HILL CITY MASTER TRANSPORTATION PLAN

2023

HILL CITY

HEART OF THE BLACK HILLS™

City of Hill City Master Transportation Plan

South Dakota Department of Transportation

City of Hill City

August 2023

Prepared By:

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SD DOT

Acknowledgements

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Introduction

Project

Under Infrastructure Investment and Jobs Act (IIJA) signed into law on November 15, 2021, a percentage of the federal transportation funds received by South Dakota must be designated for transportation planning and research activities through the State Planning and Research Program (SPR). Historically, the South Dakota Department of Transportation (SDDOT) used a portion of the SPR funds for transportation planning studies for counties and Class 1 cities (>5000) not within a Metropolitan Planning Area.

Transportation Alternatives (TA) is authorized by the Infrastructure Investment and Jobs Act (IIJA) and is a set-aside of Surface Transportation Block Grant (STBG) program funding. TA includes the Safe Routes to School, Scenic Byways and Recreation Trails programs. These set-aside funds include all projects and activities that were previously eligible under the Transportation Alternatives Program (TAP), encompassing a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historical preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity.

It became apparent during the first round of TAP applications that many of the small communities applying for the grant funds are lacking an overall community transportation plan. The absence of a community transportation plan may be a detriment in obtaining TAP and other transportation-related funds. It may also be a detriment to the community as it grows and changes. Not only will a community transportation plan be a benefit in many funding

situations, but it will also help aid a community in developing a transportation network that provides better access to schools, business districts, residential districts, agricultural and industrial facilities, and parks and recreation attractions.

With that in mind, the SDDOT started dedicating a portion of its SPR funds to establish the Small Community Transportation Planning Program in 2014. The City of Hill City was selected as the 2023 project for this program. The City of Hill City Master Transportation Plan intends to lay out a vision and set the direction for how people and goods move throughout the community. The transportation planning process has been a collaborative effort between the City of Hill City and the SDDOT. The report's study team has worked with the Hill City community to identify the expectations and goals of citizens, system stakeholders, and local officials for their multi-modal transportation system. The report addresses the study area in Figure 1. This report provides the City of Hill City with a blueprint for achieving its vision for the transportation system through a series of recommended projects, programs, and policies.

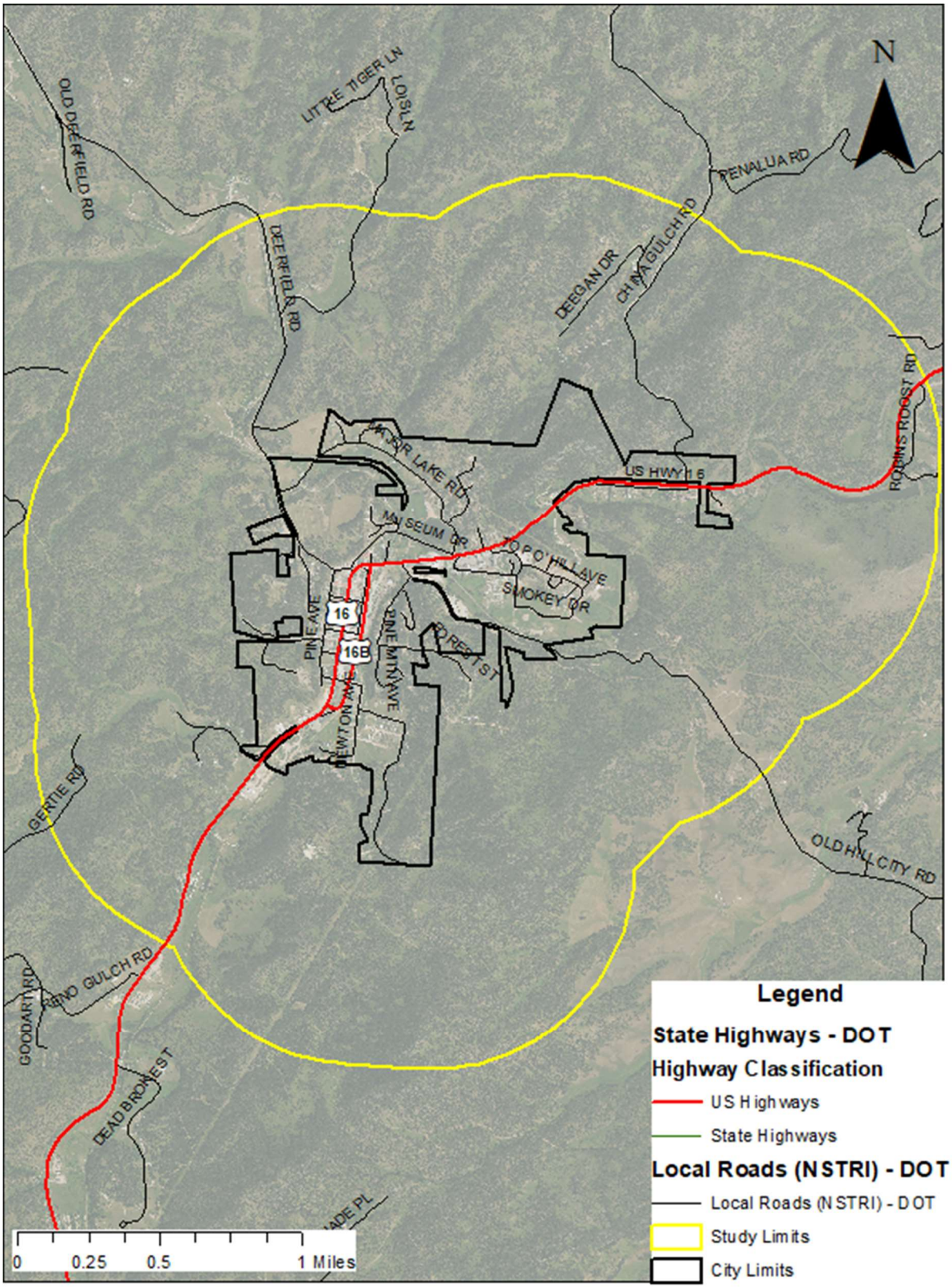


Figure 1. Study Area Map

Historical Context

The City of Hill City (see Figure 1) was established in 1876 with the discovery of gold at French Creek, thirteen miles south of the townsite. The town became almost completely abandoned after the gold rush moved to the northern side of the Black Hills. The discovery of tin in the area allowed the town to rebound for a short while until the tin reserves were found to be unprofitable. The Burlington Northern Line, now the George S. Mickelson Trail, first arrived in Hill City in 1893 and was fully abandoned in 1983 before being converted into the bike trail in the 1990s. The population of Hill City has steadily grown since its founding, with a peak population of 948 in 2010 and to a population of 872 in 2020 (see Figure 2). Hill City is split through the center by US Highway 16 and US Highway 16B. This highway is a popular route for truckers and tourists alike.

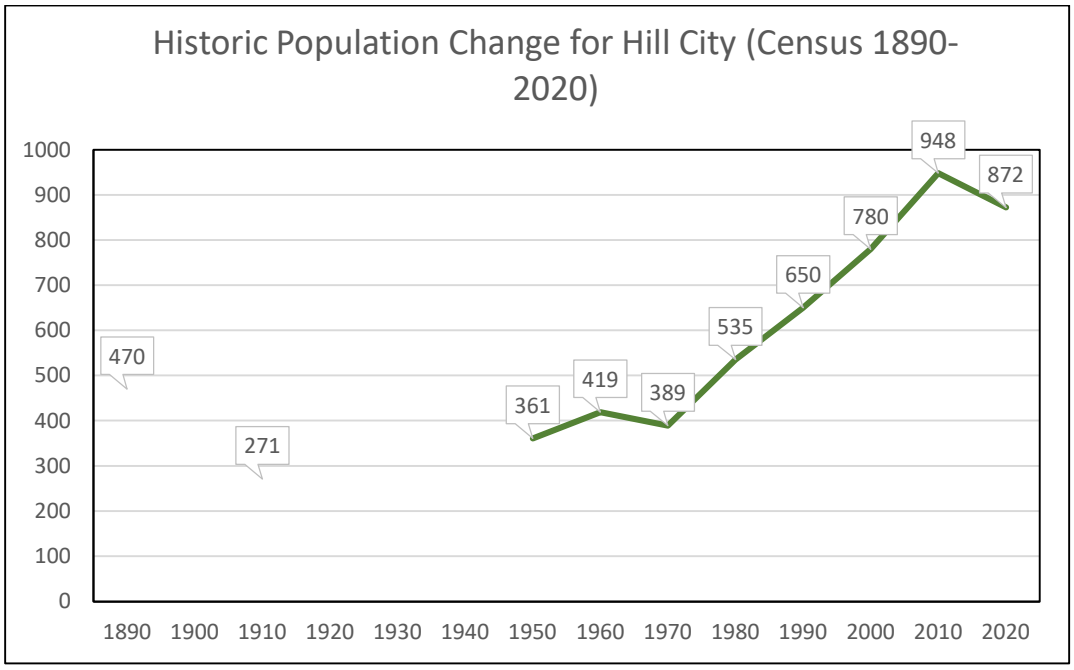


Figure 2. Historic Population Change for Hill City

The age structure in Hill City is diverse (see Figure 3), with members of community equally spread across many age groups. This means that Hill City's transportation system must strive to adequately serve all members of the community safely, with the diverse age make up in mind. In addition to age, the community has a large, bustling tourist industry in the summer and sees a large increase in the number of users in the summer months. Hill City also sees semitrucks passing through regularly because of Highway 16 running through town. Hill City sees a large diversity of transportation uses and as such needs to ensure access and safety to all users.

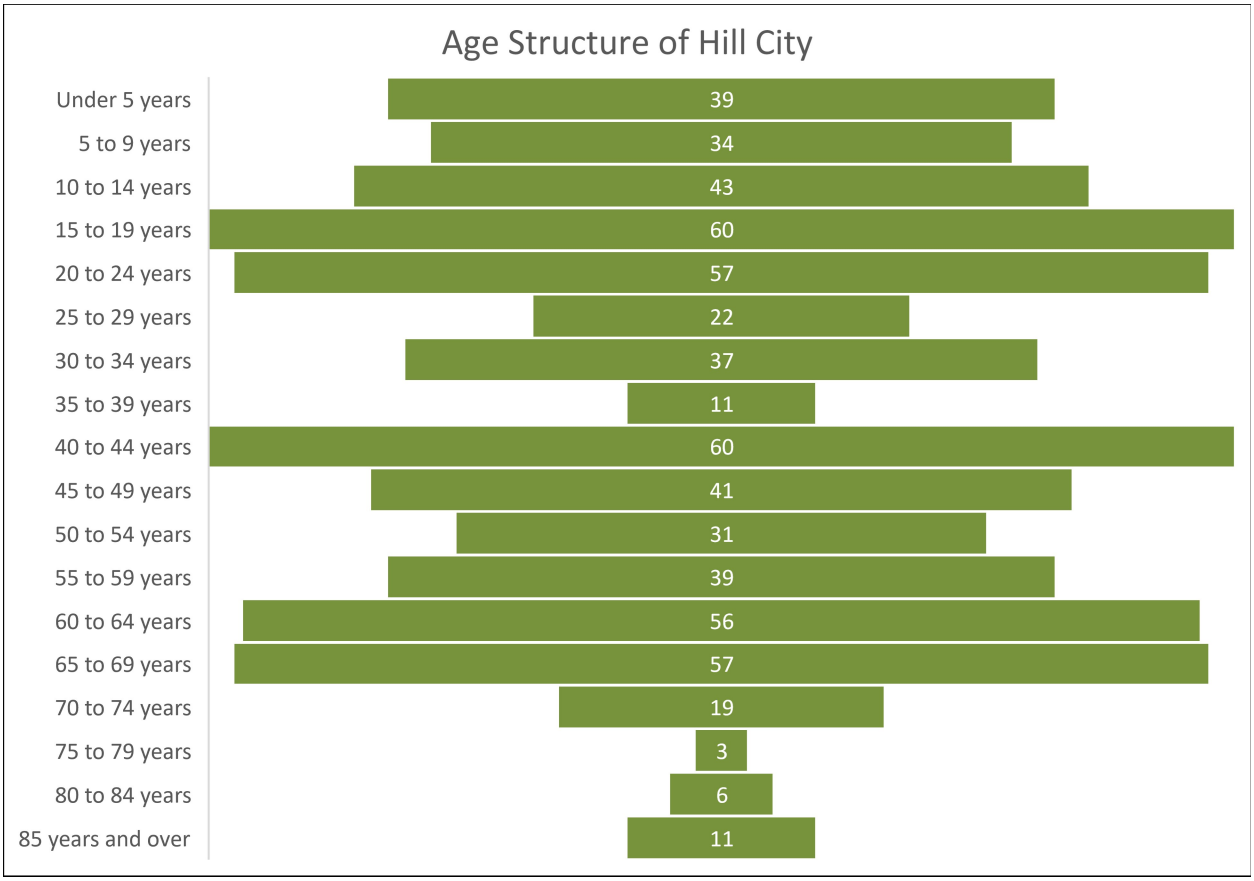


Figure 3. Age Structure of Hill City (ACS 2020)

Geographical Context

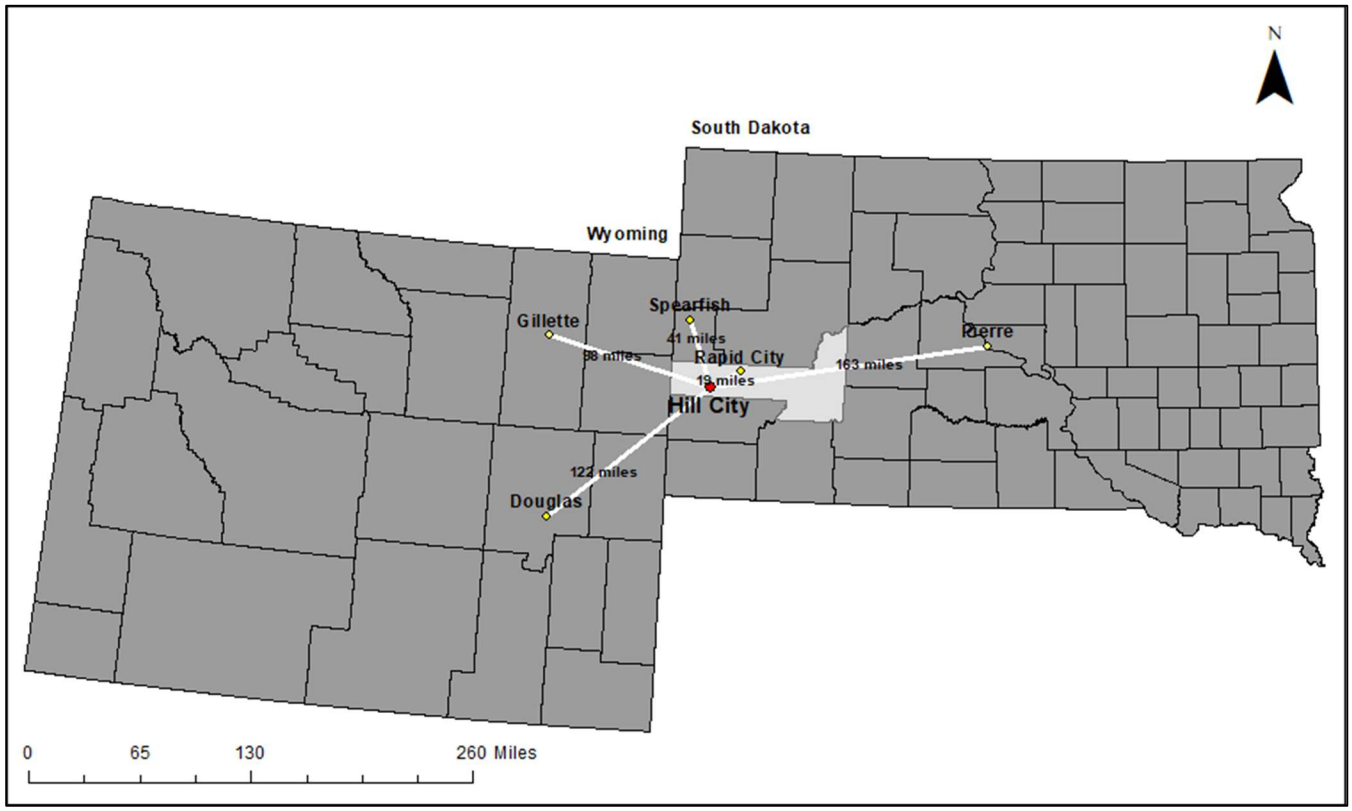


Figure 4. Geographical Context Map

Hill City is located in the western region of South Dakota, nestled in the heart of the Black Hills. With both Spearfish (class 1 city, population >5000) and Rapid City (class 1 city, population >5000) located within 50 miles of Hill City, it appears to be well connected but the geographic challenges of the Black Hills make these seemingly basic journeys quite challenging. The only other class 1 city located within 100 miles of Hill City is Gillette, Wyoming. This means there is significant travel times for tasks that cannot be completed in Hill City. Figure 4 displays Hill City's geographical context to other major South Dakota cities and Gillette and Douglas, Wyoming.

Method and Process

Moving forward, the City of Hill City's need for a transportation plan will intensify as the city's trajectory continues to change and develop. The central purpose of this transportation master plan is to provide recommendations that the City of Hill City could implement to address identified issues, concerns, and needs. The methodology behind this report is embedded in a data driven process that revolves around the inventoried analysis of data within the study area, public input, and historical data maintained by SDDOT (see Figure 5).

First, to achieve an in-depth understanding of how the transportation system operates and performs as is; data was collected to create an inventory of information representing Hill City. This data gathering created a database of baseline information on the study area that was utilized to assess and understand the transportation system in conjunction to meeting with the public and getting input. Specific data that was collected during this inventory creating stage includes: sidewalk connectivity and quality, pedestrian crosswalk locations, traffic sign locations, historical crashes, road quality and type, speed limits, American Disabilities Act (ADA) compliance, and average daily (including projected future) traffic flows.

The next step in understanding the transportation system in Hill City was perhaps the most important. This was gathering public input and direction on how the public uses the transportation system and any issues that they have with it. To do this, this report utilized an online survey that contained closed and open-ended questions pertaining to the transportation system that the public was encouraged to complete. In addition to the survey, two public meetings with open discussions were held where the public was encouraged to attend and contribute. At the first meeting, there was a brief presentation on the report itself and what the purpose was, which then opened the floor to the public for an open discussion on the Hill City

transportation system. The second meeting was used to present the preliminary findings and recommendations to the public, opening the floor to feedback on possible projects and alternatives to issues identified in Hill City.

After these major steps, the final part in the process of this report was the act of synthesizing all the information produced and gathered in this report. This stage curated analysis utilizing public input and inventoried data, which together produced the data driven results of this report. From the results this synthesizing stage, different alternatives and projects were finalized for the City of Hill City. These alternatives and projects represent the recommendations at the heart of this transportation plan.

