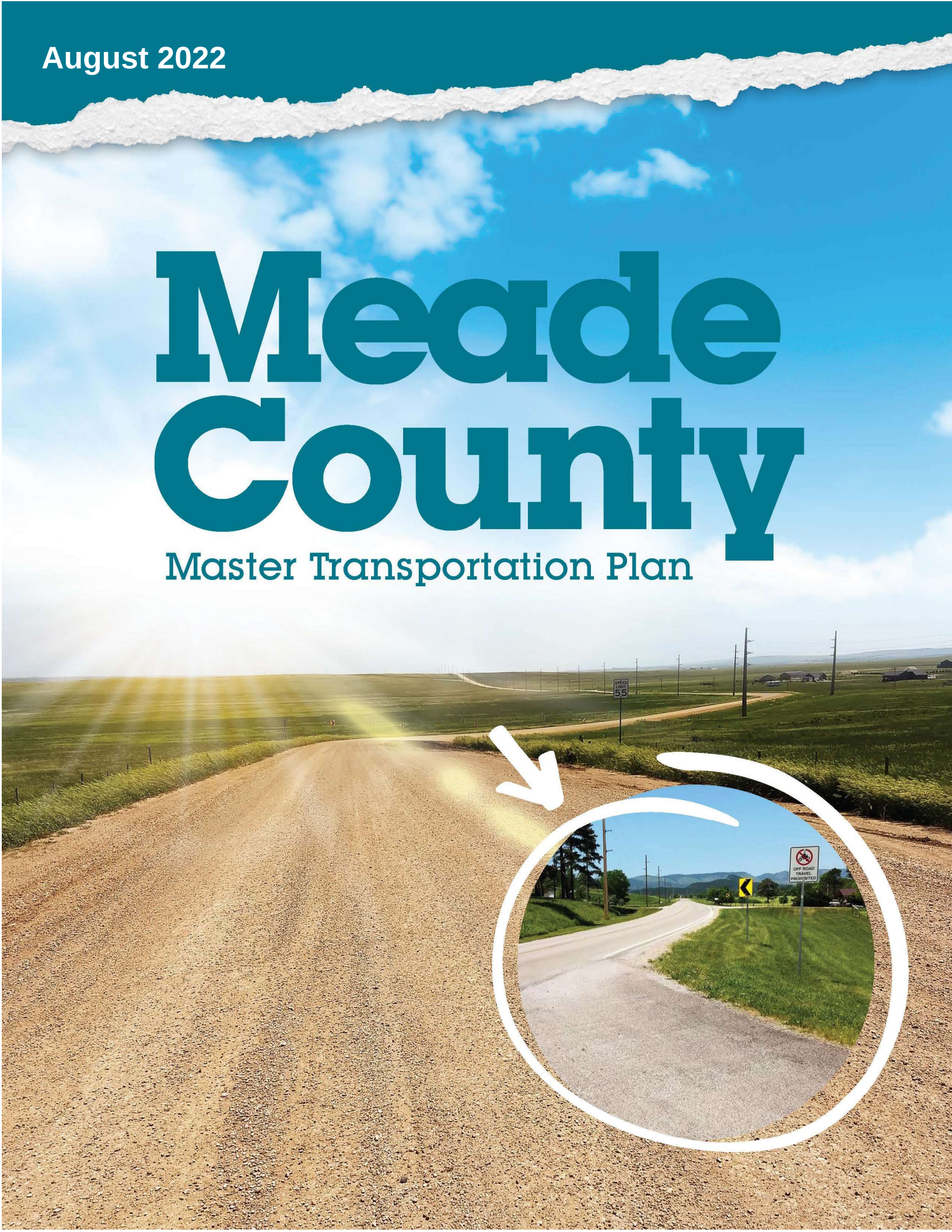
August 2022

Meade County

Master Transportation Plan



The preparation of this report has been financed in part through grant(s) from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 and Metropolitan Planning Program, Section 104(f) of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation

The preparation of this report has been financed through the South Dakota Department of Transportation's SPR Funding for Local Agencies program. The contents and recommendations of this report do not necessarily reflect official views, policy, or endorsement of the South Dakota Department of Transportation.

The South Dakota Department of Transportation and the Rapid City Area Metropolitan Planning Organization provide services without regard to race, color, gender, religion, national origin, age, or disability, according to provisions contained in SDCL 20-13, Title VI of the Civil Rights Act of 1964, the Rehabilitation Act of 1973, as amended, the Americans With Disabilities Act of 1990 and Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations, 1994.

To request additional information on the SDDOT's Title VI/Nondiscrimination policy or the file a discrimination complaint, please contact the Department's Civil Rights Office at 605-773-3540. Any person who has questions concerning this policy or who believes they have been discriminated against should contact the Rapid City Area Metropolitan Planning Organization Title VI Coordinator, Kip Harrington, at 605-394-4120.

Meade County Master Transportation Plan

Prepared for:

Meade County

1300 Sherman Street

Sturgis, SD 57785

Prepared by:

KLJ

330 Knollwood Drive

Rapid City, SD 57701

Project Manager: Steve Grabill, PE, PTOE

KLJ Project Number 2102-00279

August, 2022

Table of Contents

Figures

Tables

Appendices

Executive Summary

Introduction

The Meade County Master Transportation Plan (MTP) is a key planning document that will guide transportation investment and policy through the year 2045. This plan serves as an update to the current MTP, which was completed in 2016. The MTP was a collaborative effort involving stakeholders, agency partners, and community members, and provides a blueprint for development of the transportation system using the community's goals and priorities as a foundation.

The Meade County MTP emphasizes a balanced approach to meeting future transportation demands. A focus on improving sustainable transportation options such as biking, walking and public transit reduces roadway congestion and supports stewardship of the County's natural resources. The MTP considers a range of project recommendations to address the community's diverse transportation needs.

Public Engagement

Public Input Meetings (PIMs) were held to engage stakeholders and the public. Two PIM series were hosted during the planning process. Separate stakeholder meeting opportunities were also provided during the PIM meeting days. The consultant team organized and coordinated promotion, activities, and materials for these events.

PIM #1

The first PIM series consisted of two sessions, with the first held on September 29th (Piedmont American Legion) and the second held on September 30th (Meade County Courthouse). This introductory PIM series was designed to inform the public about the project background, baseline conditions, and Goal Areas, and to generate discussion on transportation needs and issues. PIM #1 was advertised through a variety of media channels, including newspaper ads, website, social media, and e-blast channels.

Public Input Opportunity #2

The second PIM series consisted of two sessions, with the first held on May 25th (Piedmont American Legion) and the second held on May 26th (Meade County Courthouse). This PIM series provided an opportunity for the public to review and comment on the draft Meade County MTP.

During the sessions, the project team gave a presentation on the analysis and recommendations contained in the draft MTP. PIM #2 was advertised through a variety of media channels, including newspaper ads, website, social media, and e-blast channels.

Study Advisory Team (SAT)

Development of the Meade County MTP was guided by the SAT, which was formed at the onset of the planning process. The SAT played a central advisory role throughout the planning process by providing direction at key decision points and helping to assure that the plan was reflective of the County's transportation vision. SAT members included staff and representatives from the County, SDDOT, and the MPO. The SAT met on six occasions throughout the planning process.

Baseline Conditions Analysis

An analysis of baseline conditions was completed to evaluate existing conditions relative to all modes of travel. The baseline conditions analysis included a review of growth within the County, roadway conditions, traffic and crash data, culvert and bridge conditions, freight considerations, and multimodal facilities.

Population and subdivision growth within the County has been growing at a rapid pace over the past five years and has put additional stress on the existing transportation system. Generally speaking, traffic capacity issues are isolated to the urban corridors and intersections. Crash data indicates that the high frequency crash sites are occurring at the busiest intersections, also located within the County's cities and towns. The primary multimodal needs were identified as gaps within sidewalk and shared use paths located near urban communities and schools.

Projected Conditions Analysis

Twenty-year traffic projections were developed to evaluate potential traffic capacity concerns for the future. The top 19 traffic volume locations provided by SDDOT and selected StreetLight count locations by estimated 2045 Average Daily Traffic (ADT) are shown in Table ES-1.

Table ES-1: Traffic Volume Locations by 2045 ADT Estimate

Site ID	Source	Corridor	Description	2021 ADT	2045 Estimate	2045 With Development
547041	SDDOT Traffic Count Location	Stage Stop Rd	Between J B Rd & I-90W	3,320	4,731	5,013
547042	SDDOT Traffic Count Location	Elk Creek Rd	Between Hills View Dr & I-90W	2,713	3,866	4,097
547303	SDDOT Traffic Count Location	Whitewood Rd	Between Us14A & 20Th St - Sturgis	1,714	2,442	2,588
547062	SDDOT Traffic Count Location	Erickson Ranch Rd	Between Peaceful Pines Rd & West Ridge Rd	1,320	1,881	1,993
547304	SDDOT Traffic Count Location	Whitewood Rd	Between Industry Rd & Meade/Lawrence County Line	1,058	1,508	1,598
547302	SDDOT Traffic Count Location	Vanocker Canyon Rd	South of Junction Ave - Sturgis	1,032	1,471	1,558
547050	SDDOT Traffic Count Location	Elk Creek Rd	Between Ricard Rd & Golden Valley Dr	815	1,161	1,231
547060	SDDOT Traffic Count Location	New Underwood Rd	Between Red Top Rd & Curlew Rd	679	968	1,025

552921	SDDOT Traffic Count Location	150 Pl	Between Airway Ct & 225 St - Box Elder	524	747	791
547072	SDDOT Traffic Count Location	New Underwood Rd	Between 209 St & Alkali Rd	469	668	708
547067	SDDOT Traffic Count Location	Avalanche Rd	Between Eden Rd & Elm St	445	634	672
547073	SDDOT Traffic Count Location	New Underwood Rd	Between Hay Draw Rd & Wilcox Rd	378	539	571
547049	SDDOT Traffic Count Location	Elk Vale Rd	Between Prairie Meadows Rd & Horseshoe Rd	354	504	535
547295	SDDOT Traffic Count Location	Vanocker Canyon Rd	Between 1St Ave & Otter Rd - Sturgis	321	457	485
547070	SDDOT Traffic Count Location	Alkali Rd	Between 135 Ave & 132 Ave	244	348	368
547045	SDDOT Traffic Count Location	Pleasant Valley Rd	Between 130 Ave & I-90E	214	305	323
547014	SDDOT Traffic Count Location	Elk Creek Rd	Between School Rd & Horseshoe Rd	210	299	317
547064	SDDOT Traffic Count Location	Elk Creek Rd	Between 144 Ave & Elk Vale Rd	198	282	299
547046	SDDOT Traffic Count Location	Cemetery Entrance Road	Main Black Hills National Cemetery Entrance	164	234	NA
1010	StreetLight Analysis Zone	Fort Meade Way	Between Pleasant Valley Rd & SD Hwy 34	900	1,300	1,350
1020	StreetLight Analysis Zone	Alkali Rd	West of Junction with 139 Ave	250	350	400
1030	StreetLight Analysis Zone	134th Ave/Pleasant Valley Rd	North of Junction with Tilford Rd	230	350	350
1040	StreetLight Analysis Zone	Tilford Rd	East of Junction with Ricard Rd	-	-	-
1050	StreetLight Analysis Zone	Elk Vale Rd	Between Tilford Rd & Alkali Rd	200	300	300
1060*	StreetLight Analysis Zone	Elk Vale Rd S	Between Tilford Rd & Elk Creek Rd	250	350	400

1070	StreetLight Analysis Zone	I-90	Between Sturgis & Rapid City	18,400	24,500	25,600
1080*	StreetLight Analysis Zone	Erickson Ranch Rd	Between Peaceful Pines Rd & West Ridge Rd	1,450	2,100	2,200
1090*	StreetLight Analysis Zone	Haines Ave	Between Peterson Rd & Virginia Ln	1,500	2,150	2,300
1100*	StreetLight Analysis Zone	Elk Vale South S	Between Prairie Meadows Rd & Horseshoe Rd	900	1,300	1,400
1110*	StreetLight Analysis Zone	New Underwood Rd North	Between Hope Rd & Hay Draw Rd	600	900	900
1120*	StreetLight Analysis Zone	New Underwood Rd Center	Between West Elm Springs Rd & Alkali Rd	700	1,000	1,050
1130*	StreetLight Analysis Zone	New Underwood Rd South	Between Red Top Rd & Curlew Rd	800	1,150	1,200
1140*	StreetLight Analysis Zone	Elm Spring Rd North	Between Boneita Rd & Hay Draw Rd	150	200	250
1150	StreetLight Analysis Zone	Elm Spring Rd	North of Pennington County Line	200	300	300
1160	StreetLight Analysis Zone	Antelope Creek Rd	Between Elk Creek Rd & 224 St	650	950	1,000
2010	StreetLight Analysis Zone	I-90	NW of Sturgis	12,200	16,200	17,000
2020	StreetLight Analysis Zone	Hwy 79	South of Butte County Line	2,000	2,700	2,800
2030	StreetLight Analysis Zone	Hwy 34	East of Junction with Elm Springs Rd	700	950	1,000
2040	StreetLight Analysis Zone	I-90	East of Rapid City	8,000	10,600	11,100
2050	StreetLight Analysis Zone	Hwy 73	South of Faith	800	1,100	1,100
2060	StreetLight Analysis Zone	US 212	West of Faith	500	700	700

It is noteworthy that no future roadway capacity concerns were identified based on future traffic volumes. This does not mean that addition of turn lanes at some key intersections should not be considered, as turn lanes can improve both traffic operations and safety.

Project Recommendations

The project identification process was used to define three categories of projects: Roadways, Bridges, and Multimodal (Bike and Ped) projects. This process is outlined below:

- First, a preliminary set of project recommendations was developed in coordination with the Study Advisory Team and county staff. These preliminary recommendations were based on available data, transportation priorities as expressed by the county, the 2016 transportation plan, and public input received during the planning process.
- Second, the set of project recommendations was assessed against current and historical conditions, such as roadway safety within the study area.
- Third, the set of project recommendations was assessed against projected conditions, including future traffic operations, and forecast areas of concentrated population and employment growth.
- Fourth, the set of projects was refined by working closely with stakeholders and staff.

This process provided a progressive approach by which the project team could narrow, adjust, and refine the universe of projects based on existing and projected conditions.

Short-Range Projects

Short-Range projects were drafted from the county's 5-year plan and condensed where applicable. It is assumed that these will remain the county's priority in the short term. Short-range projects are listed with a location, brief description, and cost. Projects with a listed year of 2021 were assumed to have been completed and have been omitted. Short range projects are listed in Table ES-2. Short range project locations are shown in Figure ES-1.

