in Table One: Inventory by Division and Surface Type.

- Missoula – 73.1 miles
- Kalispell – 36.8 miles
- Butte – 9.1 miles
- Bozeman - 37.6 mile
- Great Falls - 17.0 miles
- Havre - 4.8 miles
- Wolf Point – 1.0 miles
- Miles City – 2.0 miles
- Billings – 0.8 mile
- Lewistown – 0.0 miles

In conjunction with the inventory, the shared use paths conditions were rated as they currently existed. The rating system was modeled after the *“Distress Identification Manual for the Long-Term Pavement Performance Program,”* (June 2003). The Shared-Use-Path Rating System (Appendix Four) surveyed existing surface conditions, by taking random samples of 1/10 of a mile (528’) that were evaluated with this rating system. Each 1/10 of a mile was assumed to represent the surface condition of the entire mile. This data collection helped determine how to best preserve or repair these shared use paths and the estimated costs depending on the treatment.

The current maintenance needs of the shared use paths total approximately \$357,000.00. The maintenance needs range from simple monitoring to a combination of treatments. This is a one-time cost which represents the maintenances needs of the existing paths. It is important to note that most of shared use paths have agreements between MDT and cities, counties, or other entities addressing path maintenance. Under current agreements, a little over \$196,000 of the total current maintenance costs is city, county, or other entities responsibilities, while MDT is responsible for just over \$160,000.

In addition to the current maintenance needs there are two other maintenance activities that are essential to maintain the shared use paths. These maintenance activities are general maintenance activities which include snow removal, sweeping, mowing, and ongoing pavement preservation maintenance activities such as pavement seals and pavement overlays.

The annual costs for the general maintenance activities of shared use paths is just under \$660,000, which is mostly snow removal costs, and approximately \$530,000 of those costs are the responsibilities of city, county, or other entities. A more detailed analysis can be found in Table Three: Total Costs of Shared Use Paths Maintained by Responsible Party.

Pavement preservation maintenance consists of crack sealing, fog sealing and pavement overlays. Generally, MDT recommends a crack seal every four years, a fog seal every eight years and a pavement overlay every 25 years. In order to calculate the costs of these pavement preservation activities, it is assumed that one quarter of the paths will be crack sealed every year, one eight of the paths will be fog sealed, and 1/25<sup>th</sup> of the paths will have an overlay every year. Annual pavement preservation maintenance needs are estimated to be slightly over \$270,000. Table Three: Total Costs of Shared Use Paths Maintained by Responsible Party breaks out the costs of the future maintenance between MDT's responsibility and other entities such as cities and counties.

Finally, the plan addresses possible funding strategies to maintain these paths. Generally, MDT would attempt to leverage federal funds for pavement overlays. If MDT were tasked to assume all maintenance responsibility for the current shared use paths, funding would have to be identified in future legislation or MDT would have to lower our maintenance efforts in other areas. This would mean there would be less money for the current maintenance practices and the condition of Montana Highways would decrease, in order to maintain the shared use paths within state maintained federal-aid highway right-of-way.

As the years progress, the majority of this plan will remain the same. The only changes in the body of this document will be the Detailed Description of Shared Use Paths by Division. The current condition of the path will be reflected and new paths will be added. A history of work performed on the paths will be documented in Appendix Five.

## **Shared Use Path Updates for 2016**

Several paths current conditions were improved in 2016. The most notable was the Hungry Horse to Coram path. This 3.2-mile-long path was improved from a Poor rating to an Excellent rating. This was achieved through an overlay project. Several paths in the Butte, Bozeman, Great Falls, and Havre divisions were improved from a Good rating to an Excellent rating. This rating was achieved with crack sealing, hand and machine patching, and fog sealing.

A joint effort has been made between MDT's Planning, Engineering, and Maintenance to identify future construction projects that have a shared right-of-way with paths that need repairs. These paths repairs may be able to be added to the scope of work for future projects.

A new path (Missoula to Lolo) was constructed and has been added to the Maintenance Plan.

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## **PURPOSE**

This document contains an inventory of multiuse trails or paths within state maintained federal-aid highway right-of-way. There is 180 overall miles of shared use paths within Montana Department of Transportation's right-of-way. It also covers a Detailed Maintenance Plan for maintaining and repairing shared use paths including estimated costs associated to the defined maintenance tasks. There are three types of maintenance activities described in this plan which include current maintenance needs, general annual maintenance activities and pavement preservation maintenance.

## **METHODOLOGY**

This section describes the steps taken to collect an accurate inventory, determine maintenance needs, and calculate maintenance costs.

### **Inventory**

The shared use path inventory was collected using ArcGIS Collector. This program collects and updates data in the field, logs current location, and puts the data captured into a map and data base. The program uses maps and collects current conditions of the paths. ArcGIS collector was used while traveling the shared use paths to “draw” and accurate picture of the paths, and to document current conditions of the paths. These data were collected in the summer of 2015.

The inventory was collected by riding a bike with the ArcGIS collector application. During data collection, surface types were noted and intersections with the path were captured as they would not be counted in the maintenance plan but rather would be maintained as part of any normal roadway maintenance. This data was collected for every separated shared use path within MDT's right-of-way as defined by HB604.

### **Current Maintenance Treatment**

In order to understand current maintenance needs for the shared use paths, during inventory collection, a random 1/10-mile section, every mile was selected and the following data was recorded:

- Cracking—including type (alligator, longitudinal, and transverse) and the severity of the cracking
- Oxidation—including the severity of the oxidation
- Potholes and Raveling—including type (pothole, raveling, and edge raveling) and severity
- Drainage issues—including severity.

Additionally, during data collection a picture was taken every 10 seconds with a GoPro camera and those pictures were used in addition to the 1/10-mile section for the overall assessment of the shared use path. The data was analyzed and a general treatment was determined for each path.

### **Maintenance Plan Development**

The maintenance plan and treatment recommendations were developed from other state and city plans, such as “Best Practices for Bicycle Trail Pavement Construction and Maintenance in Illinois” prepared by the Illinois Center for Transportation, June 2012. These included best practices in order to protect and sustain the investment of the shared use paths.

## Costs

Costs were determined from past maintenance costs using a three year average when possible. Additionally, current bid costs from the 2015 fiscal year were used from both maintenance and construction. These costs were calculated by using the average width and final costs were reflected in costs per mile.

## INVENTORY

The shared use paths are represented on maps and denoted in 5 Districts (District Number) – Missoula (1), Butte (2), Great Falls (3), Glendive (4), and Billings (5).

An inventory of the shared use paths was obtained and grouped by 10 Divisions (Division Number) – Missoula (11), Kalispell (12), Butte (21), Bozeman (22), Great Falls (31), Havre (32), Wolf Point (42), Miles City (43), Billings (51), and Lewistown (53) and are shown on maps in Appendix One. The inventory is comprised of the path name, path length and width, path coordinates, path setting, type of path, agency responsible for path maintenance, and pictures representing each path. Locations of drainage features, structures, and intersections were also collected in the inventory.

Table One Below is a general summary of the total path miles (*excluding structures and intersections*) by Division. An in depth inventory is given in the Detailed Description of Shared Use paths by Division.

**Table One: Inventory by District and Surface Type**

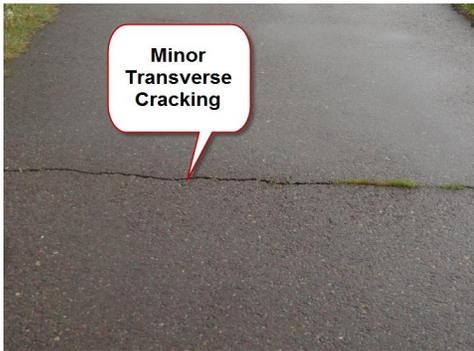
Division	Asphalt Miles	Concrete Miles	Gravel Miles	Striped Bike Lane Miles	Total Miles
Missoula (11)	65.75	3.35	3.65	0.35	73.1
Kalispell (12)	34.15	0.55	0.00	2.10	36.8
Butte (21)	8.85	0.20	0.00	0.00	9.1
Bozeman (22)	32.05	1.70	3.80	0.00	37.6
Great Falls (31)	12.50	0.90	0.00	3.60	17.0
Havre (32)	3.40	0.00	0.00	1.40	4.8
Wolf Point (42)	0.85	0.15	0.00	0.00	1.0
Miles City (43)	2.00	0.00	0.00	0.00	2.0
Billings (51)	0.40	0.40	0.00	0.00	0.8
Lewistown (53)	0.00	0.00	0.00	0.00	0.0
State Wide Totals	159.95	7.25	7.5	7.5	182.2

## CURRENT CONDITION OF PATHS

A Path Rating Guideline was used to evaluate the current condition of each path. For each mile of pathway, a random 1/10 of a mile (528') was rated and assumed to represent the surface condition of the entire mile. Ratings fell into 3 categories, No issues, Minor issues, or Major issues. Issues evaluated included alligator cracking, transverse and longitudinal cracking, oxidation, potholes and/or raveling, path edge raveling, root infiltration, and drainage issues.

The figures below show paths that demonstrate some of criteria used to determine the maintenance needed to protect the investment, particularly Cracking, Oxidation, and Raveling. These are examples of minor and major issues seen during the 2015 inventory collection.

**Figure One: Cracking**



**Figure Two: Oxidation**



**Figure Three: Raveling**



The Path Rating Guideline (Appendix Four) defined the different surface issues found on the shared use paths, and the levels of severity of these issues, in more detail.

Paths varied in conditions, from no maintenance required other than monitoring, to paths that needed multiple treatments for the current maintenance. Conditions of shared use paths were divided into five categories: Monitor/Evaluate, Minor Treatment, Major Treatment, Resurfacing, or Special Needs.

Paths requiring Monitoring/Evaluating should be looked at yearly for needs such as sweeping, drainage issues, debris removal, and any minor or major treatments. Weed spraying and debris removal are part of path maintenance; however, these activities are typically performed from fence line to fence line as part of MDT's Maintenance Operations. Those paths requiring Minor Treatment need minor crack sealing and/or hand patching. Paths requiring Major Treatment need major crack sealing, machine patching, and/or fog sealing. Resurfacing would require an overlay of asphalt. Finally, special needs are conditions that are specific to that individual path and could include drainage fixes, and root dig outs.

## **DETAILED MAINTENANCE PLAN**

The Detailed Maintenance Plan is a description of the work required for current surface maintenance needs, general maintenance, and pavement preservation maintenance with the associated costs. Cost calculations for maintenance are shown in detail in Appendix Two.

Current maintenance needs are a one-time cost to bring paths' surfaces up to an acceptable level. These costs are based on 2015 MDT Maintenance Costs for similar roadway activities. These costs were also compared to shared use path maintenance costs used by other agencies (Milwaukee County Trails Network Plan 2007, Illinois Center for Transportation 2012).

General Maintenance is performed on a yearly basis. This includes monitoring and evaluating path conditions, mowing, cleaning drainage structures, sweeping, and snow removal (which is the largest annual expense).

Finally, there is pavement preservation maintenance. This includes crack and fog seals, and pavement overlays. Pavement preservation treatments are based on other maintenance plans (Milwaukee County Trails Network Plan 2007, Illinois Center for Transportation 2012 & River's Edge Trail Maintenance Plan 2014) as well as the departments pavement preservation on the roads and highways.

### **Current Surface Maintenance Needs**

As part of the detailed maintenance plan, current maintenance needs were determined to bring paths' surfaces up to an acceptable level, and a cost was calculated for that effort. The current maintenance needs for the shared use path range from monitoring/evaluating to crack sealing, patching, and fog sealing.

### **Detailed Description of Shared Use Path Inventories and Current Maintenance Needs**

This section gives a detailed description of each shared use path, the surfacing type, the current condition, and maintenance needs and describes the maintenance agreement and details responsibilities between the department and local agencies.

Figure Four shows a path in good to excellent condition which requires very minor treatments such as path monitoring/evaluation. Figure Five shows a path in fair condition which requires treatments such as minor crack sealing, hand patching, and fog sealing. And finally, Figure Six shows a path in poor condition requires treatments such major crack sealing, machine patching, fog sealing, and overlays.

**Figure Four: Good to Excellent Condition**    **Figure Five: Fair Condition**



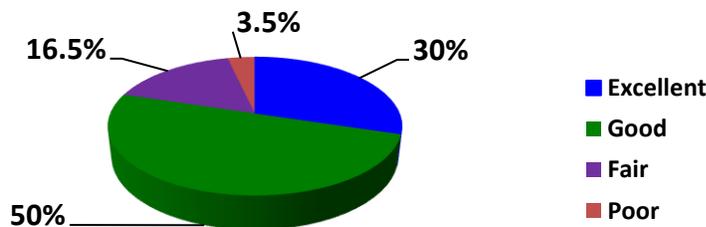
**Figure Six: Poor Condition**



The path's surface condition was assessed and placed into four general categories; excellent, good, fair, and poor. Figure seven below shows the percentage of the 84 paths that were assessed the summer of 2015 in these four general categories. Most of the paths, 80% are in good to excellent condition, while only 20% are in fair to poor condition.

**Figure Seven: Percent Rating based on Condition**

**Percent Rating of Shared Use Paths based on Condition**



## Detailed Description of Shared Use Paths by Division

Below is a description of every shared use path within state maintained federal-aid highway right-of-way in the summer of 2015. This description includes path location, current rating, surface type, length, current maintenance needs and a brief discussion of agreements. An important note is that the distance between mileposts may not equate to the length of the path as many of the paths do not run completely parallel with the roadway.

### 11 – MISSOULA (25 Paths)

- **Mullen Rd West (Mullan Rd, MP 0.8 to 3.5) Excellent:** This is an asphalt separated path built in 2010 that is **2.5 miles** long and **8 feet** wide. This path has minor oxidation. There is an area with a minor longitudinal cracking. This path only needs monitoring. The cost for current maintenance needs is \$5.75. This project was constructed in the CTEP program. In all CTEP projects, the entities (City of Missoula) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Reserve St (US 93, MP 0.1 to 0.7) Poor:** This is an asphalt separated path that is **0.6 miles** long and **7 feet** wide. This path has major oxidation, transverse cracking, potholes and edge raveling, and root infiltration. This path needs major crack sealing, machine patching, and fog sealing. The root infiltration needs to be addressed at some point. This is a good candidate for an overlay. The cost for current maintenance needs is \$5,386.38. This project was constructed in the CTEP program. In all CTEP projects, the entities (City of Missoula) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Seeley Urban (MT 83, MP 13.1 to 14.8) Good:** This path is **1.7 miles** long and **8 feet** wide and built in 2001. There is **0.25 miles** of asphalt striped bike lane **8 feet** wide, **0.15 miles** of gravel separated path **6 feet** wide, leaving the remaining **1.3 miles** asphalt separated path **8 feet** wide. There is a 1 structure. This path has major oxidation. It also has minor transverse and longitudinal cracking, edge raveling, and drainage issues. This path needs minor crack sealing and a fog seal. The cost for current maintenance needs is \$3,513.34. This project was constructed in the CTEP program. In all CTEP projects, the entities (Missoula County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted. Removal of snow is not performed. Paths are used as snowmobile paths during the winter season.
- **Bonner East (Route 210, MP 0.0 to 3.1) Excellent:** This path is **3.0 miles** long and **8 feet** wide and built in 2008. There is **0.1 miles** of asphalt striped bike lane **6.5 feet** wide, **0.4 miles** of concrete separated path **8 feet** wide, leaving the remaining **2.5 miles** asphalt separated path **8 feet** wide. There is 1 structure. This path has minor oxidation, longitudinal and transverse cracking, and edge raveling. This path only needs monitoring. The cost for current maintenance needs is \$6.67. This project was constructed in the CTEP program. In all CTEP projects, the entities (Missoula County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Rustic Rd (Rustic Rd, MP 0.0 to 0.2) Excellent:** This path is **2.8 miles** long and **3 feet** wide and built in 2008. There is **2.2 miles** of gravel separated path **3 feet** wide, **0.2 miles** of concrete separated path **9 feet** wide, leaving the remaining **0.4 miles** asphalt separated path **9 feet** wide. The asphalt portion of this path has minor oxidation. Both the gravel portion and asphalt portion of this path only needs monitoring. The cost for current maintenance needs is \$6.44. This project was constructed in the CTEP program. In all CTEP projects, the entities (Missoula County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.

- **Missoula to Lolo (US 93, MP 83.4 To 90.3) Built in 2016 - Excellent:** This is an asphalt separated path that is **6.9 miles** long and **10 feet** wide. This path was newly constructed and completed in July of 2016. This path has no issues and needs monitoring. There is a maintenance agreement in place. Missoula County assumes responsibility for general maintenance and snow removal. MDT assumes responsibility for pavement preservation.
- **US 93 North of Jct 12 (US 12/US 93, MP 83.4 to 83.9) Fair:** This path is **0.85 miles** long and **9 feet** wide. There is **0.05 miles** of concrete separated path greater than **12 feet** wide, leaving the remaining **0.8 miles** asphalt separated path **9 feet** wide. This path has major oxidation and some major transverse cracking. It also has minor transverse cracking and edge raveling. This path needs major crack sealing and a fog seal. The cost for current maintenance needs is \$4,721.96. There is a maintenance agreement in place. Missoula County assumes responsibility for snow removal. MDT assumes responsibility for general maintenance and pavement preservation.
- **Jct of 12 and 93 West on 12 (US 12, MP 31.6 to 32.6) Excellent:** This is an asphalt separated path that is **1.5 miles** long and **8 feet** wide and built in 2011. It has minor oxidation, longitudinal and transverse cracking, and some minor edge raveling. The path only needs monitoring. The cost for current maintenance needs is \$3.45. This project was constructed in the CTEP program. In all CTEP projects, the entities (Missoula County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Florence to Jct of 12 and US 93 (US 93, MP 74.2 to 83.4) Fair:** This path is **10.2 miles** long and **11 feet** wide and built in 2000. There is **0.6 miles** of concrete separated path **10 feet** wide, leaving the remaining **9.6 miles** asphalt separated path **11 feet** wide. There are 3 structures. This path has major transverse cracking and some alligator cracking. It has minor oxidation, longitudinal cracking, and edge raveling. The path needs major crack sealing. The cost for current maintenance needs is \$46,103.46. There is a maintenance agreement in place. The City of Florence assumes responsibility for routine maintenance including snow removal and sweeping. MDT assumes responsibility for pavement preservation.
- **Florence South (Route 203, MP 10.2 to 11.3) Good:** This is an asphalt separated path that is **2.3 miles** long and **12 feet** wide and built in 2014. There are 3 structures. This path has minor oxidation, longitudinal and transverse cracking. The path needs minor crack sealing. The cost for current maintenance needs is \$3,685.29. This project was constructed in the CTEP program. In all CTEP projects, the entities (Ravalli County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **North Kootenai Rd to Florence (US 93, MP 68.3 to 74.2) Good:** This is an asphalt separated path that is **6.5 miles** long and **10 feet** wide and built in 2006. There are 4 structures. This path has minor oxidation, transverse and longitudinal cracking, and some drainage issues. The path needs minor crack sealing. The cost for current maintenance needs is \$10,414.95. There is a maintenance agreement in place. Ravalli County assumes responsibility for snow removal. MDT assumes responsibility for general maintenance and pavement preservation.
- **McCalla Creek bridge to North Kootenai Rd (US 93, MP 65.8 to 68.3) Excellent:** This is an asphalt separated path that is **1.8 miles** long and **10 feet** wide and built in 2010. There are 3 structures. This path has minor oxidation, very minor transverse, and longitudinal cracking as well as some drainage issues. This path needs monitoring. The cost for current maintenance needs is \$4.14. There is a maintenance agreement in place. Ravalli County assumes responsibility for snow removal. MDT assumes responsibility for general maintenance and pavement preservation.