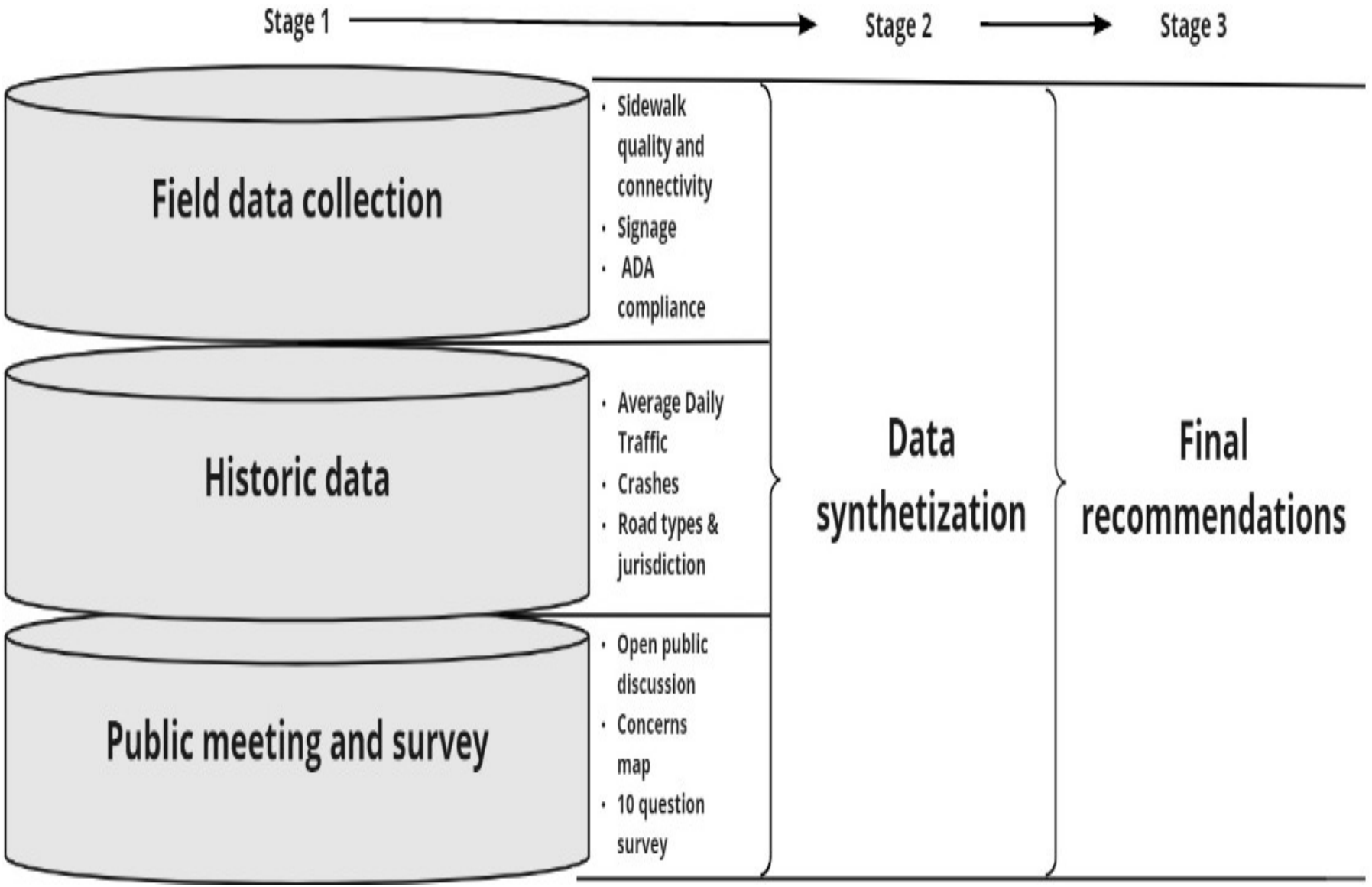


Figure 5. Research Methodology

Goals and Objectives

The goals and their respective objectives (See Figure 6) are key to the motivation of this report. As mentioned in the Methods and Process section, the central purpose of this report is to provide recommendations for the City of Hill City to implement that are recognized as solutions to improve and provide a plan for their transportation system through the identification of distinct opportunities and issues. To achieve this central purpose, a set of goals with objectives were established based off the visions and concerns of Hill City's residents and the data acquired during the inventory stage of this report. In practice, goals and objectives create a combination of broad arching visions and methods to get there.

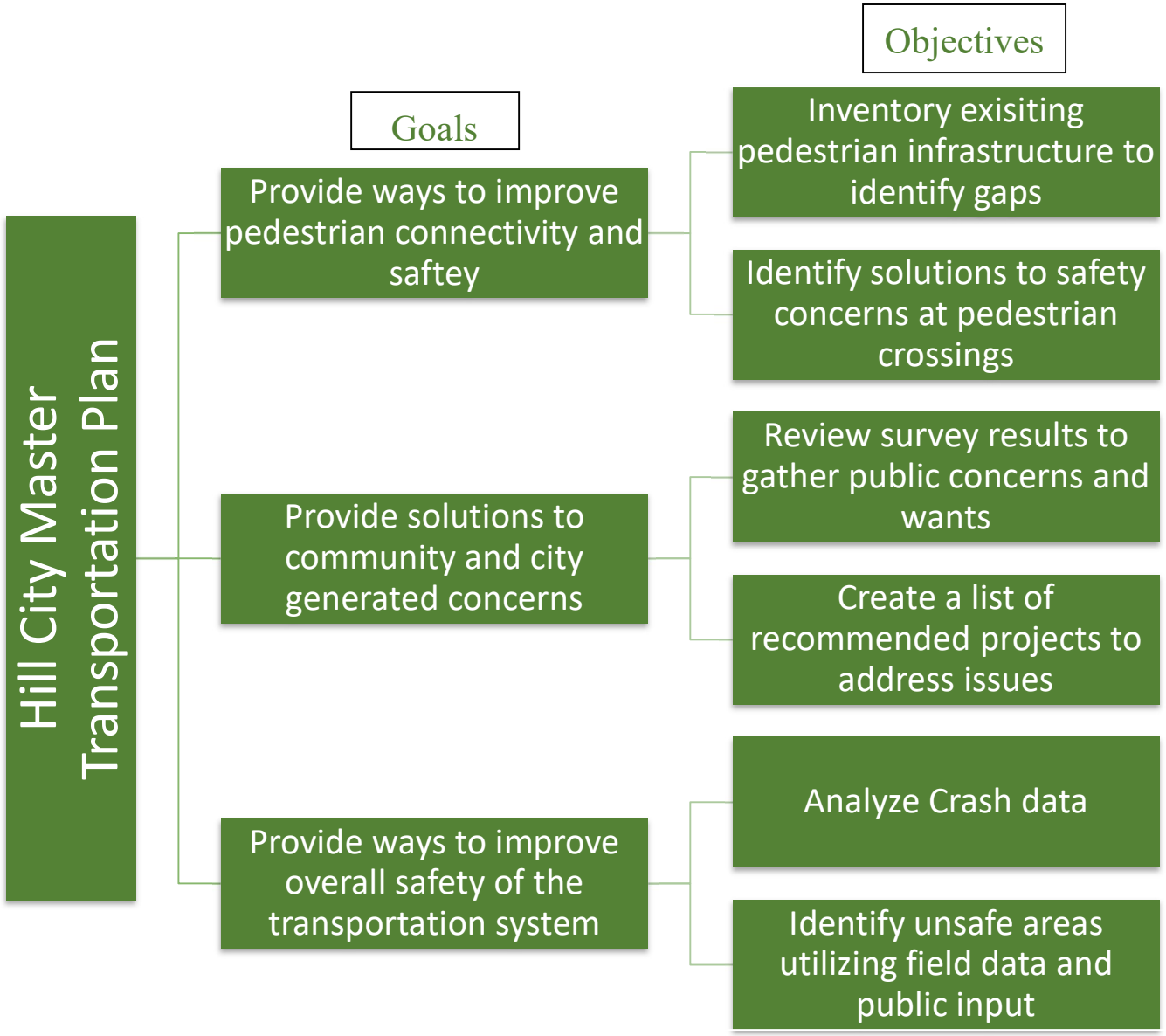


Figure 6. Goals and Objectives

Inventory of Existing Conditions

Transportation System

Hill City's existing transportation system serves as the baseline source of information for this report from which the study advisory team can curate actions, policies, and improvements that might be desirable to the community and best for increasing the system's overall performance. The issues identified that currently create problems for the transportation system are impetus for future transportation system improvements in Hill City.

The primary traffic routes in Hill City are US Highway 16 and 16B which split Hill City in two as they pass from the northeast to the southwest. These highways are by far the most travelled roads in Hill City and has some of the most important and interesting places in Hill City along them such as the grocery and hardware stores, the fire station, the business district, the schools, and many tourist attractions. In addition to serving as the spine of Hill City's transportation network US Highway 16 and 16B are also on the National Highway System (NHS) which also makes them a major carrier of truck and tourist traffic in the region. Other important roads in Hill City are Deerfield Road and Old Hill City Road, both of which are Pennington County controlled roads that enter Hill City opposite of one another from the northwest and the southeast. All other roads in Hill City feed off one of the previously mentioned four roads meaning there is heavy reliance on roads in the community that aren't controlled by the city. These neighborhood roads follow a grid pattern close to the downtown center of the city, but this quickly breaks down as the roads begin winding their way up hills and through the many gulches in the area. The topography outside of the downtown and adjacent areas creates a series of disconnected streets and dead ends as many of these hilltop neighborhoods end in cul-de-sacs.

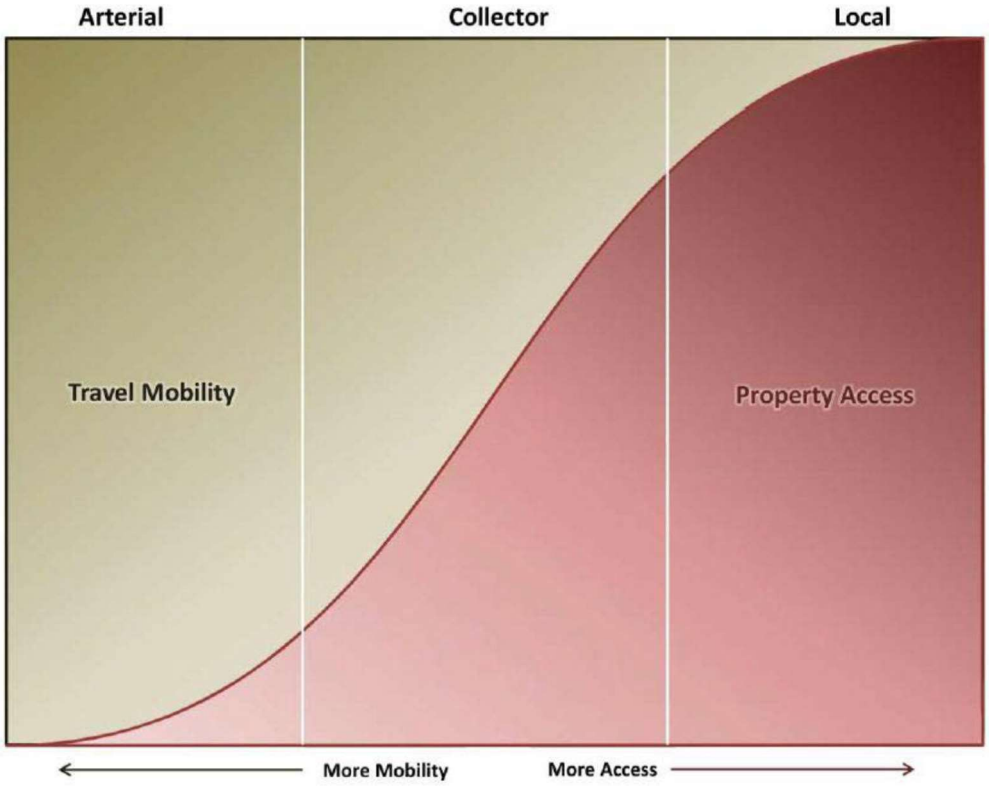


Figure 7. Travel Mobility

The types of roads in Hill City and who has jurisdiction over them is displayed in the following two maps below (see Figure 8 and Figure 9). The mobility and access of the types of roads and how they measured up compared to each other based on their classification is graphically represented in Figure 7. Figure 7 is showing that local roads provide more property access and less travel mobility whereas arterial and collector roads offer more travel mobility and less property access.

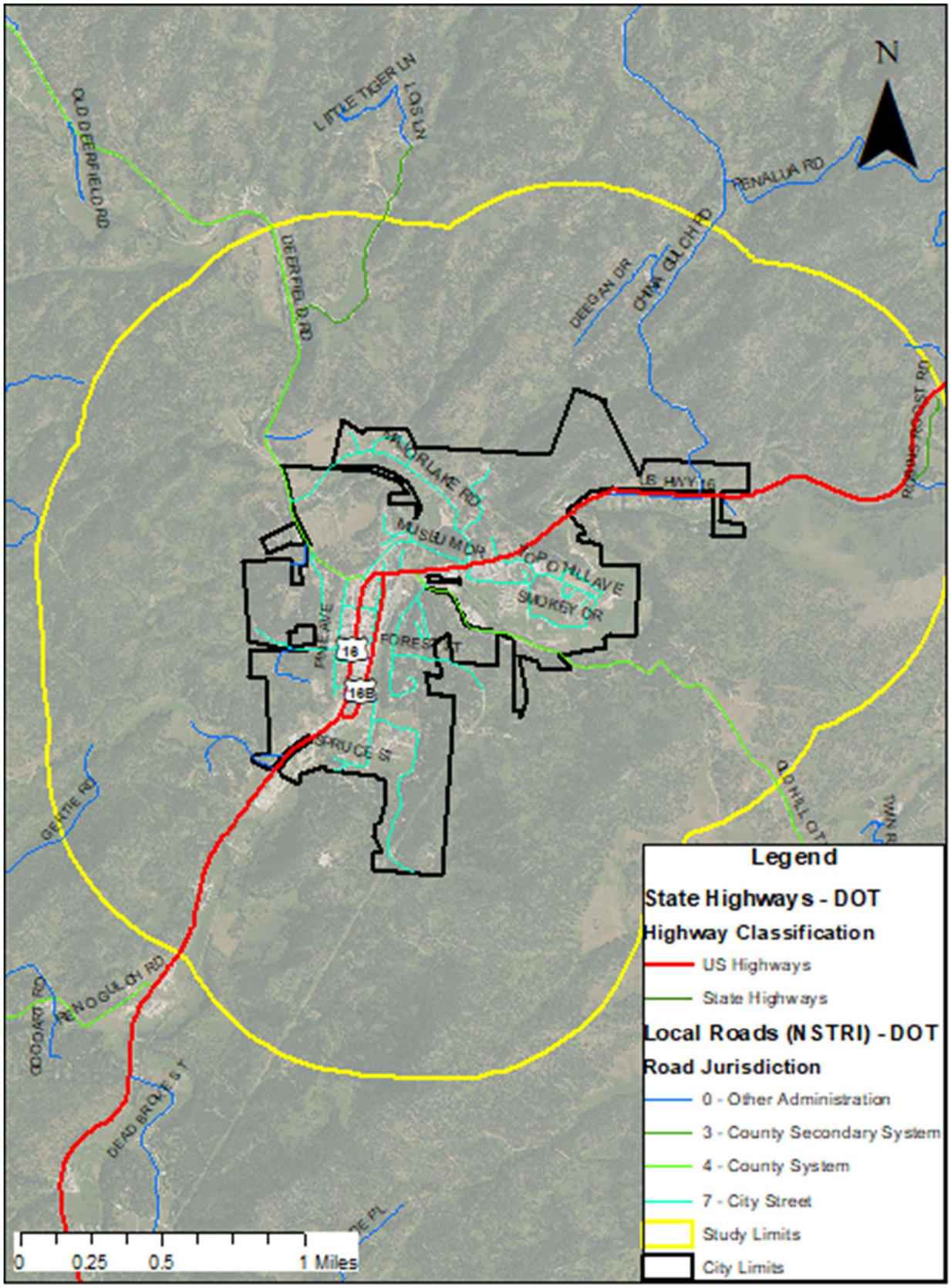


Figure 8. Road Type Map

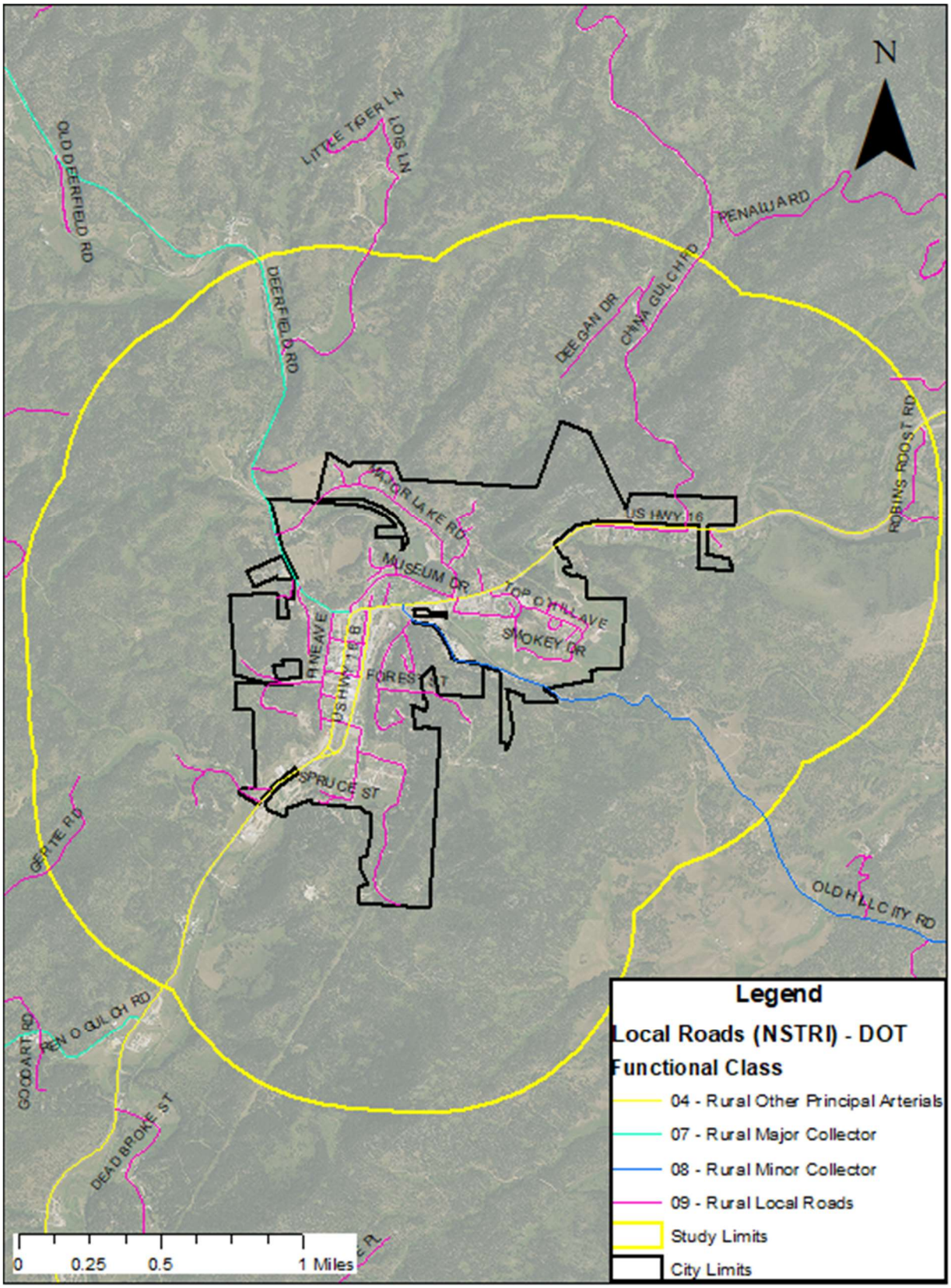


Figure 9. Road Functional Class

The distribution of road types and jurisdictions in Hill City is alternatively displayed below in two figures (Figure 10 and Figure 11). These two figures demonstrate the dynamic at play for the roads within Hill City and the study area. While a slight majority of roads are controlled locally by the city, a large portion of the roads are controlled by other entities, namely other divisions of government. This will require a greater degree of planning and cooperation to accomplish some projects if they take place on roads that fall outside of city control.