Table ES-2: Short-Range Roadway Projects

Corridor/Project Location	Description	Total Project Cost (in Thousands)	Source
Multiple Projects	Chip Seal	1,510	County 5-Year Plan
Structure No. 47-541-100, 9 mi. S. & 5 mi. E. of Maurine	Replace Structure (Already in Progress)	1,867	County 5-Year Plan
Structure No. 47-635-190, 6 mi. E. & 12 mi. N. of White Owl on Whitetail Rd.	Replace Structure	550	County 5-Year Plan
Structure No. 47-549-149, 21.1 mi. W. & 13.9 mi. S. of Faith on Pine Creek Rd.	Replace Structure	462	County 5-Year Plan
Rolling Hills Rd from Nemo Road North 2 mi.	Fix Drainage	34	County 5-Year Plan
N Haines Ave. from Pennington Co. line 6.12 mi. North to Elk Creek Rd.	Change to 24' Deck with 4' Shoulders	6,500	County 5-Year Plan
Alkali Rd from Ft. Meade Way east 5 mi. to Titan Rd.	2" overlay	2,000	County 5-Year Plan

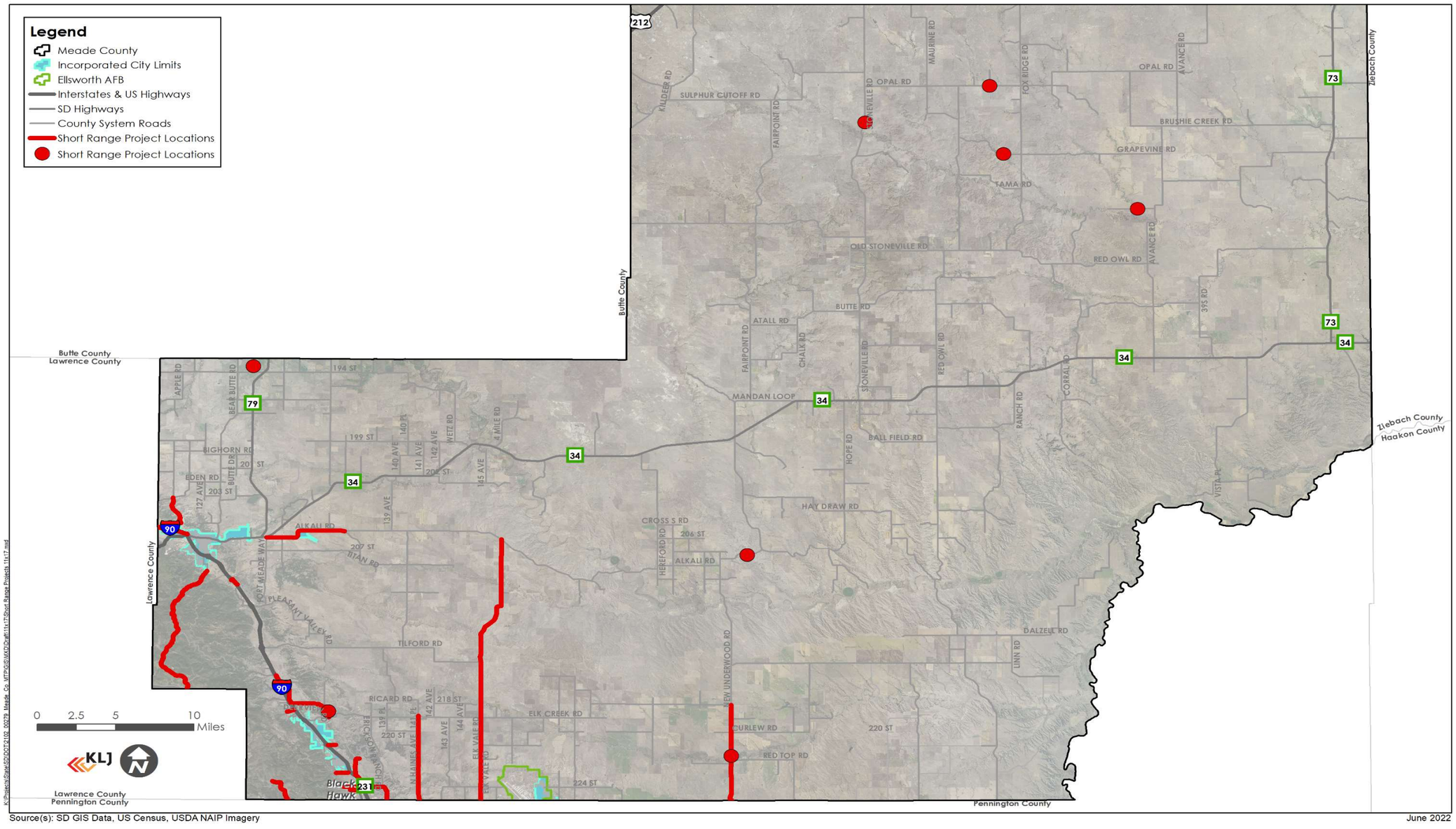
New Underwood Rd from Pennington Co. line to Elk Creek Rd 7 miles	Reconstruct & New AC Surfacing	7,500	County 5-Year Plan
Mnt. Shadows Rd. off of 2nd Street in Piedmont	Chip Seal	31	County 5-Year Plan
Norman Ave. from Peaceful Pines N to end of county asphalt	Chip Seal	78	County 5-Year Plan
Deadwood Ave and Peaceful Pines east of I-90 to Pennington County Line	Chip Seal	67	County 5-Year Plan
Sidney Stage Rd	Full depth reclamation and AS Surfacing	1,100	County 5-Year Plan
Structure No. 47-460-128, 11.8 mi S of Hwy 212 on Stoneville Rd.	Replace Bridge	400	County 5-Year Plan
Avalanche Rd from Alder Pl. N 3 mi to Eden Rd	Reconstruct & New AC Surfacing	3,200	County 5-Year Plan
Ft. Meade Way from Hwy 34 2.4 miles South	Regrade	1,000	County 5-Year Plan
Structure No. 47-060-305, 3 mi. E &12.5 mi. N of Sturgis (130th Ave)	Replace Bridge	500	County 5-Year Plan
Engineer North 2.4 miles Ft. Meade Way	PE Engineering	35	County 5-Year Plan
Structure No. 47-114-553, 8.4 mi. E &12.3 mi. S. of Sturgis (Deerview Rd.)	Replace Bridge	750	County 5-Year Plan
Deerview Rd.	Reconstruct & New AC Surfacing	6,000	County 5-Year Plan

Long-Range Roadway Projects

Long-Range Projects were created by first carrying forward projects from the 2016 Meade Moving Forward Transportation Plan. Projects that no longer apply were deleted and additional projects were identified through the processes identified at the beginning of this chapter.

Each project is listed with a corresponding Map ID, location information, a brief description, and a source, which details whether the project came from the 2016 plan or from efforts of this plan. The projects are not listed in any order of priority, and it will be up to the County to decide in the future which projects should be implemented over time. Approximate costs have also been listed. Long-range projects are shown in Table ES-3 and shown in Figure ES-2.

Figure ES-1: Short-Range Project Locations



Source(s): SD GIS Data, US Census, USDA NAIP Imagery

June 2022

Table ES-3: Long-Range Roadway Projects

Map ID	Corridor	From	To	Description	Source	Estimated Cost ($M)
1	Antelope Creek Road	Pennington County Line	Elk Creek Road	Asphalt paving	2016 Transportation Plan	10.2
2	Elk Creek Road	I-90 Exit 46	Edgewood Place	Acquire ROW for improvements, Realignment of roadway	2016 Transportation Plan	4.8
3	Elk Creek Road	Elk Vale Road	Antelope Creek Road	Asphalt paving	2016 Transportation Plan	10.2
4	I-90 Service Road	Exit 40	Vanocker Canyon Road	Corridor Preservation	2016 Transportation Plan	12.8
5	Elk Creek Road	Elk Vale Road	Haines Avenue	Asphalt paving to rural arterial	2016 Transportation Plan	6.9
6	New Corridor	Erickson Ranch Rd	143rd Ave	New collector road	MCC Study 2020	7.5
7	Pleasant Valley Road	Tilford	Fort Meade Way	Asphalt Paving	Newly Identified	13
8	Haines Ave	Pennington County Line	Elk Creek Road	Reconstruct	Newly Identified	10.4

Special Roadway Projects

Throughout the planning process of this plan, a few key corridors have drawn the attention of SAT members and planning staff. These corridors present unique challenges as they are not strictly under the county's jurisdiction, or the county has expressed an interest in the state taking over jurisdiction. Each unique corridor is listed below and is listed in Table ES-4 and shown in Figure ES-2.

Fort Meade Way

Fort Meade Way has long been an identified corridor need east of Sturgis. The corridor runs from Pleasant Valley Rd to SD 34 near the Buffalo Chip campground. Previous efforts from the county to turn the corridor over to the SDDOT have not been successful. The corridor is unpaved but high traffic volumes indicate the need for paving. Although the county may not be interested in taking on the project itself, the project is listed here to support future coordination efforts.

Quaal Road

Quaal Road is roughly parallel to I-90 on the east side of Summerset between Stagestop Road and Norman Avenue. The road serves rural subdivision housing and was not constructed to be a major connection for the County. Quaal Road is maintained by a Road District, but they possess insufficient

funds to upgrade the corridor as a major through corridor. This plan identifies Quaal Road as a potential candidate for conversion to a three-lane corridor: two-lanes with a center lane turning lane. Further coordination between Summerset, the Road District, and the County will be needed to ensure proper planning and usage of Quaal Rd, and to identify needed funding.

150th Avenue

This project was moved from the list of long-range projects to the special projects as this road was deemed by SAT members to be of greater importance to the City of Box Elder and Pennington County, even though the landfill at the end of this corridor is in Meade County. Coordination is needed to determine jurisdictional responsibilities and to prioritize implementation.

Sly Hill Road

Sly Hill Road leaves the City of Sturgis and heads north into surrounding Meade County. The road transfers to Meade County jurisdiction at the top of the hill at city limits. This road serves current and future development and may need to be paved in the future.

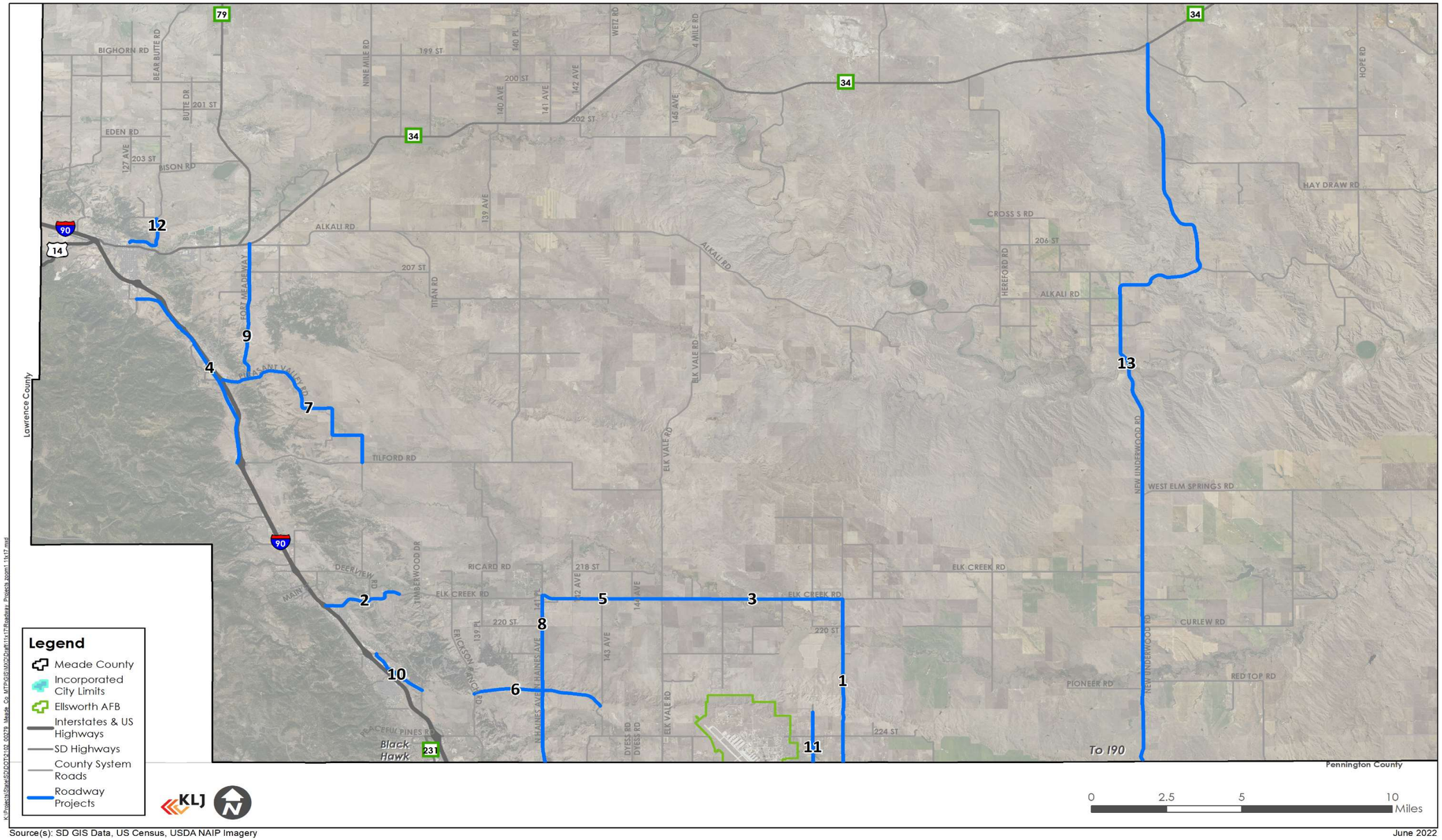
New Underwood Road

Additional study will be needed to assess needs along the entirety of the New Underwood Road corridor from I-90 in Pennington County to its junction with SD 34.

Table ES-4: Special Roadway Projects

Map ID	Corridor	From	To	Description	Source	Estimated Cost ($M)
9	Fort Meade Way	Pleasant Valley Road	SD 34	Pave Roadway	Public Meeting Feedback	8.7
10	Quaal Road	Stagestop Road	Norman Avenue	Convert to three-lane with TWCLTL	Public Meeting Feedback	3.5
11	150th Avenue	Pennington County Line	North (Eagle Ranch Rd)	Asphalt paving as minor arterial	2016 Transportation Plan	3.1
12	Sly Hill Rd	Junction Ave	Foothills Rd	Pave Roadway	SAT Feedback	3.3
13	New Underwood Rd	I-90	SD 34	Corridor Study, Assess Needs	SAT Feedback	0.2

Figure ES-2: Long-Range and Unique Projects



Bike/Ped Projects

In addition to roadway projects, the MTP sought to identify potential project needs for non-automobile transportation. These projects often coincide with roadway projects and should be considered along with them when planning for roadway projects. This will help to ensure funding in cases where bike and pedestrian needs should be addressed. Also, planning for bike and ped users will help to serve more residents of Meade County, especially those who cannot drive or need off-street infrastructure for general travel or for recreational purposes.

Projects for UTV users were considered however input from county staff and the SAT concluded that projects for UTVs were not a Meade County priority. The County is amenable to UTV users however limited funding is available to improve facilities for these users.

Bike/Ped projects were considered regardless of whether they would be a County-led project as in many instances a project may require cooperation among more than one jurisdiction and include the County. Projects were developed using the following criteria:

- Filling in sidewalks around area schools
    - Some schools in the county lack complete sidewalk access.
    - These projects were developed to aid in access to the school for bike and ped users.
    - Gaps were filled to connect the schools to already existing sidewalk networks.
    - Rural schools with no surrounding housing were not considered.
- Creating shared use for community use
    - Potential sites for shared use paths or sidewalks were identified to connect existing networks or to bridge gaps.
    - A potential link from the Pennington County line north through the communities of Black Hawk, Summerset, and Piedmont was identified for a shared use path to roughly parallel Sturgis Rd, making use of existing shared use path where it exists.

School Sidewalk Gaps

1) Approximately 0.2 miles to connect Black Hawk Elementary to housing with an existing sidewalk network on the east side of Sturgis Road.
2) Construct 350 ft of sidewalk in the City of Faith to connect the school to the sidewalk at Main St.

Shared Use Paths

3) Construct 3 miles of shared use path (SUP) from the Pennington County line to connect to an existing SUP that terminates at Leisure Ln/Castlewood Dr in Summerset. This project is part of a series of projects parallel to Sturgis Rd.
4) Construct 1.2 miles of SUP to continue where the SUP in Summerset terminates at High Meadows Rd and continue north to the existing SUP at approximately Stagestop Rd.
5) Construct the final 2.1 miles of SUP along Sturgis Rd to connect where project 5 leaves off and connect to the city of Piedmont.
6) Construct a sidewalk or SUP to connect housing subdivision on the east side of I-90 east of the community of Summerset. The bridge over I-90 already contains a separated sidewalk, however, the approaches on either side would be difficult for bike/ped users.

7) Construct new facilities to connect housing across I-90 and to connect to the SUP proposed in Project 6. Currently, the bridge over the interstate has no bike/ped facilities. This project would involve at a minimum three jurisdictions: Meade County, Summerset, and Piedmont.