- **US 93 to Stevensville (Route 269, MP 20.0 to 21.3) Good:** This is an asphalt separated path that is **1.2 miles** long and **10 feet** wide and built in 1995. There are 2 structures. This path has major oxidation and edge raveling. It also has minor alligator, transverse and longitudinal cracking. This path needs crack sealing and a fog seal. It may also need some patching. The cost for current maintenance needs is \$3,242.76. This project was constructed in the CTEP program. In all CTEP projects, the entities (Ravalli County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Bell Crossing W to McCalla Creek bridge (US 93, MP 61.9 to 65.8) Excellent:** This is an asphalt separated path that is **4.8 miles** long and **10 feet** wide and built in 2011. There are 2 structures. This path has minor oxidation and very minor transverse cracking. The path needs monitoring. The cost for current maintenance needs is \$11.04. There is a maintenance agreement in place. Ravalli County assumes responsibility for snow removal. MDT assumes responsibility for general maintenance and pavement preservation.
- **Sweathouse Creek bridge to Bell Crossing W (US 93, MP 60.1 to 61.9) Excellent:** This path is **1.4 miles** long and **10 feet** wide and built in 2011. There is **0.1 miles** of concrete separated path **10 feet** wide, leaving the remaining **1.3 miles** asphalt separated path **10 feet** wide. This path has no issues and needs monitoring. The cost for current maintenance needs is \$3.22. There is a maintenance agreement in place. Ravalli County assumes responsibility for snow removal. MDT assumes responsibility for general maintenance and pavement preservation.
- **Victor Transfer Station to Sweathouse Creek bridge (US 93, MP 58.7 to 60.1) Excellent:** This path is **1.6 miles** long and **10 feet** wide and built in 2012. There is **0.6 miles** of concrete separated path **10 feet** wide, leaving the remaining **1.0 miles** asphalt separated path **10 feet** wide. There are 2 structures. This path has no issues and needs monitoring. The cost for current maintenance needs is \$3.68. There is a maintenance agreement in place. Ravalli County assumes responsibility for snow removal. MDT assumes responsibility for general maintenance and pavement preservation.
- **Jim Ellis Auction Yard to Victor Transfer Station (US 93, MP 53.4 to 58.7) Excellent:** This is an asphalt separated path that is **4.5 miles** long and **10 feet** wide and built in 2012. There are 3 structures. This path has no issues and needs monitoring. The cost for current maintenance needs is \$10.35. There is a maintenance agreement in place. Ravalli County assumes responsibility for snow removal. MDT assumes responsibility for general maintenance and pavement preservation.
- **Hamilton North to Jim Ellis Auction Yard (US 93, MP 49.1 to 53.4) Excellent:** This path is **4.4 miles** long and **10 feet** wide and built in 2010. There is **1.1 miles** of concrete separated path **10 feet** wide, leaving the remaining **3.3 miles** asphalt separated path **10 feet** wide. There are 2 structures. This path has minor drainage issue and needs monitoring. The cost for current maintenance needs is \$10.12. There is a maintenance agreement in place. Ravalli County assumes responsibility for snow removal. MDT assumes responsibility for general maintenance and pavement preservation.
- **US 93 to Corvallis (Route 373, MP 0.0 to 0.2) Good:** This is an asphalt separated path that is **1.6 miles** long and **10 feet** wide and built in 2003. This path has major oxidation and transverse cracking. This path needs minor crack sealing and a fog seal. The cost for current maintenance needs is \$4,323.68. This project was constructed in the CTEP program. In all CTEP projects, the entities (Ravalli County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Anglers Roost bridge to South end of Hamilton (US 93, MP 43.8 to 46.6) Excellent:** This is an asphalt separated path that is **2.6 miles** long and **7 feet** wide and was built in 1984 (overlay in 2014). There is 1 structure. This path has no issues and needs monitoring. The cost for current maintenance needs is \$5.98. There is a maintenance agreement in place. The City of Hamilton assumes responsibility for snow removal. MDT assumes responsibility for general maintenance and pavement preservation.

- **Jocko Rd to Coldwater Ln (US 93/MT 200, MP 15.1 to 16.6) Excellent:** This is an asphalt separated path that is **1.5 miles** long and **8.5 feet** wide and was built in 2014. This path has no issues and needs monitoring. The cost for current maintenance needs is \$3.45. This project was constructed in the CTEP program. In all CTEP projects, the entities (Lake County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Dirty Corner to Arlee (US 93/MT 200, MP 15.1 to 17.5) Excellent:** This is an asphalt separated path that is **0.8 miles** long and **8.5 feet** wide and built in 2013. This path has minor oxidation and needs monitoring. The cost for current maintenance needs is \$1.84. This project was constructed in the CTEP program. In all CTEP projects, the entities (Lake County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Combs Ln to Arlee (US 93/MT 200, MP 15.9 to 17.2) Excellent:** This is a gravel separated path that is **1.3 miles** long and **6 feet** wide and was built in 2011. This path has no issues and needs monitoring. The cost for current maintenance needs is \$2.99. This project was constructed in the CTEP program. In all CTEP projects, the entities (Lake County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **RXR tracks West (Route 211, MP 1.0 to 1.7) Good:** This is an asphalt separated path that is **1.65 miles** long and **8.5 feet** wide and built in 2008. This path has major oxidation and some transverse cracking. This path needs minor crack sealing and a fog seal. The cost for current maintenance needs is \$4,458.80. This project was constructed in the CTEP program. In all CTEP projects, the entities (Lake County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **North of Ronan to Polson (US 93, MP 48.0 to 57.9) Good:** This path is **12.0 miles** long and **10.5 feet** wide and built in 2009. There is **0.3 miles** of concrete separated path **10 feet** wide, leaving the remaining **11.7 miles** asphalt separated path **10.5 feet** wide. There are 5 structures. This path has major oxidation and very minor potholes. There is a portion of the path with some major and minor transverse and longitudinal cracking and some edge raveling. The path needs minor crack sealing and a fog seal. The cost for current maintenance needs is \$31,617.60. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.

The total cost to treat **Missoula** shared use path current conditions is **\$117,547.34**.

## 12– KALISPELL (16 Paths)

- **MT 35 East of Polson (MT 35, MP 0.0 to 2.6) Good:** This path is **2.4 miles** long and **11 feet** wide. There is **0.1 miles** of concrete separated path **11 feet** wide, leaving the remaining **2.3 miles** asphalt separated path **11 feet** wide. This path has major oxidation and some major longitudinal cracking. It has minor alligator and transverse cracking, potholes, and edge raveling. It needs minor crack sealing and a fog seal. The cost for current maintenance needs is \$6,215.52. There is a maintenance agreement in place. The City of Polson assumes responsibility for snow removal. MDT assumes responsibility for general maintenance and pavement preservation.
- **US 93 – Polson (US 93, MP 56.6 to 60.3) Fair:** This path is **2.3 miles** long and **6 feet** wide. There is **2.1 miles** of asphalt striped bike lane **6 feet** wide, **0.15 miles** of concrete separated path **6 feet** wide, leaving the remaining **0.05 miles** asphalt separated path **6 feet** wide. This bike lane has major oxidation and longitudinal cracking. The separated path has major alligator cracking, minor transverse cracking, potholes, and edge raveling. The bike lane conditions will be included in roadway treatments. The separated path needs minor crack sealing, machine patching, and a fog seal. The cost for current maintenance needs is \$289.21. There is a maintenance agreement in place. The City of Polson assumes responsibility for snow removal. MDT assumes responsibility for general maintenance and pavement preservation.

- **Kerr Dam Rd Southwest of Polson (Route 354, MP 1.1 to 1.9) Good:** This is an asphalt separated path that is **0.8 miles** long and **9 feet** wide. This path has major oxidation and very minor transverse cracking and edge raveling. It needs a fog seal and should consider a crack seal prior to fogging. The cost for current maintenance needs (fog seal only) is \$881.84. This project was constructed in the CTEP program. In all CTEP projects, the entities (Lake County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Rocky Point (Rocky Point Dr, MP 0.0 to 2.0) Good:** This is an asphalt separated path that is **1.9 miles** long and **6.5 feet** wide. This path has major oxidation and some major transverse cracking. There are minor potholes. This path needs minor cracks sealing and a fog seal. The cost for current maintenance needs is \$5,134.37. This project was constructed in the CTEP program. In all CTEP projects, the entities (Lake County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Big Arm (US 93, MP 73.7 to 74.4) Good:** This is an asphalt separated path that is **0.7 miles** long and **8 feet** wide. This path has major oxidation and needs a fog seal. The cost for current maintenance needs is \$771.61. This project was constructed in the CTEP program. In all CTEP projects, the entities (Lake County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Somers (US 93, MP 102.1 to 104.3) Fair:** This is an asphalt separated path that is **2.1 miles** long and **8 feet** wide. This path has major oxidation, transverse and longitudinal cracking. There are a few areas that would require patching. This path needs major cracks sealing, hand patching, and a fog seal. The cost for current maintenance needs is \$13,024.83. This project was constructed in the CTEP program. In all CTEP projects, the entities (Flathead County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **MT 82 to Ashley Creek bridge (US 93, MP 104.3 to 108.5) Fair:** This is an asphalt separated path that is **4.2 miles** long and **10 feet** wide. There is 1 structure. This path has some major and minor potholes, transverse cracking, and drainage issues. It has very minor longitudinal cracking. This path needs minor crack sealing and hand patching. The cost for current maintenance needs is \$7,989.66. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.
- **Ashley Creek bridge to Alt 93 (US 93, MP 108.5 to 109.2) Good:** This is an asphalt separated path that is **0.9 miles** long and **10 feet** wide. This path has major oxidation and needs a fog seal. The cost for current maintenance needs is \$992.07. This project was constructed in the CTEP program. In all CTEP projects, the entities (Flathead County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Alternate 93 (US 93 Alt, MP 0.0 to 3.9) Good:** This path is **4.2 miles** long and **11 feet** wide. There is **0.1 miles** of concrete separated path **10 feet** wide, leaving the remaining **4.1 miles** asphalt separated path **11 feet** wide. There are 2 structures. This path has major oxidation and needs a fog seal. The cost for current maintenance needs is \$4,519.66. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.
- **US 2 to Alt 93 (US 2, MP 118.1 to 119.6) Good:** This is an asphalt separated path that is **1.9 miles** long and **11 feet** wide. This path has minor oxidation and transverse cracking which have been previously sealed. This path needs minor crack sealing. The cost for current maintenance needs is \$3,044.37. There is a maintenance agreement in place. The Rails to Trails Group assumes responsibility for all path maintenance.

- **Kila to W Springcreek Rd (US 2, MP 111.9 to 118.1) Good:** This is an asphalt separated path that is **6.5 miles** long and **10 feet** wide. There are 2 structures. This path has some major oxidation in places. Most of the path has minor oxidation, transverse cracking, and very minor potholes, edge raveling, and root infiltration. The path needs at minimum a fog seal. The cost for current maintenance needs including a crack seal and fog seal is \$7,164.95. There is a maintenance agreement in place. The Rails to Trails Group assumes responsibility for all path maintenance.
- **Willow Glen (Route 317, MP 0.5 to 1.5) Excellent:** This is an asphalt separated path that is **1.0 miles** long and **8 feet** wide. This path has a minor oxidation and only needs monitoring. The cost for current maintenance needs is \$2.30. This project was constructed in the CTEP program. In all CTEP projects, the entities (Flathead County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **N Meridian Rd to W Reserve Dr (US 93, MP 114.7 to 116.0) Fair:** This is an asphalt separated path that is **1.7 miles** long and **11 feet** wide. There is 1 structure. This path has major oxidation, transverse and longitudinal cracking. There are minor potholes and drainage issues. This path needs major crack sealing, hand patching and a fog seal. The cost for current maintenance needs is \$10,543.91. This project was constructed in the CTEP program. In all CTEP projects, the entities (Flathead County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **West Valley School to Rhodes Draw (Route 424, MP 5.2 to 6.2) Fair:** This is an asphalt separated path that is **0.9 miles** long and **11 feet** wide. This path has major oxidation, some transverse cracking, as well as root infiltration. This path needs minor crack sealing and a fog seal. At some time, the root infiltration will need to be addressed. The cost for current maintenance needs is \$2,432.07. This project was constructed in the CTEP program. In all CTEP projects, the entities (Flathead County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Railway St to Big Mountain Rd (Route 487, MP 0.3 to 1.3) Good:** This is an asphalt separated path that is **2.1 miles** long and **10 feet** wide. There is 1 structure. This path has major oxidation and some root infiltration. There is also very minor transverse cracking and edge raveling. This path needs minor crack sealing and a fog seal. At some time, the root infiltration will need to be addressed. The cost for current maintenance needs is \$5,674.83. There is a maintenance agreement in place. The City of Whitefish assumes responsibility for all path maintenance.
- **Hungry Horse to Coram (US 2, MP 142.4 to 146.2) Excellent:** This path is **3.2 miles** long and **8 feet** wide. There is **0.2 miles** of concrete separated path **8 feet** wide, leaving the remaining **3.0 miles** asphalt separated path **8 feet** wide. This path has no issues and needs monitoring. The cost for current maintenance needs is \$7.36. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.

The total cost to treat **Kalispell** shared use path current conditions is **\$68,688.56**.

## 21 – BUTTE (9 Paths)

- **Dillon North (MT 41, MP 0.9 to 1.6) Excellent:** This is an asphalt separated path that is **0.6 miles** long and **10 feet** wide. This path has no issues and needs monitoring. The cost for current maintenance needs is \$1.38. There is a maintenance agreement in place. The City of Dillon assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.

- **Twin Bridges (MT 41, MP 27.2 to 27.4) Excellent:** This is an asphalt separated path that is **0.4 miles** long and greater than **12 feet** wide. There is 1 structure. This path has minor oxidation, alligator cracking, transverse and longitudinal cracking, minor potholes, edge raveling, some drainage issues and root infiltration. The path needs a minimum of monitoring. The cost for current maintenance needs is \$0.92. There is a maintenance agreement in place. The City of Twin Bridges assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.
- **Montana City Interchange (Route 518, MP 0.1 to 0.6) Good:** This is an asphalt separated path that is **0.65 miles** long and **10 feet** wide. There is 1 structure. This path has minor oxidation and transverse cracking. It needs minor cracks sealed. The cost for current maintenance needs is \$1,041.50. This project was constructed in the CTEP program. In all CTEP projects, the entities (Jefferson County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Capital I Ped Tunnel (E Broadway St/I-15/18<sup>th</sup> St, MP 191.6 to 0.0) Excellent:** This is an asphalt separated path that is **0.7 miles** long and **11 feet** wide. There is 1 structure. This path has no issues and only needs monitoring. The cost for current maintenance needs is \$1.61. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.
- **Days Inn to Walmart (US 12/US 287, MP 45.2 to 46.0) Excellent:** This path is **0.9 miles** long and **11 feet** wide. There is **0.2 miles** of concrete separated path **11 feet** wide, leaving the remaining **0.7 miles** asphalt separated path **8 feet** wide. There is 1 structure. This path has minor oxidation and needs monitoring. The cost for current maintenance needs is \$2.07. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.
- **East Helena to Helena (US 12/US 287, MP 46.8 to 49.6) Excellent:** This is an asphalt separated path that is **2.5 miles** long and **9 feet** wide. There is 1 structure. This path has minor oxidation, transverse and longitudinal cracking as well as some drainage issues. This path needs monitoring. The cost for current maintenance needs is \$5.75. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.
- **Custer Ave (W Custer Ave, MP 0.0 to 1.4) Fair:** This is an asphalt separated path that is **1.3 miles** long and **9 feet** wide. This path has major transverse cracking, and minor oxidation and longitudinal cracking. It needs crack sealing. This path is a good candidate for a fog seal. The cost for current maintenance needs (crack seal only) is \$6,242.99. This project was constructed in the CTEP program. In all CTEP projects, the entities (City of Helena) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Valley Forge Rd to Gun Club (N Montana Ave, MP 2.9 to 4.1) Excellent:** This is an asphalt separated path that is **1.1 miles** long and **5 feet** wide. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$2.53. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.
- **Lincoln Rd West (Route 279, MP 0.1 to 0.9) Fair:** This is an asphalt separated path that is **0.9 miles** long and greater than **10 feet** wide. There is 1 structure. This path has major oxidation and transverse cracking, and minor longitudinal cracking. It needs crack sealing and a fog seal. The cost for current maintenance needs is \$5,312.07. This project was constructed in the CTEP program. In all CTEP projects, the entities (Helena School District #1) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.

The total cost to treat **Butte** shared use path current conditions is **\$12,610.82**.

## 22 – BOZEMAN (22 Paths)

- **Townsend North (US 287, MP 94.0 to 94.3) Good:** This path is **1.6 miles** long and **9 feet** wide. There is **1.2 miles** of gravel separated path **9 feet** wide, leaving the remaining **0.4 miles** asphalt separated path **9 feet** wide. This path has major oxidation, and minor transverse cracking and edge raveling. This path needs minor crack sealing and a fog seal. The cost for current maintenance needs is \$1,083.68. This project was constructed in the CTEP program. In all CTEP projects, the entities (Broadwater County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **MT 2 – Jefferson River to Front Rd (MT 2, MP 93.6 to 94.3) Good:** This is an asphalt separated path that is **0.8 miles** long and **8 feet** wide. This path has major oxidation, and minor transverse and longitudinal cracking, edge raveling, and root infiltration. This path needs minor crack sealing and a fog seal. At some time, the root infiltration needs to be addressed. The cost for current maintenance needs is \$2,161.84. This project was constructed in the CTEP program. In all CTEP projects, the entities (Gallatin County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Three Forks Rodeo Grounds to I-90 (MT 2, MP 96.1 to 96.4) Excellent:** This is an asphalt separated path that is **0.3 miles** long and **11 feet** wide. This path has minor oxidation and needs monitoring. The cost for current maintenance needs is \$0.69. There is a maintenance agreement in place. The City of Three Forks assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.
- **Headwaters Golf Course (MT 2, MP 96.7 to 97.6) Good:** This is an asphalt separated path that is **1.1 miles** long and **8 feet** wide. This path has major oxidation, and minor transverse and longitudinal cracking, and potholes. This path needs minor crack sealing, hand patching and a fog seal. The cost for current maintenance needs is \$3,302.53. This project was constructed in the CTEP program. In all CTEP projects, the entities (Gallatin County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Three Forks East (Route 205, MP 1.2 to 3.0) Excellent:** This path is **2.6 miles** long and **9 feet** wide. There is **0.3 miles** of gravel separated path **9 feet** wide, leaving the remaining **2.3 miles** asphalt separated path **9 feet** wide. There are 2 structures. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$5.98. There is a maintenance agreement in place. The City of Three Forks assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.
- **Three Forks - Hickory St (US 287, MP 0.2 to 0.5) Good:** This is an asphalt separated path that is **0.3 miles** long and **8 feet** wide. This path has minor oxidation, transverse and longitudinal cracking. The path needs crack sealing and a fog seal. The cost for current maintenance needs is \$810.69. There is a maintenance agreement in place. The City of Three Forks assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.
- **Trident (Route 286, MP 1.0 to 2.8) Good:** This path is **2.1 miles** long and **9 feet** wide. There is **0.5 miles** of gravel separated path **7 feet** wide, leaving the remaining **1.6 miles** asphalt separated path **9 feet** wide. This path has major oxidation, and some edge raveling. It has minor transverse and longitudinal cracking. This path needs minor crack sealing, hand patching and a fog seal. The cost for current maintenance needs is \$4,804.83. This project was constructed in the CTEP program. In all CTEP projects, the entities (Gallatin County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.