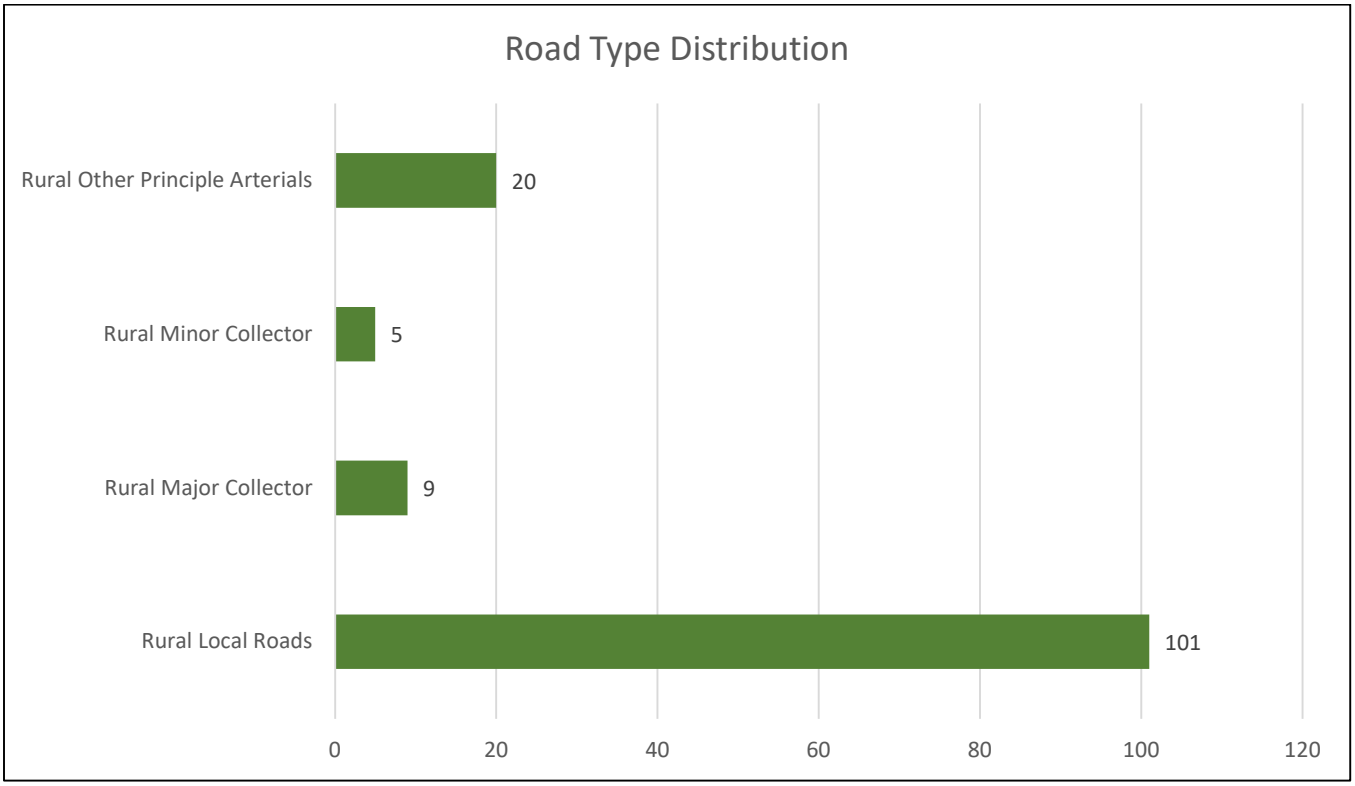


Figure 10. Road Type Distribution

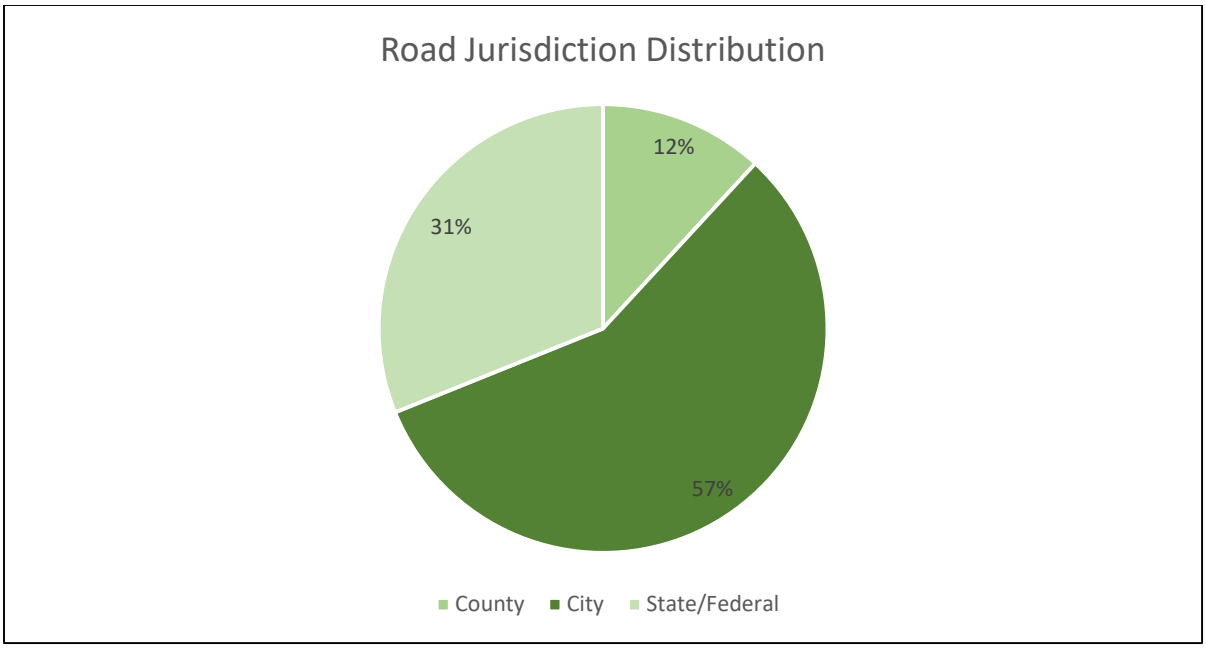


Figure 11. Road Jurisdiction Distribution

While the majority of roads in Hill City are rural city streets, the most frequently traveled road when it comes to Average Daily Traffic (ADT) is by far US Highway 16 and 16B. Traffic counts are not available for local city streets in the study area however the county roads do have traffic counts available. US Highway 16 and 16B each had over 3000 more vehicles than the highest measured on any county road in the study area. Figure 12 shows the ADT and traffic count locations, labelled with measured traffic, in the study area.

While US Highway 16 and 16B are clearly the most traveled roads, there are not accurate, up to date counts on many roads through town and as such, there is no way to accurately analyze current traffic conditions on local roads away from the US and county highways.

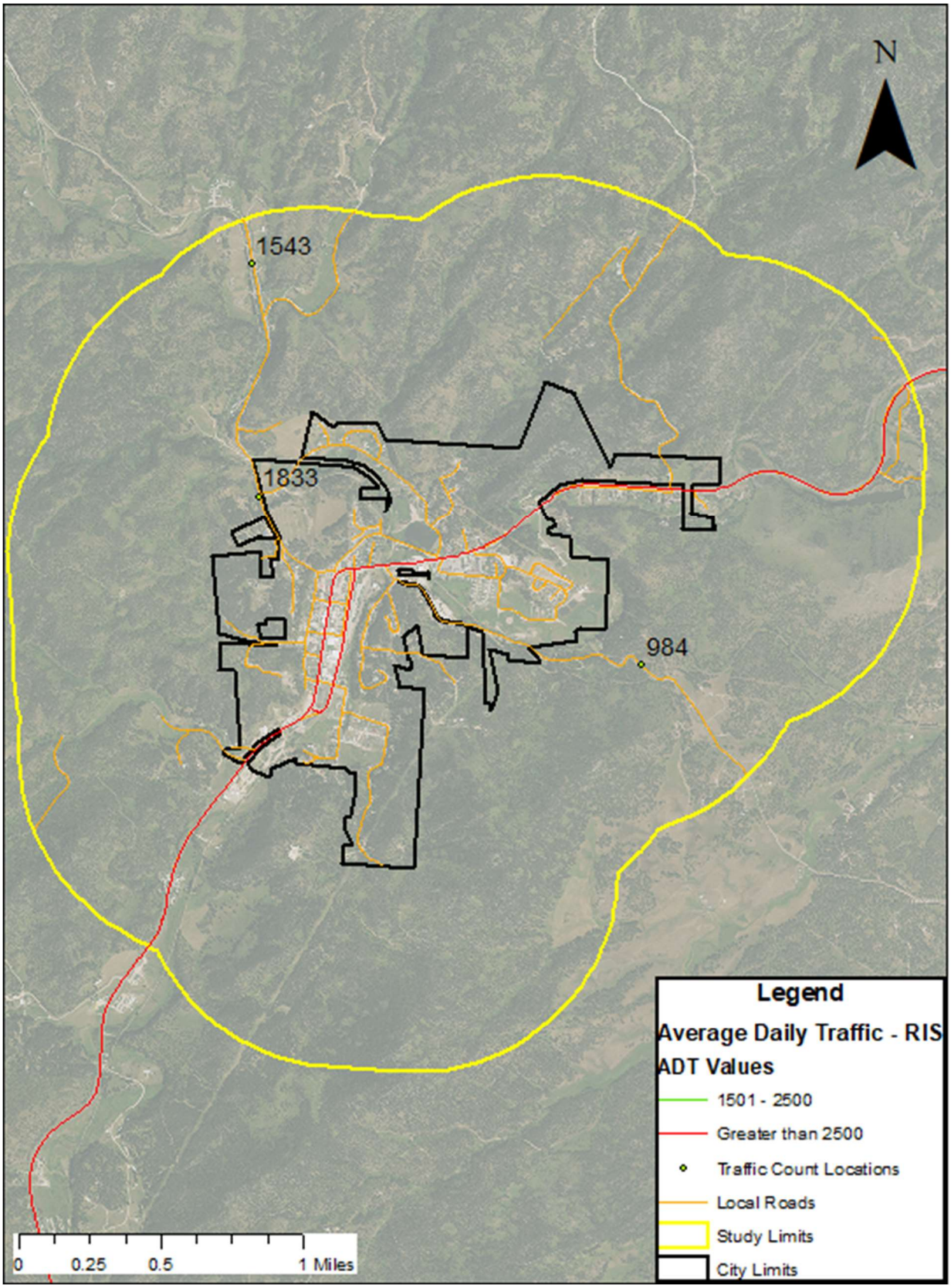


Figure 12. Average Daily Traffic Map

Analysis of Traffic Safety

To analyze traffic safety for motorists in the City of Hill City, crash data was analyzed from 2018 to the most up to date records in 2023 at the time of this report's creation. In this 5-year span there were 129 crashes reported (see Figure 13) within the study area. The vast majority of these crashes occurred on Highway 16, with many of these concentrating at major intersections through town and along the on-street parking in the downtown area.

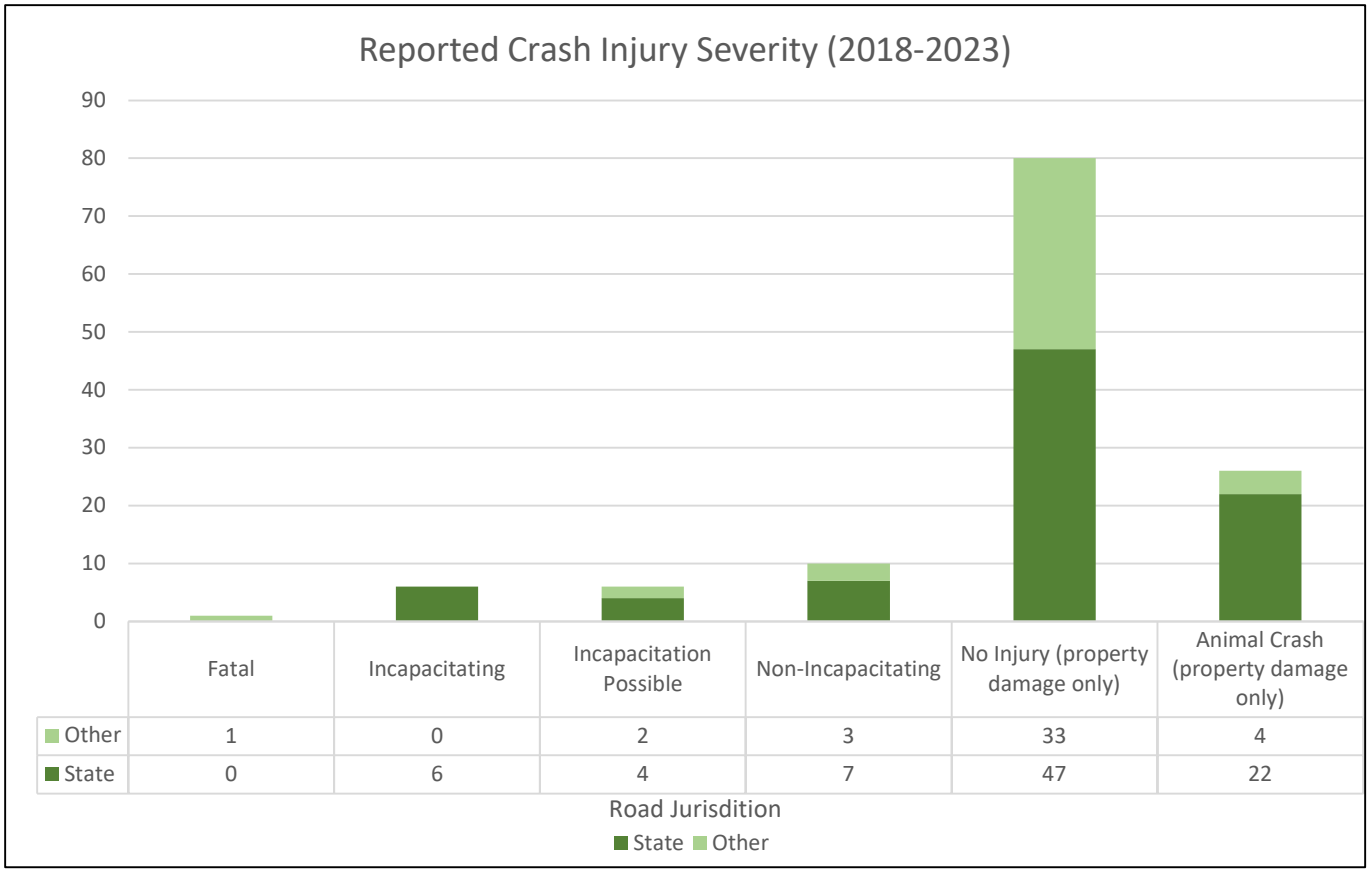


Figure 13. Reported Crash Type Frequency

US Highway 16 had the highest frequency and number of crashes reported (see Figure 14). These crashes were typically minor crashes resulting in no injuries but could range all the way up to the most severe ranking outside of a fatal crash. City streets made up the next most frequent area for crashes but many of these are concentrated on side streets near the downtown

and were almost all no injury crashes. County roads were the least frequent area for crashes however they had the only fatal crash in the 5-year period.

An important caveat to this crash data is that these numbers only represent reported crashes. This means that there could have been more crashes and/or instances of crashes that happened but were not reported to authorities or the crashes were determined not the meet the minimum property damage amount required to be reported to the South Dakota Department of Public Safety. It is common for minor crashes to occur, like running off the road during inclement weather or crashes with no property damage, where no authorities are contacted.

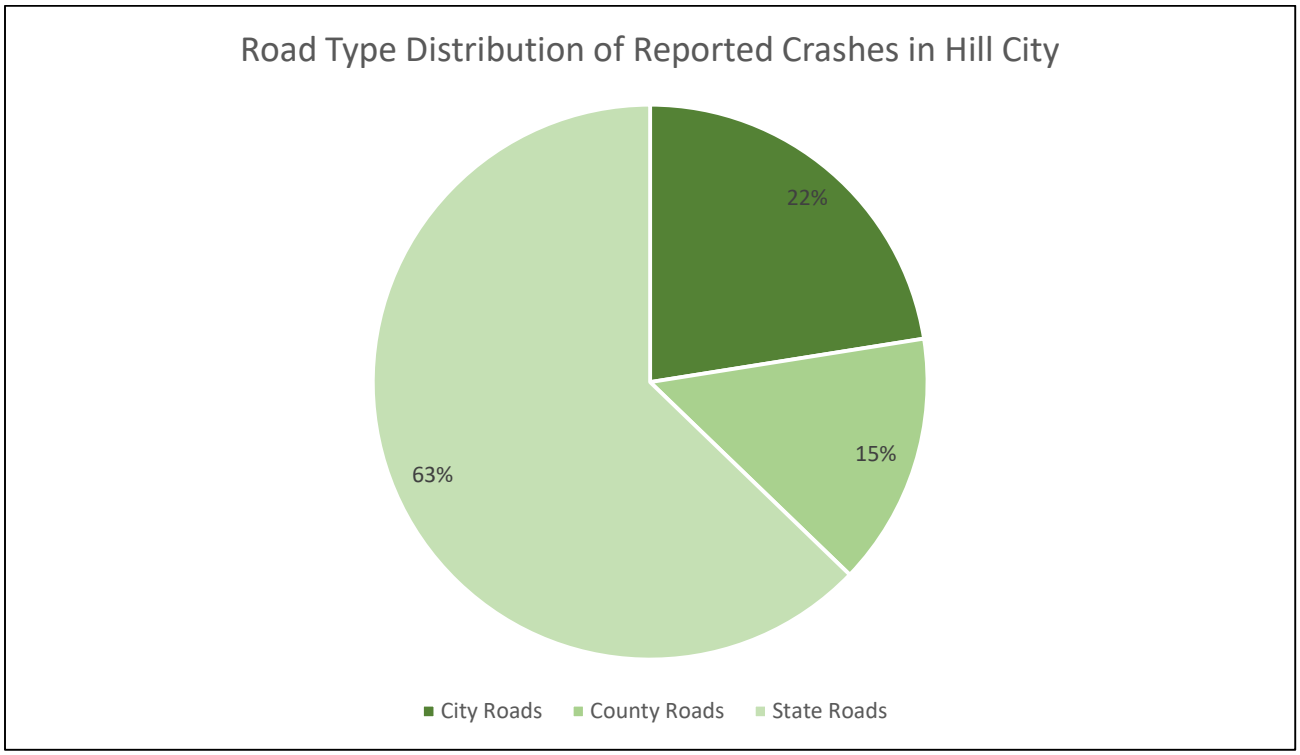


Figure 14. Road Type Distribution of Reported Crashes

Much of Highway 16 as it passes through Hill City has parallel on-street parking which contributes to many of these crashes, with most of these occurring in and around parking spots. Another contributing factor to the high number crashes is the number of tourists in Hill City and the drivers' unfamiliarity with the area and driving in more geographically challenging terrain.

Many of these crashes also concentrated themselves around major intersections, namely US Highway 16 and Deerfield Road, US Highway 16 and Old Hill City Road, and US Highway 16 and US Highway 16B (Main Street and Railroad Avenue). There are also numerous crashes involving animals just outside of city limits, another contributing factor to the high number of crashes in this area.