Table ES-5: Bike/Ped Projects

Map ID	Corridor	From	To	Length (Miles)
1	Elm St in Black Hawk	Black Hawk Elementary	Meadow Rose Ln	0.2
2	W 1st Ave in Faith	5th St	1st St	0.07
3	Sturgis Rd	County Line	Leisure Ln/Castlewood Dr	3.1
4	Sturgis Rd	High Meadows Rd	Stagestop Rd	1.19
5	Sturgis Rd	Stables Dr	Park St	2.14
6	Stagestop Rd	Renata Dr	I-90 Bridge	0.53
7	Elk Creek Rd	Sturgis Rd	Glenwood Dr	0.67

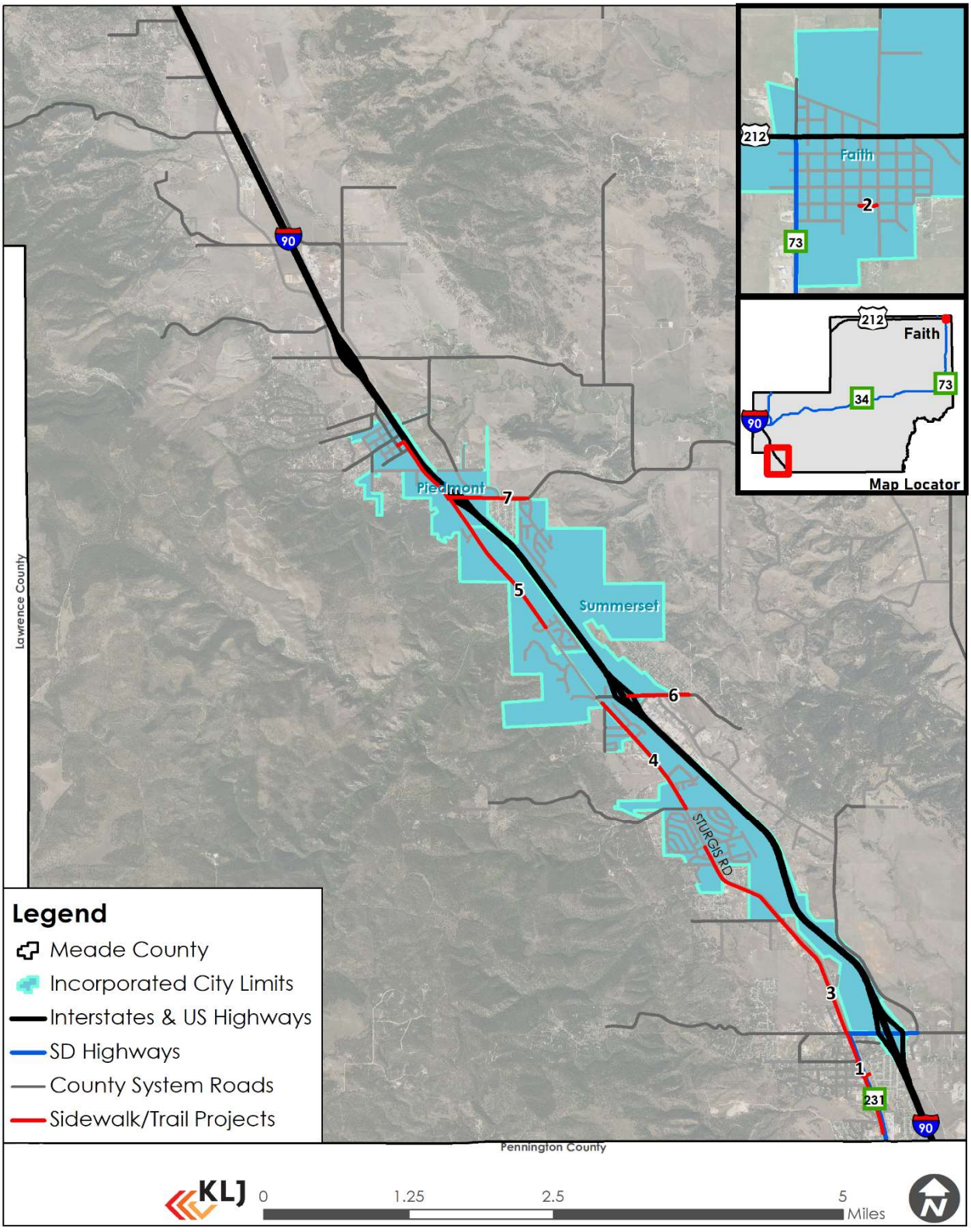


Figure ES-3: Bike/Ped Projects

Bridges

Bridge project priorities were developed from bridge inspection data and input from County staff. Three categories were established for the 30 lowest ranked bridges in the County, primary system, secondary system, and single access routes. Bridge project priorities within each category were developed using Bridge Improvement Grant (BIG) scoring criteria developed by the SDDOT, as well as other factors. Bridge project priorities are listed in Table ES-6.

Table ES-6: Bridge Project Priorities

Route Type	Bridge Number	Rural Collector	Struct. Deficient	Load Posted	Low Condition	Daily Traffic	B.I.G. Score	Budgetary Replacement Cost
Primary System	47-460-128	x	x		4	233	37.0	$600,000
	47-378-444	x			5	233	36.0	$4,074,000
	47-459-135	x	x		3	233	25.3	$1,050,000
	47-750-132	x		x	5	29	36.5	$814,000
	47-499-460	x	x		3	60	27.3	$431,000
	47-065-619	x			6	500	35.0	$1,115,000
	47-170-612	x			7	1895	30.0	$777,000
	47-363-476	x			6	280	29.2	$3,675,000
	47-117-558	x			6	240	21.0	$494,000
	47-050-322	x	x		4	33	14.5	$440,000
Secondary System	47-183-390		x	x	1	50	50.0	$339,000
	47-549-149		x	x	2	18	56.7	$582,000
	47-541-100		x	x	4	59	54.5	$1,302,000
	47-093-404		x	x	4	33	46.7	$524,000
	47-060-305		x	x	4	33	44.0	$370,000
	47-270-575		x		4	56	37.0	$840,000
	47-475-100			x	6	60	55.8	$592,000
	47-375-253		x		4	65	31.6	$339,000
	47-580-338			x	5	10	54.9	$499,000
	47-320-392			x	5	55	47.3	$872,000
Single Access	47-377-117		x	x	2	30	67.0	$539,000
	47-110-518		x	x	1	10	60.9	$539,000
	47-635-190		x	x	3	10	58.9	$1,124,000
	47-320-585		x	x	4	10	45.9	$599,000
	47-243-401		x	x	4	10	52.9	$1,176,000
	47-120-441			x	0	5	58.0	$630,000
	47-689-123			x	5	21	60.0	$432,000
	47-382-368		x	x	4	15	44.9	$490,000
	47-088-539		x		4	30	38.0	$615,000
	47-079-547			x	6	11	49.9	$524,000

Financial Scenarios

Based on existing County Highway Department revenue, two scenarios were developed to allocate resources to meet system wide transportation needs. One scenario assumes the County continues its recent population growth for the next 20 years, the other scenario assumes similar growth and revenues with the addition of newly available federal monies.

Scenario 1 – Use of Known Funding

Base year, or existing condition investments in the Meade County highway system are the basis for the development of this future potential funding scenario. Meade County has a current annual average investment in the 5-year plan of nearly $7 million per year. Existing known revenues for Meade County are approximately $4.6 million per year. This will allow Meade County to complete roughly 2/3 of their programmed projects using available funding. The remaining projects in the 5-year plan may either be moved further out into the long range or can be completed if additional funding becomes available.

Other options exist for completing projects with limited funding. These could include phasing, with phases of less deficient segments being moved into the long range. Also, partnerships that spread the costs among multiple jurisdictions can help to complete the projects in the short term.

Using four percent inflation, the $7 million per year would grow to about $15.2 million by 2042. If population and revenue continue to grow, most transportation needs of the county are reasonable as the 5-year plan is non-binding and commissioners are allowed to pick and choose projects. As such, some projects on the 5-year plan are considered “must haves” while others are much lower in priority and were added to the list in the interest of completeness and to be eligible for funding.

Scenario 2 – Influx of New Funding

Scenario 2 assumes an increase in federal funding availability. In this scenario, county revenues increase as in scenario 1, however new federal funding creates significant new opportunities to fund projects. With the likely incoming of large amounts of previously unavailable federal funding due to recent congressional infrastructure bills, Meade County may be able to fund projects which were previously not feasible.

In the event new federal monies become available, the county will need to act quickly and decisively to apply for grants and other funding sources and to have “shovel ready” projects applicable for funding. One such project is a potential corridor study on New Underwood Road. County staff and SAT members have noted a potential future need for improvements on the corridor between I-90 in Pennington County and SD 34 in Meade County. At a minimum, the corridor could be studied to determine what future project improvements should be considered, whether the project should be phased, and how multiple jurisdictions should work together to see the improvements implemented.

Other projects from the long-range list of road projects that are currently considered to be low priority may suddenly have the opportunity to become fully funded, and the county will need to be prepared. Under scenario 2, the County simply adopts a more aggressive stance with regards to project planning and design.

Funding Strategy Recommendations

Having considered both scenarios, it would be appropriate for Meade County to be prepared for either scenario to occur. Meade County should look for ways to phase or delay some projects, or to choose a lesser improvement on some short-range projects if possible. Meade County should also be aggressive in pursuing other funding sources, including grants, to increase their financial resources for completing projects. This may require more emphasis on early project planning and completion of design to be more competitive for grants that require “shovel ready” projects.

Standards

Typical section and access standards contained in Ordinance 10 were reviewed and recommendations are provided within the MTP. Modified typical sections were provided to give the County more options when approached by developers who wish to propose either rural or urban developments within Meade County. The County may wish to adopt these new, modified typical sections as part of Ordinance 10. Access spacing standards were reviewed and found to be consistent with those used by the SDDOT. No revisions were recommended.

Chapter 1: Introduction

Purpose

The Meade County Master Transportation Plan (MTP) is a key planning document that will guide transportation investment and policy through the year 2045. This plan serves as an update to the current Meade Moving Forward Transportation Plan, which was completed in 2016. The MTP was a collaborative effort involving stakeholders, agency partners, and community members, and provides a blueprint for development of the transportation system using the community's goals and priorities as a foundation.

The plan marks a period of rapid growth for the County driven by strong investment, new residents, and the area's enduring cultural appeal for tourists and visitors. While this vibrance and vitality should be celebrated, they introduce new pressures on the existing transportation system. Important considerations include subdivision growth along the I-90 corridor and throughout rural areas within the county, economic development spurred by increasing population and expansion of the Ellsworth Air Force Base (AFB), and an intensifying need for pedestrian and bicycle infrastructure. These factors have produced changes in traffic volumes and patterns, warranting a detailed evaluation of the efficiency, condition, and safety of the existing system. The MTP update responds to the changing conditions within Meade County. It considers current trends, anticipates future needs, and presents recommendations to support the County in accommodating future growth.

The Meade County MTP emphasizes a balanced approach to meeting future transportation demands. A focus on improving sustainable transportation options such as biking, walking and public transit reduces roadway congestion and supports stewardship of the County's natural resources. The MTP considers a range of project recommendations to address the County's diverse transportation needs.

Background

Meade County is located in western South Dakota, with most of its land area lying to the north and east of Rapid City. The County encompasses more than 2 million acres, making it the largest county in South Dakota in terms of land area. Although the County measures 140 miles from its northeast corner to its southwest corner, it is sparsely populated. The total land area of Meade County is 3,482 square miles with an estimated population of 29,852 (2020). Sturgis is the largest city in the County with approximately 7,020 (2020) residents. The County's remaining residents reside in smaller towns along Interstate 90 (I-90), in the City of Faith located in the County's northeastern corner, and within rural areas throughout the rest of the County. The number one industry in the County is agriculture. Meade County is also home to Ellsworth Air Force Base (EAFB). In addition to the agriculture industry and military, the County hosts up to one-half million tourists each August for the world's largest motorcycle rally, the Sturgis Motorcycle Rally.

The purpose of the County transportation system is to move people and goods in a safe and efficient manner. A variety of travel needs must be considered to fulfil this purpose, including travel within the County, trips that pass through the County, and trips between rural parts of the County and between the County's cities. The County roadway system is a critical component of the transportation system, serving most of the travel needs outside city limits.

The County roadway network has been designed and constructed to serve rural and regional needs. Ongoing growth and development in the County have created increased traffic demands on this roadway network, with some facilities struggling to accommodate growing traffic volumes. The Annual Sturgis Motorcycle Rally further heightens travel demand in the western portion of the County.

Planning Process

The Meade County MTP is a collaborative effort between Meade County, the South Dakota Department of Transportation (SDDOT), and the Rapid City Area Metropolitan Planning Organization (MPO) designed to identify needs and establish priorities with respect to the Meade County transportation system. The plan addresses existing issues and anticipated concerns for traffic congestion, safety, access, and connectivity. The planning process involved collaboration between multiple jurisdictions, key stakeholders, and citizens, and was designed to create an open dialogue within the County on transportation.

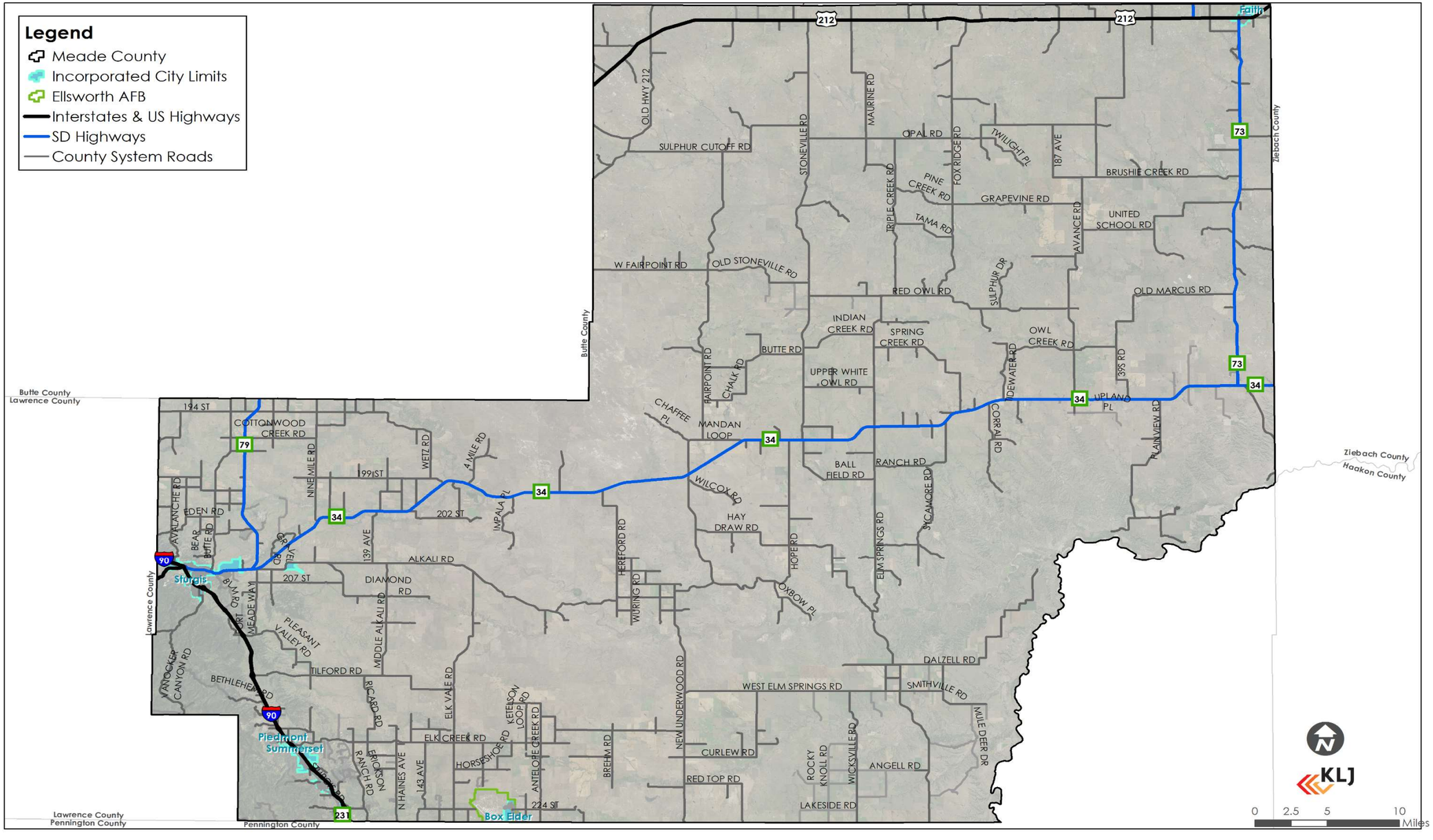
Study Advisory Team (SAT)

Development of the Meade County MTP was guided by the SAT, which was formed at the onset of the planning process. The SAT played a central advisory role throughout the planning process by providing direction at key decision points and helping to assure that the plan was reflective of the County's transportation vision. SAT members included staff and representatives from the County, SDDOT, and the MPO. The SAT met on six occasions throughout the planning process. SAT meeting presentations and summaries are included in Appendix B.

Study Area

The study area for the project includes all of Meade County. Transportation facilities under the jurisdiction of the County are the central focus of this plan. However, the relationship and connectivity of the County system to other transportation systems – municipal, state, federal, and those under jurisdiction of road districts – have also been considered and incorporated throughout the planning process. The project study area is shown in Figure 1.

Figure 1: Meade County MTP Study Area



Policy Framework

The Meade County MTP policy framework serves as the plan's policy foundation and charts a course for future transportation investment within the study area. The framework is designed to be long-range and comprehensive, reflecting the transportation system as a whole and incorporating the County's priorities to support current and future residents.

The framework was developed in close coordination with the SAT, local governments and stakeholders throughout the County, and the SDDOT. It incorporates input collected through the community engagement process, as well as the policy direction put forth in local and regional planning documents.

The policy framework consists of three elements: Vision, Goals, and Strategies.

- **Vision**: The transportation vision communicates the aspirations and priorities that will guide the County's transportation investments in order to achieve its desired future.
- **Goals**: Goals are broad statements that describe a desired end state. The goals represent key priorities for desired outcomes for the transportation system, and for the wellbeing and prosperity of the county. Goals are visionary statements that reflect key priority areas.
- **Strategies**: Strategies are specific statements that support the achievement of goals. Strategies "operationalize" the goals: they refine goals into discrete, policy-based actions that are used to guide decision making towards achievement of the vision. There are multiple strategies for each goal.

Transporation Vision

The transportation vision will serve as an anchor for future development of the Meade County transportation system. The transportation vision is as follows:

> *Meade County will develop a transportation system that incorporates high network connectivity, supports commerce, and provides efficient, safe, and dependable mobility for people and goods. The transportation system will be a driving force for the County's growth and prosperity, supporting livable and vibrant communities that serve existing residents while creating an attractive environment for investment, tourism, and new residents.*

Goals and Strategies

The project team defined six goal areas in collaboration with the SAT, stakeholders, and the public. In addition, the goal areas presented in SDDOT's 2045 Long Range Transporation Plan[1] (LRTP) served as a basis for the Plan goal areas. The goal areas were used to develop the final set of six MTP goals.

[1] https://dot.sd.gov/media/documents/FinalSDLRTP.pdf

The public involvement process was fundamental in establishing the MTP goal areas. Input collected during engagement events allowed for the project team to craft a set of goals that closely reflect the needs, preferences, and priorities of the County.