- **Manhattan North (Route 346, MP 1.0 to 2.8) Excellent:** This is an asphalt separated path that is **1.7 miles** long and **8 feet** wide. There are 2 structures. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$3.91. There is a maintenance agreement in place. Gallatin County and the City of Manhattan assume responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.
- **Valley Center Rd (Route 235, MP 0.0 to 5.3) Good:** This path is **4.3 miles** long and **9 feet** wide. There is **0.85 miles** of concrete separated path **8 feet** wide, leaving the remaining **3.45 miles** asphalt separated path **9 feet** wide. There is 1 structure. This path has major oxidation and minor edge raveling. It needs a fog seal. The cost for current maintenance needs is \$3,804.89. There is a maintenance agreement in place. Gallatin County assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.
- **Four Corners North on Jackrabbit Ln (MT 85, MP 0.0 to 4.2) Excellent:** This path is **4.2 miles** long and **10 feet** wide. There is **0.1 miles** of concrete separated path **10 feet** wide, leaving the remaining **4.1 miles** asphalt separated path **10 feet** wide. There is 1 structure. This path has minor oxidation, potholes, edge raveling, and drainage issues. This path needs monitoring. The cost for current maintenance needs is \$9.66. There is a maintenance agreement in place. Gallatin County assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.
- **Zoot Way to Four Corners (MT 84, MP 28.5 to 29.0) Good:** This is an asphalt separated path that is **0.5 miles** long and **9 feet** wide. This path has some major oxidation and minor potholes. It needs a fog seal. The cost for current maintenance needs is \$551.15. There is a maintenance agreement in place. Gallatin County assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.
- **Four Corners West (MT 84, MP 27.9 to 29.0) Good:** This is an asphalt separated path that is **1.1 miles** long and **6 feet** wide. This path has minor raveling and transverse cracking. The path needs crack sealing. The cost for current maintenance needs is \$1,762.53. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.
- **Cobb Hill to Four Corners (US 191, MP 81.9 to 82.9) Good:** This is an asphalt separated path that is **1.7 miles** long and **6 feet** wide. There are 3 structures. This path has major oxidation, drainage issues and some root infiltration. It has minor transverse cracking, potholes, and edge raveling. It needs minor crack sealing and a fog seal. At some time, the drainage issues will need to be addressed. This path may be a possible candidate for an overlay. The cost for current maintenance needs is \$4,593.91. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.
- **Four Corners South (US 191, MP 77.2 to 81.9) Fair:** This path is **4.7 miles** long and **9 feet** wide. There is **1.7 miles** of gravel separated path **5 feet** wide, leaving the remaining **3.0 miles** asphalt separated path **9 feet** wide. There are 3 structures. This path has major oxidation, transverse cracking, and edge raveling. It has minor potholes. It needs major crack sealing and a fog seal. The cost for current maintenance needs is \$17,710.81. This project was constructed in the CTEP program. In all CTEP projects, the entities (Gallatin County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Huffine Lane - Ferguson to College (US 191, MP 86.2 to 87.1) Good:** This is an asphalt separated path that is **0.9 miles** long and **8 feet** wide. This path currently has minor transverse cracking. The path needs crack sealing. The cost for current maintenance needs is \$1,442.07. This project was constructed in the CTEP program. In all CTEP projects, the entities (City of Bozeman) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.

- **East River Rd to Merrill Ln (US 89, MP 49.8 to 52.4) Good:** This is an asphalt separated path that is **2.6 miles** long and **8 feet** wide. This path has major oxidation. It has minor transverse and longitudinal cracking, and potholes. It needs minor crack sealing, hand patching and a fog seal. The cost for current maintenance needs is \$7,805.98. This project was constructed in the CTEP program. In all CTEP projects, the entities (Park County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Merrill Ln to Rogers Ln (US 89, MP 52.4 to 53.2) Excellent:** This is a concrete separated path that is **0.65 miles** long and **9 feet** wide. This path is primarily concrete and has raveling occurring. The cost for current maintenance needs is \$196.50. This project was constructed in the CTEP program. In all CTEP projects, the entities (Park County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Rogers Ln to Elkhorn Ln (US 89, MP 53.2 to 53.4) Fair:** This is an asphalt separated path that is **0.3 miles** long and **9 feet** wide. This path has major oxidation and longitudinal cracking. It has minor transverse cracking, potholes, and edge raveling. It needs major crack sealing, hand patching, and a fog seal. The cost for current maintenance needs is \$1,860.69. This project was constructed in the CTEP program. In all CTEP projects, the entities (Park County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **I-90 Business Loop Old Maint (I-90 Business Loop/W Park St, MP 0.0 to 0.2) Fair:** This is an asphalt separated path that is **0.4 miles** long and **9 feet** wide. This path has major oxidation and longitudinal cracking. It has minor transverse cracking, some potholes, and some root infiltration. It needs major crack sealing, hand patching, and a fog seal. This path may be a good candidate for an overlay. The cost for current maintenance needs is \$2,480.92. This project was constructed in the CTEP program. In all CTEP projects, the entities (City of Livingston) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **Big Sky Spur Rd (MT 64, MP 0.0 to 2.9) Good:** This path is **2.8 miles** long and **8 feet** wide. There is **0.1 miles** of concrete separated path **5 feet** wide, leaving the remaining **2.7 miles** asphalt separated path **8 feet** wide. There is 1 structure. This path has major oxidation and minor transverse and longitudinal cracking, potholes, and edge raveling. It needs minor crack sealing, hand patching and a fog seal. The cost for current maintenance needs is \$8,106.44. There is a maintenance agreement in place and Big Sky Community Corporation (BSCC) assumes responsibility for all path maintenance.
- **Opher to MT 64 (US 191, MP 45.3 to 47.9) Good:** This path is **2.6 miles** long and **10 feet** wide. There is **0.1 miles** of gravel separated path **8 feet** wide, leaving the remaining **2.5 miles** asphalt separated path **10 feet** wide. There is 1 structure. This path has major oxidation and drainage issues. It has minor potholes and edge raveling. It needs hand patching and a fog seal. At some time, the drainage issues will need to be addressed. The cost for current maintenance needs is \$3,505.98. There is a maintenance agreement in place and Big Sky Community Corporation (BSCC) assumes responsibility for all path maintenance.
- **Ennis West to Rodeo Ground (MT 287/Golf Course Dr, MP 0.2 to 0.4) Good:** This is an asphalt separated path that is **0.3 miles** long and **9 feet** wide. This path has major oxidation and needs a fog seal. The cost for current maintenance needs is \$330.69. This project was constructed in the CTEP program. In all CTEP projects, the entities (Madison County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.

The total cost to treat **Bozeman** shared use path current conditions is **\$66,336.37**.

## 31 – GREAT FALLS (4 Paths)

- **Cascade – Old US Hwy 91 (Old US 91, MP 1.7 to 3.0) Excellent:** This is an asphalt separated path that is **2.0 miles** long and **11 feet** wide. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$4.60. There is a maintenance agreement in place. Joe's Trail, Inc. assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.
- **Whitetail Ln to Lake St (Old US 91, MP 11.3 to 13.2) Excellent:** This is an asphalt separated path that is **1.9 miles** long and **9 feet** wide. There is 1 structure. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$4.37. There is a maintenance agreement in place. Joe's Trail, Inc. assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.
- **Vaughn - 4<sup>th</sup> St to 12<sup>th</sup> St (US 89, MP 2.2 to 2.8) Good:** This is an asphalt separated path that is **0.9 miles** long and **8 feet** wide. This path currently has minor transverse cracking. The path needs crack sealing. The cost for current maintenance needs is \$1,442.07. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.
- **Great Falls (River Dr N/US 87 Bypass/57<sup>th</sup> St, MP 0.0 to 20.3) Good:** This path is **12.2 miles** long and **11 feet** wide. There is **1.7 miles** of asphalt striped bike lane **9 feet** wide, **1.9 miles** of concrete striped bike lane **9 feet** wide, **0.9 miles** of concrete separated path **11 feet** wide, leaving the remaining **7.7 miles** asphalt separated path **11 feet** wide. There are 10 structures. This path has major oxidation, some alligator cracking, potholes, and some drainage issues. It has minor transverse and longitudinal cracking, and edge raveling. This path needs minor crack sealing, hand patching, and a fog seal. Portions of the path are a good candidate for an overlay. The cost for current maintenance needs is \$23,119.78. There is a maintenance agreement in place and Great Falls Park & Recreation Department, PPL Montana, and Montana State Parks assumes responsibility for all path maintenance.

The total cost to treat **Great Falls** shared use path current conditions is **\$24,570.82**.

## 32 – HAVRE (4 Paths)

- **Shelby North (MT 67, MP 0.4 to 1.4) Good:** This path is **1.5 miles** long and **8 feet** wide. There is **1.0 miles** of asphalt striped bike lane **5 feet** wide, leaving the remaining **0.5 miles** asphalt separated path **8 feet** wide. This path has major oxidation and minor transverse cracking. It needs minor cracks sealed and a fog seal. The cost for current maintenance needs is \$1,351.15. This project was constructed in the CTEP program. In all CTEP projects, the entities will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- **East of Havre (US 2, MP 383.8 to 384.8) Excellent:** This path is **1.0 miles** long and **8 feet** wide. There is **0.4 miles** of asphalt striped bike lane **8 feet** wide, leaving the remaining **0.6 miles** asphalt separated path **8 feet** wide. This path has no issues and needs monitoring. The cost for current maintenance needs is \$1.38. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.
- **West of Chinook (US 2, MP 402.2 to 402.5) Poor:** This is an asphalt separated path that is **0.3 miles** long and **7 feet** wide. This path has major oxidation, transverse cracking, potholes, and edge raveling. It needs major crack sealing, machine patching and a fog seal. The cost for current maintenance needs is \$2,693.19. This project was constructed in the CTEP program. In all CTEP projects, the entities (Blaine County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.

- **Fort Belknap South (MT 66, MP 48.2 to 50.0) Excellent:** This is an asphalt separated path that is **2.0 miles** long and **7 feet** wide. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$4.60. There is no maintenance agreement in place. The Fort Belknap Tribe assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.

The total cost to treat **Havre** shared use path current conditions is **\$4,050.32**.

#### 42 – WOLF POINT (1 Path)

- **Poplar (US 2, MP 611.9 to 613.0) Fair:** This path is **1.0 miles** long and **8 feet** wide. There is **0.15 miles** of concrete separated path **6 feet** wide, leaving the remaining **0.85 miles** asphalt separated path **8 feet** wide. This path has major oxidation and transverse cracking, minor alligator and longitudinal cracking, potholes, path edge raveling and some drainage issues and root infiltration. This path needs major crack sealing, hand patching, and a fog seal. The cost for current maintenance needs is \$5,272.30. There is a maintenance agreement in place and Bureau of Indian Affairs (BIA) assumes responsibility for all path maintenance.

The total cost to treat **Wolf Point** shared use path current conditions is **\$5,272.30**.

#### 43 – MILES CITY (2 Paths)

- **Miles City (Main St/I-94 Business Route, MP 1.9 to 2.3) Fair:** This is an asphalt separated path that is **0.5 miles** long and **6.5 feet** wide. There is 1 structure. This path has major transverse cracking, minor oxidation, longitudinal cracking, path edge raveling, and some root infiltration. It needs crack sealing. At some time, the root infiltration will need to be addressed. The cost for current maintenance needs is \$2,401.15. There is a maintenance agreement in place and Custer County assumes responsibility for all path maintenance.
- **Broadus (US 212/MT 59, MP 78.7 to 79.8) Good:** This is an asphalt separated path that is **1.5 miles** long and **8 feet** wide. This path has major oxidation and potholes, and minor alligator, transverse and longitudinal cracking. It needs minor crack sealing, machine patching, and a fog seal. The cost for current maintenance needs is \$8,665.95. This project was constructed in the CTEP program. In all CTEP projects, the entities (Powder River County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.

The total cost to treat **Miles City** shared use path current conditions is **\$11,067.10**.

#### 51 – BILLINGS (2 Paths)

- **27<sup>th</sup> to Airport Rd (MT 3, MP 3.1 to 3.1) Excellent:** This is an asphalt separated path that is **0.4 miles** long and **11 feet** wide. There is 1 structure, a tunnel. There is minor oxidation and needs monitoring. The cost for current maintenance needs is \$0.92. There is a maintenance agreement in place and the City of Billings assumes responsibility for all path maintenance.
- **Main St to Alkali Creek (US 87/US 312, MP 2.0 to 2.0) Excellent:** This is a concrete separated path that is **0.4 miles** long and **10 feet** wide. There is 1 structure, a tunnel. It has no issues and only needs monitoring. The cost for current maintenance needs is \$0.92. There is a maintenance agreement in place and the City of Billings assumes responsibility for all path maintenance.

The total cost to treat **Billings** shared use path current conditions is **\$1.84**.

The total cost to treat current conditions of **all shared use paths** within MDT right-of-way is **\$310,145.47**.

## General Maintenance Plan

**Description:** The general maintenance plan includes monitoring and evaluating path conditions, mowing, cleaning drainage structures, sweeping and cleaning, and snow removal. Snow removal is included in General Maintenance but it is noted that snow removal may not be performed on every path. Again, weed spraying and debris removal costs are part of MDT's normal maintenance operations and those costs are not included.

**Costs:** The General Maintenance Plan should be performed yearly, regardless of the type of path. The total cost for general maintenance is \$263.30 per path mile. The total cost for snow removal is \$3,600.00 per path mile. The total cost to perform general maintenance on 180 miles of shared use path (excluding 8 miles of striped bike lanes) is approximately \$670,000 of which \$624,000 is the cost of snow removal efforts on all paths.

- Path Evaluation - \$2.30 per path mile
- Mowing (5' either side) - \$40.00 per path mile
- Cleaning Drainage Structures - \$51.00 per path mile
- Sweeping and cleaning - \$85 per path mile occurring 2 times per year
- Snow Removal - \$180.00 per path mile occurring 20 times per year (the number of snow removal times was based on an average of snow removal on paths/trails over the past 5 years, and 1/10 the number of times MDT plowed highways over a three-year average)

## Pavement Preservation Maintenance Plan

The pavement preservation plan and treatment recommendations were developed from other state and city plans (Milwaukee County Trails Network Plan 2007, Illinois Center for Transportation 2012, & River's Edge Trail Maintenance Plan 2014). These included best practices in order to protect and sustain the investment of the shared use paths.

**Description:** The three surface types found on the shared use paths include, asphalt, gravel and concrete. The gravel surfaces (7.5 miles) and concrete surfaces (7.1 miles) are not considered as those costs are minor and those surfaces comprise of less than 10% of the shared use path mileage and preservations costs are minor. There are four general treatments for asphalt pavement preservation which include crack sealing, patching, fog sealing and overlays. Generally, MDT recommends a crack seal every four years, a fog seal every eight years and a pavement overlay every 25 years. In order to calculate the costs of these pavement preservation activities, it is assumed that one quarter of the paths will be crack sealed every year, one eighth of the paths will be fog sealed and 1/25<sup>th</sup> of the paths will have an overlay every year.

**Costs:** There is a Future Surface Maintenance Plan that should be performed on a routine schedule and budgeted based on that schedule.

- Minor Crack Sealing - \$1,600 per mile, to be scheduled every four years
- Major Crack Sealing - \$4,800 per mile, to be scheduled as needed
- Hand Patching - \$300 per mile, to be scheduled as needed
- Machine Patching - \$3,075 per mile, to be scheduled as needed
- Fog Sealing - \$1,100 per mile, to be scheduled every eight years
- Plant Mix Surfacing Overlay - \$ 29,500 per mile, to be scheduled every 25 years

## Costs

This section describes the costs to protect the shared use path investment, the annual costs of general maintenance and the annual costs of pavement preservation. Additionally, the break out of MDT costs vs cities, counties and other entities are given which reflect current maintenance agreements.

Table Two, below, describes the costs to protect our current investment, yearly costs for snow removal and general path maintenance such as monitoring/evaluating, mowing, sweeping, and finally shows the yearly costs for pavement preservation by Division. Appendix Three has a more detailed table showing these costs by each path.

**Table Two: Total Costs of Shared Use Path Maintenance**

Path	Current Maintenance Cost	Annual Costs of Snow Removal	Annual Costs of General Maintenance	Annual Costs of Pavement Preservation
<b>Total of Missoula Division</b>	\$117,547.33	\$256,680.00	\$19,155.08	\$112,925.63
<b>Total of Kalispell Division</b>	\$95,613.56	\$124,920.00	\$9,136.51	\$58,652.63
<b>Total of Butte Division</b>	\$15,990.82	\$32,580.00	\$2,382.87	\$15,199.88
<b>Total of Bozeman Division</b>	\$77,136.37	\$135,180.00	\$9,886.92	\$55,045.88
<b>Total of Great Falls Division</b>	\$30,430.82	\$48,240.00	\$3,528.22	\$21,468.75
<b>Total of Havre Division</b>	\$9,450.32	\$12,240.00	\$895.22	\$5,839.50
<b>Total of Wolf Point Division</b>	\$5,272.30	\$3,600.00	\$263.30	\$1,459.88
<b>Total of Miles City Division</b>	\$11,067.10	\$7,200.00	\$526.60	\$3,435.00
<b>Total of Billings Division</b>	\$1.84	\$2,880.00	\$210.64	\$687.00
<b>Total of Lewistown Division</b>	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total Costs for the State of Montana</b>	<b>\$362,510.46</b>	<b>\$623,520.00</b>	<b>\$45,985.36</b>	<b>\$274,714.15</b>

The total costs for the current maintenance needs are \$362,510.46 which is a onetime cost. Yearly costs would include the snow removal costs, general maintenance costs, and the pavement preservation costs which are approximately \$944,219.51.

Table Three below, breaks out the costs for MDT and city/county responsibilities when there are agreements in place, by the costs for current maintenance, yearly costs for general path maintenance such as snow removal, mowing, sweeping, and finally shows the yearly costs for pavement preservation by maintenance area. Appendix Three has a more detailed table showing these costs by each path.