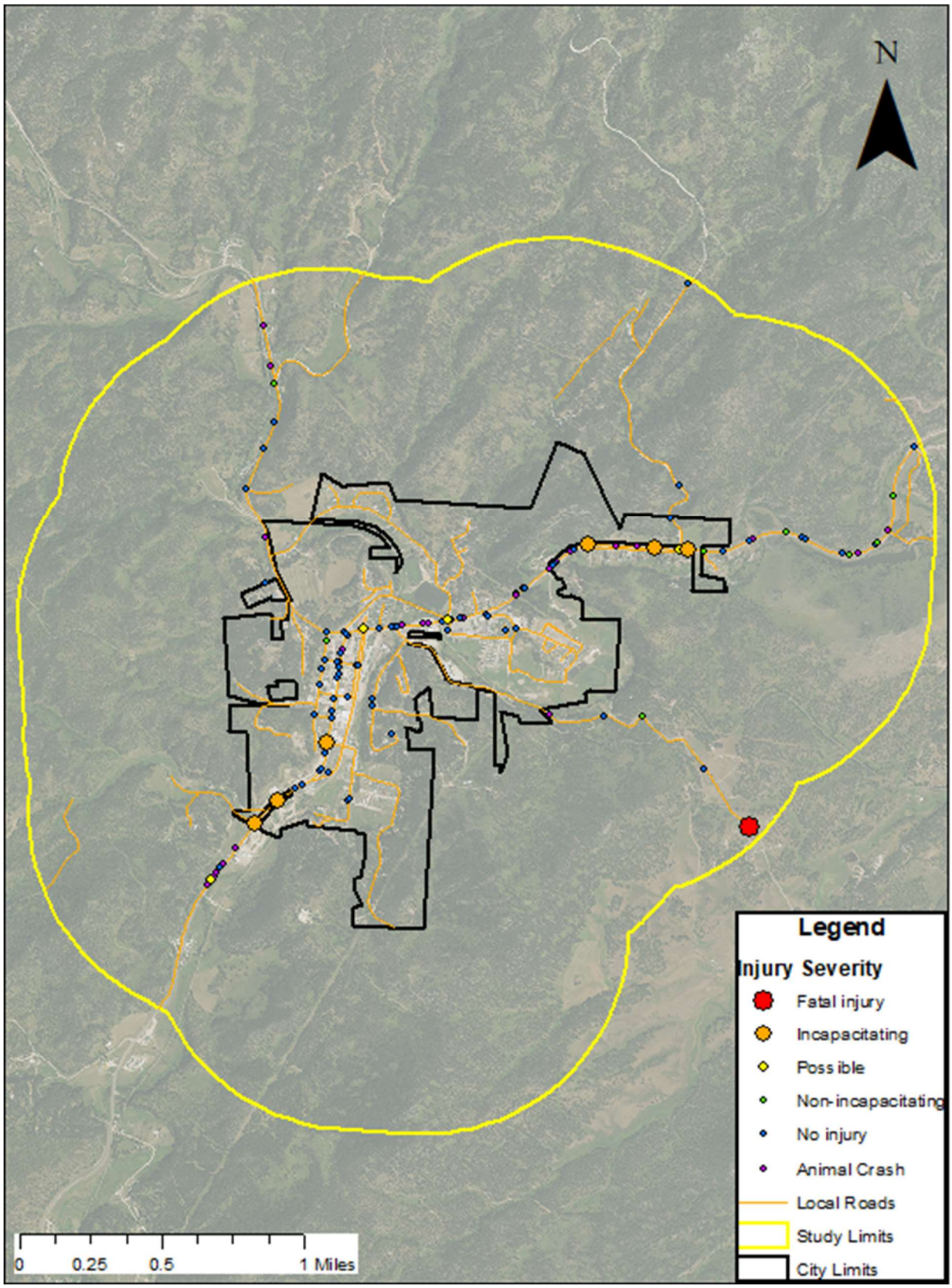


Figure 15. Crash Map

Assessment of Pedestrian Infrastructure

Sidewalks

The ability for pedestrians to safely move through any transportation system is vital to its performance, as everyone at some point is a pedestrian in their community. Safe crossings and maintained sidewalks that are connected in a cohesive and consistent manner to major community resources are key to high pedestrian mobility and safety.

The assessment began by identifying every section of public sidewalk within the city limits of Hill City to create an inventory of the current extent of the network. After identifying the current network, the entire network was walked to refine the data on location as well as to assess condition. A map and corresponding chart were created displaying the results from rating the entire sidewalk network in Hill City (See Figure 16 and Figure 17).

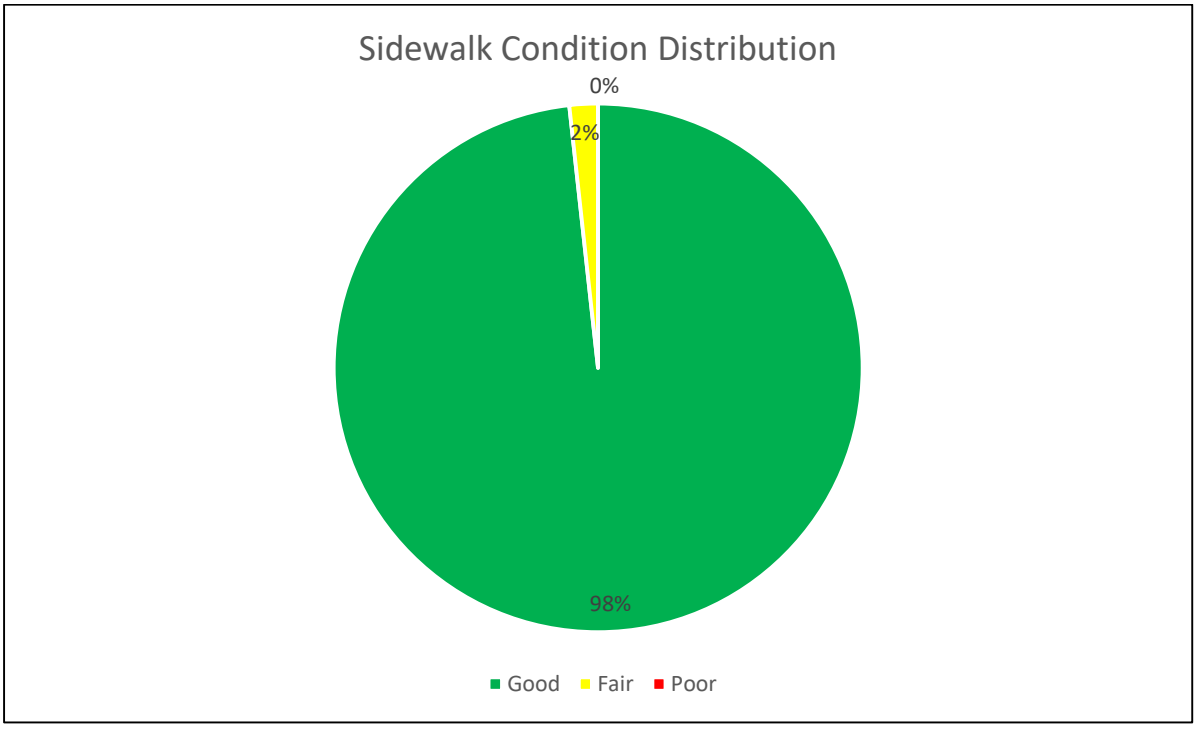


Figure 16. Sidewalk Condition Distribution

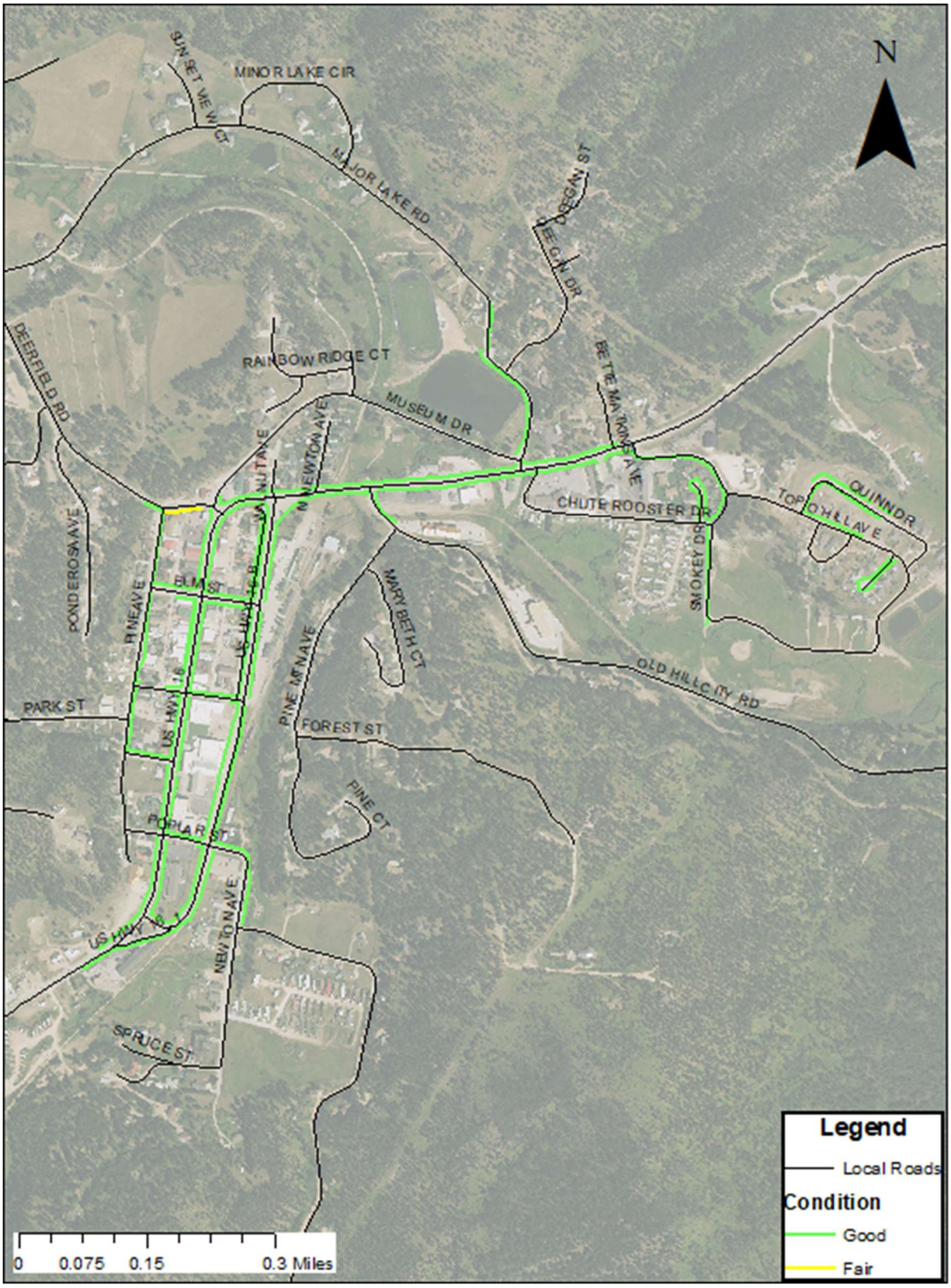


Figure 17. Sidewalk Condition Map

This map demonstrates the relatively limited sidewalk network in Hill City and the gaps within the network. The existing network was observed to be maintained to a very high quality with very few sidewalks being difficult to traverse and the network adequately serving the downtown area. It should be noted for purposes of this report that the City of Hill City has ordinances that requires sidewalks for new buildings but much of these requirements are at the discretion of the planning commission. These are found in Title 9, Chapter 9.14, Section 1405.11 Sidewalks, and References Table 1405.11.1, found at the end of Title 9, of the Municipal Code for Hill City. It should also be noted that in addition to having ordinances regarding the construction of sidewalks, Hill City also has an ordinance, Title 10, Chapter 7.22, regarding keeping sidewalks clear of snow and ice and an ordinance, Title 10, Chapter 7.30, regarding directing water flow over sidewalks. There are seemingly no ordinances regarding keeping sidewalks clear of any other obstructions.

The sidewalks were rated to three levels:

1) **Good (98%)-** Appears to be in compliance with or is close to standards set by the Americans with Disabilities Act (ADA). All panels are in new or slightly worn conditions. Easily traversable.

Good Sidewalk

2) **Fair (2%)-** Some maintenance required to meet ADA standards. Some panels are starting to distress, crack, or heave. Maintenance issues are not enough to prevent most people from using sidewalk, albeit with some extra effort.

Fair Sidewalk

3) **Poor (0%)-** Does not comply with ADA standards in almost any category. Many panels are severely distressed, cracked, or heaved. The best

maintenance option would likely be the replacement of most of, if not all, of the sidewalk. Traversal is difficult for many users.

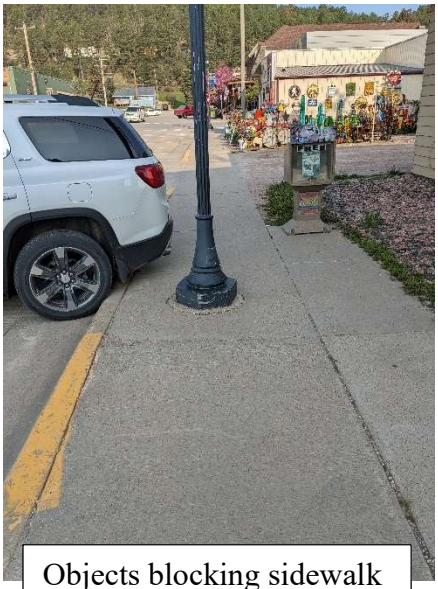
As shown on the map showing sidewalk condition, the sidewalk network in Hill City is very connected around the downtown but quickly becomes disconnected and incohesive. The network also has smaller issues that are prevalent even on the most well-maintained sections of sidewalk such as small protrusions dotting the sidewalks that are tripping hazards, streetlight placements that significantly reduces the usability of some sections of sidewalks, and some sidewalks being obstructed by vehicles or other objects.

Objects blocking sidewalk

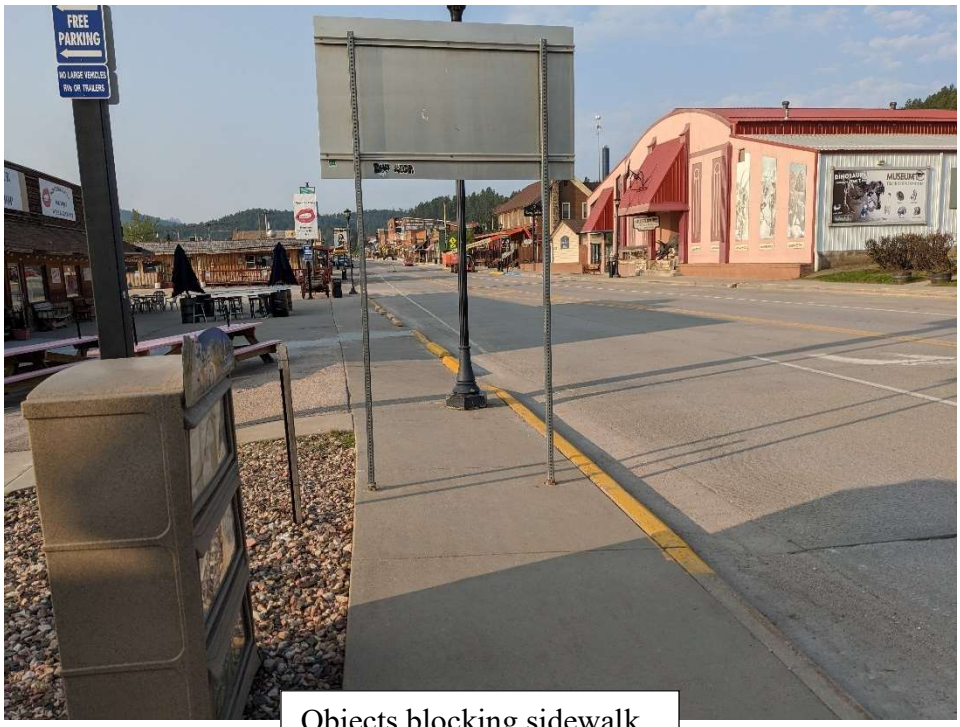
Tripping hazard in sidewalk

In addition to the obstructions within the sidewalks, there are miscellaneous sections of sidewalk that are poorly maintained, as shown in some of the following images. These sections of sidewalk were not included in the full inventory since the sections were very small and could be fixed with minimal intervention.

Objects blocking sidewalk



Objects blocking sidewalk



Objects blocking sidewalk

Curb Ramps

Curb ramps are a vital part of ensuring that all areas of the city are accessible to all users by giving pedestrians an easy way to reach street level to cross the street.

The assessment of these curb ramps was a similar process to the sidewalks with minor differences in rating. Curb ramps were rated as Good, No ADA warning panel, and Dangerous. An explanation of these ratings is below. A map and corresponding chart were created displaying these results (See Figure 18 and Figure 19).