The six goal areas are shown in Table 1, where they are presented in relation to the SDDOT 2045 LRTP goals. The goal areas, as presented here, do not imply an order of priority.

Table 1: Meade County MTP Goal Areas

Meade County MTP Goal Area	SDDOT 2045 LRTP Goals
Safety	Improve Transportation Safety and Security for all Modes of Transportation
System Preservation	Preserve and Maintain the Transportation System
Mobility, Reliability, & Accessibility	Improve Mobility, Reliability and Accessibility
Economic Vitality	Improve Mobility, Reliability and Accessibility
Environmental Sustainability	Promote Environmental Stewardship
Innovative Transportation Technologies	Promote Innovative Transportation Technologies

The goal areas were used to define the final set of six MTP goals. For each goal, various strategies are defined.

1. Safety

***Goal**: Create a transportation system that incorporates safety and security throughout all modes and for all users.*

- Support the mission of South Dakota's Strategic Highway Safety Plan to save lives and reduce serious injuries.
- Reduce the incidence of all motor vehicle and non-motor vehicle (pedestrian and cyclist) crashes, with an emphasis on serious injury and fatal crashes.
- Regularly review and update emergency routes, coordinating as needed with city governments and SDDOT to facilitate the rapid movement of first responders and support incident management during times of emergency.
- Target safety improvement projects, if applicable, to address the Top 10 High Frequency Crash Locations as identified within the Meade County MTP.
- Enhance crash data integration and analysis to support decision making and issue identification.
- Recommend that sidewalks be included on both sides of new streets in neighborhood and business districts, and that they be incorporated into major construction projects for existing streets within these districts.
- Improve education on bike safety and increase the awareness of both bicyclists and motorists regarding bike related laws, rules, and responsibilities.
- Incorporate street trees into projects to buffer pedestrians from traffic, improve community and neighborhood aesthetics, and provide shade.

2. System Preservation

***Goal**: Proactively preserve and maintain existing transportation system infrastructure.*

- Continue to employ a road maintenance plan to inventory road conditions, prioritize projects, allocate investment, and comply with the functional classification standards as described within Meade County Ordinance 10.
- Employ a systematic, data-driven process to support decisions on when and where to pave a gravel roadway.
- Seek to invest in cost-effective preventative maintenance projects to reduce the need for more costly structural improvements.
- Develop a capital improvement program that implements the project recommendations developed and prioritized within the Meade County MTP.

3. Mobility, Reliability, & Accessibility

***Goal**: Create a transportation system that optimizes mobility and connectivity, allowing users to move from one place to another in a direct route with minimal travel times and delays.*

- Improve system-wide bicycle and pedestrian connectivity by prioritizing investments that address network gaps and help traverse barriers.
- Implement operational improvements to optimize the efficiency of the transportation system, including geometric improvements, access management, and updated intersection control.
- Implement a consistent approach for investment, design, connectivity, and maintenance of pedestrian and bicycle facilities.
- Identify and consider accessibility and connectivity needs on improvement projects for roads, paths, and sidewalks.
- Utilize the development review process to require new developments to provide adequate pedestrian and bicycle access to essential services, amenities, and destinations.
- Work with Prairie Hills Transit to improve route efficiency while continuing to serve major employment centers, education facilities, medical offices, commercial developments, and tourist destinations.
- When improving sections of street, upgrade existing pedestrian and bicycle facilities or construct such facilities if desired and none are present.
- Provide an integrated system of bike and pedestrian trails and greenways to future neighborhoods, employment centers, and recreational amenities.

4. Economic Vitality

***Goal**: Create a transportation system that supports economic competitiveness, vitality, and prosperity by providing for the efficient movement of people and goods.*

- Enhance the efficient and safe movement of freight and goods by investing in roadway maintenance and safety improvements on critical freight corridors.
- Promote investments in network connectivity to allow industrial areas immediate access to air, rail, and arterial or collector streets.
- Support projects that decrease travel time between major activity centers.

- Give priority to transportation projects that improve and provide access to area tourist destinations and amenities.
- Improve right-of-way preservation and access management standards to support the reliability of collector and arterial roadway systems to efficiently distribute and move traffic.
- Improve north-south and east-west vehicle connectivity by upgrading key corridors used to travel within and to/from the County.
- Incorporate pedestrian and bicycle facilities along key corridors connecting activity centers to promote tourism and support pedestrian access to local businesses.

5. Environmental Sustainability

***Goal**: Prioritize environmental stewardship in the development, maintenance, and operation of the transportation system.*

- Encourage sustainability in all aspects of the transportation system to meet the needs of the present and ensure that future generations enjoy equal or improved opportunities.
- Maintain Meade County's air quality for the health and enjoyment of residents and visitors. Continue to explore ways to reduce air pollution further.
- Maintain a planning process that integrates and coordinates transportation planning with land use, water, and natural resource conservation.
- Adopt infrastructure design standards that minimize impervious surfaces, preserve and encourage native plant landscaping, and align with stormwater planning.
- Foster positive working relationships with resource agencies and stakeholders through early coordination and consultation.

6. Innovative Transportation Technologies

***Goal**: Utilize new and innovative transportation technologies to create new opportunities and increase mobilty and access.*

- Encourage the use and adoption of new technologies to facilitate transportation needs in the County where possible.
- Create relationships with nearby communities to determine whether innovative technologies that they are using, such as electric car charging stations, have applications within Meade County.

Chapter 2: Public Engagement

Introduction

Meaningful public engagement involves two-way communication with project stakeholders. A cornerstone of the planning process, engagement provides access to project information, addresses questions and concerns raised by community members and project partners, and helps define the study priorities. Public engagement should have a measurable effect on the study's outcomes.

The Meade County MTP public engagement process was designed to engage with participants in a way that is open and respectful, while collecting input that is useful to the development of the project. The objectives were to educate stakeholders on the planning process and its importance, provide multiple, flexible opportunities for feedback, empower stakeholders to take an active role in shaping the plan, and incorporate stakeholder input to guide recommendations. Developing a sense of ownership among stakeholders is vital for implementation of the plan's recommendations over time.

Stakeholders

Meade County's residents represent a variety of perspectives, interests, and priorities with respect transportation. The project team designed its public engagement approach to target diverse stakeholders throughout the County, including community members, local governments, neighborhoods, underserved populations, and business owners, among others.

Key project stakeholders included:

- Members of the general public
- Cities of Sturgis, Piedmont, Summerset, Faith, and Box Elder
- Pennington and Lawrence Counties
- A Study Advisory Team (SAT) consisting of local government representatives. The specific agencies that participated in the SAT are listed in Table 2.

Table 2: Study Advisory Team Member Agencies

SAT Member Agencies
South Dakota Department of Transportation
Meade County Planning
Meade County Commission
Meade County Highway Department
Meade County Equalization & Planning
Meade County Sheriff
Rapid City Area MPO

Methods and Activities

The Meade County MTP sought to provide ample opportunities for engagement with the community, leveraging a range of strategies to collect input on priorities, challenges, and needs relevant to the

County's transportation system. The information collected was used to inform the study Vision, Goals, and Objectives, identify opportunities, and develop recommendations. An overview of the engagement methods and activities is provided below.

Public Input Meetings (PIMs)

The PIMs were intended to engage stakeholders and members of the general public. Two PIM series were hosted during the planning process. The consultant team organized and coordinated promotion, activities, and materials for these events.

PIM #1

The first PIM series consisted of two sessions, with the first held on September 29th, 2021 (Piedmont American Legion) and the second held on September 30th, 2021 (Meade County Courthouse). This introductory PIM series was designed to inform the public about the project background, baseline conditions, and Goal Areas, and to generate discussion on transportation needs and issues.

During the sessions, the project team gave a presentation on existing conditions within the county and led a discussion to identify transportation needs. Additionally, meeting attendees were invited to participate in a goal prioritization activity, which allowed them to rank the plan goals in order of relative importance.

PIM #1 was advertised through a variety of media channels, including newspaper ads, website, social media, and e-blast channels. Public meeting materials and a meeting summary is included in Appendix A.

Public Input Opportunity #2

The second PIM series consisted of two sessions, with the first held on June 28th, 2022 (Piedmont American Legion) and the second held on June 29th, 2022 (Meade County Courthouse). This PIM series provided an opportunity for the public to review and comment on the draft Meade County MTP.

During the sessions, the project team gave a presentation on the analysis and recommendations contained in the draft MTP. PIM #2 was advertised through a variety of media channels, including newspaper ads, website, social media, and e-blast channels. Public meeting materials and a meeting summary is included in Appendix A.

Project Website

The project website played a key role in the public engagement effort, acting as a repository for project resources and providing convenient opportunities for the public to share input. Visitors to the site were encouraged to identify transportation needs using an online interactive map, or if they preferred, send comments to the project team by email. Visitors also had the opportunity to rank the project goals by completing an online goals prioritization survey. All public meeting presentations and draft plan documents were made available for download from the website. The website remained active throughout the project lifecycle.

Input received through the project website aided the project team in developing plan recommendations. A summary of the engagement results is provided in the following paragraphs.

Interactive Issues Map Engagement Results

The interactive issues map was hosted on the project website starting in August 2021. Visitors to the map were able to explore the study area, add location and issue-specific comments, view and discuss comments left by others, and react to others' comments with an "up vote" or "down vote". In total, 11 stakeholders interacted with the map, leaving 23 comments.

One approach for quickly perceiving the most prominent themes highlighted within stakeholder comments is a word cloud. The larger the word, the more often it was repeated. The word cloud is shown in Figure 2.

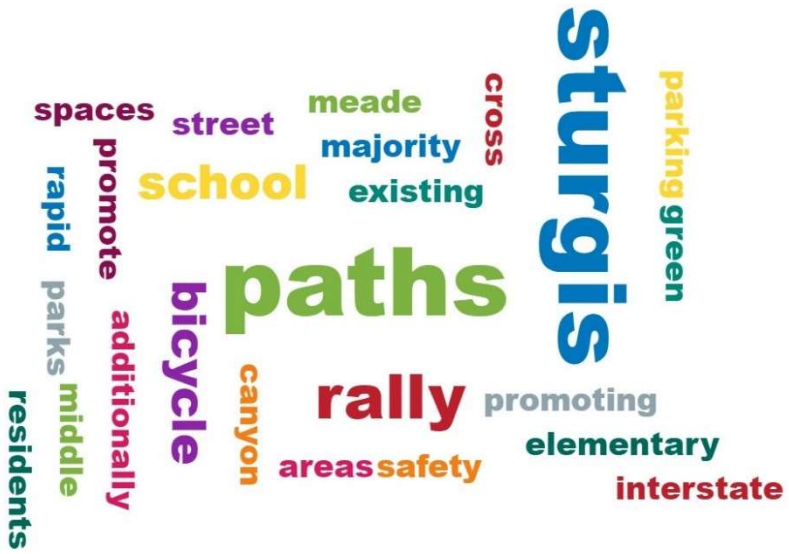


Figure 2: Interactive Issues Map Comment Word Cloud

Comment Clusters and Summary

22% of comments were at Elk Creek and Galaxy Rd. Public comments included:

- The S curve is dangerous. There's been a fatality and a serious injury.
- Not maintained in the winter
- Guardrails needed
- The bridge is outdated

17% of the comments were along County Hwy C-21/Underwood Ave. Public comments included:

- Signage is needed here at 167th Ave. for the turn into Lake Curlew. Drivers miss the turn, then U-turn which creates a safety hazard. Also, place a second sign for the lake at Niagara Pl.
- Some existing signage along the road near culverts make it impossible for large agricultural equipment to move to the shoulder which is a safety hazard for oncoming traffic.
- Sign is needed that Elk Creek Rd. comes to an end here. Drivers plow straight through the T-intersection and the private property owner has repaired their fence several times.
- Southbound drivers approaching Elk Creek Rd. go too fast and have hit deer. There are also large trucks entering and exiting this area.
- There has been a fatality near Elk Creek Rd. intersection.

13% of the comments were about Elk Creek Rd. Public comments included:

- Pavement is needed from Haines Ave. to Elk Vale

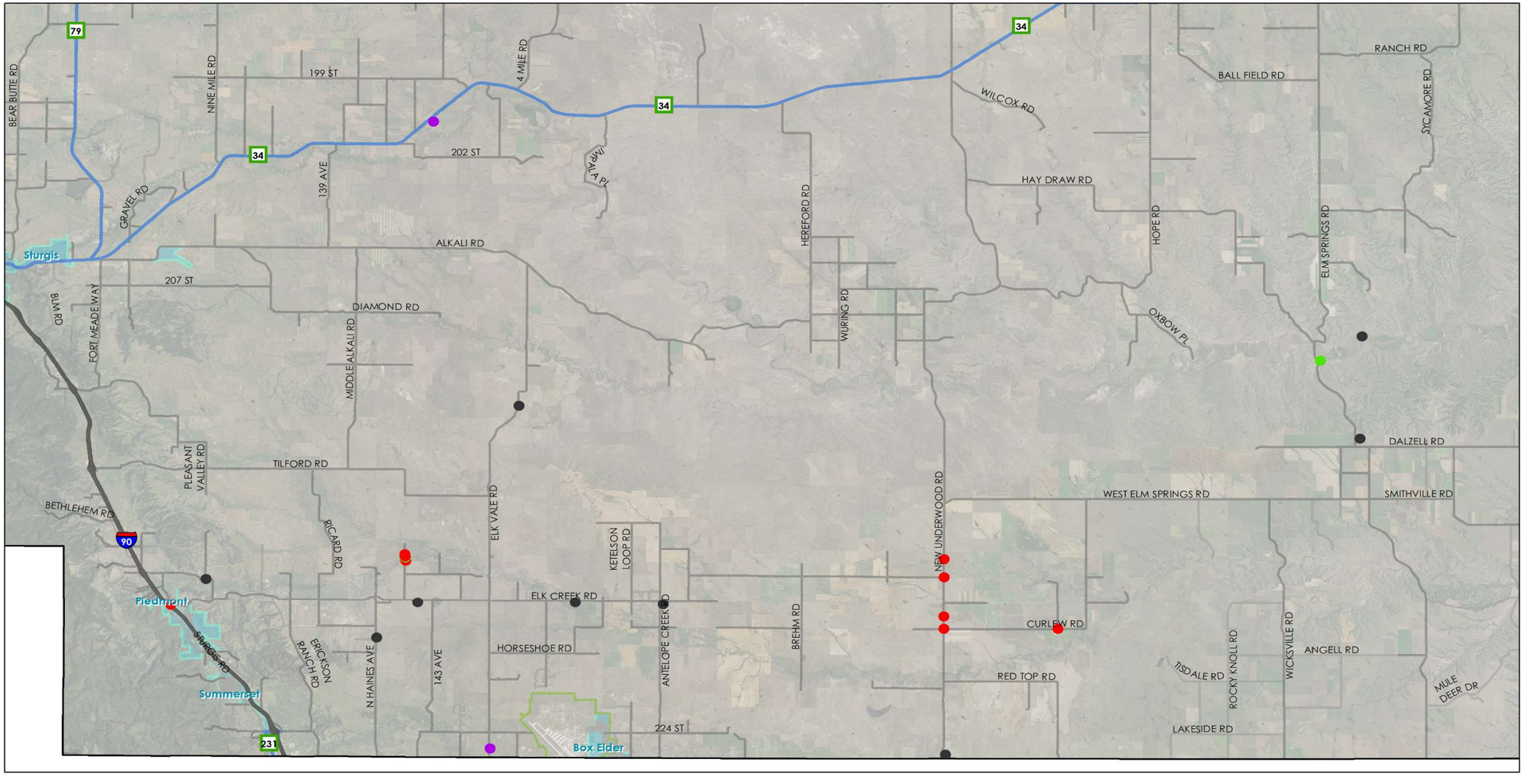
- This is the only major east-west connector in the southern part of the county and residential base is growing. It should be paved between Haines Ave. and New Underwood Rd (It is noted that east of Antelope Creek Road the section is currently very rural in nature).

Other comments included:

- Connect Elk Vale Rd with Hwy 34. Another main route to Rapid City is needed that avoids going through Sturgis.
- Upgrade the Elk Creek Rd. interchange with I-90.
- Deerview and McIntosh should be upgraded to paved roads with the amount of increased local traffic.
- Elk Vale Rd. from Lone Tree Rd to Alkali Rd. south needs gravel.
- The guardrail at Elm Springs Rd. and Bull Creek has been taken out from an accident and never replaced. This is a dangerous curve and narrow.
- A half inch of rain can make Elm Springs Rd. impassible.

Comments received from Social Pinpoint within the project website are shown by location and comment type in Figure 3 below.

Figure 3: Social Pinpoint Map Comments



Legend

- Meade County
- Incorporated City Limits
- Ellsworth AFB
- Interstates & US Highways
- SD Highways
- County System Roads

Comment Type

- Traffic Safety
- Bridge Condition
- Other
- Road Condition

0 2.5 5 10 Miles

Transportation Plan Goals Survey

The goals survey was hosted on the project website from June 2021 through November 2021. Survey participants were asked to rate each of the project goal areas from "highest priority" to "lowest priority". Participants were also given the option to specify any additional transportation goals that they felt were missing.