**Table Three: Total Costs of Shared Use Paths Maintenance by Responsible Party**

<b>Path Name</b>	<b>MDT's Current Maintenance Cost</b>	<b>Others Current Maintenance Cost</b>	<b>MDT's Annual Costs of General Maintenance</b>	<b>Others Annual Costs of General Maintenance</b>	<b>MDT's Annual Costs of Pavement Preservation</b>	<b>Others Annual Costs of Pavement Preservation</b>
<b>Total of Missoula Division</b>	\$92,906.50	\$24,640.84	\$53,850.49	\$221,984.60	\$78,428.25	\$34,497.38
<b>Total of Kalispell Division</b>	\$45,946.41	\$49,667.15	\$45,498.86	\$88,557.65	\$23,443.88	\$35,208.75
<b>Total of Butte Division</b>	\$2,433.34	\$13,557.48	\$20,089.16	\$14,873.71	\$9,378.00	\$5,821.88
<b>Total of Bozeman Division</b>	\$15,465.48	\$61,670.89	\$10,817.24	\$134,249.68	\$22,661.13	\$32,384.75
<b>Total of Great Falls Division</b>	\$3,541.04	\$26,889.78	\$3,476.97	\$48,291.25	\$6,684.00	\$14,784.75
<b>Total of Havre Division</b>	\$2,205.98	\$7,244.34	\$2,317.98	\$10,817.24	\$3,665.50	\$2,174.00
<b>Total of Wolf Point Division</b>	N/A	\$5,272.30	N/A	\$3,863.30	N/A	\$1,459.88
<b>Total of Miles City Division</b>	N/A	\$11,067.10	N/A	\$7,726.60	N/A	\$3,435.00
<b>Total of Billings Division</b>	N/A	\$1.84	N/A	\$3,090.64	N/A	\$687.00
<b>Total of Lewistown Division</b>	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total Costs for Montana</b>	<b>\$162,498.75</b>	<b>\$200,011.72</b>	<b>\$136,050.70</b>	<b>\$533,454.67</b>	<b>\$144,260.76</b>	<b>\$130,453.39</b>

## FUNDING

During construction of the shared use paths, MDT typically enters into a maintenance agreement with a county, city or other entity who requested the path, to share the costs of maintenance. These agreements outline MDT responsibilities and the other entities responsibility. Some of these agreements state that MDT will maintain major pavement preservation efforts such as fog sealing, overlays, and reconstruction efforts. The other entities are typically responsible for general path maintenance like snow removal, sweeping, weed control, crack sealing, and minor patching. Other agreements especially those shared use paths built with CTEP funding are the local's responsibility for all maintenance activities. It is important to note that not all paths have been maintained regularly. This does increase the current maintenance needs cost due to this differed maintenance.

MDT does not typically maintain shared use path as can be seen from the tables above. However, for the current needs, MDT will look to leverage funding used for highway construction projects for use on the shared use paths as well. When a construction project is nominated part of the preliminary field review will include an analysis of any shared use path adjacent to the construction project for any construction needs the path may have. This will make the construction projects more expensive, and will result in fewer construction projects, however, MDT believes that will be nominal.

Currently MDT maintenance funding is used primarily on the 25,000 lane miles of the state highways and roads. There is little funding directed toward these paths. If MDT were asked to maintain all of the shared use paths, the funding would have to be either included in the legislation, or we would have lower our maintenance efforts in other areas. This would mean that the condition of Montana Highways would decrease, in order to maintain all of the bike paths.

## SUMMARY

The State has about 180 miles of shared use paths which includes asphalt paths, gravel paths, and some striped bike lanes connecting two separated paths. The current maintenance needs of the paths total around \$363,000.00. The annual costs to maintain the shared use paths are approximately \$945,000.00.

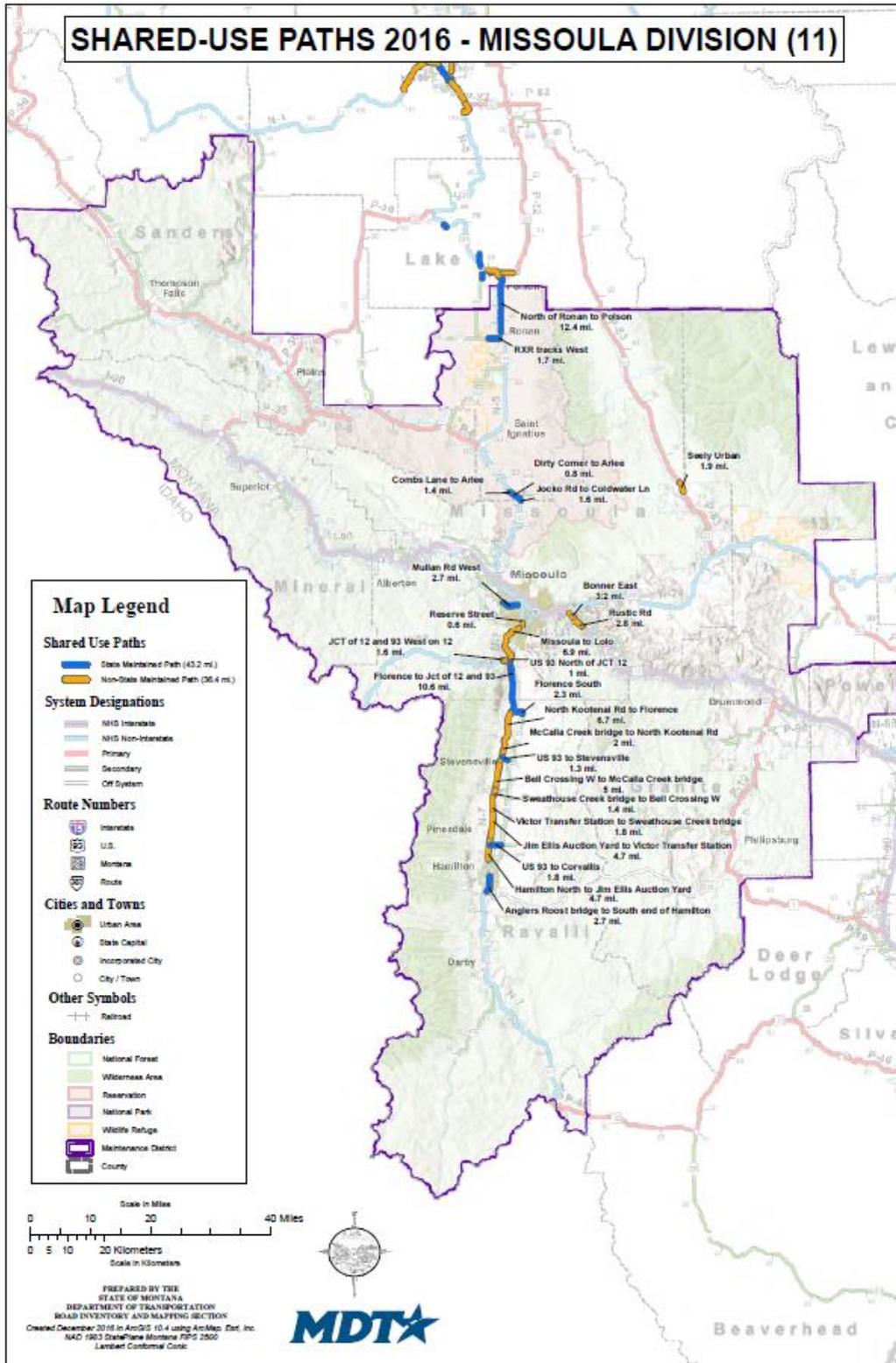
Regular maintenance needs, which are primarily pavement preservation activities, include; crack sealing every four years, fog sealing every eight years, and pavement overlay every 25 years.

Funding strategies to maintain these paths include leveraging federal funds for pavement overlays. As mentioned above, if MDT were asked to maintain all of the shared use paths, the funding would have to be either included in the legislation or MDT would have to lower maintenance efforts in other areas, leading to a decrease in the condition of Montana Highways.

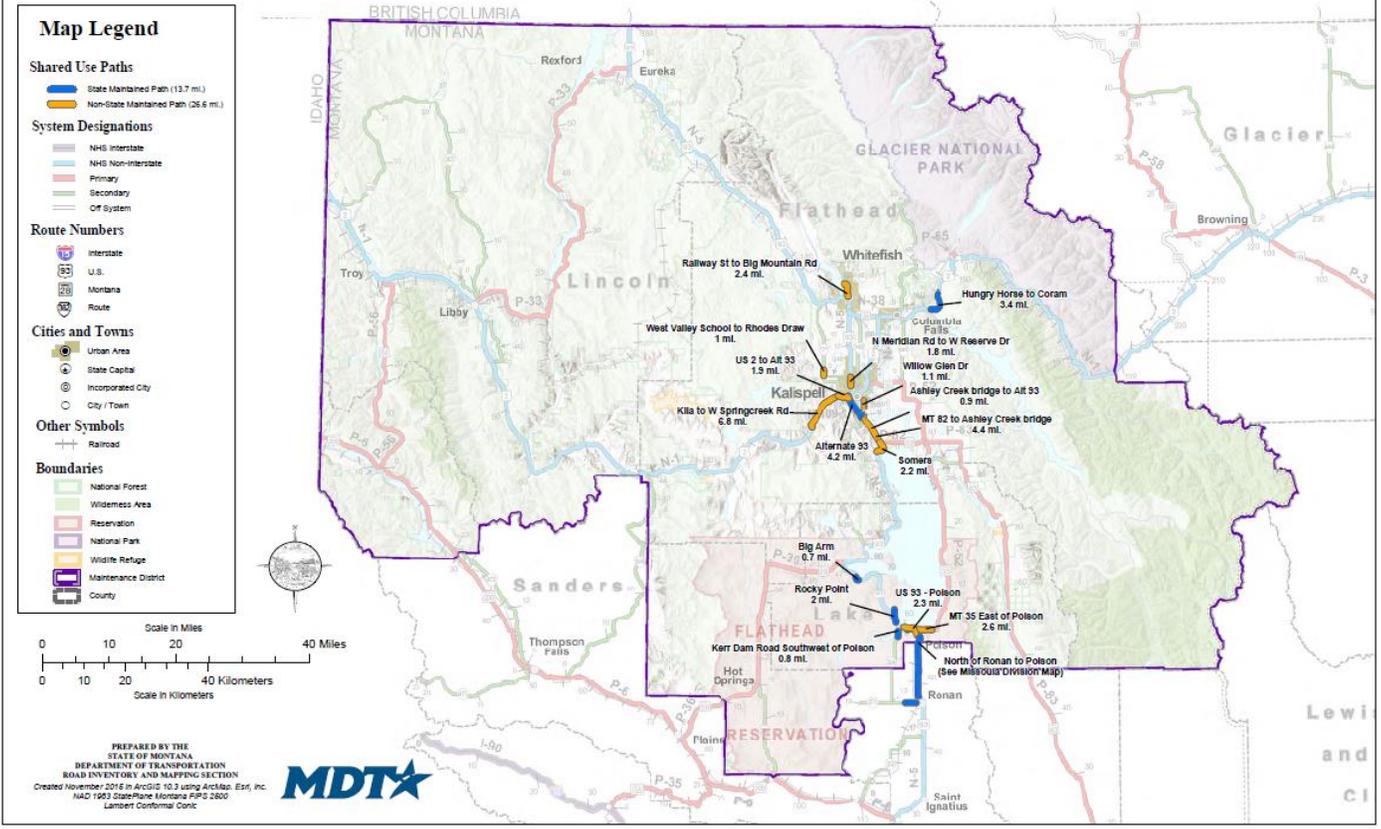
## REFERENCES

- Office of Infrastructure Research and Development, U.S. Department of Transportation Federal Highway Administration, 2003 (June). *Distress Identification Manual for the Long-Term Pavement Performance Program*.
- University of Illinois at Urbana-Champaign, Illinois Center for Transportation, 2012 (June). *Best Practices for Bicycle Trail Pavement Construction and Maintenance in Illinois*.
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- Milwaukee County Dept. of Parks, Recreation, and Culture, 2007. *Milwaukee County Trails Network Plan Draft* retrieved from [www.countyparks.com](http://www.countyparks.com), June 2015.

# APPENDIX ONE: Maps by Division of Shared Use Paths



# SHARED-USE PATHS 2015 - KALISPELL DIVISION (12)



# SHARED-USE PATHS 2015 - BUTTE DIVISION (21)

### Map Legend

**Shared Use Paths**

- State Maintained Path (5.2 mi.)
- Non-State Maintained Path (3.8 mi.)

**System Designations**

- NHS Interstate
- NHS Non-Interstate
- Primary
- Secondary
- Off System

**Route Numbers**

- Interstate
- U.S.
- Montana
- Route

**Cities and Towns**

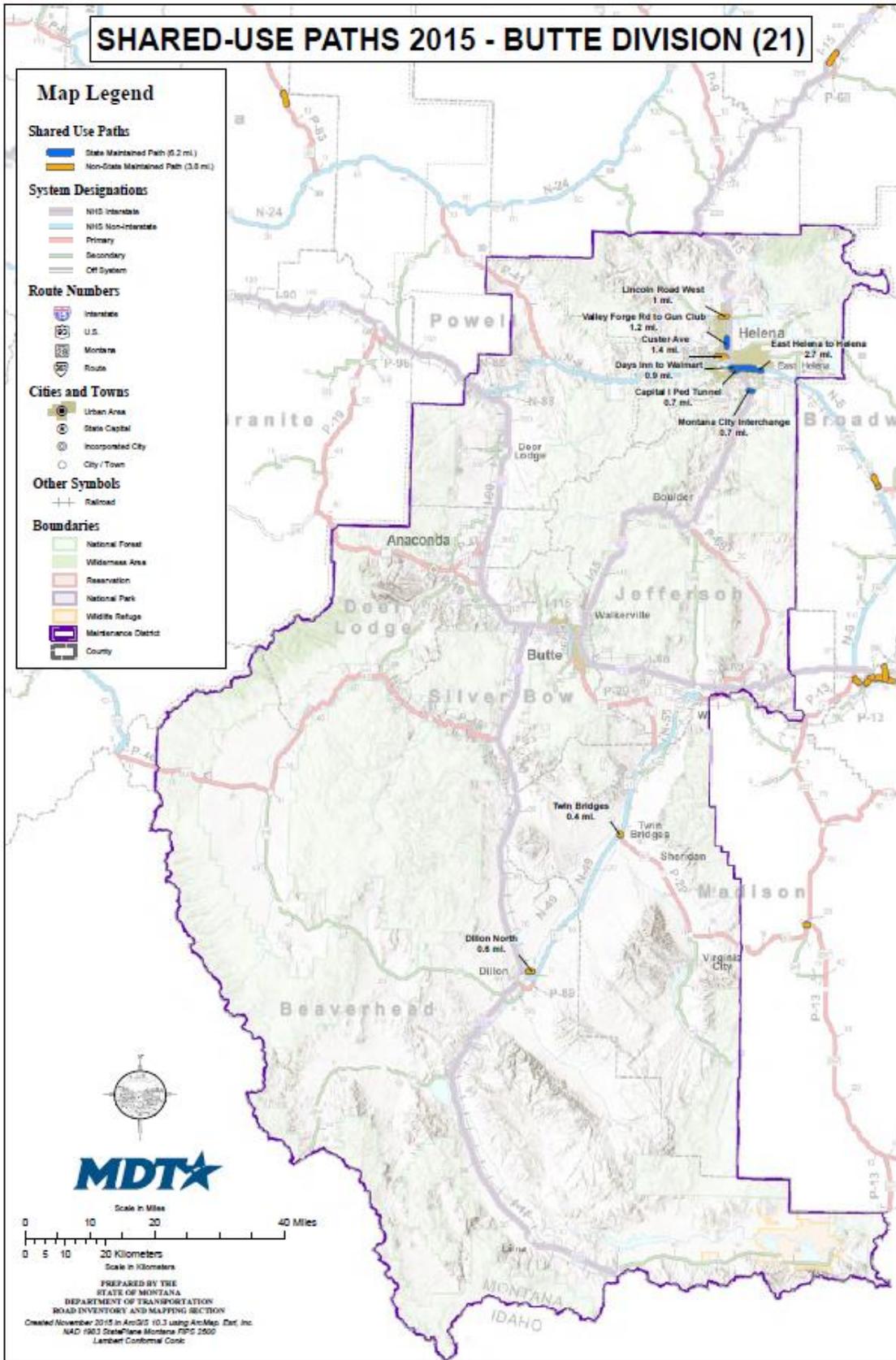
- Urban Area
- State Capital
- Incorporated City
- City / Town