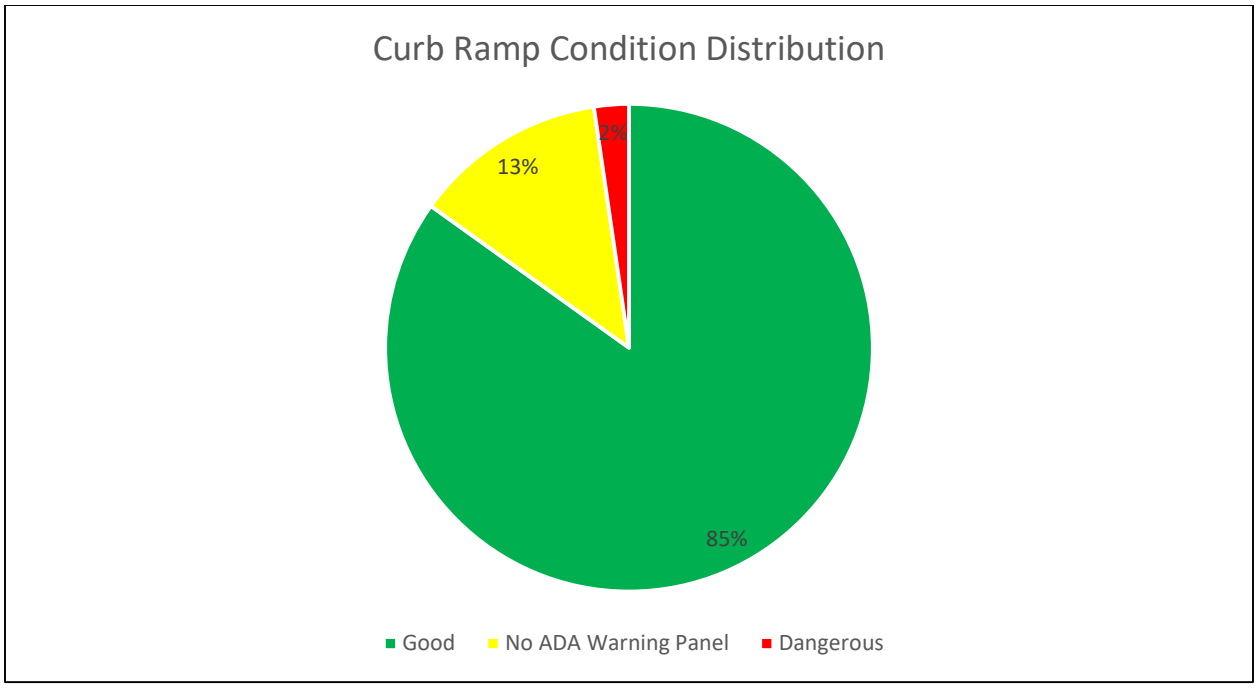


Figure 18. Curb Ramp Condition Distribution

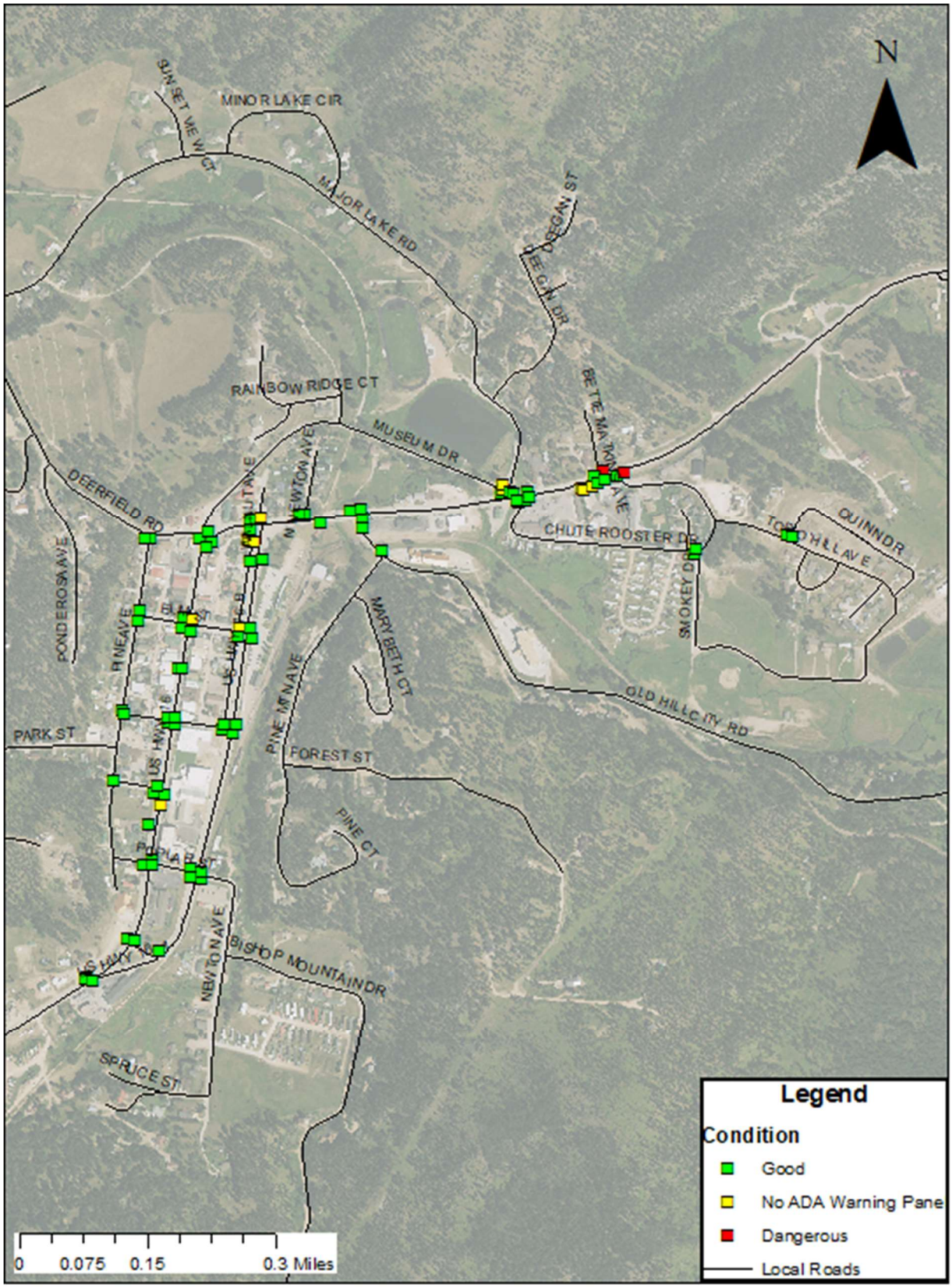


Figure 19. Curb Ramp Condition Map

The map displays conditions of the curb ramps at the time of making this report. The curb ramps are aligned with the sidewalk network but show a greater difference in maintenance than the sidewalk network. Many curb ramps had damaged warning panels or panels that were missing all together. Some curb ramps were filled with runoff from the surrounding hills or unpaved roads and were difficult to traverse due to the sand nature of the runoff.

Good Curb Ramp Quality

The curb ramps were rated to three levels:

1) **Good (85%)-** In good condition, not broken or in need of replacement. In compliance with ADA standards.

No ADA Warning Panel

2) **No ADA Warning Panel (13%)-** Panel was either partially broken or completely missing. Panels are in need of replacement and no longer meet ADA standards.

3) **Dangerous (2%)-** Conditions near the panel pose a significant hinderance to travel for physically disabled individuals and should be addressed immediately.

Dangerous Curb Ramp Quality

It appears most of the damage suffered by these curb ramp panels comes from snow plows or other snow removal equipment. Many of these damaged panels should be easily replaced. Curb ramps that were designated as dangerous show significant runoff issues in the areas around them and might have to be addressed differently. Although a short term solution to this would be the removal of these deposits from the curb ramps.

Broken ADA Warning Panel

Missing ADA Warning Panel

Runoff deposit in ADA Warning Panel

Drainage System

The drainage system in Hill City is responsible for efficiently handling stormwater flows and keeping sitting water off the transportation system. Much of the city has a paved curb and gutter system, with even the hillside neighborhoods having a curb and gutter for much of the area with relatively few paved roads in town not having a curb and gutter system as seen on Figure 21. The overall quality of this system mirrors that of the sidewalk system, as seen in Figure 20, with relatively few sections of curb and gutter being a matter of concern. However, the areas that are of concern are of great concern and have issues that negatively affect drainage.

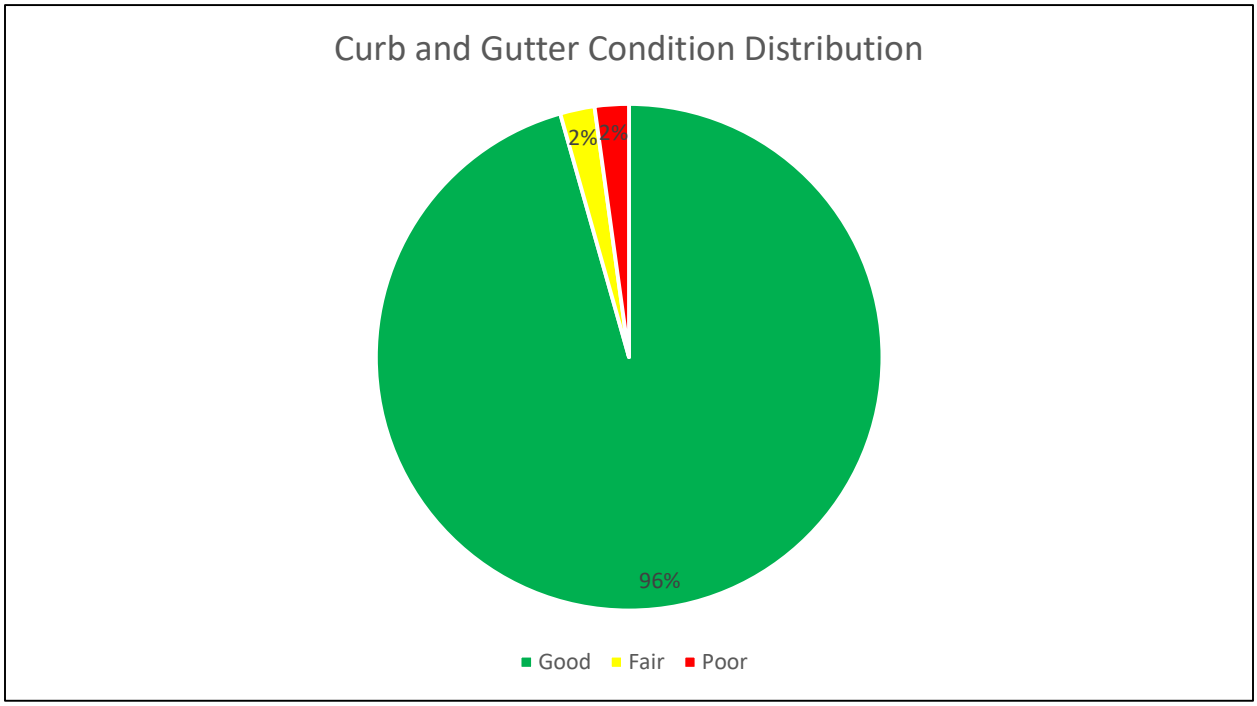


Figure 20. Curb and Gutter Condition Distribution

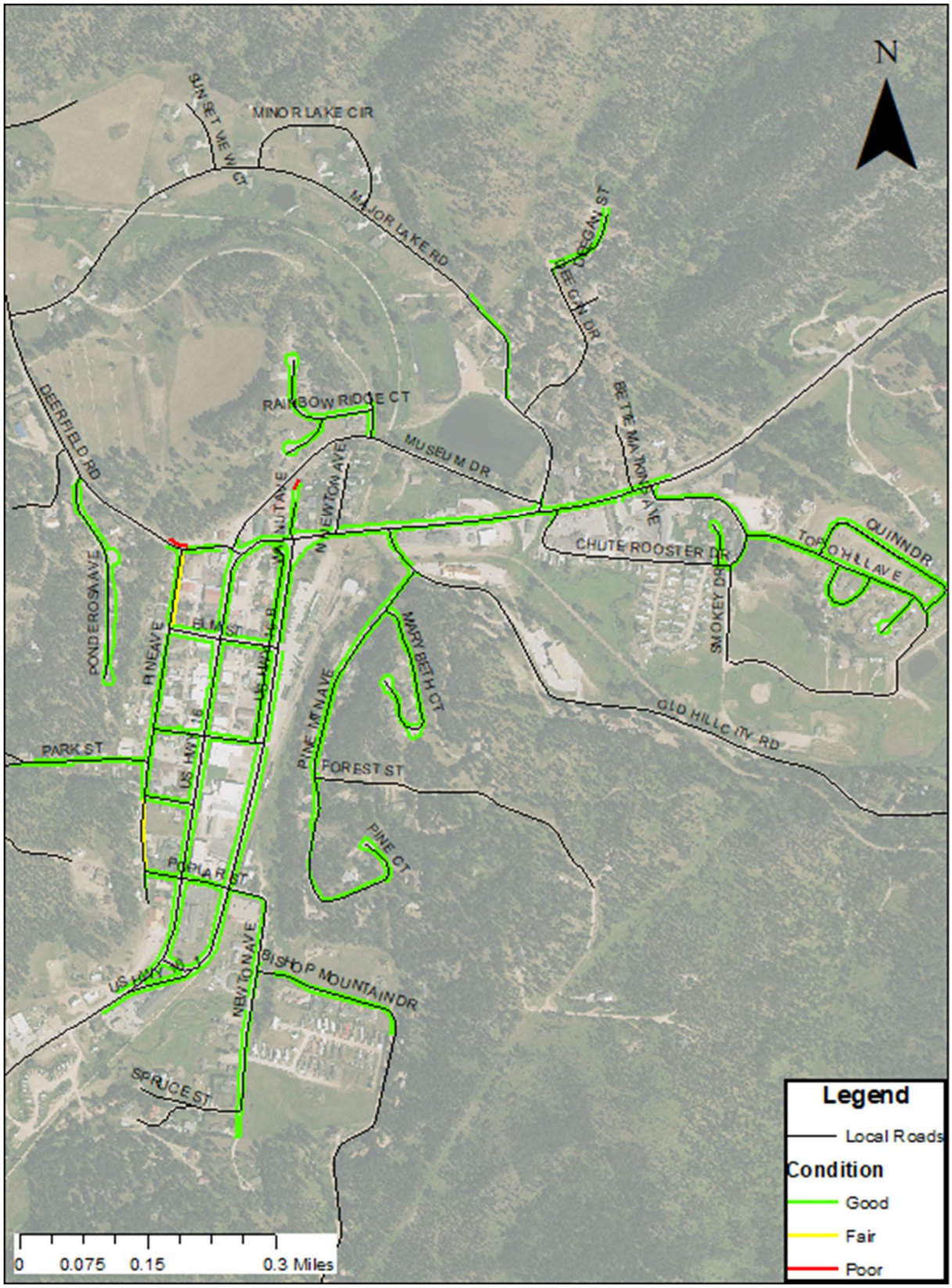


Figure 21. Curb and Gutter Condition Map

The map in Figure 21 displays how widespread the current drainage system in Hill City is, with much of the city already serviced by curb and gutter. Hill City currently requires curb and gutter to be built whenever sidewalk is deemed necessary by the planning commission. Curb and gutter were rated to three levels:

1) **Good (96%)-** Curb and gutter have little to no damage visible. No scouring present and no debris blocking the path of water.

Good Curb and Gutter Quality

2) **Fair (2%)-** Curb showing obvious signs of wear. Damage does not significantly interfere with drainage.

Fair Curb and Gutter Quality

3) **Poor (2%)-** Curb shows obvious signs of damage and damage significantly impairs drainage. Curb is blocked by debris that impedes drainage.

Poor Curb and Gutter Quality

Curb and Gutter blocked by debris

Signage

Signs are a tremendously important aspect of municipal transportation systems, as they contribute heavily to how the transportation system is interpreted and operated within. Signs are equally important as important to the usual operators of the transportation system as they are to travelers moving through the area.

The Manual of Uniform Traffic Control Devices (MUTCD), published by the Federal Highway Administration (FHWA), is the American standard for the specifications regarding signage, signals, and other traffic control devices. These specifications include height, distance from roadway and intersection, size, color, light reflectivity and more. It is important that all roadways follow the same specifications so that motorists are more readily aware of their surroundings and can make safer traffic decisions.

An integral part of this report was an inventory and analysis of the current signage in Hill City. This was done by walking and driving through the city and marking locations on a map showing what signs are where. See the signage map in Figure 22.

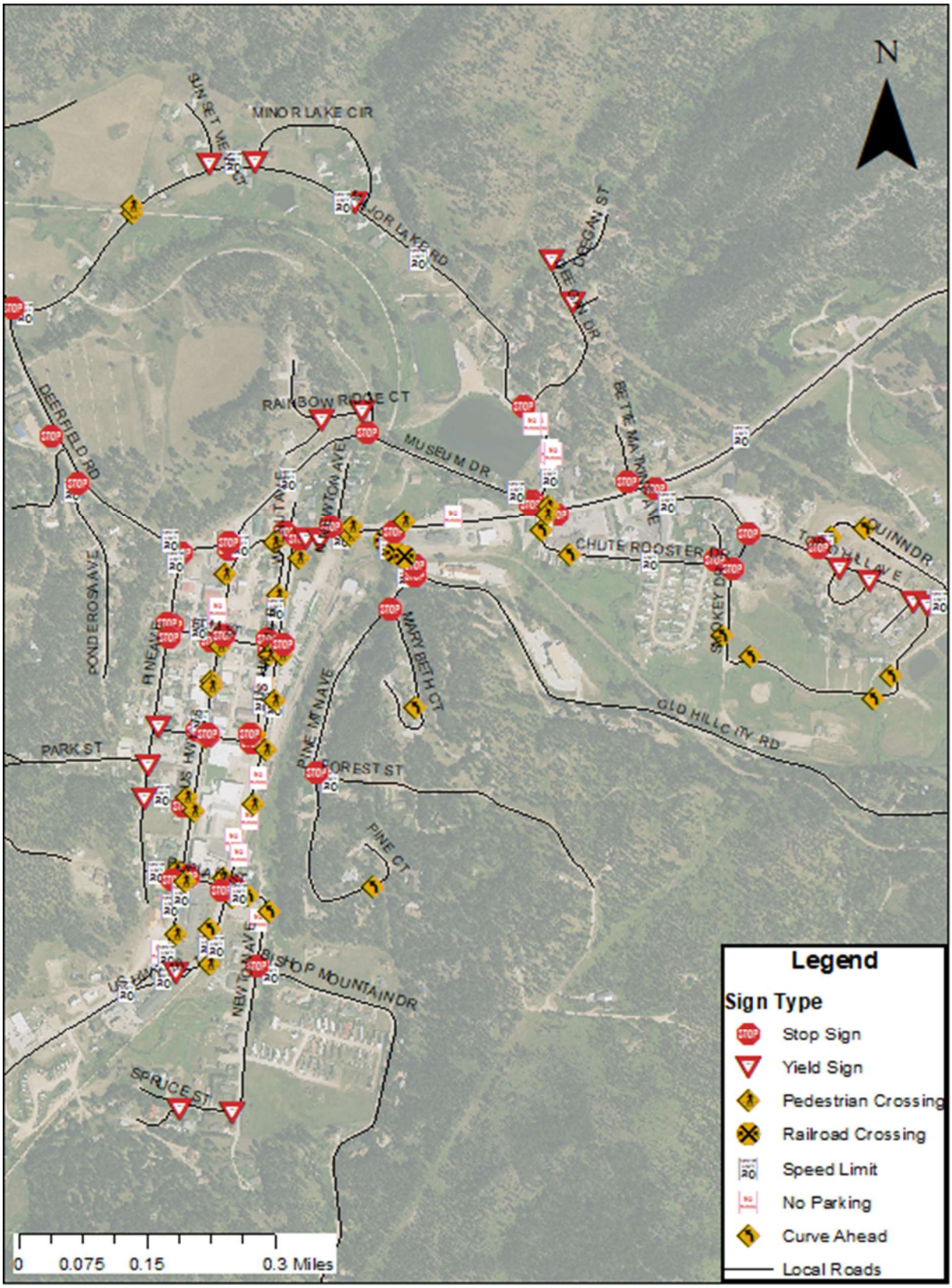


Figure 22. Current Signage Map

The majority of Hill City is adequately signed with relatively few issues, with most signs meting MUTCD standards and most intersections having adequate and unconfusing signs. There are, however, a few signs in the downtown area in particular that are in need of replacement as the purpose of the sign cannot be readily read from the road.

Sign in need of replacement

Guardrails

Unique to this area of the state, guardrails make up a vital safety feature on the roads within the Black Hills in general and in Hill City in particular. Hill City has a number of residential streets that are very close to steep drop-offs that are dangerous, even more so in the winter. Because of the vital role these guardrails play in public safety their maintenance and ensuring that they are up to modern standards is paramount.

Data for guardrail condition was collected by walking along guardrails to collect their location and filling out the same questionnaire that is used to rate guardrails on the state highway network. The answers from this questionnaire were then used to assign a point value of 1-10; 10-8 being Good, 7-4 being Fair, and anything 3 or less being Poor. A map of guardrail location and condition with a corresponding chart are below (See Figure 23 and Figure 24).