Results of the goals survey aided the project team in establishing plan priorities, developing solutions, and prioritizing project recommendations. In total, 20 stakeholders completed the survey. The goals survey results are shown in Table 3. Six participants listed optional additional goals.

Table 3: Goals Survey Results

	Safety	System Preservation	Mobility, Reliability, & Accessibility	Economic Vitality	Environmental Sustainability	Innovative Transportation Technologies
Highest Priority	12	5	9	5	3	5
High-Moderate Priority	5	8	7	6	6	8
Moderate Priority	2	5	4	8	6	3
Moderate-Low Priority	1	1	0	1	2	3
Lowest Priority	0	1	0	0	3	1

Chapter 3: Baseline Conditions

Introduction

Meeting the goals of the of the Meade County MTP depends upon the region's ability to move people and goods from place to place through a quality comprehensive transportation system. An analysis of the existing transportation network is important in helping understand the system's current strengths, weaknesses, and opportunities for improvement. Similarly, evaluation of population totals, distributions, and historical growth trends is necessary to anticipate where transportation investment can best support future development.

The Baseline Conditions element presents an inventory of data associated with Meade County's existing transportation system and its users. This inventory considers the physical condition of the roadways as well as its operations. The following sections are included in this chapter:

- Population Growth Trends
- Roadway Conditions
- Freight Systems
- Multimodal Facilities

Population Growth Trends

Meade County has seen the second fastest population growth among South Dakota counties[2] within the last decade, only following Lincoln County. The total population of Meade County grew from 25,434 in 2010 to 29,852 in 2020, an increase of 4,418 (17.4%) residents. South Dakota's top 20 counties by population growth during the previous decade are summarized in Figure 4.

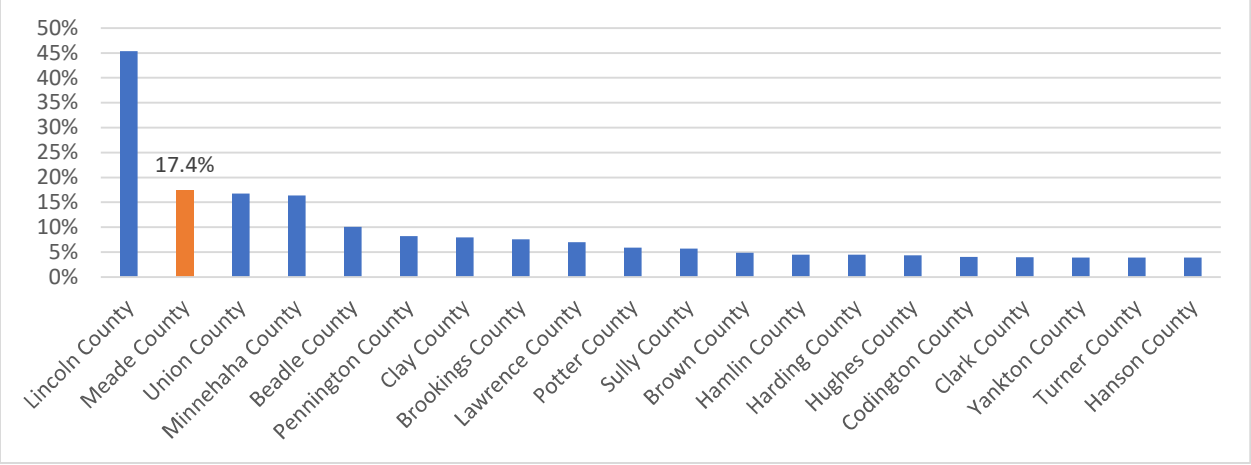


Figure 4: South Dakota's Top 20 Counties by Population Growth (2010 – 2020)

[2] https://www.census.gov/data/datasets/time-series/demo/popest/2010s-counties-total.html

Overall population trends during the last century indicate steady growth in the County, punctuated by short periods of slow or no growth associated with regional and national economic downturns. Meade County's growth throughout the 20th century and beginning of the 21st century is shown in Figure 5.

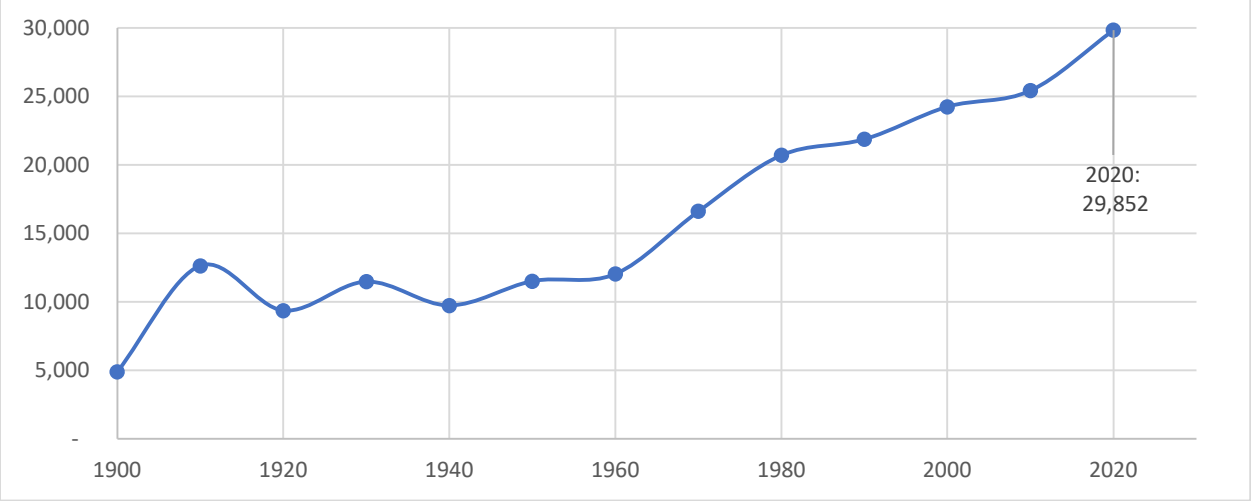


Figure 5: Meade County Population Growth throughout the 20th Century

Future Growth Areas

While population trends can be one indicator of future conditions, it is equally important to understand the location and nature of the growth. The project team considered future growth distribution within Meade County to support the future needs analysis and aid in the development of project recommendations.

Rural Development Growth

Meade County's population grew by 4,418, or 17.4 percent, between 2010 and 2020. As shown in Figure 6, the County's rural share of the population fell slightly, and its urban share[3] grew slightly, over this period. Still, Meade County remains largely rural, with nearly 60 percent of residents living outside of cities.

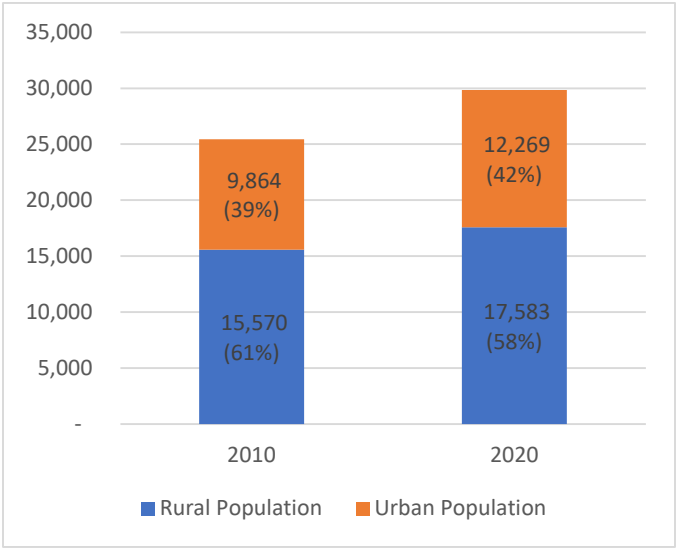


Figure 6: Meade County Rural and Urban Population, 2010 and 2020

[3] The County's urban population was approximated using the combined populations of Sturgis, Summerset, Faith, Piedmont, and the portion of Box Elder within Meade County.

The relationship between rural and urban growth is further illustrated in Figure 7. Of the 4,418 individuals added to Meade County over the last decade, approximately 55 percent reside within the boundaries of Sturgis, Summerset, Piedmont, and the portion of Box Elder within Meade County (the City of Faith shrunk slightly over the last decade). Despite the strong growth concentrated around cities, nearly 45 percent of the County's population increases occurred within rural areas over the last 10 years. Recent and projected subdivision trends, as well as the expansion of Ellsworth Air Force Base, suggest that rural development growth will persist and even increase within the coming years.

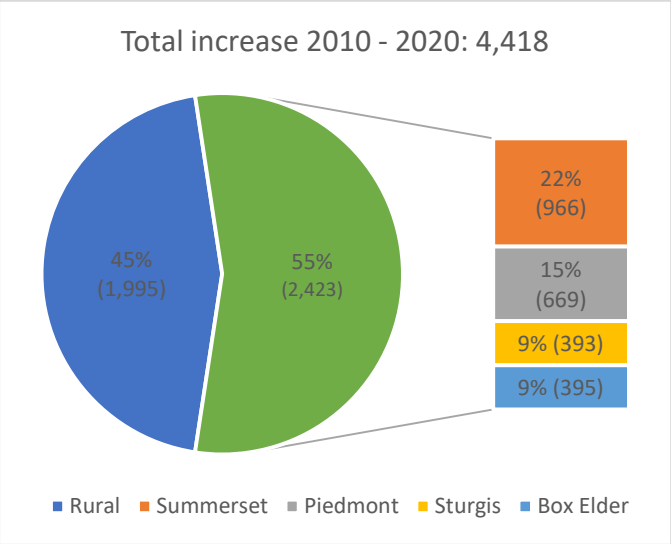
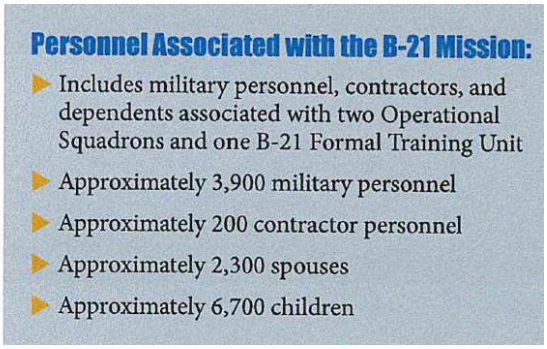


Figure 7: Meade County Rural and Urban Population Growth from 2010 to 2020

It is important that the County continue to anticipate and accommodate new development near it's cities by planning transportation projects that serve areas of higher population density. At the same time, the County should continue to improve and maintain the infrastructure serving current and future rural residents to support sustained rural development growth into the future.

Ellsworth Air Force Base

A key growth area surrounds Ellsworth Air Force Base, which is located 4 miles east of Rapid City and adjacent to Box Elder. In March of 2019, the United States Air Force announced that Ellsworth Air Force Base would be the nation's first home to the new B-21 training and operational squadrons. The announcement indicated Ellsworth Air Force Base was selected as the "Main Operating Base 1" for the B-21, which will include B-21 operational squadrons, a B-21 formal training unit, and a weapons generation facility. The B-21 Raider is expected to make its first flight in December 2021, and an environmental impact study looking toward the roll out of the B-21 bomber is currently underway.



The Environmental Impact Statement, published in the Federal Register on March 6, 2020, outlines the projected population increase as shown above. The full notice and the population project excerpt can be found at www.boxelderbuildgrant.com.

This addition at Ellsworth Air Force Base is expected to bring hundreds of new personnel and their families to Meade County. This growth will result in new infrastructure needs, including weapon storage facilities, hangars, schools, housing, and transportation. According to the Ellsworth Economic Impact Statement, Ellsworth currently has an annual economic impact of $359,475,786 and employs 10,622 personnel. This impact will increase as the base continues to emerge as an economic anchor within the region.

Subdivision Growth

High rates of subdivision growth are anticipated within southwest Meade County during the coming years. Subdivision growth will likely continue to concentrate along I-90 and the secondary north-south corridors connecting Rapid City and Sturgis, with clusters of development becoming more prominent adjacent to the small urbanizing areas between and around the two cities. The highest subdivision growth is expected closer to the Rapid City area and areas adjacent to the Ellsworth Air Force Base, as discussed above. These high-growth areas include the Black Hawk Area, the city of Summerset, the city of Piedmont, and the city of Box Elder.

Figure 8 shows subdivisions which are under construction or planned, and which are slated for completion in 2022. For each subdivision, the maximum number projected lots are specified.

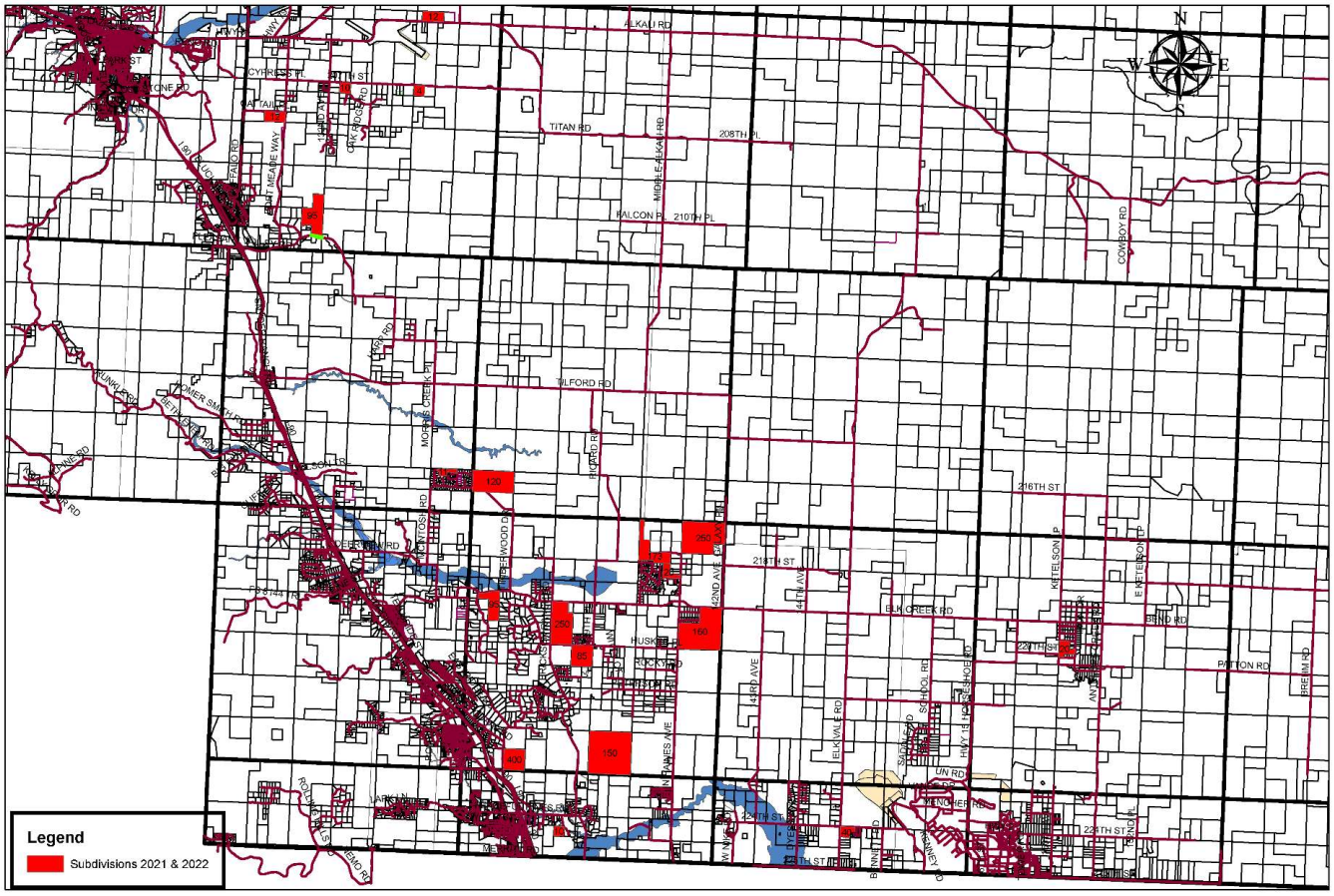


Figure 8: Subdivisions Planned for Completion in 2022

Roadway Conditions

While a roadway conditions analysis was beyond the scope of this study, roadway conditions was considered a critical element in prioritizing project needs for the future. Project priorities to address deficient roadway conditions were established based on visual inspections and input from County staff and public stakeholders.