**Other Symbols**

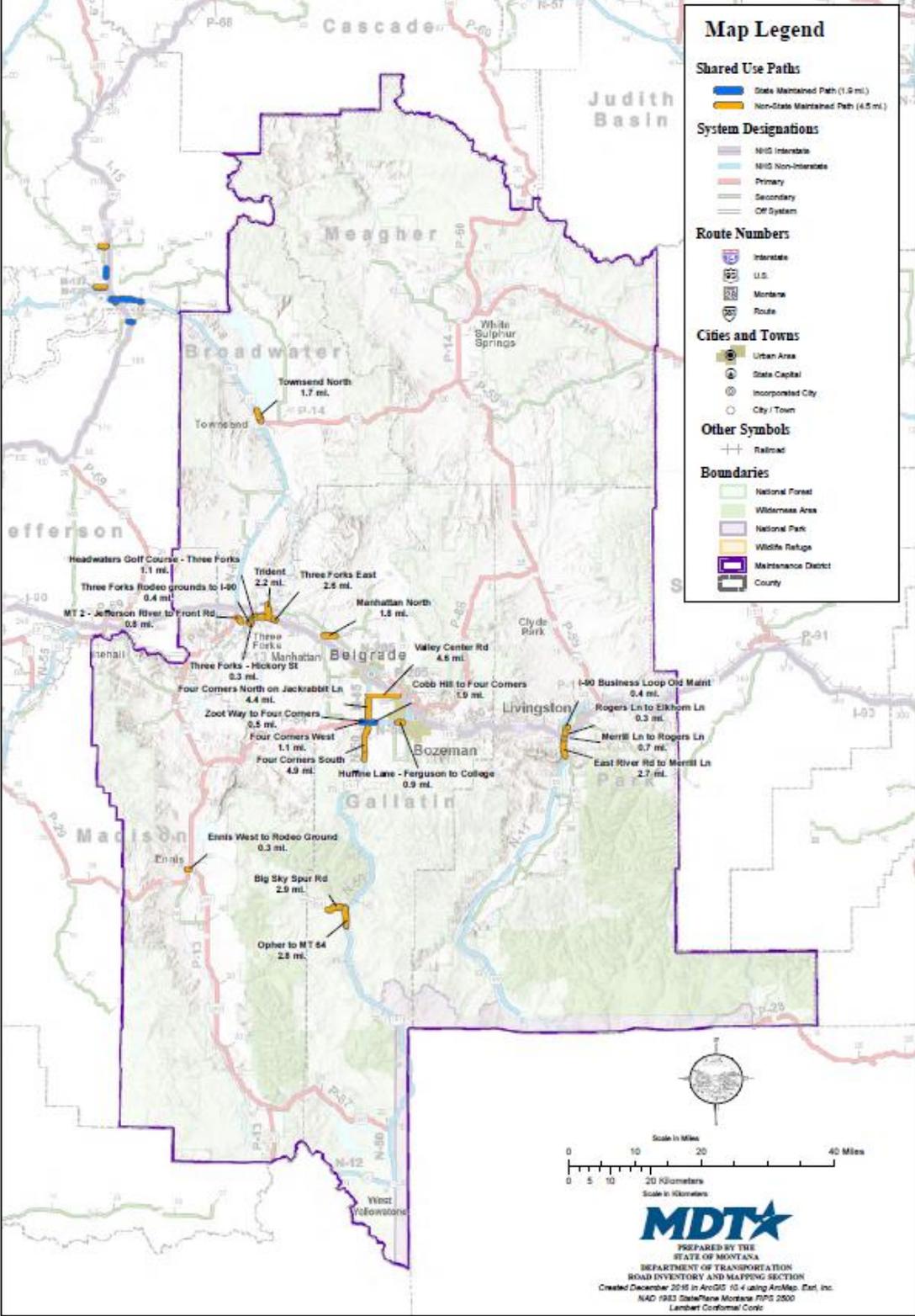
- Railroad

**Boundaries**

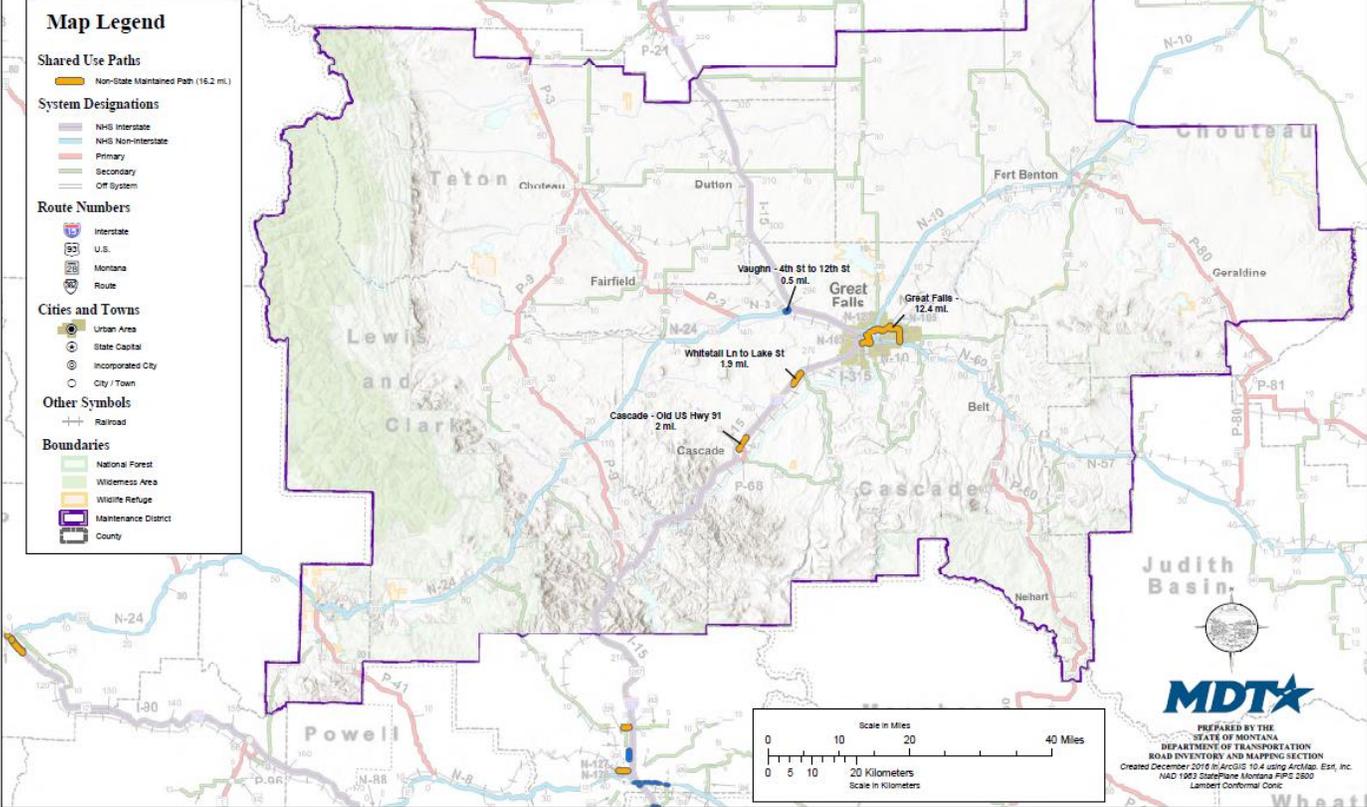
- National Forest
- Wilderness Area
- Reservation
- National Park
- Wildlife Refuge
- Maintenance District
- County



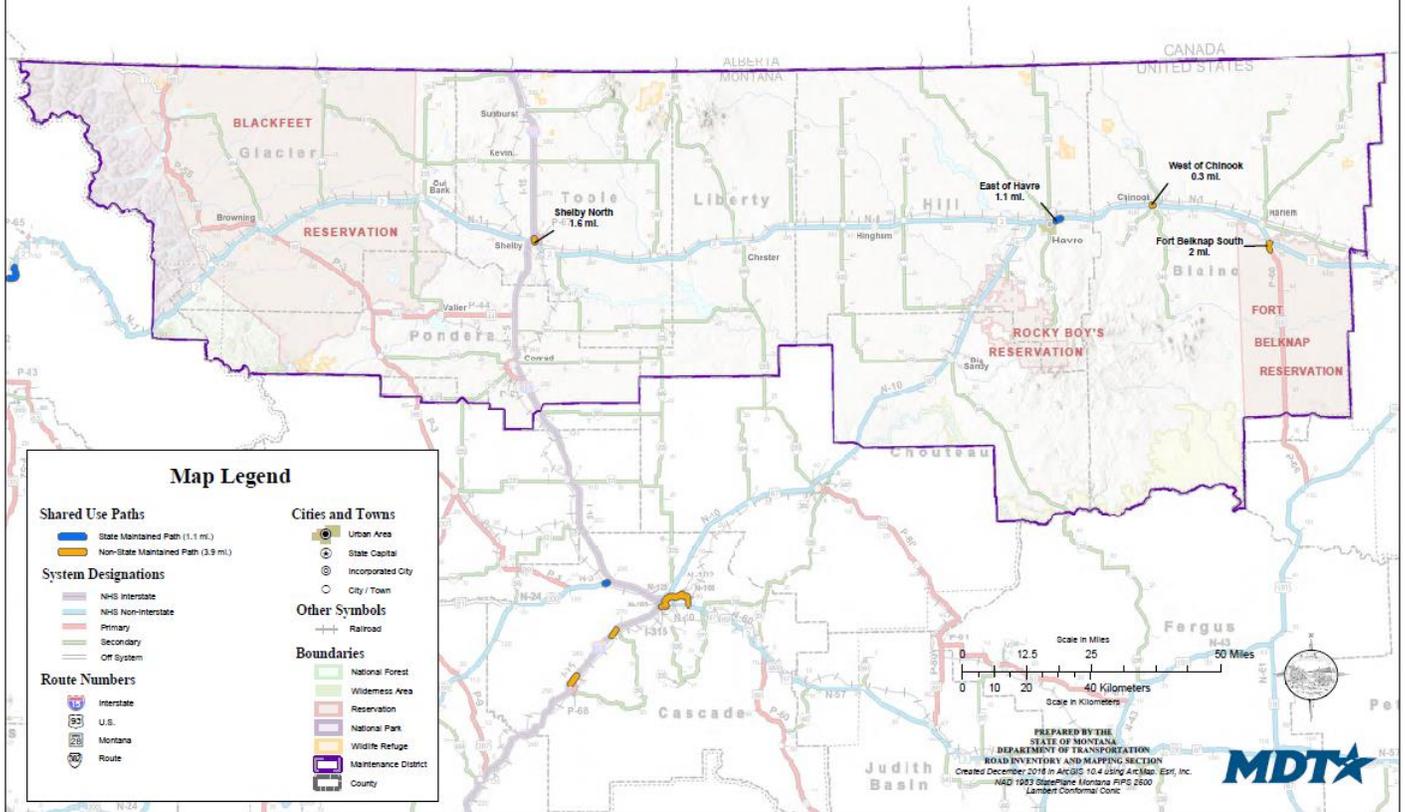
# SHARED-USE PATHS 2016 - BOZEMAN DIVISION (22)



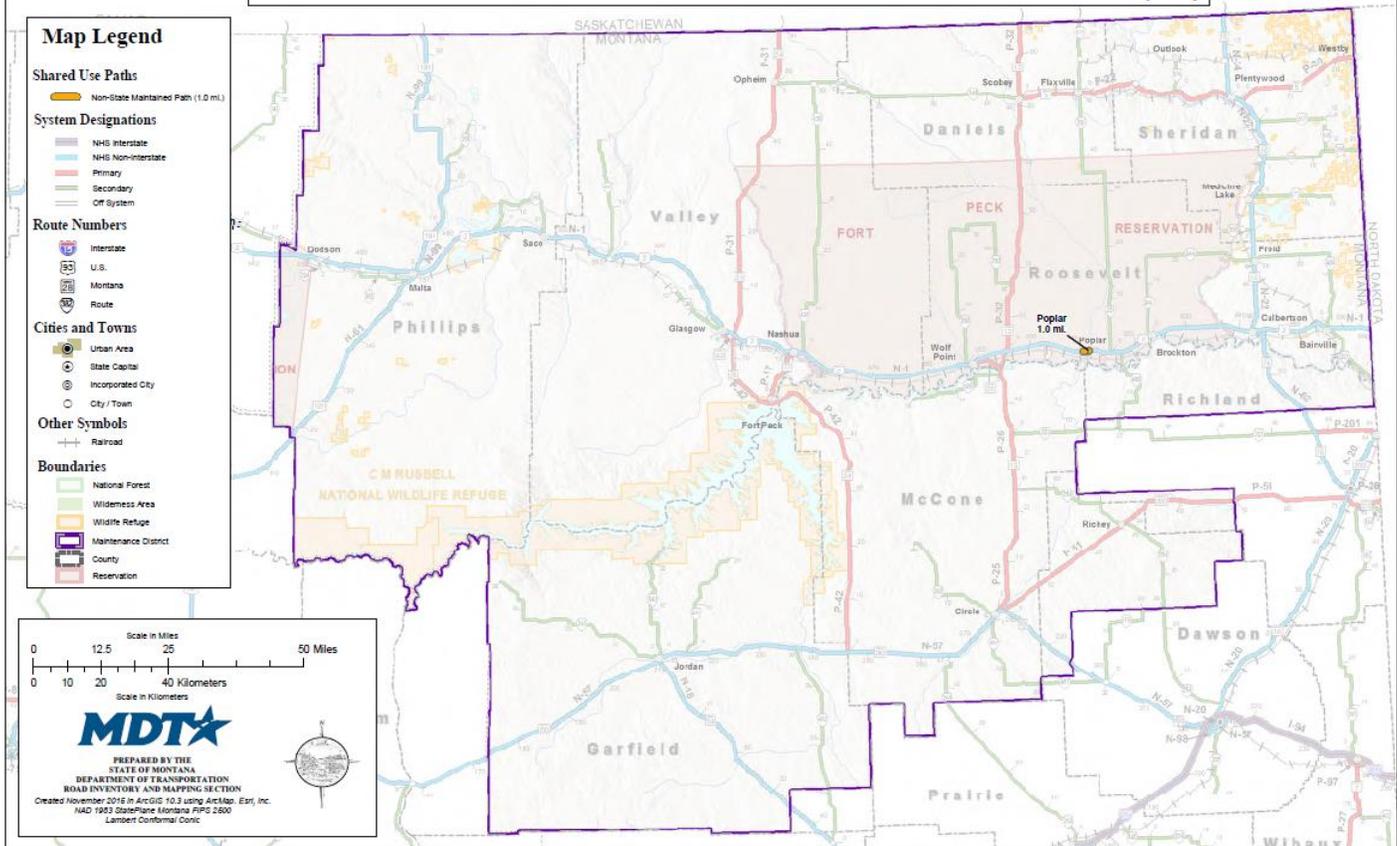
# SHARED-USE PATHS 2016 - GREAT FALLS DIVISION (31)



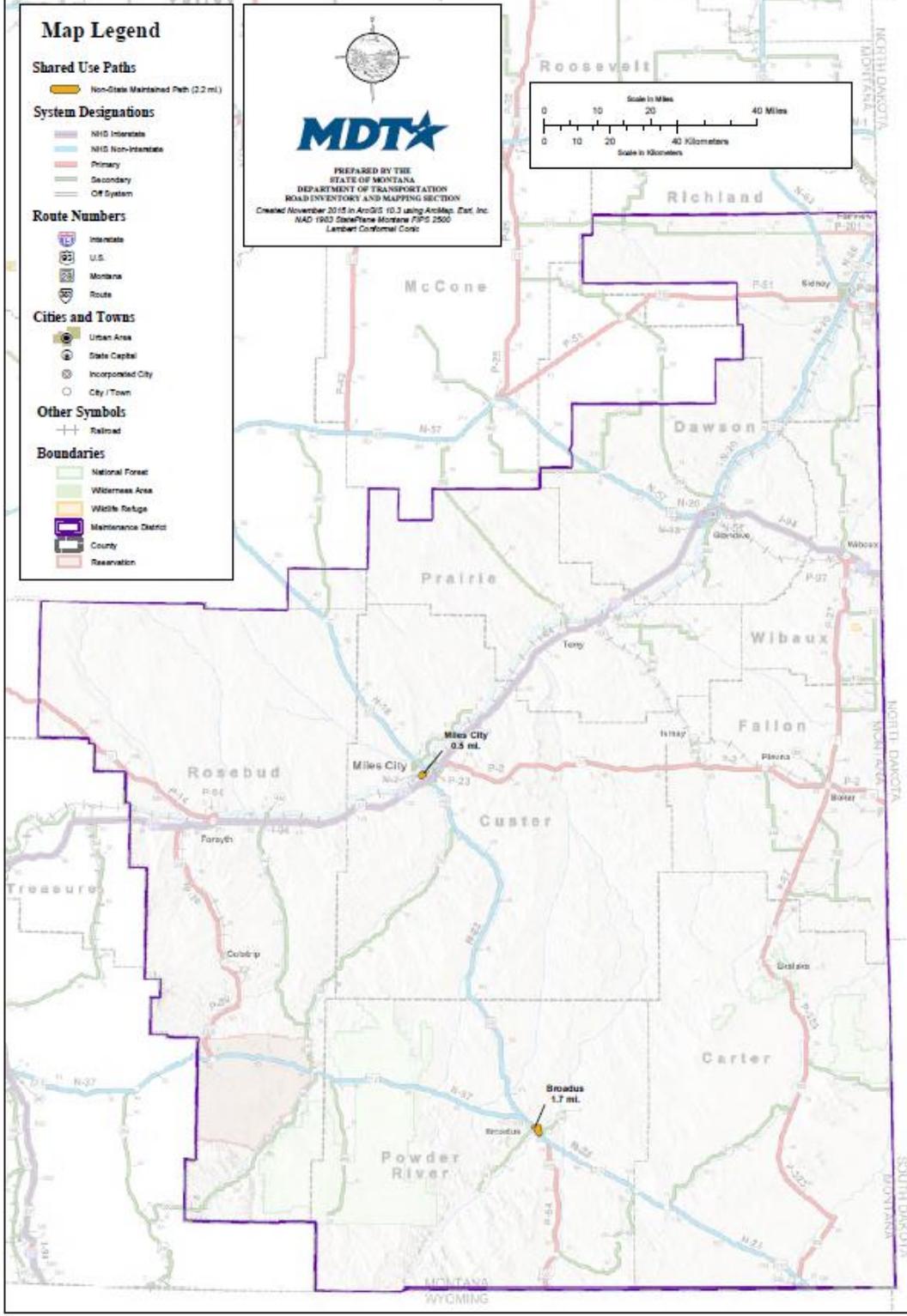
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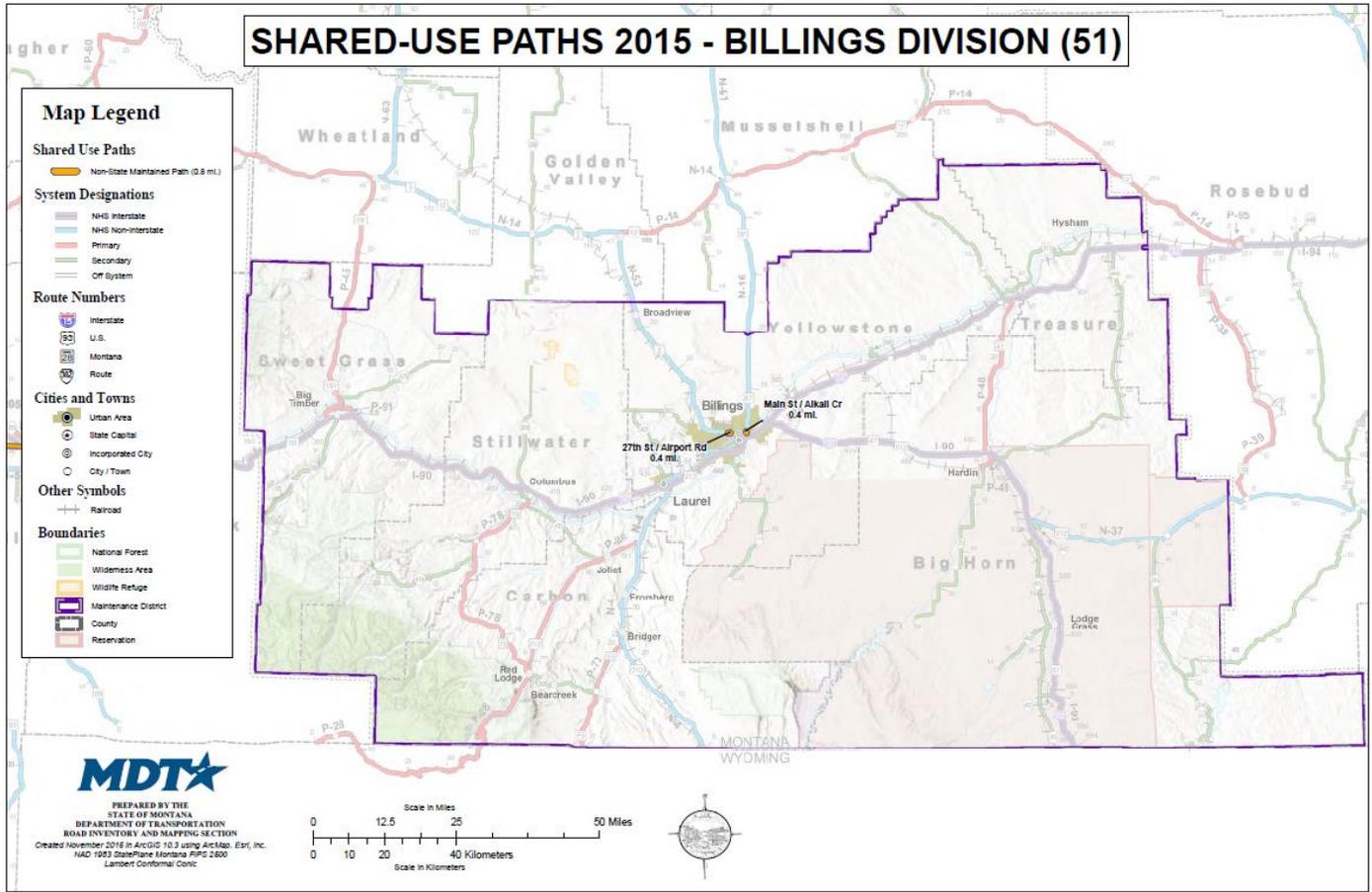
# SHARED-USE PATHS 2015 - WOLF POINT DIVISION (42)



# SHARED-USE PATHS 2015 - MILES CITY DIVISION (43)



# SHARED-USE PATHS 2015 - BILLINGS DIVISION (51)



## APPENDIX TWO: Cost Calculations for Maintenance of Shared Use Paths

General Maintenance covers yearly maintenance that should be performed on the shared use paths.

### General Maintenance Activities:

- Path Evaluation
- Mowing (5' either side)
- Cleaning Drainage Structures
- Sweeping and Snow Removal

Costs for these activities were derived from MDT's Maintenance Management System (MMS).