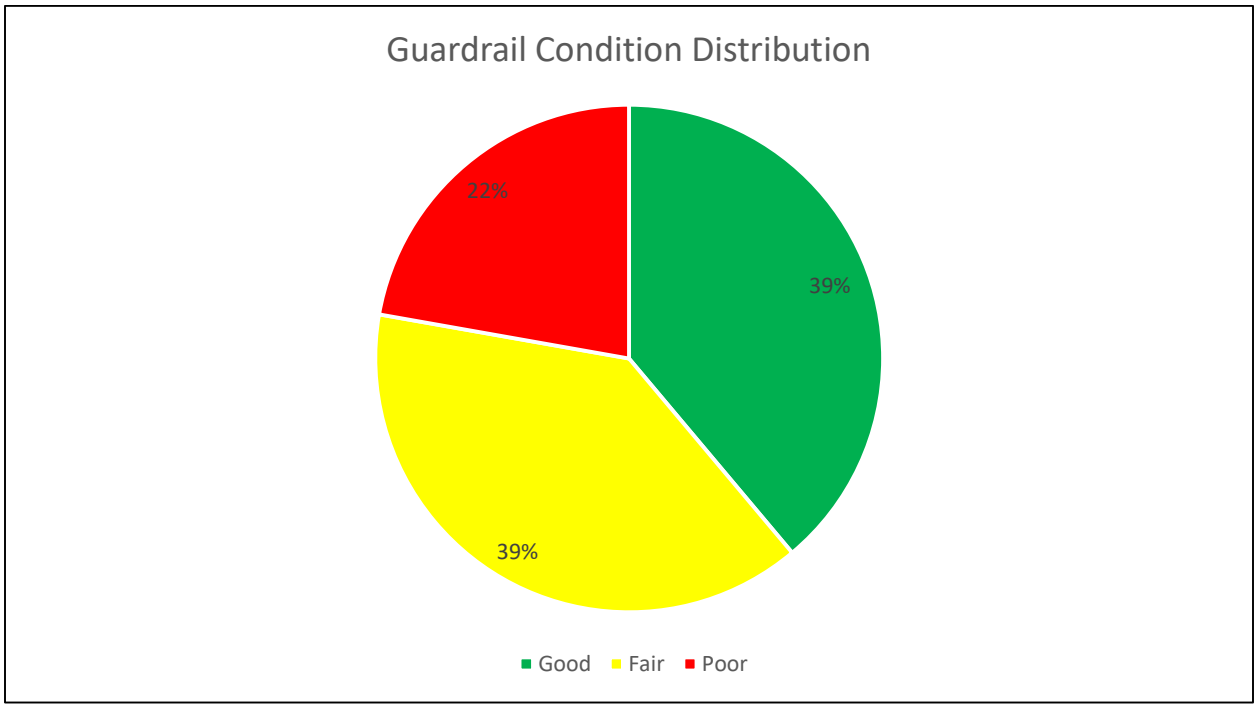


Figure 23. Guardrail Condition Distribution

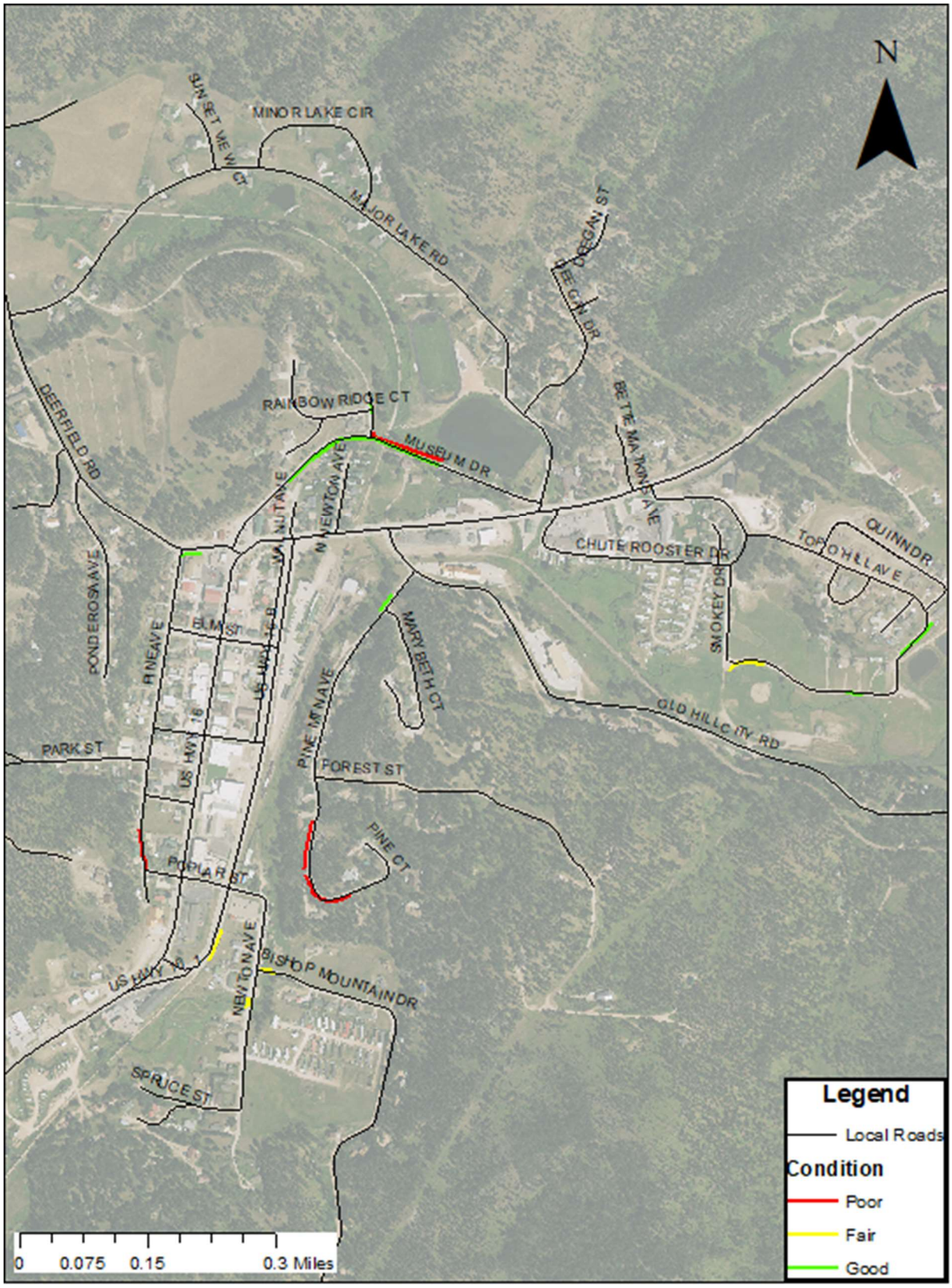


Figure 24. Guardrail Condition Map

As can be seen in the previous figures, the guardrail condition can vary widely throughout the city even with guardrails right across from one another. Certain sections of guardrail were not up to modern guardrail standards and matched the standards from several decades ago. Other sections of guardrail were just poorly maintained and are now in need of replacement.

The guardrail was rated into three levels:

1) **Good (39%)-** No corrosion visible on the face of the guardrail, posts are in good condition with no posts leaning. Guardrail is not missing any hardware.

Good Guardrail Quality

2) **Fair (39%)-** Corrosion is visible but no holes through the guardrail, some posts might need to be replaced or are leaning. Guardrail is missing minimal hardware.

Fair Guardrail Quality

3) **Poor (22%)-** Holes due to corrosion are present, posts are falling apart and have many posts leaning. Guardrail is missing significant hardware or is not up to modern standards.

Poor Guardrail Quality

Not to modern standards, corrosion

Post in need of replacement, corrosion holes

Corrosion holes

Not to modern standards, corrosion

Public Participation

When undertaking a report such as this, public engagement and meeting with community stakeholders is of the utmost importance as these groups can provide valuable insight into the day-to-day conditions of the transportation systems in the communities. The community knows the roads best as they experience these roads day in and day out. To engage with the public and collect information about the Hill City transportation system from their point of view; we held an open house and created an online questionnaire. The open house was a public meeting that gave members of the community an introduction to the project and a brief overview of the inventory of the current conditions of Hill City's transportation system. This public meeting was also used as a source to pinpoint issues within Hill City. Members of the community added to the data by voicing concerns and giving members of the SAT a view of driver behavior, which was not something that was able to be measured during the inventory. Additionally, they were given a comment sheet that could be mailed in and an online survey to fill out and make comments on. At the first public meeting, issues that brought into the discussion by members of the community were categorized into 3 major topics: pedestrian crossings, traffic safety, and wayfinding.

Pedestrian crossings, more specifically the safety of these crossings, were a frequent topic of discussion at both the public meeting and stakeholder meetings. Figure 25 shows the locations that members of the community and stakeholders identified as pedestrian crossings that are unsafe due to the environment or due to high numbers of pedestrians at these crossings.

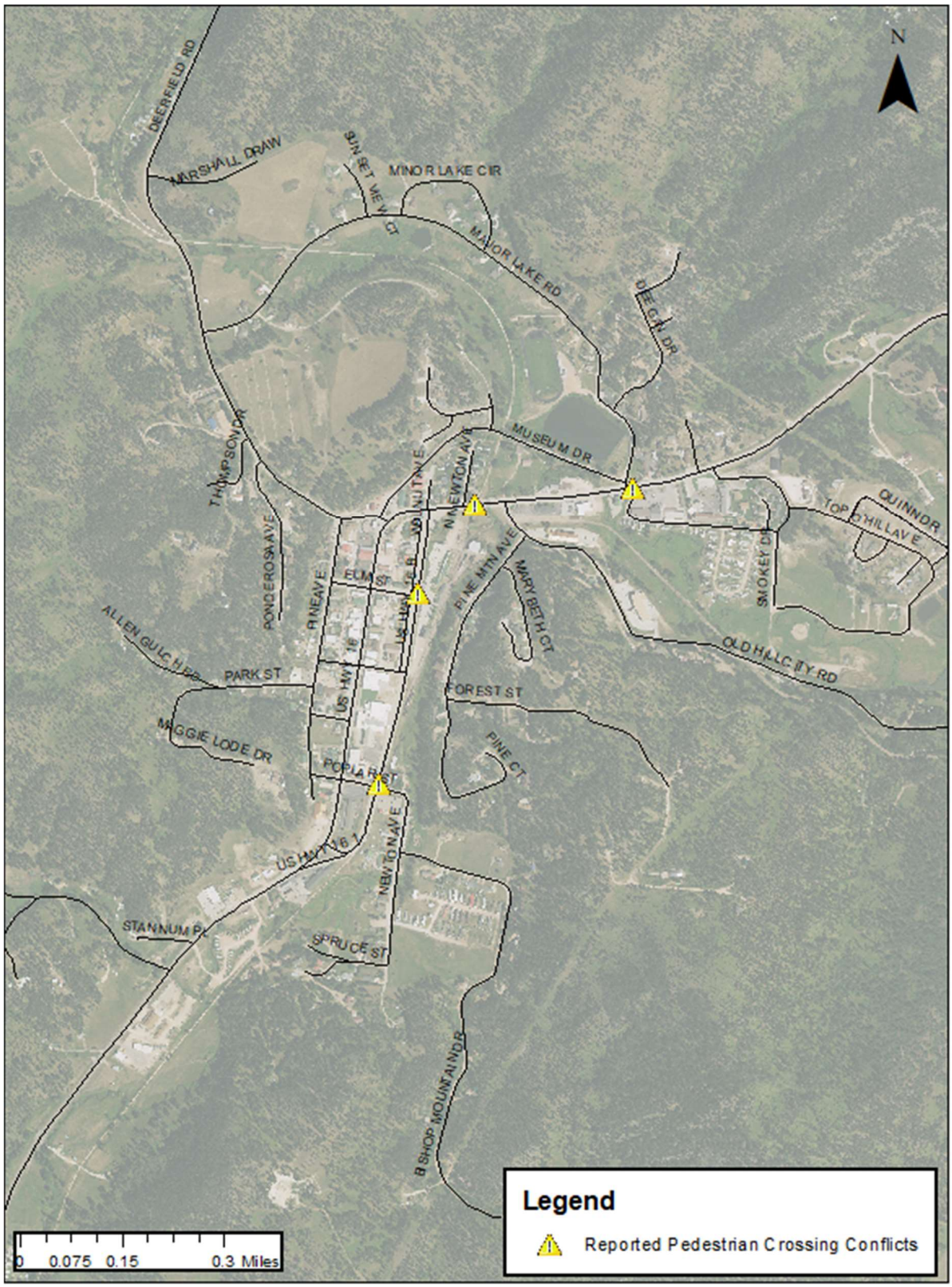


Figure 25. Pedestrian Crossing Conflicts Map

Another topic that was heavily discussed at the public meeting was traffic in general and traffic safety. Many members of the public voiced concern at driving behaviors that were observed while driving in Hill City, including drivers using the shoulder to pass vehicles attempting to make a left along US 16/16B. In addition to the concerns with driver behavior, many members of the community also voiced frustration at the difficulty of making left turns onto US 16/16B in the summer months as well as the odd arrangement of intersections making traffic confusing and potentially causing backups. Figure 26 shows intersections where driver behavior and turning is problematic.

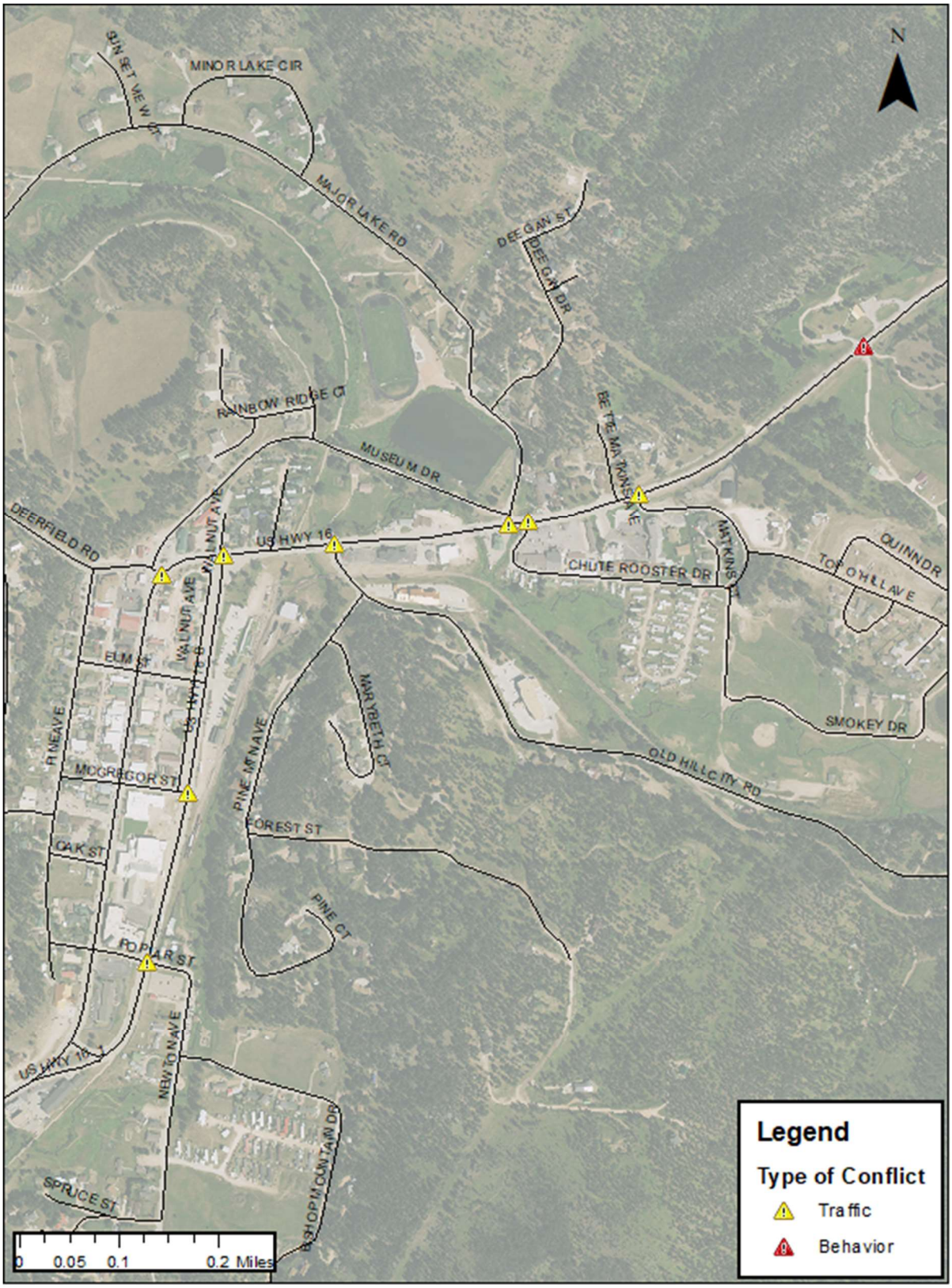


Figure 26. Intersection Conflict Map

Wayfinding was also voiced as a major concern at the public meeting. Hill City is in the unique position to have a thriving tourist industry in the summer months. This however results in large numbers of people that are not familiar with the area attempting to find their way to different locations. This means that any parking areas that are not immediately and obviously located along US 16/16B are typically not used. Another issue that was discussed was the lack of directions from the Mickelson Trail to downtown Hill City. Members of the community identified this as a missed opportunity and feel the signage for the trail itself could also be improved as people have noticed that some riders get lost finding the trail from the trailhead.

Survey Results

The survey was created and provided online on the Hill City Master Transportation Plan webpage which was on the SDDOT's website during the project. The survey asked a series of questions asking how citizens travelled in Hill City and looked for feedback and impressions of the transportation system. A total of 11 unique responses were received from Hill City area residents during the period. The study team recognizes that this is not a statistically significant sampling of the entire Hill City population, but rather it provides an additional means of gathering input from Hill City citizens. The rest of this section summarizes survey responses. Some questions were written response only and most of the multiple-choice questions gave the option to provide comments. These comments and written answer responses are compiled in Part 2 of the appendix.

Means of Transportation

Figure 27 shows percentages of respondents' means of transportation. Multiple answers were allowed; thus, the total is greater than 11 but reveal what people use most.

What methods of transportation do you currently use in Hill City at any time? (Select all that apply)

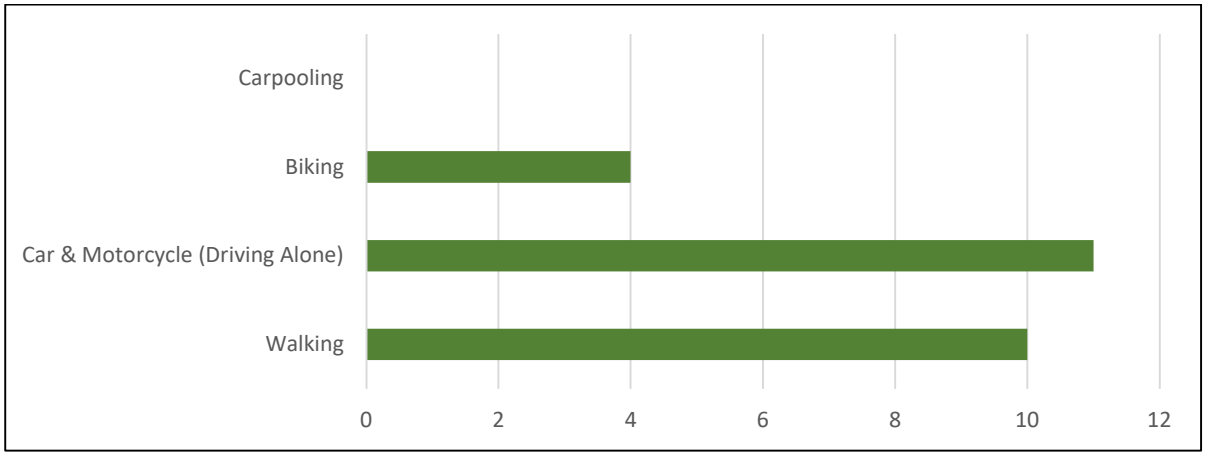


Figure 27. Means of Transportation Survey Result

Figure 27 shows that the majority of people drive alone, although there is a sizable number of people that walk along with a fairly significant portion of people that bike.

Views of Existing Issues

Figure 28 shows how residents feel about traffic safety in Hill City at the time of this report.

How would you rate traffic safety in Hill City?