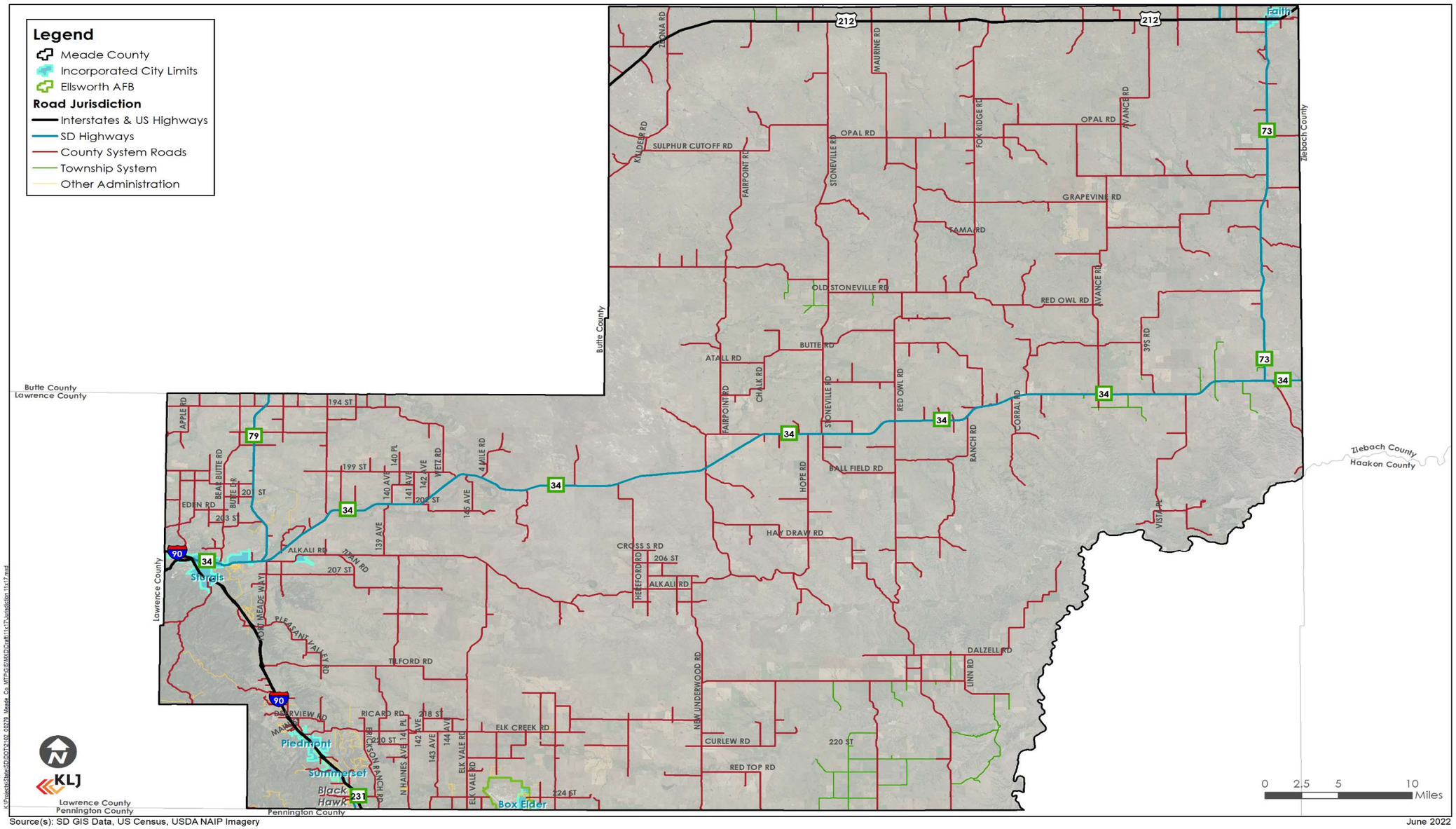
Jurisdictional Ownership

Within the Meade County study area, there are a variety of highway and road systems under different jurisdictions. The South Dakota Department of Transportation (SDDOT) is responsible for maintaining the Interstate and State Highway systems, which move people and freight efficiently across the region, state, and country.

County and Township roadways distribute traffic to home, work, and businesses (collectors), and provide rural roads to farms and rural residencies. Within the County's cities, a system of local streets composes the traditional grid system typically found across the Midwest. Depending on jurisdiction, these roadways draw from different funding sources for maintenance and improvements.

The Meade County roadway system in shown by jurisdiction in Figure 9.

Figure 9: Meade County Roadway System by Jurisdiction



Functional Classification

Overview

The operation of a county's transportation network is supported by the functional classification of its roadway system. This classification defines the role that each road segment is intended to play in serving the flow of traffic through the study area. By defining a functional classification system, the operation of traffic can be conducted in a logical and efficient manner. The FHWA organizes roadways into a hierarchy of five general functional classifications. Figure 10 demonstrates the relationship between access and mobility for each functional classification.

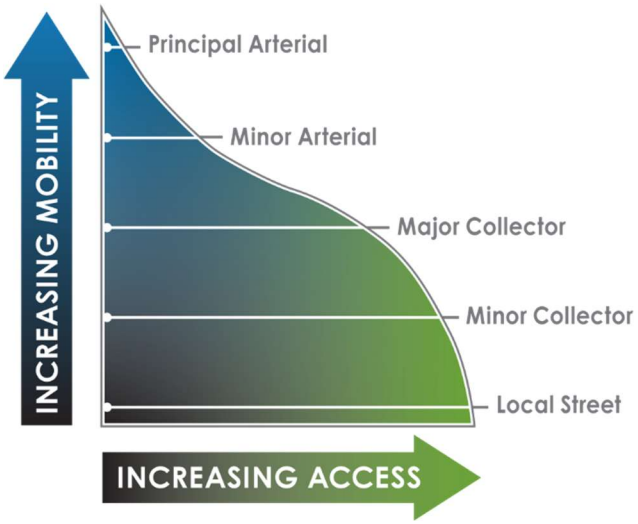


Figure 10: Functional Classification: Access vs Mobility

Most streets and highways have one of two predominant functions: either they provide the motorist with access to abutting land, or they promote optimum mobility through an area. Traffic that provides access to abutting land is considered "local," while all other traffic is considered "through." Through traffic neither originates nor terminates within a designated area, but simply traverses it. Conversely, local traffic has origins or destinations within a designated area.

A general definition for each of the FHWA functional classifications is provided below.

Principal Arterials - Principal Arterials provide for regional and interstate transportation of people and goods. This is done by designing facilities to accommodate high speeds and long, uninterrupted trips. In urban areas, Principal Arterials constitute high-volume corridors with a large portion of regional trips.

The FHWA specifies three subcategories within the Principal Arterial classification:

- Interstates are the highest classification of Arterials, designed for high-speed, long-distance travel. I-90 is the county's only interstate, running generally north-south through the southwest corner of the county and east-west across South Dakota.
- Other Freeways & Expressways, while not included in the Interstate system, operate similarly to Interstate roadways. Roads in this classification generally have directional travel lanes that are separated by a physical barrier, with access points limited to on- and off-ramp locations or a limited number of at-grade intersections.
- Other Principal Arterials serve major metropolitan areas and can also provide mobility through rural areas. Unlike their access-controlled counterparts, Other Principal Arterials occasionally directly serve abutting land uses.

Minor Arterials - Minor Arterial routes within the street system provide connections and support the Principal Arterial system. Trips using these facilities are generally shorter and spread out over a smaller geographic area. Minor Arterials allow more access than their Principal Arterial counterparts. In Meade County, there are rural and urban arterials.

Major and Minor Collectors - Collectors serve a critical role in the roadway network by gathering traffic from Local Roads and funneling them to the Arterial network. Within the context of functional classification, Collectors are broken down into two categories: Major Collectors and Minor Collectors.

The distinctions between Major Collectors and Minor Collectors are often subtle. Generally, Major Collector routes are longer in length, have higher access control, have higher speed limits, have higher annual average traffic volumes, and may have more travel lanes than Minor collectors. In general, Major Collectors offer more mobility, while Minor Collectors provide more access.

Local Streets - Local streets provide basic access to residential, commercial, and industrial properties. These streets have slower speeds and often include traffic calming measures. Local streets are the largest element in the public road network in terms of mileage.

In October 2008, the FHWA added a designation to all functional classifications: urban or rural. This designation reflects the particular characteristics of a roadway with respect to its surrounding urban/rural development patterns. A detailed description of urban and rural characteristics for each functional classification can be found in FHWA's *Highway Functional Classification Concepts, Criteria and Procedures*.[4]

Federal legislation continues to use functional classification in determining eligibility for funding under the Federal-aid program. At present, roads functionally classified as a "rural major" or "urban minor" collector or higher are eligible for Federal assistance – these are referred to as "Federal-aid Highways".

Functional Classification within the Study Area

There are 1,783 miles of roadway within Meade County, 1,267 miles of which are maintained by the County. The county has two functional classification systems concurrently. The county's system comes from South Dakota's ordinance 10 which laid out functional class similar to the methodology used by FHWA. The MTP reviewed the county's system and compared it to the FHWA-based system. This plan proposes moving forward with two systems. The county will keep its definitions for county arterials and collectors for planning purposes.

County Arterial – Meade County's system will include county designated arterials but will not include federal and state highways

County Collectors – Meade County will also designate collectors. There is minimal difference in the county plan between major and minor collectors.

The number of roadway miles defined under each FHWA functional classification is shown in Table 4. A map of the FHWA functionally classified system is presented in Figure 11. Functional classification based

[4] https://dot.sd.gov/media/documents/HwyFunctionalClassification.pdf

on the county's road classifications is presented in Figure 12. County functional classifications differ from FHWA classifications and are therefore designated as County Arterials or County Collectors. This was desired by the County Highway Department for establishing their own priorities for maintenance and future improvements.

Table 4: FWHA Roadway System Miles by Functional Classification

Functional Classification	Total Miles within Study Area	% of Total Miles within Study Area	Total County-Maintained Miles	% of Total County-Maintained Miles
Principle Arterial				
Urban	34	2%	0	0%
Rural	204	11%	0	0%
Minor Arterial				
Urban	9	1%	0	0%
Rural	0	0%	0	0%
Major Collector				
Urban	18	1%	5	<1%
Rural	359	20%	358	28%
Minor Collector				
Urban	0	0%	0	0%
Rural	168	9%	166	13%
Local Roads				
Urban	86	5%	7	<1%
Rural	905	51%	731	58%
Total	***1,783***	***100%***	***1,267***	***100%***

Table 5: County-Based Functional Classification Miles

Functional Classification	Total Miles within Study Area	% of Total Miles within Study Area
Principle Arterial	225	11%
Minor Arterial	427	21%
Major & Minor Collectors	442	22%
Local	941	46%
Total	***2,034****	***100%***

**Includes Ellsworth AFB roads and other private access roads*

Primary and Secondary Road Classifications

In addition to the functional classification systems that exist for roadways, most roads in Meade County are classified as either a Primary or a Secondary Road. Currently, approximately 910 miles of county roads are on the Primary System, and 364 miles of county roads are on the Secondary System.

Primary roads have maintenance funded through the County's general fund, whereas secondary roads are funded through a secondary mill levy. The current high proportion of primary system roads has placed a high demand on the limited general funds available for road improvements within the County. If some of the Primary System roads were moved to the Secondary System, more secondary mill levy funds could

be raised and applied to better maintain the roads within Meade County. This could be done without changing the maintenance level of service for those roads.

It was beyond the scope of this MTP to modify the primary and secondary road systems within the County. This effort was being undertaken through a collaborative effort between the County and SDDOT during the formation of this MTP. It is recommended that the County proceed with updating its primary and secondary road systems.

Figure 11: FHWA Functional Classification within Meade County

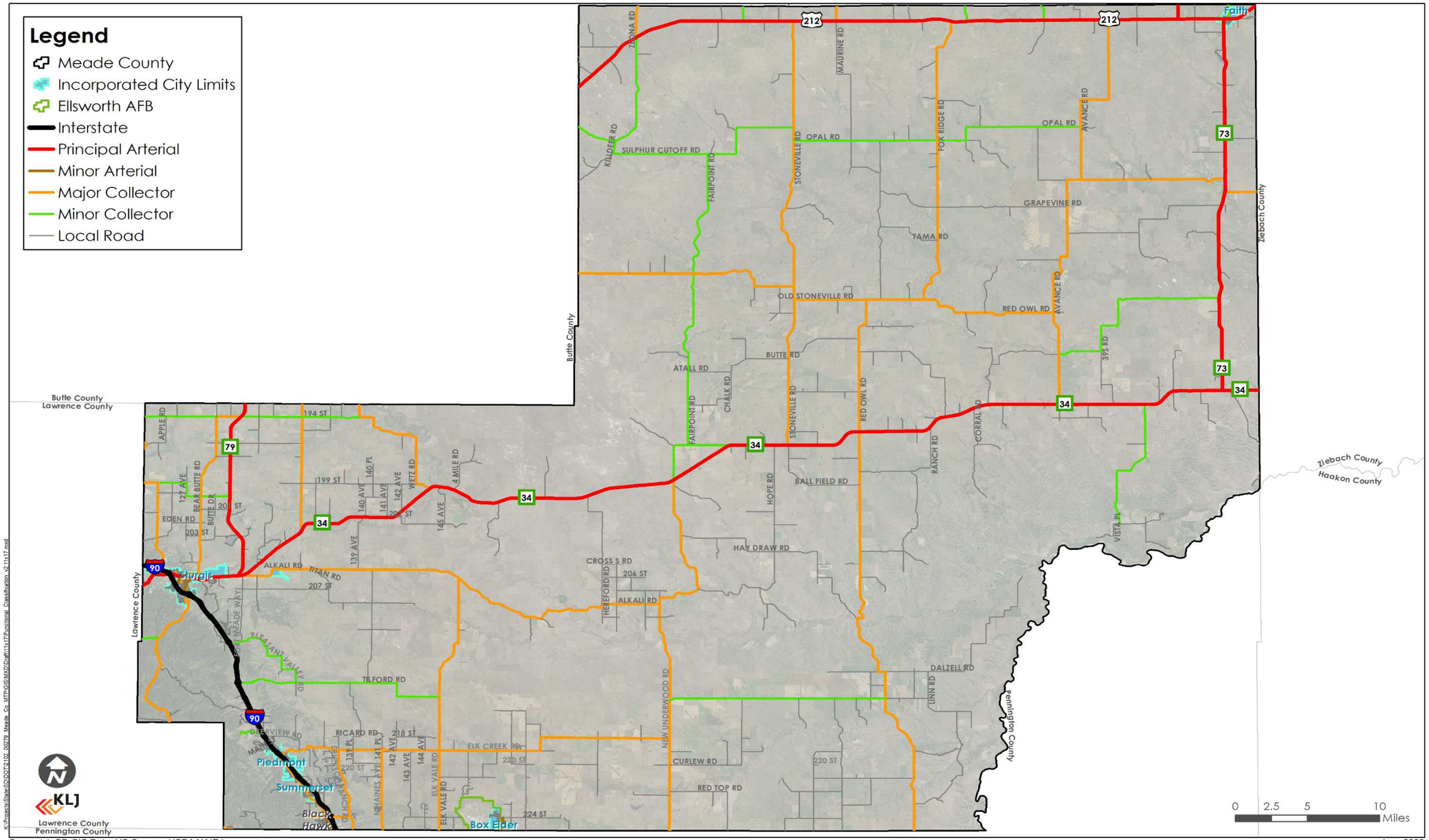
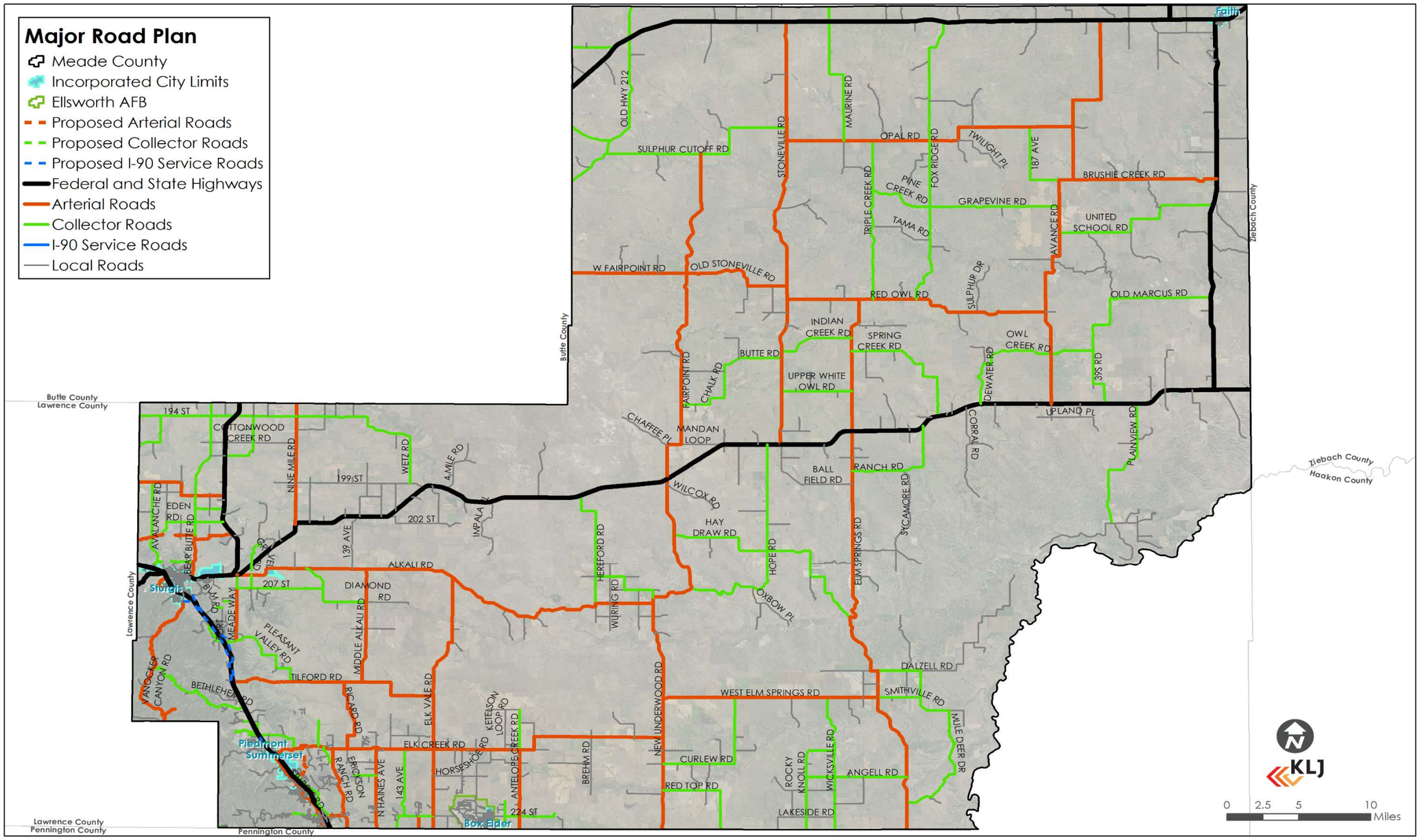


Figure 12: Meade County Functional Classification



Roadway Surface and Pavement Management

South Dakota's transportation network includes over 83,000 miles of roads, of which about 10 percent are state-controlled, and 3 percent are federal routes. This leaves about 72,000 miles of roadway to be maintained by counties, townships, and municipalities, and most of these are considered low-volume roads (LVR), defined by AASHTO as local or minor collector roads carrying a daily traffic volume of 2,000 vehicles or less[5]. These roads are primarily either bituminous- or gravel-surfaced, with the more rural and lower volume roads typically being gravel-surfaced and the more heavily traveled roads being bituminous-surfaced.