Activity Code	Activity Description	Activity Cost 2015	Activity Unit	Cost per Mile
6203	Roadway Inspection (Path Evaluation)	\$2.324	pass mile	\$2.30
2201	Mowing	\$4.044	swath mile	\$40.00
3101	Cleaning Drainage Structures (Clean Culverts)	\$102.12	each	\$51.00
1203	Sweeping & Cleaning (Sweeping)	\$42.608	pass mile	\$85 (x2)
2101	Path & Trail Maintenance (Snow Removal)			\$180.00 (x20)
				\$3,863.30/mi

Path Evaluation - Cost rounded to the tenth of a dollar.

Mowing – Cost rounded to the nearest dollar.

A swath mile is 1 ft. wide at \$4.044 per swath mile.

Mowers are a minimum of 5 ft. wide ( $\$4.044 \times 5 \text{ ft.} = \$20.22$ ).

Paths would require each side to be mowed ( $\$20.22 \times 2 = \$40.44$ ).

Clean Culvert – Cost rounded to the nearest dollar.

There are approximately 94 culverts intersecting the paths. There are 188 paths and it is assumed that there will be 1 culvert for every other path. ( $\$102 \text{ per culvert} / 2 = \$51 \text{ per path}$ ).

Sweeping - Cost was rounded to the nearest dollar.

It will require 2 passes to sweep a shared use path. ( $\$42.608 \times 2 = \$85.216$ ).

It is assumed this activity will be performed 2 times per year ( $\$85 \times 2 = \$170$ ).

Snow Removal - \$180.00 per path mile.

It is assumed this activity will be performed 20 times per year.

This assumption was based on average of snow removal on paths/trails over the past five years, and 1/10 the number of times MDT plowed highways over a three-year average.

**Current/Future Maintenance Activities:**

- Crack Sealing (Minor)
- Crack Sealing (Major)
- Patching (Hand)
- Patching (Machine)
- Fog Sealing
- Overlay

Costs for most of these activities were derived from MDT’s Maintenance Management System (MMS).

Activity Code	Activity Description	Activity Cost 2015	Activity Unit	Cost per Mile
1103	Crack Seal (Crack Sealing - Minor)	\$1.074	linear foot	\$1,600.00
1103	Crack Seal (Crack Sealing – Major)	\$4.044	swath mile	\$4,800.00
1101	Hand Patch (Patching – Minor))	\$6.315	square foot	\$300.00
1102	Machine Patch (Patching - Major)	\$12.30	square yard	\$3,075.00
1107	Rejuvenation/Fog Seal (Fog Seal)	\$2,090.25	lane mile	\$1,100.00
	Overlay	\$29,500.00	pass mile	\$29,500.00

Minor Crack Seal – Cost rounded to the nearest 100 dollar.

A Maintenance Review was completed in 2015 on MT 200. This section had both minor and major crack filling. The minor cracks averaged 5,803 ft./mi. It was assumed that the shared use paths are approximately 1/4 of the width of the roadway ( $5803/4 = 1450$  ft./mi). This number was rounded to 1500ft./mi. At  $\$1.074/\text{ft.} \times 1500 \text{ ft.} = \$1611$ .

Major Crack Seal – Cost rounded to the nearest 100 dollar.

A Maintenance Review was completed in 2015 on MT 200. This section had both minor and major crack filling. The major cracks averaged 18,071 ft./mi. It was assumed that the shared use paths are approximately 1/4 of the width of the roadway ( $18,071 \text{ ft.}/4 = 4518$  ft./mi). This number was rounded to 4500 ft./mi. At  $\$1.074/\text{ft.} \times 4500 \text{ ft.} = \$4833$ .

Minor Patching – Cost rounded to the nearest 100 dollar.

A 1 ft. x 1 ft. area was used to represent minor patching. It was estimated there would be approximately 50 patches per mi,  $1 \text{ sq. ft.} \times 50 \text{ patches} = 50 \text{ sq. ft.}$  at  $\$6.32/\text{sq. ft.} = \$316$ .

Major Patching - Cost rounded to the nearest 100 dollar.

A 50-ft. long x 9 ft. wide area ( $50 \text{ ft.} \times 9 \text{ ft.} = 450 \text{ sq. ft.}$ ) was used to represent major patching. It was estimated there would be approximately 5 patches per mi,  $450 \text{ sq. ft.} / 9 = 50 \text{ sq. yd.}$  at  $\$12.30/\text{sq. yd.} = \$615 \times 5 \text{ spots} = \$3,075$ .

Fog Seal – Cost rounded to the highest 100 dollar.

It is assumed that the average width of shared use paths is slightly larger than 1/2 the width of a lane mile ( $\$2090/2 = \$1045$ ).

There were 600 gallons of straight CSS-1 used on a 2.5-mile-long project. That would equate to 1,200 gallons of a 50/50 blend of CSS-1/Water. There are 237 gallons in 1 ton and 1 ton is approximately \$541. This means that 5.06 tons were used ( $1200 \text{ gallons}/237 = 5.06 \text{ tons}$ ). The total cost for 5.06 tons at \$541 = \$2,739.24, there're  $\$2739.24/2.5 \text{ mi} = \$1,095.70$  per mile.

Overlay – Cost rounded to the nearest 100 dollar.

The cost of plant mix surfacing was derived from an overlay project of a shared use paths along US 93 in the Missoula Division. The cost of plant mix surfacing was \$29,491.35 per mile.

## APPENDIX THREE: Detailed Cost Analysis by Path and Responsible Party

The table below describes the costs to protect our current investment, yearly costs for general path maintenance, and the yearly costs for pavement preservation by path.

Path	Current Cost to Protect Investment	Annual Costs of Snow Removal	Annual Costs of General Maintenance	Annual Costs of Pavement Preservation
Mullen Rd West	5.75	9,000.00	658.25	4,293.75
Reserve St	5,386.38	2,160.00	157.98	1,030.50
Seeley Urban	3,513.34	N/A	381.79	2,232.75
Bonner East	6.67	10,440.00	763.57	4,293.75
Rustic Rd	6.44	10,080.00	737.24	687.00
US 93 North of Jct 12	4,721.96	3,060.00	223.81	1,374.00
Jct of 12 and 93 West on 12	3.45	5,400.00	394.95	2,576.25
Florence to Jct of 12 and US 93	46,103.46	36,720.00	2,685.66	16,488.00
Florence South	3,685.29	8,280.00	605.59	3,950.25
North Kootenai Rd to Florence	10,414.95	23,400.00	1,711.45	11,163.75
McCalla Creek bridge to North Kootenai Rd	4.14	6,480.00	473.94	3,091.50
US 93 to Stevensville	3,242.76	4,320.00	315.96	2,061.00
Bell Crossing W to McCalla Creek bridge	11.04	17,280.00	1,263.84	8,244.00
Sweathouse Creek bridge to Bell Crossing W	3.22	5,040.00	368.62	2,232.75
Victor Transfer Station to Sweathouse Creek bridge	3.68	5,760.00	421.28	1,717.50
Jim Ellis Auction Yard to Victor Transfer Station	10.35	16,200.00	1,184.85	7,728.75
Hamilton North to Jim Ellis Auction Yard	10.12	15,840.00	1,158.52	5,667.75
US 93 to Corvallis	4,323.68	5,760.00	421.28	2,748.00
Anglers Roost bridge to South end of Hamilton	5.98	9,360.00	684.58	4,465.50
Jocko Rd to Coldwater Ln	3.45	5,400.00	394.95	2,576.25
Dirty Corner to Arlee	1.84	2,880.00	210.64	1,374.00
Coombs Ln to Arlee	2.99	4,680.00	342.29	0.00
RXR tracks West	4,458.80	5,940.00	434.45	2,833.88
North of Ronan to Polson	31,617.60	43,200.00	3,159.60	20,094.75
<b>Total of Missoula Division</b>	<b>\$117,547.33</b>	<b>\$256,680.00</b>	<b>\$19,155.08</b>	<b>\$112,925.63</b>

Path	Current Cost to Protect Investment	Annual Costs of Snow Removal	Annual Costs of General Maintenance	Annual Costs of Pavement Preservation
MT 35 East of Polson	6,215.52	8,640.00	631.92	3,950.25
US 93 - Polson	289.21	720.00	52.66	85.88
Kerr Dam Rd Southwest of Polson	881.84	2,880.00	210.64	1,374.00
Rocky Point	5,134.37	6,840.00	500.27	3,263.25
Big Arm	771.61	2,520.00	184.31	1,202.25
Somers	13,024.83	7,560.00	552.93	3,606.75
MT 82 to Ashley Creek bridge	7,989.66	15,120.00	1,105.86	7,213.50
Ashley Creek bridge to Alt 93	992.07	3,240.00	236.97	1,545.75
Alternate 93	4,519.66	15,120.00	1,105.86	7,041.75
US 2 to Alt 93	3,044.37	6,840.00	500.27	3,263.25
Kila to W Springcreek Rd	7,164.95	23,400.00	1,711.45	11,163.75
Willow Glen	2.30	3,600.00	263.30	1,717.50
N Meridian Rd to W Reserve Dr	10,543.91	6,120.00	447.61	2,919.75
West Valley School to Rhodes Draw	2,432.07	3,240.00	236.97	1,545.75
Railway St to Big Mountain Rd	5,674.83	7,560.00	552.93	3,606.75
Hungry Horse to Coram	26,932.36	11,520.00	842.56	5,152.50
<b>Total of Kalispell Division</b>	<b>\$95,613.56</b>	<b>\$124,920.00</b>	<b>\$9,136.51</b>	<b>\$58,652.63</b>
Dillon North	1,621.38	2,160.00	157.98	1,030.50
Twin Bridges	0.92	1,440.00	105.32	687.00
Montana City Interchange	1,041.50	2,340.00	171.15	1,116.38
Capital I Ped Tunnel	1.61	2,520.00	184.31	1,202.25
Days Inn to Walmart	2.07	3,240.00	236.97	1,202.25
East Helena to Helena	5.75	9,000.00	658.25	4,293.75
Custer Ave	6,242.99	4,680.00	342.29	2,232.75
Valley Forge Rd to Gun Club	1,762.53	3,960.00	289.63	1,889.25
Lincoln Road West	5,312.07	3,240.00	236.97	1,545.75
<b>Total of Butte Division</b>	<b>\$15,990.82</b>	<b>\$32,580.00</b>	<b>\$2,382.87</b>	<b>\$15,199.88</b>

<b>Path</b>	<b>Current Cost to Protect Investment</b>	<b>Annual Costs of Snow Removal</b>	<b>Annual Costs of General Maintenance</b>	<b>Annual Costs of Pavement Preservation</b>
Townsend North	1,083.68	5,760.00	421.28	687.00
MT 2 - Jefferson River to Front Rd	2,161.84	2,880.00	210.64	1,374.00
Three Forks Rodeo Grounds to I-90	0.69	1,080.00	78.99	515.25
Headwaters Golf Course	3,302.53	3,960.00	289.63	1,889.25
Three Forks East	6,215.98	9,360.00	684.58	3,950.25
Three Forks – Hickory St	810.69	1,080.00	78.99	515.25
Trident	4,804.83	7,560.00	552.93	2,748.00
Manhattan North	4,593.91	6,120.00	447.61	2,919.75
Valley Center Rd	3,804.89	15,480.00	1,132.19	5,925.38
Four Corners North on Jackrabbit Ln	9.66	15,120.00	1,105.86	7,041.75
Zoot Way to Four Corners	551.15	1,800.00	131.65	858.75
Four Corners West	1,762.53	3,960.00	289.63	1,889.25
Cobb Hill to Four Corners	4,593.91	6,120.00	447.61	2,919.75
Four Corners South	17,710.81	16,820.00	1,237.51	5,152.50
Huffine Lane – Ferguson to College	1,442.07	3,240.00	236.97	1,545.75
East River Rd to Merrill Ln	7,805.98	9,360.00	684.58	4,465.50
Merrill Ln to Rogers Ln	196.50	2,340.00	171.15	0.00
Rogers Ln to Elkhorn Ln	1,860.69	1,080.00	78.99	515.25
I-90 Business Loop Old Maint	2,480.92	1,440.00	105.32	687.00
Big Sky Spur Rd	8,106.44	10,080.00	737.24	4,637.25
Opher to MT 64	3,505.98	9,360.00	684.58	4,293.75
Ennis West to Rodeo Ground	330.69	1,080.00	78.99	515.25
<b>Total of Bozeman Division</b>	<b>\$77,136.37</b>	<b>\$135,180.00</b>	<b>\$9,886.92</b>	<b>\$55,045.88</b>

Path	Current Cost to Protect Investment	Annual Costs of Snow Removal	Annual Costs of General Maintenance	Annual Costs of Pavement Preservation
Cascade - Old US Hwy 91	3,204.60	7,200.00	526.60	3,435.00
Whitetail Ln to Lake St	2,664.37	6,840.00	500.27	3,263.25
Vaughn – 4 <sup>th</sup> St to 12 <sup>th</sup> St	1,442.07	3,240.00	236.97	1,545.75
Great Falls	23,119.78	30,960.00	2,264.38	13,224.75
<b>Total of Great Falls Division</b>	<b>\$30,430.82</b>	<b>\$48,240.00</b>	<b>\$3,528.22</b>	<b>\$21,468.75</b>
Shelby North	1,351.15	1,800.00	131.65	858.75
East of Havre	1.38	2,160.00	157.98	1,030.50
West of Chinook	2,693.19	1,080.00	78.99	515.25
Fort Belknap South	5,404.60	7,200.00	526.60	3,435.00
<b>Total of Havre Division</b>	<b>\$9,450.32</b>	<b>\$12,240.00</b>	<b>\$895.22</b>	<b>\$5,839.50</b>
Poplar	5,272.30	3,600.00	263.30	1,459.88
<b>Total of Wolf Point Division</b>	<b>\$5,272.30</b>	<b>\$3,600.00</b>	<b>\$263.30</b>	<b>\$1,459.88</b>
Miles City	2,401.15	1,800.00	131.65	858.75
Broadus	8,665.95	5,400.00	394.95	2,576.25
<b>Total of Miles City Division</b>	<b>\$11,067.10</b>	<b>\$7,200.00</b>	<b>\$526.60</b>	<b>\$3,435.00</b>
27th to Airport Rd	0.92	1,440.00	105.32	687.00
Main St to Alkali Creek	0.92	1,440.00	105.32	0.00
<b>Total of Billings Division</b>	<b>\$1.84</b>	<b>\$2,880.00</b>	<b>\$210.64</b>	<b>\$687.00</b>
<b>Total of Lewistown Division</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total Costs for the State of Montana</b>	<b>\$362,510.46</b>	<b>\$623,520.00</b>	<b>\$45,985.36</b>	<b>\$274,714.15</b>

The table below shows a detailed analysis of the costs for MDT and other responsibilities determined from current maintenance agreements. The costs include current needs, yearly costs for general path maintenance and annual pavement preservation costs.

<b>Path Name</b>	<b>MDT's Current Cost to Protect Investment</b>	<b>Others Current Cost to Protect Investment</b>	<b>MDT's Annual Costs of General Maintenance</b>	<b>Others Annual Costs of General Maintenance</b>	<b>MDT's Annual Costs of Pavement Preservation</b>	<b>Others Annual Costs of Pavement Preservation</b>
Mullen Rd West	N/A	5.75	N/A	9,658.25	N/A	4,293.75
Reserve St	N/A	5,386.38	N/A	2,317.98	N/A	1,030.50
Seeley Urban	N/A	3,513.34	N/A	381.79	N/A	2,232.75
Bonner East	N/A	6.67	N/A	11,203.57	N/A	4,293.75
Rustic Rd	N/A	6.44	N/A	10,817.24	N/A	687.00
US 93 North of Jct 12	4,721.96	N/A	223.81	3,060.00	1,374.00	N/A
Jct of 12 and 93 West on 12	N/A	3.45	N/A	5,794.95	N/A	2,576.25
Florence to Jct of 12 and US 93	46,103.46	N/A	N/A	39,405.66	12,648.00	3,840.00
Florence South	N/A	3,685.29	N/A	8,885.59	N/A	3,950.25
North Kootenai Rd to Florence	10,414.95	N/A	1,711.45	23,400.00	11,163.75	N/A
McCalla Creek bridge to North Kootenai Rd	4.14	N/A	473.94	6,480.00	3,091.50	N/A
US 93 to Stevensville	N/A	3,242.76	N/A	4,635.96	N/A	2,061.00
Bell Crossing W to McCalla Creek bridge	11.04	N/A	1,263.84	17,280.00	8,244.00	N/A
Sweathouse Creek bridge to Bell Crossing W	3.22	N/A	368.62	5,040.00	2,232.75	N/A
Victor Transfer Station to Sweathouse Creek bridge	3.68	N/A	421.28	5,760.00	1,717.50	N/A
Jim Ellis Auction Yard to Victor Transfer Station	10.35	N/A	1,184.85	16,200.00	7,728.75	N/A
Hamilton North to Jim Ellis Auction Yard	10.12	N/A	1,158.52	15,840.00	5,667.75	N/A
US 93 to Corvallis	N/A	4,323.68	N/A	6,181.28	N/A	2,748.00

Path Name	MDT's Current Cost to Protect Investment	Others Current Cost to Protect Investment	MDT's Annual Costs of General Maintenance	Others Annual Costs of General Maintenance	MDT's Annual Costs of Pavement Preservation	Others Annual Costs of Pavement Preservation
Anglers Roost bridge to South end of Hamilton	5.98	N/A	684.58	9,360.00	4,465.50	N/A
Jocko Rd to Coldwater Ln	N/A	3.45	N/A	5,794.95	N/A	2,576.25
Dirty Corner to Arlee	N/A	1.84	N/A	3,090.64	N/A	1,374.00
Coombs Ln to Arlee	N/A	2.99	N/A	5,022.29	N/A	0.00
RXR tracks West	N/A	4,458.80	N/A	6,374.45	N/A	2,833.88
North of Ronan to Polson	31,617.60	N/A	46,359.60	N/A	20,094.75	N/A
<b>Total of Missoula Division</b>	<b>\$92,906.50</b>	<b>\$24,640.84</b>	<b>\$53,850.49</b>	<b>\$221,984.60</b>	<b>\$78,428.25</b>	<b>\$34,497.38</b>
MT 35 East of Polson	6,215.52	N/A	631.92	8,640.00	3,950.25	N/A
US 93 - Polson	289.21	N/A	52.66	720.00	85.88	N/A
Kerr Dam Rd Southwest of Polson	N/A	881.84	N/A	3,090.64	N/A	1,374.00
Rocky Point	N/A	5,134.37	N/A	7,340.27	N/A	3,263.25
Big Arm	N/A	771.61	N/A	2,704.31	N/A	1,202.25
Somers	N/A	13,024.83	N/A	8,112.93	N/A	3,606.75
MT 82 to Ashley Creek bridge	7,989.66	N/A	16,225.86	N/A	7,213.50	N/A
Ashley Creek bridge to Alt 93	N/A	992.07	N/A	3,476.97	N/A	1,545.75
Alternate 93	4,519.66	N/A	16,225.86	N/A	7,041.75	N/A
US 2 to Alt 93	N/A	3,044.37	N/A	7,340.27	N/A	3,263.25
Kila to W Springcreek Rd	N/A	7,164.95	N/A	25,111.45	N/A	11,163.75
Willow Glen	N/A	2.30	N/A	3,863.30	N/A	1,717.50
N Meridian Rd to W Reserve Dr	N/A	10,543.91	N/A	6,567.61	N/A	2,919.75
West Valley School to Rhodes Draw	N/A	2,432.07	N/A	3,476.97	N/A	1,545.75
Railway St to Big Mountain Rd	N/A	5,674.83	N/A	8,112.93	N/A	3,606.75
Hungry Horse to Coram	26,932.36	N/A	12,362.56	N/A	5,152.50	N/A
<b>Total of Kalispell Division</b>	<b>\$45,946.41</b>	<b>\$49,667.15</b>	<b>\$45,498.86</b>	<b>\$88,557.65</b>	<b>\$23,443.88</b>	<b>\$35,208.75</b>