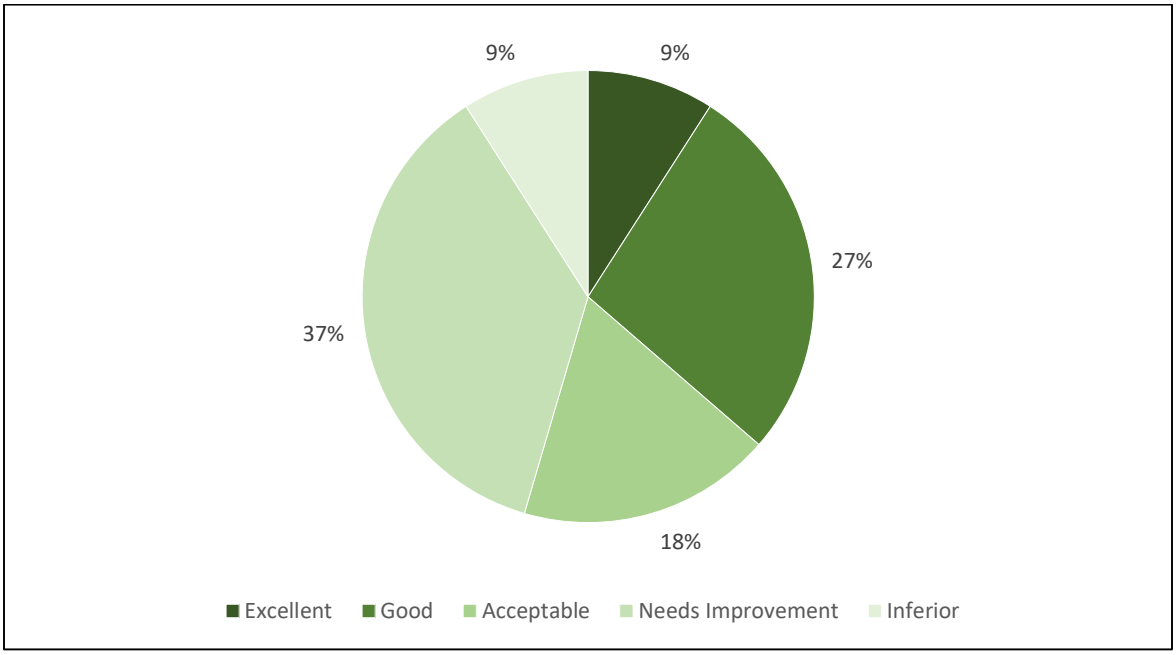


Figure 28. Views on Existing Issues Survey Result

The results of this question reveal that a large portion of residents feel that traffic safety in Hill City is inferior or in need of improvement. However, there is also a not insignificant portion of residents who feel that traffic safety is at a good or excellent level.

Evaluation of Multimodal Infrastructure

Figure 29 shows how survey respondents rated the availability and quality of safe walking and bike facilities in Hill City.

How would you rate the availability and safety of walking and biking facilities (Ex. Sidewalks, Bike Paths, Pedestrian Crosswalks, etc.)?

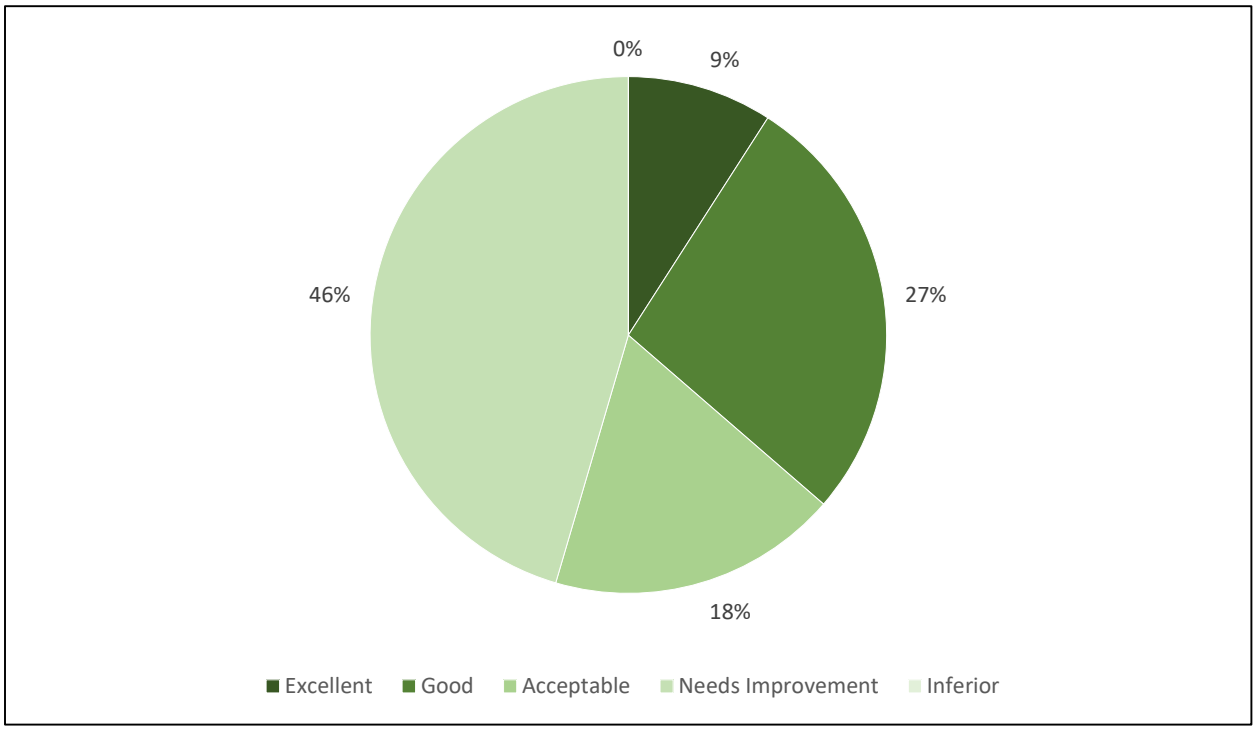


Figure 29. Evaluation of Multimodal Infrastructure Survey Results

The results from this question show that most of the survey respondents feel that bike and pedestrian facilities require improvement in Hill City.

Most Important Transportation Priorities to Address

Figure 30 shows survey results depicting issues that survey respondents feel are most important for the City of Hill City to address. These issues were rated on a scale of 1 to 6, 1 being very important and 6 being unimportant.

Rate the following from most important to least important:

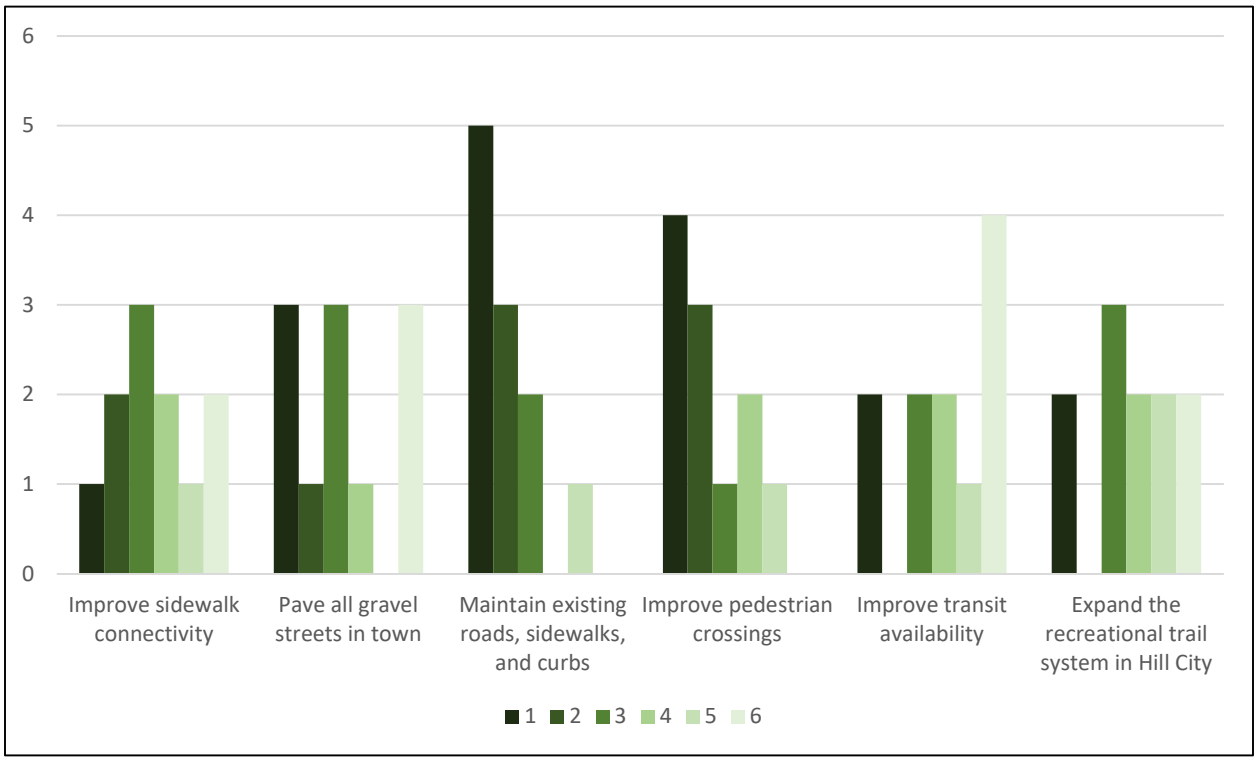


Figure 30. Most Important Issues Survey Results

Figure 30 shows that survey respondents placed a high priority on maintaining the existing transportation and drainage system in Hill City and improving pedestrian crossings, particularly those on US Highway 16 and 16B. Respondents then rated paving all gravel roads and improving sidewalk connectivity almost equally. Finally, expanding the recreational trail system was almost perfectly split amongst the respondents and improving transit availability was rated as least important of the activities listed. This lays out a clear plan moving forward for the priorities of the public for the planning of these projects into the future.

Future Conditions

An important aspect of the following recommendations is to take future conditions into account. Hill City currently has a comprehensive plan that was adopted in 2017 that projects future land use and anticipated extra territorial boundary. These are both invaluable tools that can be used to ensure that the recommendations found in this report support the future growth of Hill City. The population of Hill City and Pennington County as a whole is expected to continue increasing and so plans must be made now for this future growth. Hill City's transportation network is very well maintained and is in need of better connectivity to help take it to that next level.

Currently the most traveled road in Hill City is US 16, which sees around 5,000 vehicles per day. Over the next 20 years this number is expected to increase to almost 7,250 vehicles every day. This is a significant change for a town of this size and a will inevitably increase the traffic on the other roads in town as this increase can be expected to contain a fair number of tourists visiting Hill City. This report used all the information collected from the inventory of current conditions, input from the public, and all of the documents provided by Hill City, including the comprehensive plan and other planning documents, when creating the final list of transportation alternatives and recommendations for Hill City.

Not mentioned in this report is a number of projects which the city is, at this time this report was made, currently in the early planning phases or waiting on SDDOT for installation. Some of these projects are Rapid Flashing Beacons (RFBs) at the Mickelson Trail crossing on Highway 16, Museum Drive resurfacing, and looking at the feasibility of a turn lane in front of the visitor center.

Recommended System Projects

Proposed projects in this section have been organized first by major category and then by area of effect and suggested time of completion. Example plans, cost estimates, and funding of these alternatives are covered in sections following the recommendations.

Transportation System

The following projects are for paving plans, pedestrian safety, and guardrail replacement programs. An option that is possible but is not recommended in this section is taking "No Action". This is not recommended due to citizen desire to pave the current gravel streets, lack of sidewalks being a potential safety hazard in some sections of town, and the increasing costs of fully rehabilitating pavement rather than have multiple smaller interventions.

- **Short-Term (0 to 5 years)**
    - **Project 1A:** Develop a road paving priority plan. Members of the community have expressed a strong desire to see certain streets paved and the city identified six street groupings in their comprehensive plan they have desired to see paved. Having a plan for moving forward on this project will help the city budget for specific projects going into the future and hopefully give a timeline from there. An example plan is included in a later section along with cost estimations.
    - **Project 1B:** Develop a sidewalk paving priority plan. Sidewalks are an important aspect of pedestrian safety in communities of any size. Currently Hill City has areas that are not serviced by sidewalks and others that have sidewalks, but they are not connected to the larger system. Other areas have shown a need for sidewalks where there currently are none. The development of a sidewalk paving priority plan to fill the gaps in this network's service will help with pedestrian

safety in Hill City on residential streets, away from the federal highway. An example plan is included in a later section along with cost estimations.

- **Project 1C:** Request the addition of additional Rapid Flashing Beacons (RFBs) at pedestrian crossings on US 16 and US 16B. SDDOT currently has plans to install RFBs at the Mickelson Trail crossing on US Highway 16. Citizens noted that crossing these highways was difficult and additional warning signage or flashing beacons was desired. Additional locations for these beacons will help pedestrian crossings at different locations in Hill City and will potentially improve pedestrian safety at other crossings in Hill City. These requests can be for multiple crossings at the same time. Details on this process can be found in Part 3 of the appendix.

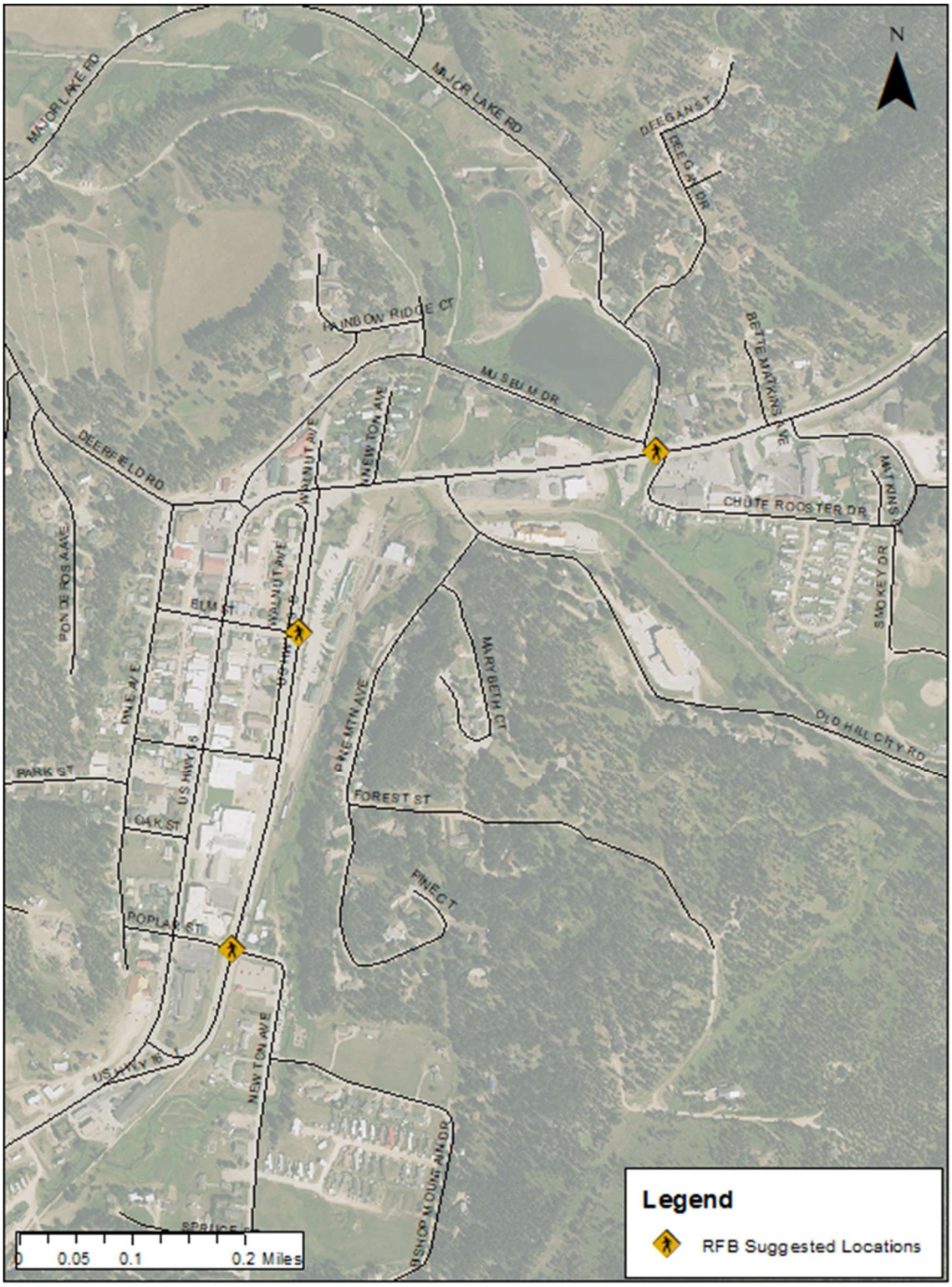


Figure 31. Rapid Flashing Beacon Suggested Locations

- **Project 1D:** Request that the SDDOT reduce the speed limit on US Highway 16 and Highway 16B through Hill City from 35MPH to 30MPH. Members of the public in the online survey identified that the speed limit through Hill City is too high for the safe and effective use of the transportation system. This reduction should increase safety and slow traffic down as it passes through the community. All changes to the speed limit or signage along US 16 and US 16B must be done with regional SDDOT approval and support. Details on this process can be found in Part 3 of the appendix. **Note: Changing the speed limit will not be effective if there is insufficient enforcement of the established speed limit.*

- **Mid-Term (5 to 10 years)**
  - **Project 1E:** Remove and replace guardrail to ensure installed guardrail complies with modern standards. The guardrail installed throughout Hill City was of considerably low quality at the time of inventorying and some of this guardrail was in areas that could be considered critical for safety. Other sections of guardrail were far outside of recommended standards and were seemingly used for a different purpose. It is therefore recommended that Hill City replace some sections of guardrail and replace it with more modern, up to standards guardrail and remove and replace other guardrail that can be replaced, and other material better suited for the task can be used in its place.

- **Long-Term (10 to 20 years)**
  - **Project 1F:** Realign the eastern intersection of Chute Rooster Drive and US 16. Members of the public indicated that this intersection is very difficult to traverse with only 30 feet between the US Highway and a 90 degree turn in addition to

being a very narrow street. One solution is to realign this street, so it is straighter as it approaches US Highway 16 as shown in Figure 32. This project will be expensive as it will require the city to buy property for the right of way for this street. Another potential solution would be to simply widen the street by purchasing right of way from the small parcel near the intersection. The base map in Figure 32 was retrieved from the City of Rapid City Rapidmap.

Figure 32. Chute Rooster Drive Potential Realignment

Ordinance and Policy

Projects in this category are projects that will have a greater effect on the city's ordinances and policies. These projects will be less "visible" to the public and will likely take slightly longer but will have a large impact on the quality of the transportation system and the vision of the city moving forward.

- **Short Term (0 to 5 years)**
    - **Project 2A:** Develop a pavement preservation program. A pavement preservation program can help improve roads while also cutting down on maintenance costs. Developing this plan will require an inventory of current road conditions as well as ensuring that roads never become too degraded before work begins on them. Currently Hill City's road conditions are quite good and basing a preservation plan to ensure that roads are on a rotating schedule would be best. This program could be based on the current age of the road surface should the city have access to all that information for every city owned road. Otherwise, the city could set up a geographic system where all roads in one section of town are done at the same time and rotate which sections are done every year.
    - **Project 2B**: Ensure enforcement of current city ordinances and other applicable laws. This will help ensure consistency to laws and posted signage and ensure the safety of drivers and pedestrians in Hill City. Enforcement of no parking signs along US 16B should be considered a top priority along with enforcement of sidewalk clearance ordinances. See Chapter 7.22, Snow Removal And Maintenance Of Sidewalks for current city ordinance on sidewalk clearance and maintenance.

- **Midterm (5 to 10 years)**
    - **Project 2C:** Update sidewalk design and placement guidelines in city ordinances. Currently the placement of sidewalks in Hill City is governed by the Planning Commission as stated in the city's ordinances in Title 9, Chapter 14- Section 1405.11, Sidewalks. The current ordinances also include width requirements in addition to placement requirements. The ordinance should be updated to require the placement sidewalks and only disallow them with permission of the Planning Commission instead of the current arrangement. This will mean that developers will be required to place sidewalks in any new developments to prevent the current issue of having a disconnected sidewalk network while also requiring developers to seek special permission to not include sidewalks. The design of sidewalks should also be updated to a more modern standard of six foot wide.
    - **Project 2D:** Adopt road design standards. The current design standards in the ordinance reference "Local Government construction standards" of which there is no document that the city has adopted to reference. The city has generally been using the *City of Rapid City Infrastructure Design Criteria* when bidding projects. The city should formally adopt these design criteria and update the ordinance to reflect this change and to make the standards clearer to both citizens and prospective contractors. This update may require changes to the design guidelines that better reflect Hill City's needs, the design guidelines should not be adopted as is without reviewing and potentially making changes first. These design standards also contain references to sidewalk design so this project could also be used as a way to complete **Project 2C**.