In Meade County, 93 percent (1,180 miles) of County-maintained roadway are unpaved (gravel, drained earth, trail/primitive, or unimproved). The roughly 7 percent (87 miles) of County roads that are paved have a bituminous surface, except for one small 1/3-mile section of concrete on Peaceful Pines Road. A breakdown of County road surface type percentages is provided in Figure 13. A map of County roads by surface type is shown in Figure 14.

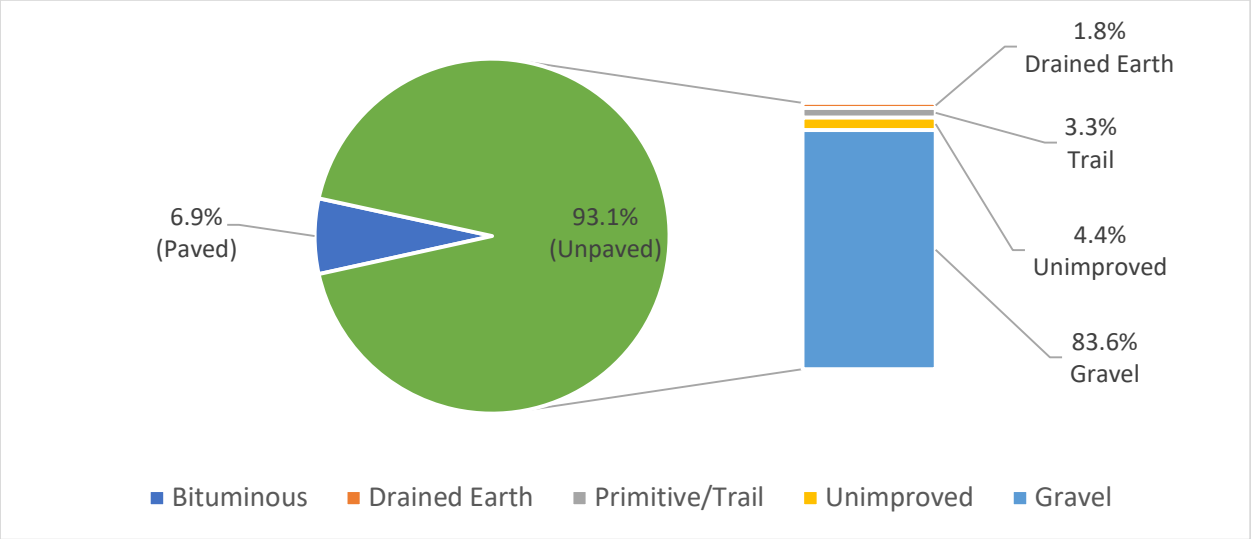
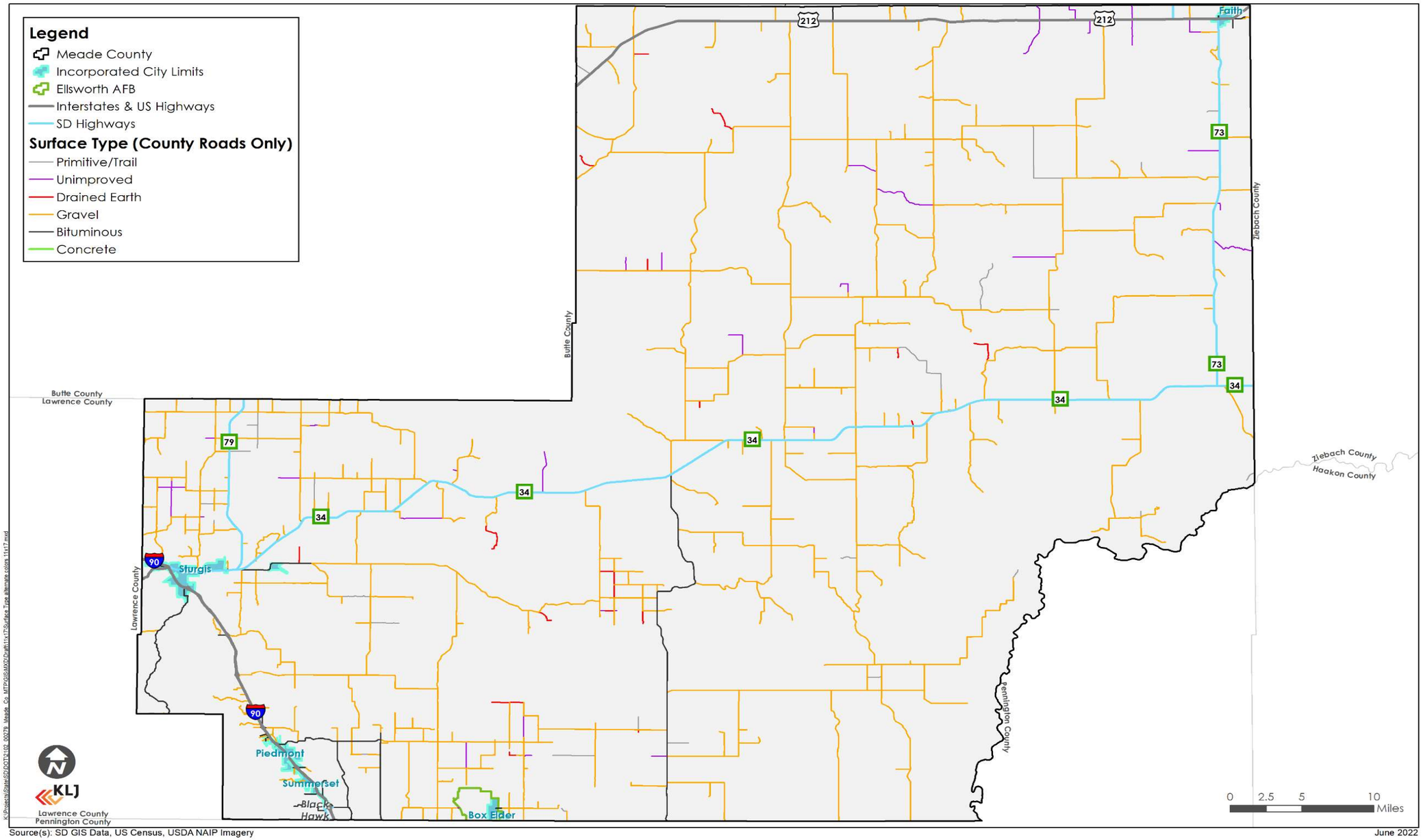


Figure 13: County Roads Surface Type Percentages

[5] AASHTO Guidelines for Geometric Design of Low-Volume Roads (2019).

Figure 14: County Roads by Surface Type



Existing Gravel Road Surfacing Plan

Ruts, potholes, and displaced gravel are an eventual concern on even lightly traveled gravel roads. Many gravel roads have seen accelerated deterioration due to increased tire pressures, which are necessary to accommodate heavier, larger, and more powerful commercial vehicles and agricultural equipment[6]. While all gravel roadways may require periodic re-grading, a regular maintenance program that supports the strength and integrity of the road can reduce the frequency of grading.

Meade County currently uses a Microsoft Excel-based graveling tool to prioritize roadway segments for maintenance, establish maintenance schedules, and forecast maintenance costs. Cost forecasts are based on various inputs including travel, labor, and material cost estimates. The tool assumes a regravelling frequency of 10 years for Federal-aid secondary highway system (FAS system) and major collector routes, 12 years for urban minor collector routes, 14 years for rural minor collector and urban local routes, 16 years for rural local routes, and 20 years for "minimum maintenance" routes.

Roadway Surface Decisions

Paved roads provide several improvements over gravel roads, including more dependable winter surfaces, increased safety from enhanced delineation, higher skid resistance, a smoother surface that increases user satisfaction and reduces vehicle maintenance costs, redistribution of traffic away from gravel roads, and an increased tax base on adjacent property.

The decision to pave a roadway requires the consideration of several factors. The County's current approach to determining when to pave a roadway was presented in the 2008 Meade County Transportation Plan and was carried forward within the 2016 Transportation Plan. This approach includes the following considerations:

- **Daily traffic volumes and type of traffic along the roadway** – SDDOT data indicates that it is economically viable to provide surface treatment to gravel roads carrying in excess of 250 to 300 vpd. Roads carrying in excess of 660 vpd are typically reviewed to determine whether an alternate roadway surface should be considered.
- **Continuity and functional classification of the roadway** – Arterial roads should generally be paved before collector or local roads. As another consideration, a local street may be economically sealed or paved while a road with heavy truck usage may best be surfaced with gravel and left unpaved until sufficient funds are available to place a thick load-bearing pavement on the road.
- **Tendency of drivers to divert away from gravel surfaces and onto paved surfaces to make their trip** – If the new paved roadway would provide the first paved surface serving a particular demand pattern within Meade County, it should be designed to accommodate higher levels of traffic. Routes leading to it may require some improvement to provide adequate traffic safety.
- **Traffic safety** – Paved roads encourage higher travel speeds. Sight distance, curvature, lane width, surface friction, and super-elevation should be tailored to the anticipated travel speed.

[6] https://blog.midwestind.com//wp-content/uploads/2017/11/ots15002.pdf

- **Stormwater drainage** – It is important to build up the road base and improve drainage before paving. If water is not drained away from the road, the pavement will fail.
- **Public opinion** – Public opinion should be weighed in the decision process, and leaders should inform the public about the factors considered in the decision process.
- **Accommodation of non-motorized modes** – Consideration of whether non-motorized users, such as bicyclists and pedestrians, would be inclined to use the paved route, and if so, what type of accommodation is appropriate (bicycle- and pedestrian-focused signing and striping, inclusion of bike lanes and shared-use paths, etc.).

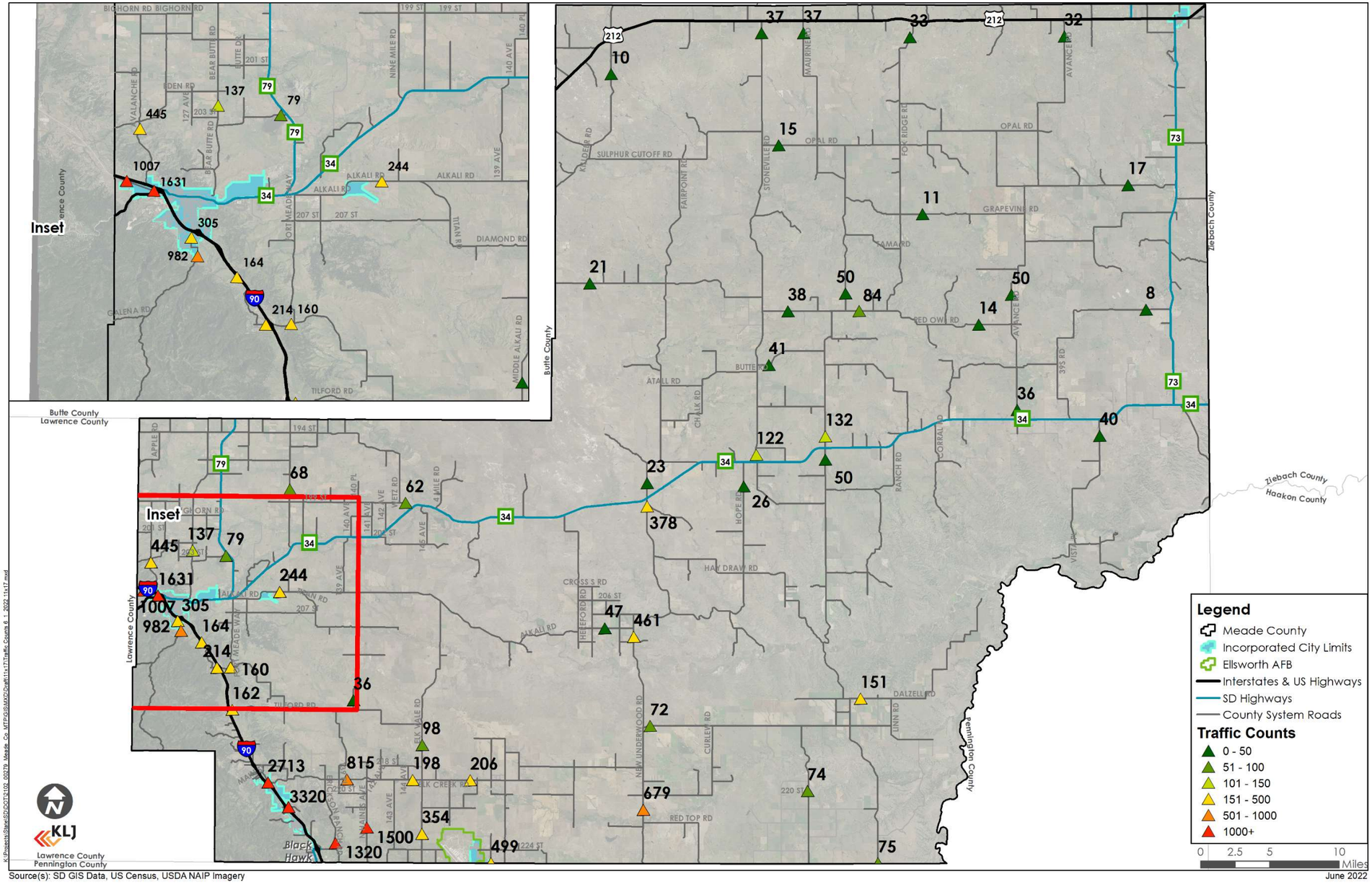
Traffic Volumes

Segment Volumes

Average Daily Traffic (ADT) volumes show how many vehicles travel on the road on an average day. The project team assembled traffic volume information provided by SDDOT for County roadway segments within the study area. Traffic count data is generally current, with most count locations providing counts from 2020 and 2019, and five locations providing counts from 2017.

The highest recorded traffic volumes surround the I-90 corridor in southwest Meade County, which connects the City of Sturgis with the Cities of Piedmont, Summerset, and Rapid City. Only two county-maintained facilities carry more than 2,000 vehicles per day (ADT) at any recorded location. Some north-south connections (alternative to I-90) display higher volumes, with segments of Erickson Ranch Road/Deadwood Avenue showing volumes of more than 1,300, and segments of N Haines Avenue showing volumes of more than 1,500. The most traveled gravel-surfaced road, according to StreetLight Data, is Fort Meade Way, which runs north from Pleasant Valley Rd and carries an estimated 900 vehicles per day. This volume is much higher during the Sturgis Rally. Traffic count locations and recorded volumes are shown in Figure 15.