Path Name	MDT's Current Cost to Protect Investment	Others Current Cost to Protect Investment	MDT's Annual Costs of General Maintenance	Others Annual Costs of General Maintenance	MDT's Annual Costs of Pavement Preservation	Others Annual Costs of Pavement Preservation
Dillon North	661.38	960.00	N/A	2,317.98	790.50	240.00
Twin Bridges	N/A	0.92	N/A	1,545.32	N/A	687.00
Montana City Interchange	N/A	1,041.50	N/A	2,511.15	N/A	1,116.38
Capital I Ped Tunnel	1.61	N/A	2,704.31	N/A	1,202.25	N/A
Days Inn to Walmart	2.07	N/A	3,476.97	N/A	1,202.25	N/A
East Helena to Helena	5.75	N/A	9,658.25	N/A	4,293.75	N/A
Custer Ave	N/A	6,242.99	N/A	5,022.29	N/A	2,232.75
Valley Forge Rd to Gun Club	1,762.53	N/A	4,249.63	N/A	1,889.25	N/A
Lincoln Road West	N/A	5,312.07	N/A	3,476.97	N/A	1,545.75
<b>Total of Butte Division</b>	<b>\$2,433.34</b>	<b>\$13,557.48</b>	<b>\$20,089.16</b>	<b>\$14,873.71</b>	<b>\$9,378.00</b>	<b>\$5,821.88</b>
Townsend North	N/A	1,083.68	N/A	6,181.28	N/A	687.00
MT 2 - Jefferson River to Front Rd	N/A	2,161.84	N/A	3,090.64	N/A	1,374.00
Three Forks Rodeo Grounds to I-90	0.69	N/A	N/A	1,158.99	395.25	120.00
Headwaters Golf Course	N/A	3,302.53	N/A	4,249.63	N/A	1,889.25
Three Forks East	2,535.98	3,680.00	N/A	10,044.58	3,030.25	920.00
Three Forks – Hickory St	330.69	480.00	N/A	1,158.99	395.25	120.00
Trident	N/A	4,804.83	N/A	8,112.93	N/A	2,748.00
Manhattan North	1,873.91	2,720.00	N/A	6,567.61	2,239.75	680.00
Valley Center Rd	3,804.89	N/A	N/A	16,612.19	4,545.38	1,380.00
Four Corners North on Jackrabbit Ln	9.66	N/A	N/A	16,225.86	5,401.75	1,640.00
Zoot Way to Four Corners	551.15	N/A	N/A	1,931.65	658.75	200.00
Four Corners West	1,762.53	N/A	4,249.63	N/A	1,889.25	N/A
Cobb Hill to Four Corners	4,593.91	N/A	6,567.61	N/A	2,919.75	N/A
Four Corners South	N/A	17,710.81	N/A	18,157.51	N/A	5,152.50
Huffine Lane – Ferguson to College	2.07	1,440.00	N/A	3,476.97	1,185.75	360.00
East River Rd to Merrill Ln	N/A	7,805.98	N/A	10,044.58	N/A	4,465.50
Merrill Ln to Rogers Ln	N/A	196.50	N/A	2,511.15	N/A	N/A

Path Name	MDT's Current Cost to Protect Investment	Others Current Cost to Protect Investment	MDT's Annual Costs of General Maintenance	Others Annual Costs of General Maintenance	MDT's Annual Costs of Pavement Preservation	Others Annual Costs of Pavement Preservation
Rogers Ln to Elkhorn Ln	N/A	1,860.69	N/A	1,158.99	N/A	515.25
I-90 Business Loop Old Maint	N/A	2,480.92	N/A	1,545.32	N/A	687.00
Big Sky Spur Rd	N/A	8,106.44	N/A	10,817.24	N/A	4,637.25
Opher to MT 64	N/A	3,505.98	N/A	10,044.58	N/A	4,293.75
Ennis West to Rodeo Ground	N/A	330.69	N/A	1,158.99	N/A	515.25
<b>Total of Bozeman Division</b>	<b>\$15,465.48</b>	<b>\$61,670.89</b>	<b>\$10,817.24</b>	<b>\$134,249.68</b>	<b>\$22,661.13</b>	<b>\$32,384.75</b>
Cascade - Old US Hwy 91	4.60	3,200.00	N/A	7,726.60	2,635.00	800.00
Whitetail Ln to Lake St	2,094.37	570.00	N/A	7,340.27	2,503.25	760.00
Vaughn – 4 <sup>th</sup> St to 12 <sup>th</sup> St	1,442.07	N/A	3,476.97	N/A	1,545.75	N/A
Great Falls	N/A	23,119.78	N/A	33,224.38	N/A	13,224.75
<b>Total of Great Falls Division</b>	<b>\$3,541.04</b>	<b>\$26,889.78</b>	<b>\$3,476.97</b>	<b>\$48,291.25</b>	<b>\$6,684.00</b>	<b>\$14,784.75</b>
Shelby North	N/A	1,351.15	N/A	1,931.65	N/A	858.75
East of Havre	1.38	N/A	2,317.98	N/A	1,030.50	N/A
West of Chinook	N/A	2,693.19	N/A	1,158.99	N/A	515.25
Fort Belknap South	2,204.60	3,200.00	N/A	7,726.60	2,635.00	800.00
<b>Total of Havre Division</b>	<b>\$2,205.98</b>	<b>\$7,244.34</b>	<b>\$2,317.98</b>	<b>\$10,817.24</b>	<b>\$3,665.50</b>	<b>\$2,174.00</b>
Poplar	N/A	5,272.30	N/A	3,863.30	N/A	1,459.88
<b>Total of Wolf Point Division</b>	<b>N/A</b>	<b>\$5,272.30</b>	<b>N/A</b>	<b>\$3,863.30</b>	<b>N/A</b>	<b>\$1,459.88</b>
Miles City	N/A	2,401.15	N/A	1,931.65	N/A	858.75
Broadus	N/A	8,665.95	N/A	5,794.95	N/A	2,576.25
<b>Total of Miles City Division</b>	<b>N/A</b>	<b>\$11,067.10</b>	<b>N/A</b>	<b>\$7,726.60</b>	<b>N/A</b>	<b>\$3,435.00</b>
27th to Airport Rd	N/A	0.92	N/A	1,545.32	N/A	687.00
Main St to Alkali Creek	N/A	0.92	N/A	1,545.32	N/A	N/A
<b>Total of Billings Division</b>	<b>N/A</b>	<b>\$1.84</b>	<b>N/A</b>	<b>\$3,090.64</b>	<b>N/A</b>	<b>\$687.00</b>
<b>Total of Lewistown Division</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>Total Costs for Montana</b>	<b>\$162,498.75</b>	<b>\$200,011.72</b>	<b>\$136,050.70</b>	<b>\$533,454.67</b>	<b>\$144,260.76</b>	<b>\$130,453.39</b>

## **APPENDIX FOUR: The Path Rating Guideline**

### **1. Background and Purpose**

The Montana Department of Transportation's mission is to serve the public by providing a transportation system and services that emphasizes quality, safety, cost-effectiveness, economic vitality, and sensitivity to the environment.

This document describes the organizational structure of MDT Maintenance. It also provides a history of how the Shared-Use-Path rating system originated.

The Shared-Use-Paths that will be measured consist of approximately 180 miles.

A survey will be conducted of existing surface conditions for the Western half of the State. A random sampling of 1/10 of a mile (528') will be evaluated with this Rating System.

This Shared-Use-Path Rating System is important data collection. Accurate data from this rating will help determine how to best preserve or repair these paths and the estimated cost depending on the treatment.

### **2. Maintenance Program Service Center Organizational Structure**

The Headquarters organization is headed by a Division Administrator and the following subdivisions report to the Division Administrator:

- Equipment Bureau
  - Motor Pool
- Facilities Bureau
- Communications Bureau
- Systems and Operations
  - Maintenance Review Section
  - Traveler Information

There are two other critical programs that report to the Division Administrator:

- Disaster and Emergency Services
- Budget Analysis

### **3. Maintenance Areas**

The ten (10) maintenance areas are decentralized field operations that are administered by District Administrators and managed by Area Maintenance Bureau Chiefs.

- Area Maintenance Bureau Chiefs are responsible for the maintenance and operation of highways, facilities, and equipment
- Area Maintenance Superintendents are responsible for supervising multiple Maintenance Section operations
- Shop Superintendents are responsible for shop operations and equipment maintenance and repair
- Field Maintenance Supervisors are responsible for the day-to-day planning, scheduling and completing activities within each maintenance section

Maintenance Tech I, II, III, and IV typically staff the maintenance section. Supplemental staff may include temporary, seasonal, and/or on-call personnel.

These ten (10) maintenance areas and their chiefs are at the following locations:

- Missoula – Steve Felix
- Kalispell – Gary Engman
- Butte – Kam Wrigg
- Bozeman – Kyle Demars
- Great Falls – Tony Strainer
- Havre – Matt Ladenburg
- Wolf Point – Kevin Gower
- Miles City – Tom Roberts
- Billings – Randy Roth
- Lewistown – Doug Lutke

## **Legislation**

During the 64<sup>th</sup> Legislature, [House Bill 604](#) was passed. It requires the collection of information and reporting by MDT on trails and paths created under the Montana Footpath and Bicycle Trail Act of 1975. Section 1 – Inventory of trails and paths – maintenance – report to legislature, states the following:

The department of transportation shall:

(1) compile an inventory of all multiuse trails or other paths within state-maintained federal-aid highway rights-of-way that are separated from motorized vehicular traffic by open spaces, pavement, markings, or barriers and that are usable for transportation purposes by pedestrians, runners, bicyclists, skaters, equestrians, and other nonmotorized users;

(2) develop a plan for maintaining and repairing the trails and other paths described in subsection (1), including estimated costs for maintenance and repair;

(3) provide a report of the inventory and maintenance plan to the revenue and transportation interim committee and to the 65th legislature.

## **SHARED USE PATH CONDITION INVENTORY**

### **1. General**

Path condition survey is taken at each milepost. Each rating is 528 feet in length and is presumed to represent the surface condition of the entire mile.

### **2. Safety**

Safety is always the first and most important consideration. Some paths can reside within the roadway, which can be a dangerous place if taken for granted. An approved hard hat and safety vest and other approved personal protective equipment (PPE) will be worn when working on or within the path.

### 3. Procedure

This survey should be conducted in as much detail as safety will allow. The Shared-Use-Path is rated as it currently exists. Do not estimate future conditions.

The shared-use-paths in each Division can be found in Appendix One.

## GENERAL INVENTORY

### Collection Point and Intersection Locations

- GPS
- Drainage Features
- Structures

### Location Setting

- Separated Path
- Striped Bike Path

### Path Type and Width

- Asphalt
- Concrete
- Dirt/Gravel

## DISTRESS IDENTIFICATION AND RATING

### 1. Alligator Cracking

**Description:** Alligator cracks are load associated. These interconnected cracks form irregular polygons resembling alligator skin.

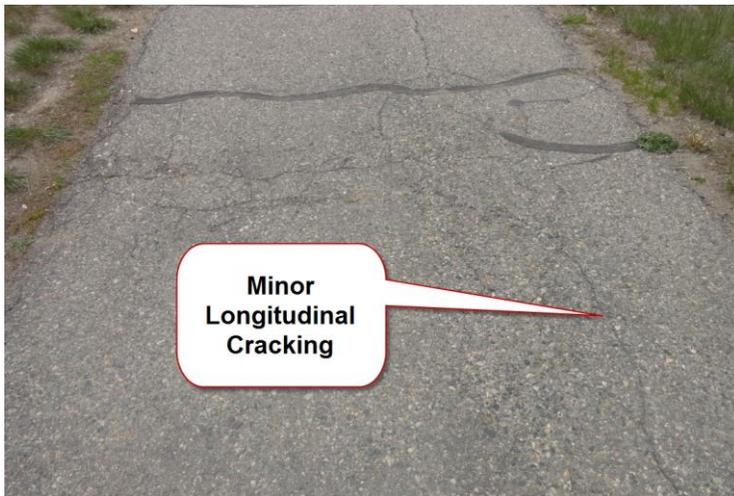
**Severity:** The severity of alligator cracking is determined as: Low/None (area with no or only a few connecting cracks; cracks are not spalled), Moderate/Minor (area of interconnected cracks forming a complete pattern; cracks may be slightly spalled), or High/Major (area of moderately or severely spalled interconnected cracks forming a complete pattern).



## 2. Longitudinal Cracking

**Description:** Longitudinal cracks run parallel with the path. Longitudinal cracks are associated with shrinkage of the surface, reflective cracking, or settlement.

**Severity:** The severity of longitudinal cracking is determined as: Low/None (crack with a mean width  $\leq 6$  mm; or a sealed crack with sealant material in good condition and a width that cannot be determined), Moderate/ Minor (any crack with a mean width  $> 6$  mm and  $\leq 19$  mm; or any crack with a mean width  $\leq 19$  mm and adjacent low severity random cracking), or High/Major (crack with a mean width  $> 19$  mm; or any crack with a mean width  $\leq 19$  mm and adjacent moderate to high severity random cracking).



### 3. Transverse Cracking

**Description:** Transverse cracks run perpendicular to the path. Transverse cracks are associated with shrinkage of the surface due to weather and temperature or reflective cracking beneath the paths surface.

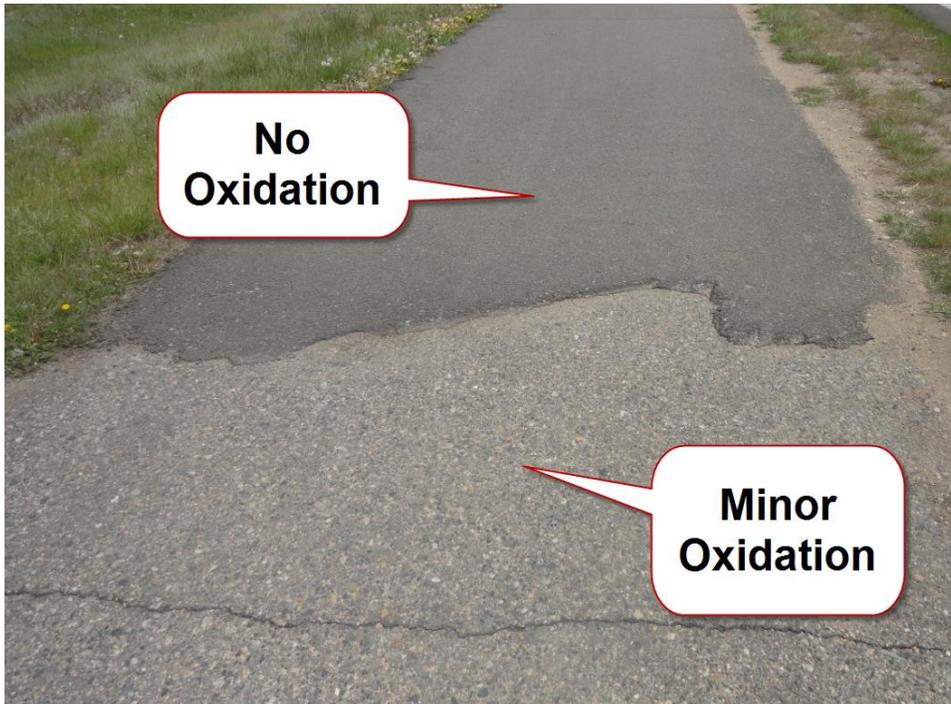
**Severity:** The severity of transverse cracking is determined as: Low/None (crack with a mean width  $\leq$  6 mm; or a sealed crack with sealant material in good condition and a width that cannot be determined), Moderate/Minor (any crack with a mean width  $>$  6 mm and  $\leq$  19 mm; or any crack with a mean width  $\leq$  19 mm and adjacent low severity random cracking), or High/Major (crack with a mean width  $>$  19 mm; or any crack with a mean width  $\leq$  19 mm and adjacent moderate to high severity random cracking).



#### 4. Oxidation

**Description:** Oxidation happens when the asphalt is exposed to oxygen. Oxidation results in the surface becoming stiffer and more brittle over time and loss of elasticity.

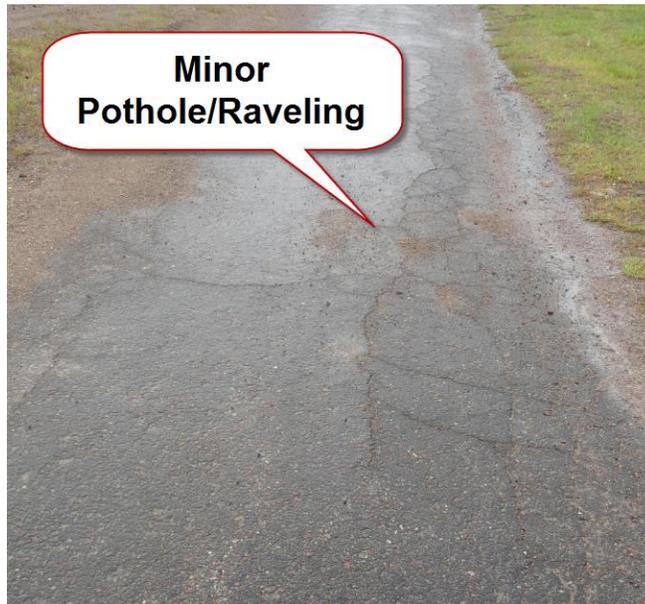
**Severity:** The severity of oxidation is determined as: None (does not exist), Minor (sporadic within the rating area), or Major (throughout the majority of the rating area).



## 5. Potholes/Raveling

**Description:** Potholes/Raveling happens for many reasons. They may result because of weather (freeze/thaw cycles), a shift/breakdown/failure of base material which creates voids below the pavement, aging asphalt which loosens the bond of the aggregate. The presence of water can make the damaged area worse. Water creates tension on the bond between asphalt and aggregate.

**Severity:** The severity of potholes/Raveling is determined as: None (does not exist), Minor (sporadic within the rating area), or Major (throughout the majority of the rating area).



## 6. Path Edge Raveling

**Description:** Edge Raveling runs parallel with the path. Edge Raveling is not load-associated and results from a lack of support on the sides of the path.

**Severity:** The severity of Edge Raveling is determined as: None (does not exist), Minor (sporadic within the rating area), or Major (throughout the majority of the rating area).



## 7. Weed Condition

**Description:** Weeds may grow within any cracks or edge of the path. If not controlled, they can cause widening of the cracks.