- **Project 2E:** Continue to partner with local rural transit authority. Rural transit has been shown to be an excellent resource to smaller communities as a way to transport people to larger population centers for any variety of services that the smaller community cannot provide. Hill City is currently working with Prairie Hills Transit to provide service in the area, and this is a partnership that the city should continue to foster into the future.

Example Priority Plans

As referenced in the previous section, prioritizing different paving projects to ensure the greatest benefit to the community while also ensuring the city can still maintain its roads to a high standard is considered a high priority to members of the public. Below are example prioritizations for road paving and sidewalk connections. Note that while these were created with input from members of the community and the SAT these prioritization plans should not be considered a binding recommendation but instead a starting point for the city to develop their own final plan if they deem it necessary. It should also be noted that any priority plans the city makes should be flexible and able to change as the situation changes.

Example Road Paving Priority Plan

- **Short Term (0 to 5 years)**
    - **Project 3A:** N Newton Avenue. Newton Avenue is the last gravel street connected to US 16 in Hill City. Much of the concern with paving these streets is preventing runoff from the gravel potentially impeding travel or drainage along paved streets. Newton has been identified by the city as a high priority for paving.
    - **Project 3B:** Deegan Drive and Lacy's Court. Deegan Drive and Lacy's Court have also been identified as high priority due to citizen request and much more significant runoff issue along Deegan Drive with Deegan Street being paved. This creates a scenario where water runs off from Deegan Street goes onto Deegan Drive where it washes it out towards Major Lake at the bottom of the hill.

- **Midterm (5 to 10 years)**
    - **Project 3C:** Spruce Street and Short Street. Spruce and Short Streets are at the end of S Newton Avenue which is already paved up to that point. This area has been desired to be paved by the city but is considered a lower priority compared to the previously mentioned projects.
    - **Project 3D:** Forest Street from Pine Mountain Avenue to city limits. Forest Street connects with the already paved Pine Mountain Avenue and sits uphill from it. This once again creates runoff concerns and means there is a desire to have this street paved. Due to lower overall traffic demands this section is not as high of a priority as the previously mentioned projects.
- **Long Term (10 to 20 years)**
    - **Project 3E:** Smokey Drive. Smokey Drive is a loop the turns south off Chute Rooster Drive and runs along a small portion of Spring Creek and near Memorial Park. Currently with the park underutilized and plans for major improvements to the park in the future traffic will increase along this road. For now, traffic is low and as such paving this road can wait for some time.
    - **Project 3F:** Bishop Mountain Drive from existing pavement to end of street. Bishop Mountain Drive runs south with its only connection to S Newton Avenue. A portion of this road has already been paved but a significant portion is currently gravel. Due to low traffic demands this section of road has a low priority for being paved.

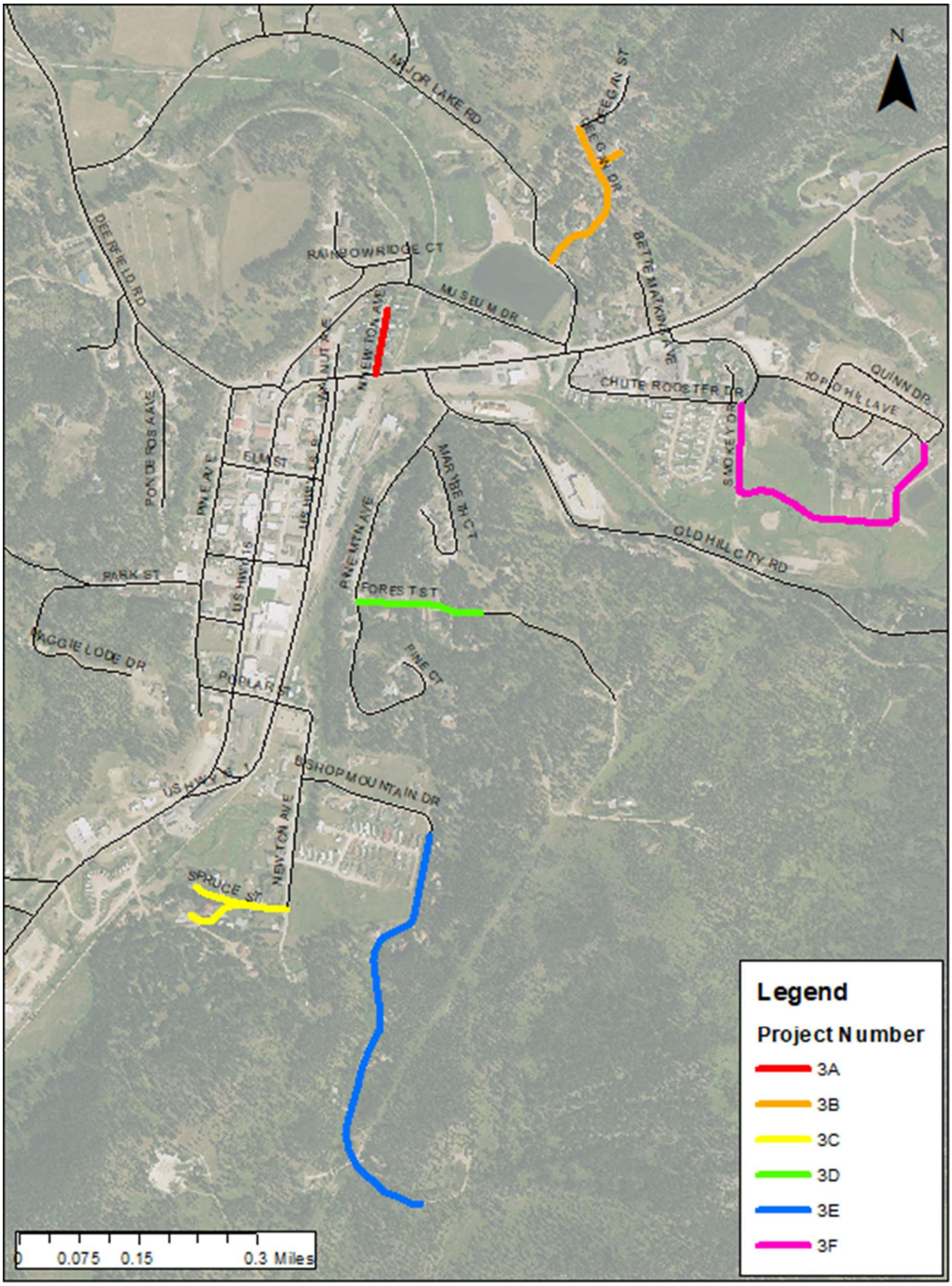


Figure 33. Example Road Paving Priority Plan

Example Sidewalk Priority Plan

- **Short Term (0 to 5 years)**
    - **Project 4A:** Deerfield Road sidewalk installation from Main Avenue to Robinson Drive. Deerfield has been identified as a desired walking trail by the city and as a way to connect City Hall to the rest of the city better. Phase 1 connects from Main Street to Thompson Drive.
    - **Project 4B:** Deerfield Road sidewalk installation from Robinson Drive to Major Lake Drive. Phase 2 of the Deerfield sidewalk will take it from Thompson Drive and connect it to Major Lake Drive. This will provide a second pedestrian access to the residents of the Major Lake area and those further north on Deerfield.
- **Midterm (5 to 10 years)**
    - **Project 4C:** Top O' Hill Avenue from Chute Rooster Drive to Quinn Drive. Currently sidewalks on Quinn Drive and Top O' Hill Avenue are a self-contained network with no connections out to any other sidewalks in Hill City. This project would remedy that by providing a connection to Chute Rooster Drive.
    - **Project 4D:** Quinn Drive sidewalk installation from Top O' Hill Avenue to existing sidewalk. This project is to ensure proper connection for any new build that happens in the future along Quinn Drive. This would connect with **Project 4C** and could potentially be done in conjunction with that project.
- **Long Term (10 to 20 years)**
    - **Project 4E:** Major Lake Drive sidewalk installation from Deerfield Road to Deegan Drive. This is currently shown as a single project on this example but separating this project and phasing out through multiple years would be

encouraged due to the length and cost. At present this sidewalk is a low priority but would go a long way to connecting the northern part of Hill City.

- **Project 4F:** Old Hill City Road sidewalk installation from US Highway 16 to east edge of Comfort Inn & Suites property. During analysis of traffic at US 16 and Old Hill City Road, several pedestrians and bicyclists were noted to use Old Hill City Road. As such it was deemed that a pedestrian connector would be beneficial in this area to improve pedestrian safety. However, due to low traffic and lack of connection for residents and businesses within Hill City this was deemed a low priority route.

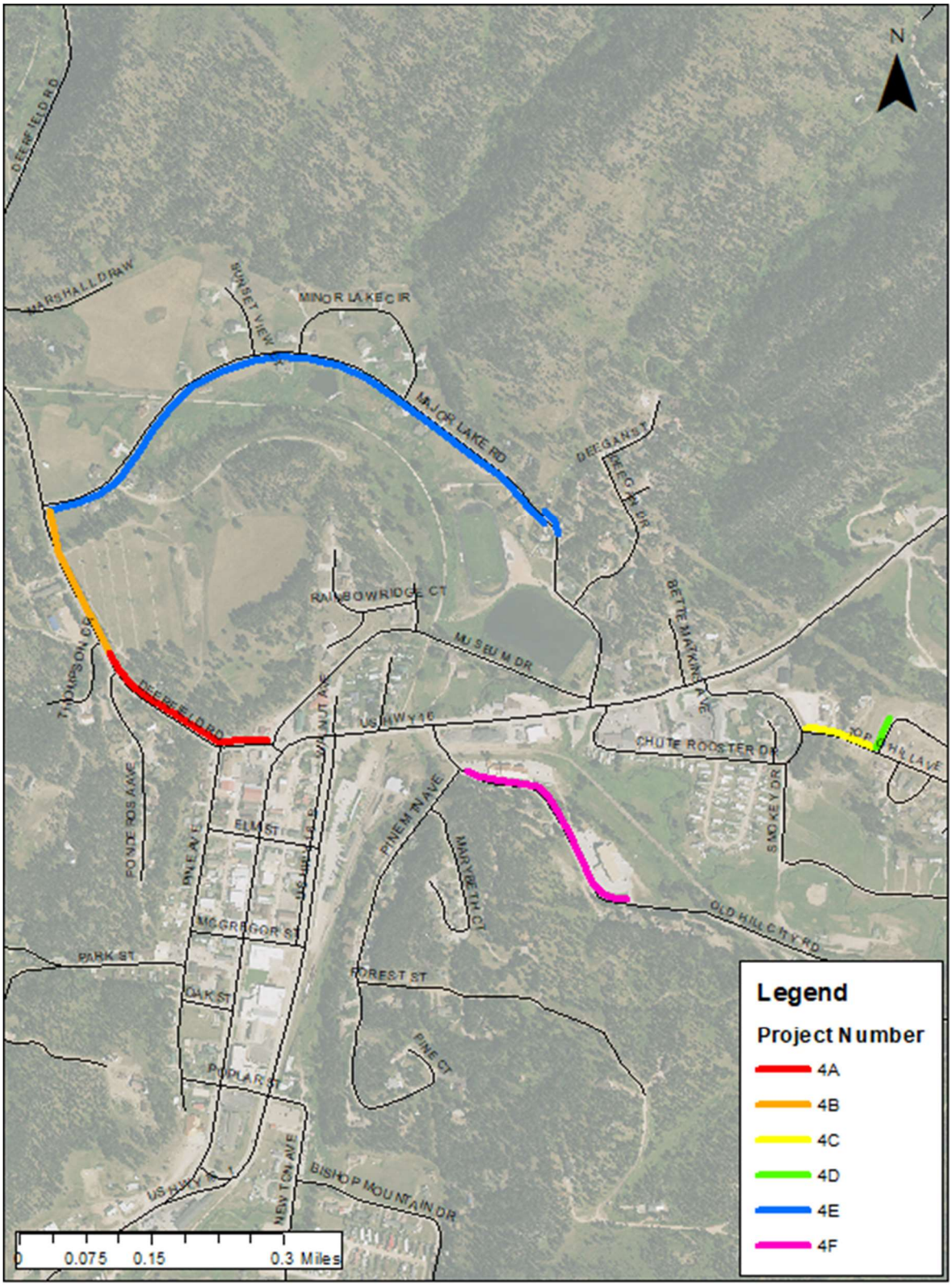


Figure 34. Example Sidewalk Priority Plan

Cost Estimates for Recommended Projects

The tables shown below, details cost estimates for each project recommended in the plan. The tables show total costs and, depending on the project, are not necessarily intended to be entirely completed immediately or at one time. Additionally, the costs are capital improvement costs only and many not necessarily represent a total cost estimate. Other expenses such as engineering consultation or design fees, utilities and right of way may increase the total cost to the city. However, the city may be able to lessen expenses by using an area cost with the ability to implement the projects at lower rates than SDDOT estimates. All cost estimates are based on per mile costs from SDDOT projects.

Short-Term (0 to 5 years)

Table 1. Short-Term Recommendations

Description	Treatment	Estimated Cost
Project 1A: Develop a road paving priority plan.	Documentation	$0
Project 1B: Develop a sidewalk paving priority plan.	Documentation	$0
Project 1C: Request the addition of additional Rapid Flashing Beacons (RFBs) at pedestrian crossings on US 16 and US 16B.	Documentation	$0
Project 1D: Request that the SDDOT reduce the speed limit on US 16 and US 16B through Hill City from 35MPH to 30MPH.	Documentation and Enforcement	$0
Project 2A: Develop a pavement preservation program.	Documentation	$0
Project 2B: Ensure enforcement of current city ordinances and other applicable laws.	Enforcement	$0

Project 3A: N Newton Avenue Asphalt Overlay.	Pave existing gravel road, 20 feet wide asphalt, ~422' of asphalt road	~$40,000
Project 3B: Deegan Drive and Lacy's Court Asphalt Overlay.	Pave existing gravel road, 20 feet wide asphalt, ~1,268' of asphalt road	~$120,000
Project 4A: Deerfield Road sidewalk installation from Main Avenue to Robinson Drive.	Create new 6 feet wide sidewalk, ~1,162' of sidewalk	~$40,000
Project 4B: Deerfield Road sidewalk installation from Robinson Drive to Major Lake Drive.	Create new 6 feet wide sidewalk, ~950' of sidewalk	~$35,000

Mid-Term 5 to 10 years

Table 2. Mid-Term Recommendations

Description	Treatment	Estimated Cost
Project 1E: Remove and replace guardrail to ensure installed guardrail complies with modern standards.	Replace old guardrail or remove old guardrail without a replacement if replacement is deemed unnecessary.	Cost varies, low end estimates at ~$500 per foot of guardrail for purchase and installation.
Project 2C: Update sidewalk design and placement guidelines in city ordinances.	Documentation	$0
Project 2D: Adopt road design standards.	Documentation	$0
Project 2E: Continue to partner with local rural transit authority.	Documentation	$0
Project 3C: Spruce Street and Short Street Asphalt Overlay.	Pave existing gravel road, 20 feet wide asphalt, ~1,056' of asphalt road	~$100,000
Project 3D: Forest Street to City Limits Asphalt Overlay.	Pave existing gravel road, 20 feet wide asphalt, ~845' of asphalt road	~$80,000
Project 4C: Top O' Hill Avenue from Chute Rooster Drive to Quinn Drive.	Create new 6 feet wide sidewalk, ~422' of sidewalk	~$15,000
Project 4D: Quinn Drive sidewalk installation from Top O' Hill Avenue to existing sidewalk.	Create new 6 feet wide sidewalk, ~160' of sidewalk	~$6,000

Long-Term 10 to 20 years

Table 3. Long-Term Recommendations

Project Description	Treatment	Estimated Cost
Project 1F: Realign the eastern intersection of Chute Rooster Dr and US 16.	Acquire right of way and construct paved road. Potential rock removal to remove line of sight conflicts. Permission will be required from region SDDOT Access Management Engineer for closing of one access and opening another.	Cost Varies
Project 3E: Smokey Drive Asphalt Overlay.	Pave existing gravel road, 20 feet wide asphalt, ~2,270' of asphalt road	~$215,000
Project 3F: Bishop Mountain Drive Asphalt Overlay.	Pave existing gravel road, 20 feet wide asphalt, ~2,905' of asphalt road	~$275,000
Project 4E: Major Lake Drive sidewalk installation from Deerfield Road to Deegan Drive.	Create new 6 feet wide sidewalk, ~3,910' of sidewalk	~$130,000
Project 4F: Old Hill City Road sidewalk installation from US Highway 16 to east edge of Comfort Inn & Suites property.	Create new 6 feet wide sidewalk, ~1,320' of sidewalk	~$45,000

Funding Availability

Financial planning is a vital component of the Transportation Plan. The availability of funding, designation of funds and future financial planning will often be the elements that make or break the implementation of the projects identified in this Transportation Plan. Therefore, it is just as important to identify the financial needs for the future as it is to identify the transportation needs of the community. South Dakota transportation projects are generally funded with federal, state, or local funds. Funding for transportation may come from federal and state fuel tax, local general funds, wheel tax, vehicle registration fees or property tax. SDDOT has special programs for community access, industrial park roads and transportation alternatives or non-motorized transportation networks. Other programs from multiple agencies exist within South Dakota that have programs for electric vehicle charging stations, recreational trails, and a wide variety of helpful studies.

As the city budgets for transportation projects, it is important to know the priorities of the community. Although these priorities should be evaluated from time to time, the long-term goals of the community will develop the long-range plan needed to budget for large projects in the distant future as well as small, annual transportation projects that either maintain the existing system or accomplish a large-scale project built in a series of phases.

Potential local funding sources for city transportation network projects may include:

- Sales tax funds
- Property tax funds
- Assessment of adjacent property owners

- Funds raised through local fundraising efforts, including private or corporate donations

In addition, the city may apply for a variety of grant or special program funding administered by the State of South Dakota. These sources may include:

- Transportation Alternatives Program funds for non-motorized transportation projects including safe routes to school, safe routes for non-drivers, shared use paths and others. (SDDOT)
- Community Access Road Grant funds, for cities less than 5,000 in population, for the construction or reconstruction of major streets, such as roads to the school or elevator. (SDDOT)
- Recreational Trails Grants for the development and maintenance of non-motorized and motorized trails for recreational purposes. (SDGF&P)
- Walking Audit Grants, Active Transportation, and other healthy lifestyle related grants for the development of transportation networks supporting walking, biking, and other active transportation facilities. (SDDOH)
- Safety Funds for safety improvement projects. (SDDOT)
- Federal Bicycle and Pedestrian Funding Opportunities for multi-modal transportation related projects.
- Bicycle and Pedestrian Grants for bike and pedestrian transportation related projects. Many are available, competitive, and fund projects at various levels.
- Advanced Transportation Technologies and Innovative Mobility Deployment (ATTIMD) through USDOT. This program is for the deployment of different advanced systems such

as traveler information systems, infrastructure maintenance of eligible projects, and transportation data collection. This is a yearly program with funding available until 2026.

- Thriving Communities Program (TCP) through USDOT. Helps facilitate the planning and development of transportation and community revitalization. This grant can help further build on transportation and other types of planning.
- Safe Streets and Roads for All (SS4A) through USDOT. Supports the development of comprehensive safety action plans and the implementation of projects. This grant can help with planning for safe streets or complete streets as well as the implementation of plans.