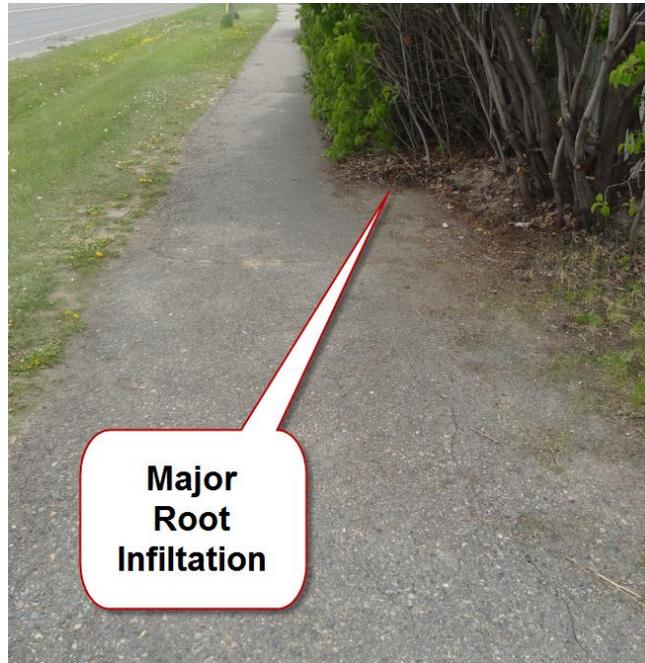
**Severity:** The severity of Weeds is determined as: None (does not exist), Minor (sporadic within the rating area), or Major (throughout the majority of the rating area).



## 8. Root Infiltration

**Description:** Root Infiltration is the growth of roots from trees or shrubs that are not contained outside of the pathway. Root Infiltration results in the cracking and/or shoving of the pavement.

**Severity:** The severity of Root Infiltration is determined as: None (does not exist), Minor (sporadic within the rating area), or Major (throughout the majority of the rating area).



## 9. Drainage Issue

**Description:** A Drainage Issue is caused by the lack of ability for water to drain off or through the path. Poor Drainage results in water creating tension on the bond between asphalt and aggregate, and can lead to pavement cracking, potholes or raveling.

**Severity:** The severity of Poor Drainage is determined as: None (does not exist), Minor (sporadic within the rating area), or Major (throughout the majority of the rating area).



## APPENDIX FIVE: Maintenance Updates of Shared Use Paths

### 2016 UPDATE

#### Current Inventory

*Table One: Inventory by District and Surface Type*

Division	Asphalt Miles	Concrete Miles	Gravel Miles	Striped Bike Lane Miles	Total Miles 2015	Total Miles 2016
Missoula (11)	72.65	3.35	3.65	0.35	73.1	80.0
Kalispell (12)	34.15	0.55	0.00	2.10	36.8	36.8
Butte (21)	8.85	0.20	0.00	0.00	9.1	9.1
Bozeman (22)	32.05	1.70	3.80	0.00	37.6	37.6
Great Falls (31)	12.50	0.90	0.00	3.60	17.0	17.0
Havre (32)	3.40	0.00	0.00	1.40	4.8	4.8
Wolf Point (42)	0.85	0.15	0.00	0.00	1.0	1.0
Miles City (43)	2.00	0.00	0.00	0.00	2.0	2.0
Billings (51)	0.40	0.40	0.00	0.00	0.8	0.8
Lewistown (53)	0.00	0.00	0.00	0.00	0.0	0.0
State Wide Totals	157.55	7.25	7.5	7.5	182.2	189.1

#### Current Condition

##### 12- KALISPELL

- **2015: Hungry Horse to Coram (US 2, MP 142.4 to 146.2) Poor:** This path is **3.2 miles** long and **8 feet** wide. There is **0.2 miles** of concrete separated path **8 feet** wide, leaving the remaining **3.0 miles** asphalt separated path **8 feet** wide. This path has major oxidation, transverse and longitudinal cracking. There are some major potholes and edge raveling and minor drainage issues. This path needs crack sealing, patching, and a fog seal. This path is an excellent candidate for an overlay. The cost for current maintenance needs is \$26,932.36. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.
- 2016: Excellent:** The path was overlaid in June of 2016. The estimated cost to crack seal, patch and fog seal was \$26,932.35. The actual cost to mill areas of the path and overlay the entire path was \$126,325.86. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$7.36.

## 21 – BUTTE

- **Dillon North (MT 41, MP 0.9 to 1.6) Good:** This is an asphalt separated path that is **0.6 miles** long and **10 feet** wide. This path has major oxidation and minor transverse cracking. It needs a minor crack seal and a fog seal. The cost for current maintenance needs is \$1,621.38. There is a maintenance agreement in place. The City of Dillon assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.

**2016: Excellent:** The path was crack sealed and fog sealed in March thru June of 2016. The estimated cost to crack seal and fog seal was \$1,621.38. The actual cost to crack seal and fog seal was \$2,418.05. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$1.38.

**Valley Forge Rd to Gun Club (N Montana Ave, MP 2.9 to 4.1) Good:** This is an asphalt separated path that is **1.1 miles** long and **5 feet** wide. This path has minor oxidation, transverse cracking, and some drainage issues. It also has very minor alligator and longitudinal cracking. The path needs crack sealing. The cost for current maintenance needs is \$1,762.53. There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance.

**2016: Excellent:** The path was crack sealed in April/May of 2016. The estimated cost to crack seal was \$1,762.53. The actual cost to crack seal was \$3,886.43. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$2.53.

## 22 – BOZEMAN

**Three Forks East (Route 205, MP 1.2 to 3.0) Good:** This path is **2.6 miles** long and **9 feet** wide. There is **0.3 miles** of gravel separated path **9 feet** wide, leaving the remaining **2.3 miles** asphalt separated path **9 feet** wide. There are 2 structures. This path has major oxidation. It has minor transverse and longitudinal cracking and edge raveling. This path needs minor crack sealing and a fog seal. The cost for current maintenance needs is \$6,215.98. There is a maintenance agreement in place. The City of Three Forks assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.

**2016: Excellent:** This path was crack sealed and fog sealed in August 2016. The estimated cost to crack seal and fog seal is \$6,215.98. The actual cost to crack seal was \$2,336. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$5.98.

**Manhattan North (Route 346, MP 1.0 to 2.8) Good:** This is an asphalt separated path that is **1.7 miles** long and **8 feet** wide. There are 2 structures. This path has major oxidation. It has minor transverse and longitudinal cracking, potholes, and edge raveling. This path needs minor crack sealing and a fog seal. The cost for current maintenance needs is \$4,593.91. There is a maintenance agreement in place. Gallatin County and the City of Manhattan assume responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays. **2016: Excellent:** This path was crack sealed and fog sealed in August 2016. The estimated cost to crack seal and fog seal is \$4,593.91. The actual cost to crack seal was \$2,010. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$3.91.

## 31 – GREAT FALLS

**Cascade – Old US Hwy 91 (Old US 91, MP 1.7 to 3.0) Good:** This is an asphalt separated path that is **2.0 miles** long and **11 feet** wide. This path has minor oxidation, transverse and longitudinal cracking, and edge raveling. It needs crack sealing. The cost for current maintenance needs is \$3,204.60. There is a maintenance agreement in place. Joe's Trail, Inc. assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.

**2016: Excellent:** The path was crack sealed in June of 2016. The estimated cost to crack seal was \$3,204.60. The actual cost to crack seal was \$722.48. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$4.60.

**Whitetail Ln to Lake St (Old US 91, MP 11.3 to 13.2) Good:** This is an asphalt separated path that is **1.9 miles** long and **9 feet** wide. There is 1 structure. This path has minor oxidation, potholes, and edge raveling. The path needs hand patching and a fog seal. The cost for current maintenance needs is \$2,664.37. There is a maintenance agreement in place. Joe's Trail, Inc. assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.

**2016: Excellent:** The path was hand patched and fog sealed in August of 2016. The estimated cost to hand patch and fog seal was \$2,664.37. The actual cost to hand patch and fog seal was \$3,689.58. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$4.37.

## 32 – HAVRE

- **Fort Belknap South (MT 66, MP 48.2 to 50.0) Good:** This is an asphalt separated path that is **2.0 miles** long and **7 feet** wide. This path has major oxidation. There are minor transverse and longitudinal cracks and edge raveling. It needs minor crack sealing and a fog seal. The cost for current maintenance needs is \$5,404.60. There is no maintenance agreement in place. The Fort Belknap Tribe assumes responsibility for general maintenance including crack sealing and hand patching. MDT assumes responsibility for pavement preservation including machine patching, fog sealing, and overlays.  
**2016: Excellent:** The path was crack sealed, machine patched, and fog sealed in February thru May of 2016. The estimated cost to crack seal and fog seal was \$5,404.60. The actual cost to crack seal and fog seal was \$6,025.25. This path currently has no issues and needs monitoring. The cost for current maintenance needs is \$4.60.

## Planned Maintenance/Construction Projects for 2016-2019

### 12 – KALISPELL

- **Somers (US 93, MP 102.1 to 104.3) Fair:** This is an asphalt separated path that is **2.1 miles** long and **8 feet** wide. This path has major oxidation, transverse and longitudinal cracking. There are a few areas that would require patching. This path needs major cracks sealing, hand patching, and a fog seal. The cost for current maintenance needs is \$13,024.83. This project was constructed in the CTEP program. In all CTEP projects, the entities (Flathead County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- This path will have rehabilitation with the upcoming 2019 Somers N & S construction project.
- **MT 82 to Ashley Creek bridge (US 93, MP 104.3 to 108.5) Fair:** This is an asphalt separated path that is **4.2 miles** long and **10 feet** wide. There is 1 structure. This path has some major and minor potholes, transverse cracking, and drainage issues. It has very minor longitudinal cracking. This path needs minor crack sealing and hand patching. The cost for current maintenance needs is \$7,989.66.
- There is no maintenance agreement in place and MDT assumes responsibility for all path maintenance. This path will have rehabilitation with the upcoming 2019 Somers N & S construction project.

## 21 – BUTTE

- **Lincoln Rd West (Route 279, MP 0.1 to 0.9) Fair:** This is an asphalt separated path that is **0.9 miles** long and greater than **10 feet** wide. There is 1 structure. This path has major oxidation and transverse cracking, and minor longitudinal cracking. It needs crack sealing and a fog seal. The cost for current maintenance needs is \$5,312.07. This project was constructed in the CTEP program. In all CTEP projects, the entities (Helena School District #1) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- MDT planning and pre-construction are looking at rehabilitation to the path occurring with the upcoming 2018 Montana Ave/Lincoln Road Roundabout construction project.

## 32 – HAVRE

- **West of Chinook (US 2, MP 402.2 to 402.5) Poor:** This is an asphalt separated path that is **0.3 miles** long and **7 feet** wide. This path has major oxidation, transverse cracking, potholes, and edge raveling. It needs major crack sealing, machine patching and a fog seal. The cost for current maintenance needs is \$2,693.19. This project was constructed in the CTEP program. In all CTEP projects, the entities (Blaine County) will maintain or cause the maintenance of these paths for the life of these paths, unless otherwise noted.
- This path will be replaced with the upcoming 2019 Lohman E & W construction project. An agreement will be obtained with Blaine County to continue the maintenance on the path.

## 2016 NEW PATH

### 11 – MISSOULA

- **Missoula to Lolo (US 93, MP 83.4 To 90.3) Excellent:** This is an asphalt separated path that is **6.9 miles** long and **10 feet** wide. This path was newly constructed and completed in July of 2016. This path has no issues and needs monitoring. The cost for current maintenance needs is \$15.87. There is a maintenance agreement in place. Missoula County assumes responsibility for general maintenance and snow removal. MDT assumes responsibility for pavement preservation.

The path's surface condition was assessed and placed into four general categories: excellent, good, fair, and poor. Figure one below shows the percentage of the 85 paths in these four general categories. Most of the paths, 81% are in good to excellent condition, while only 19% are in fair to poor condition. Note that there was a 10% increase in paths rated in Excellent condition from 2015 to 2016.

**Figure One: Percent Rating based on 2016 Condition**

**Percent Rating of Shared Use Paths based on 2016 Condition**

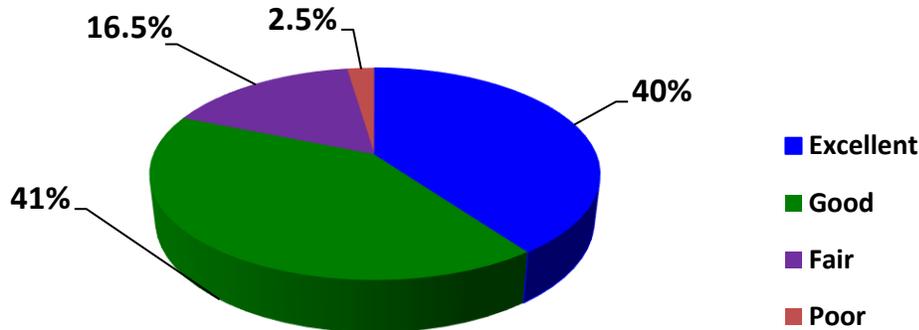
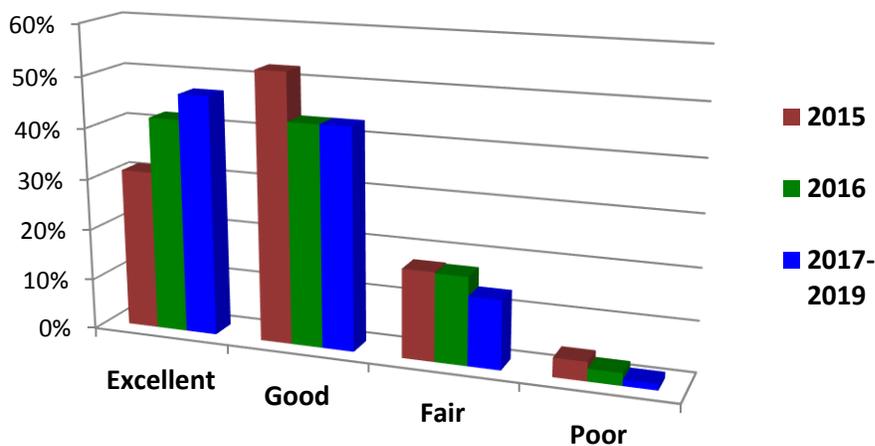


Figure two below shows the comparison of the paths condition. In 2015, the paths condition was assessed. In 2016, MDT Maintenance focused on improving the conditions of paths that were in fair to poor condition. The plan for 2017-2019 is to include pavement preservation of paths in fair to poor condition with future construction projects. The fair to poor conditions are significantly decreasing and the excellent condition is significantly increasing.

**Figure Two: Comparison of Paths Condition per year**

**2015, 2016, 2017-2019 Shared Use Paths Condition Comparison**



## Updated Maintenance Costs

Table Two, below, describes the costs to protect our current investment, yearly costs for snow removal and general path maintenance such as monitoring/evaluating, mowing, sweeping, and finally shows the yearly costs for pavement preservation by Division. Appendix Three has a more detailed table showing these costs by each path.

**Table Two: Total Costs of Shared Use Path Maintenance**

Path	2015 Maintenance Cost	2016 Maintenance Cost	Annual Costs of Snow Removal	Annual Costs of General Maintenance	Annual Costs of Pavement Preservation
<b>Total of Missoula Division</b>	\$117,547.33	\$117,563.20	\$281,520.00	\$20,971.85	\$124,776.38
<b>Total of Kalispell Division</b>	\$95,613.56	\$68,688.56	\$124,920.00	\$9,136.51	\$58,652.63
<b>Total of Butte Division</b>	\$15,990.82	\$12,610.82	\$32,580.00	\$2,382.87	\$15,199.88
<b>Total of Bozeman Division</b>	\$77,136.37	\$66,336.37	\$135,180.00	\$9,886.92	\$55,045.88
<b>Total of Great Falls Division</b>	\$30,430.82	\$24,570.82	\$48,240.00	\$3,528.22	\$21,468.75
<b>Total of Havre Division</b>	\$9,450.32	\$4,050.32	\$12,240.00	\$895.22	\$5,839.50
<b>Total of Wolf Point Division</b>	\$5,272.30	\$5,272.30	\$3,600.00	\$263.30	\$1,459.88
<b>Total of Miles City Division</b>	\$11,067.10	\$11,067.10	\$7,200.00	\$526.60	\$3,435.00
<b>Total of Billings Division</b>	\$1.84	\$1.84	\$2,880.00	\$210.64	\$687.00
<b>Total of Lewistown Division</b>	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total Costs for the State of Montana</b>	<b>\$362,510.46</b>	<b>\$310,161.33</b>	<b>\$648,360.00</b>	<b>\$47,802.13</b>	<b>\$286,564.90</b>

The total costs for the current maintenance needs are \$310,161.33 which is a onetime cost. Yearly costs would include the snow removal costs, general maintenance costs, and the pavement preservation costs which are approximately \$982,727.03.

Table Three below, breaks out the costs for MDT and city/county responsibilities when there are agreements in place, by the costs for current maintenance, yearly costs for general path maintenance such as snow removal, mowing, sweeping, and finally shows the yearly costs for pavement preservation by maintenance area. Appendix Three has a more detailed table showing these costs by each path.

**Table Three: Total Costs of Shared Use Paths Maintenance by Responsible Party**

Path Name	MDT's 2015 Maintenance Cost	MDT's 2016 Maintenance Cost	Others Current Maintenance Cost	MDT's Annual Costs of General Maintenance	Others Annual Costs of General Maintenance	MDT's Annual Costs of Pavement Preservation	Others Annual Costs of Pavement Preservation
<b>Total of Missoula Division</b>	\$92,906.50	\$92,922.37	\$24,640.84	\$55,667.26	\$246,824.60	\$90,279.00	\$34,497.38
<b>Total of Kalispell Division</b>	\$45,946.41	\$19,021.41	\$49,667.15	\$45,498.86	\$88,557.65	\$23,443.88	\$35,208.75
<b>Total of Butte Division</b>	\$2,433.34	\$13.34	\$12,597.48	\$20,089.16	\$14,873.71	\$9,378.00	\$5,821.88
<b>Total of Bozeman Division</b>	\$15,465.48	\$11,065.48	\$55,270.89	\$10,817.24	\$134,249.68	\$22,661.13	\$32,384.75
<b>Total of Great Falls Division</b>	\$3,541.04	\$1,451.04	\$23,119.78	\$3,476.97	\$48,291.25	\$6,684.00	\$14,784.75
<b>Total of Havre Division</b>	\$2,205.98	\$5.98	\$4,044.34	\$2,317.98	\$10,817.24	\$3,665.50	\$2,174.00
<b>Total of Wolf Point Division</b>	N/A	N/A	\$5,272.30	N/A	\$3,863.30	N/A	\$1,459.88
<b>Total of Miles City Division</b>	N/A	N/A	\$11,067.10	N/A	\$7,726.60	N/A	\$3,435.00
<b>Total of Billings Division</b>	N/A	N/A	\$1.84	N/A	\$3,090.64	N/A	\$687.00
<b>Total of Lewistown Division</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total Costs for Montana</b>	<b>\$162,498.75</b>	<b>\$124,479.62</b>	<b>\$185,681.72</b>	<b>\$137,867.47</b>	<b>\$558,294.67</b>	<b>\$156,111.51</b>	<b>\$130,453.39</b>

## **2016 Updated Funding Outlook**

In 2016 MDT changed the Transportation Alternatives program to include 10% of the total funding (\$350,000 per fiscal year) available for pavement preservation needs by cities and counties. The eligibility for this funding gives pavement preservation funding a higher priority. The call for new applications will be in September 2016 and close in December 2016. The application and description of the TA program can be found at the following link: [http://www.mdt.mt.gov/mdt/ta\\_application.shtml](http://www.mdt.mt.gov/mdt/ta_application.shtml)