Figure 15: Traffic Count Locations and Volumes within Meade County



Turning Movement Counts

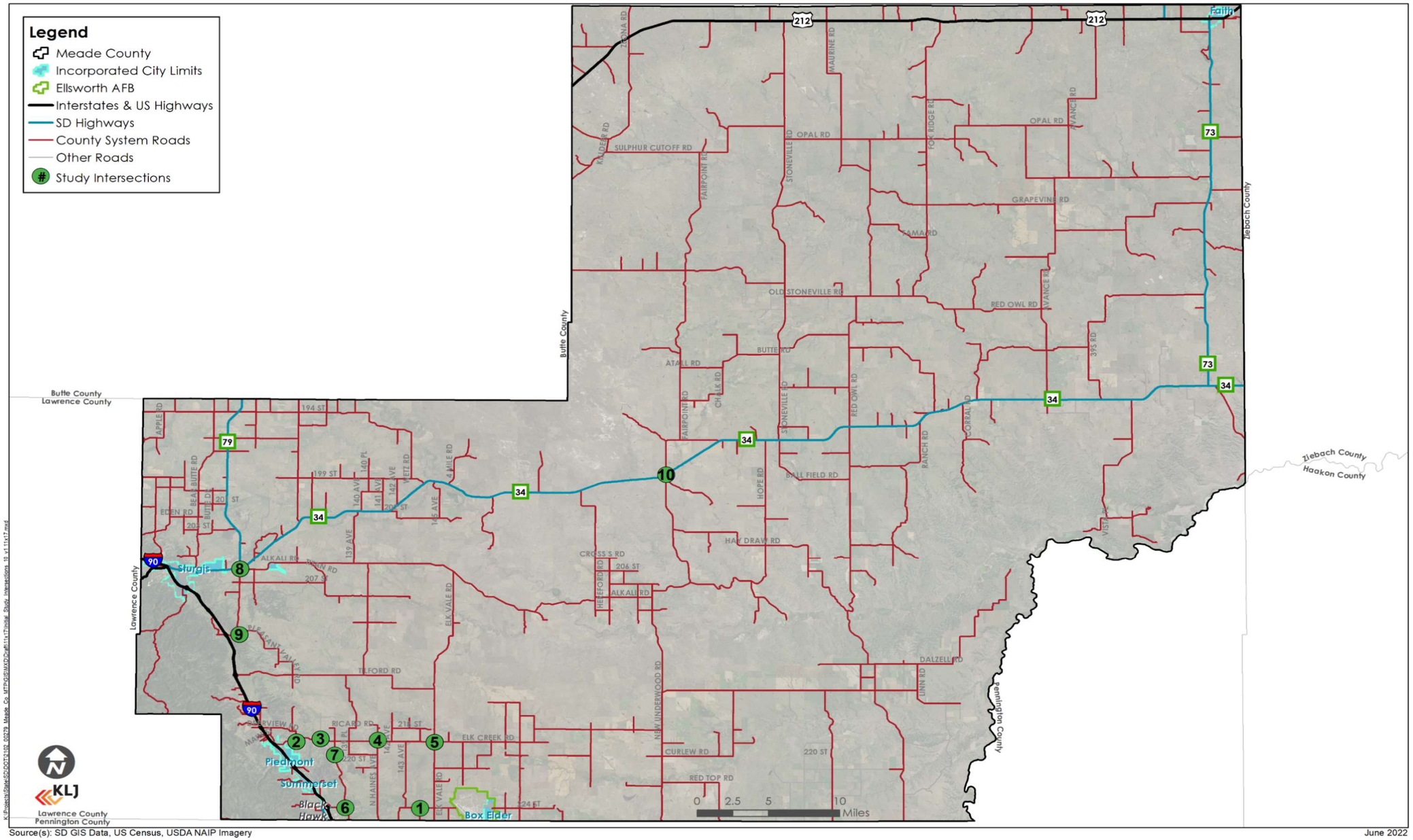
The project team collected turning movement counts (TMCs) for 10 study intersections within the Meade County study area. TMC data was sourced from the StreetLight platform, and additional in-field counts were conducted to validate the StreetLight data. In-field TMC counts were conducted at three study intersections from 7 a.m. to 9 a.m. and from 4 p.m. to 6 p.m. during September 2021. Peak hour volumes for all study intersections were determined on a per-intersection basis and representative of the PM peak hour. Following the data collection, Highway Capacity Software (HCS) computer software was used to analyze current level of service (LOS) for the intersections. The results of this analysis are provided in the next chapter of this report.

This data was used as a baseline for analysis of future traffic conditions and development of project recommendations, as presented later in this document. The ten study intersections are listed in Table 6 and shown in Figure 16.

Table 6: Study Intersections

Map ID	Road #1	Road #2
1	Dyess Road	224th Street
2	Elk Creek Road	Deerview Road
3	Elk Creek Road	Timberwood Drive
4	Elk Creek Road	Haines Avenue
5	Elk Creek Road	Elk Vale Road
6	Erickson Ranch Road	Peaceful Pines Road
7	Erickson Ranch Road	220th Street
8	Fort Meade Way	SD 34
9	Fort Meade Way	Pleasant Valley Road
10	New Underwood Road	SD 34

Figure 16: Study Intersections



Crash and Safety Analysis

An examination of transportation safety is an essential component of the transportation planning process. Improving transportation safety requires more than just fixing a road or increasing police patrols. To be most effective, safety improvements need to consider the "four Es" of transportation safety: Education, Enforcement, Engineering, and Emergency Services. The objective of the safety analysis is to improve the safety of all users of the transportation system and work towards achieving the mission of the South Dakota Strategic Highway Safety Plan (SHSP): save lives and reduce serious injuries.

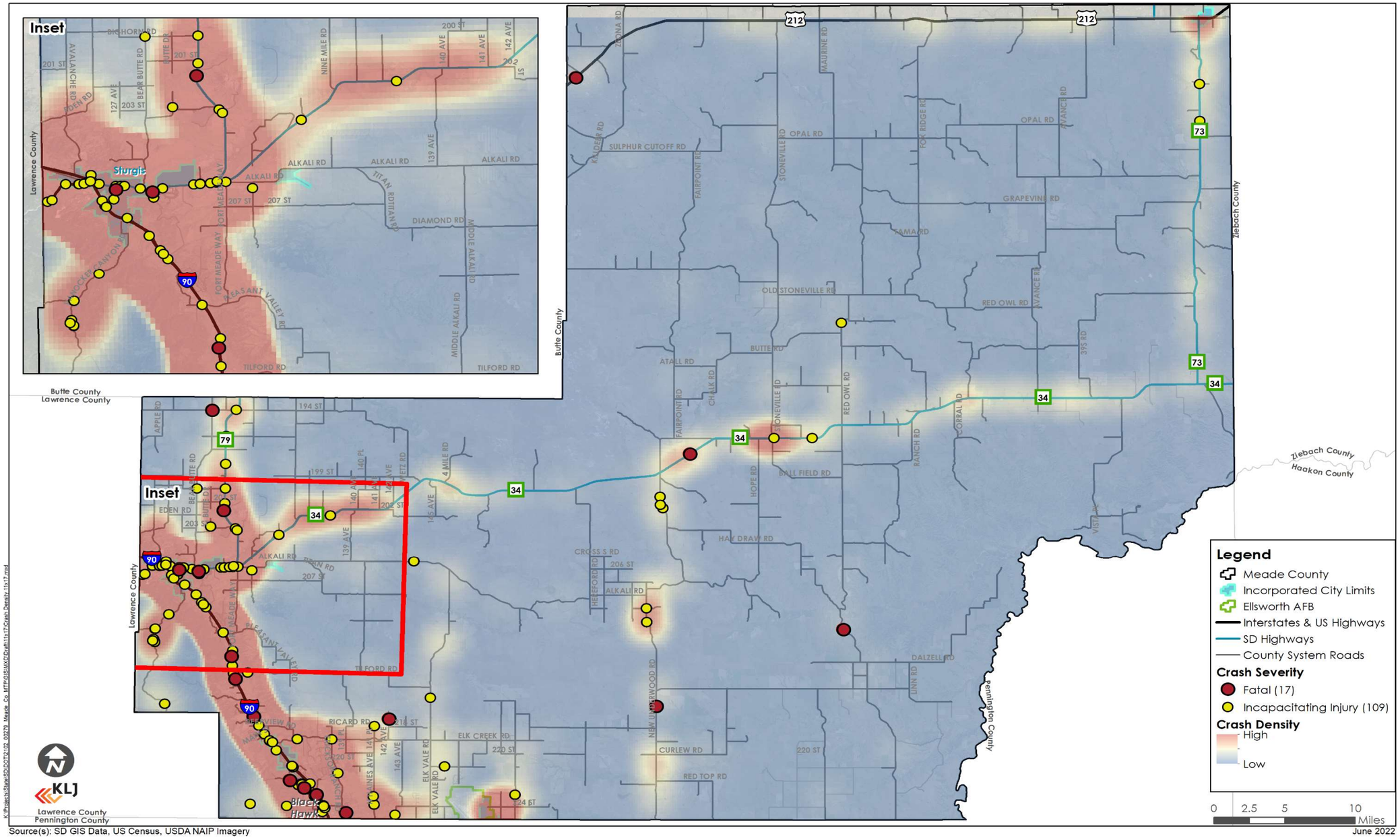
Study Area Crash Trends

The South Dakota Department of Public Safety (SDDPS) manages crash records in South Dakota. The law enforcement departments of the respective agencies around the state are responsible for reporting crashes to the SDDPS. Five years of crash records from January 1, 2016 through December 31, 2020 were provided by the SDDPS to aid in the analysis of traffic crash trends within the study area. During the five-year analysis period, 2,403 crashes were reported in Meade County. The high-level trends from this data are discussed below, with more detailed information provided later in the section.

- There were 17 crashes that resulted in a fatality and 109 crashes that resulted in an incapacitating injury.
- There were 12 crashes that involved a pedestrian, of which one was fatal and five were serious injury type crashes.
- There were six crashes that involved bicyclist, of which two were serious injury type crashes.
- About 37-percent of crashes occurred within cities in Meade County. Cities comprise only about 0.4 percent of the County's area.
- About 12-percent of crashes were intersection related.
- Roughly 41-percent of crashes occurred along I-90 that (including interchange areas).
- Total crashes rose sharply from 2016 to 2017 and plateaued through the middle of the analysis period before seeing a significant, steady decline from 2018 to 2020.
- Total fatal and injury crashed rose sharply from 2016 to 2017, before steadily declining over the remainder of the analysis period.

The crash data included spatial records which were analyzed to understand patterns of motorized vehicular crashes and identify high-risk areas. This was done through a hot-spot analysis which identifies clusters of dense accident occurrence, as shown in Figure 17.

Figure 17: Relative Crash Density within the Study Area



Crash Severity

Consideration of crash severity is important for understanding the current safety conditions of the system and developing recommendations to address specific problem areas. The SDDOT crash data categorized reported crashes by the following severity levels:

- Fatal
- Incapacitating Injury
- Non-Incapacitating Injury
- Minor Injury
- Property Damage Only (PDO)

Crash severity is categorized based on the most severe injury of the crash. For example, if a crash involved two vehicles that resulted in one serious injury and two possible injury crashes, the crash is reported as a suspected serious injury crash. A suspected serious injury crash is defined as an injury, other than fatal which prevents the injured individual from walking, driving, or normally continuing the activities they could perform before the injury. There were 17 crashes reported that resulted in death, 501 crashes that resulted in an injury (109 Incapacitating, 230 non-incapacitating, and 162 possible injury), and 1,885 crashes that resulted in PDO. Figure 18 shows that crashes resulting in injury or PDO have decreased over the five-year analysis period, with PDO crashes declining steadily after 2018 and injury crashes decreasing gradually after 2017. While decreased driving during the COVID-19 pandemic may be a factor in 2020 having the lowest total crashes during the five-year analysis period, the 2020 total is generally in line with the downward trend beginning in 2018 (total crashes decreased by about seven percent from 2018 to 2019 and about ten percent from 2019 to 2020).

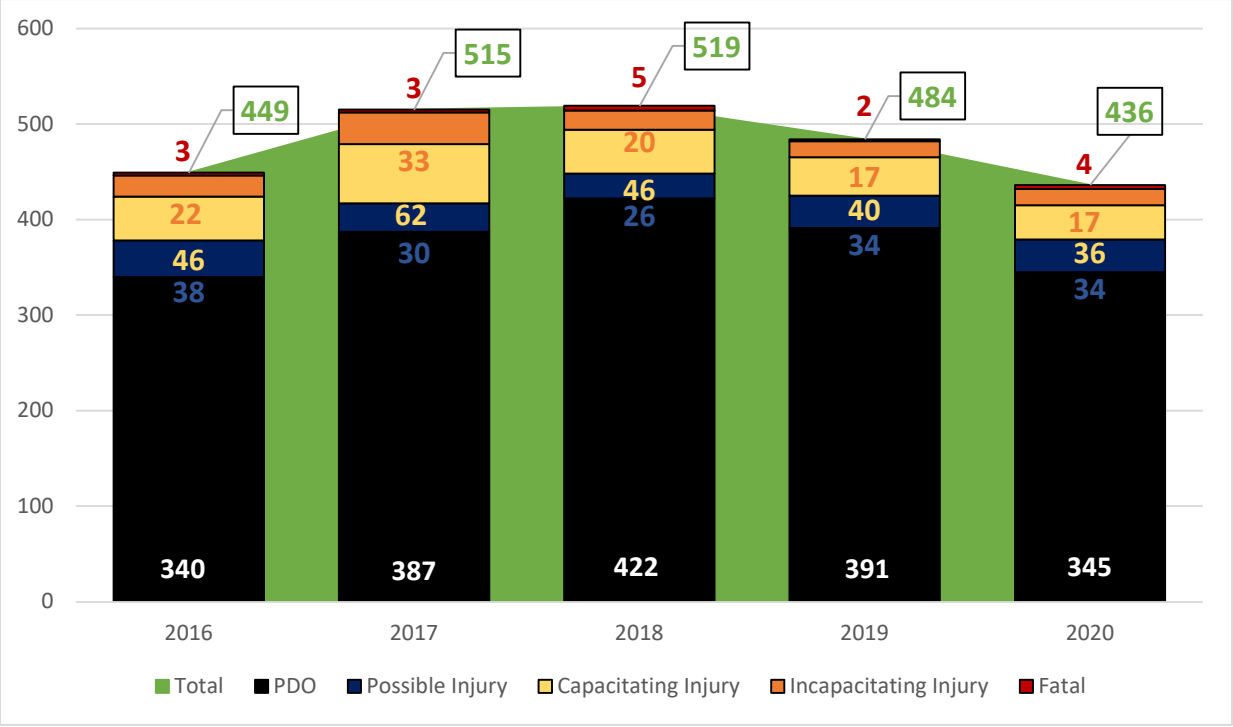


Figure 18: Crash Summary (2016 – 2020)

Meade County observed an increase of two traffic-related fatalities from 2019 to 2020. The County averaged 3.4 fatal crashes per year over the five-year analysis period. The County's increase in fatal crashes in 2020 follows a national trend of increased roadway deaths during the COVID-19 pandemic, with traffic fatalities increasing by 7.2 percent nationally from 2019 to 2020[7].

Crash Type

Analyzing crash type aids in understanding the conditions that contribute to injury and fatality crashes and supports development of countermeasures to mitigate or minimize these conditions. During the analysis period, single vehicle related (1,851), angle (280), and rear-end (165) were the most predominant crash types in the County. Figure 19 shows crashes by crash type during the five-year analysis period.

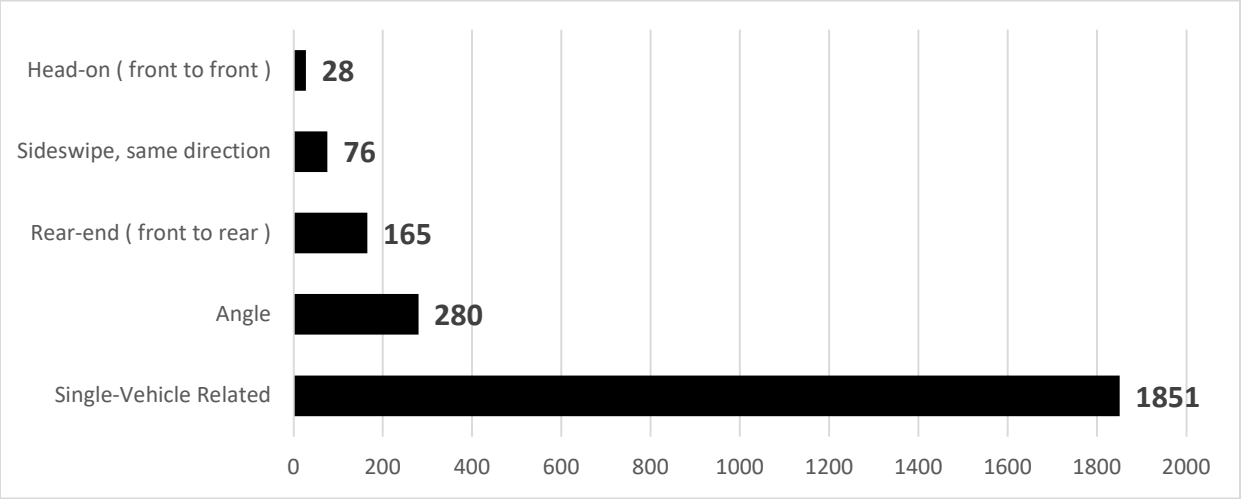


Figure 19: Crashes by Crash Type (2016 – 2020)

Crash Occurrence Period

Crash occurrence statistics assist in refining patrol deployment decisions. Typically, traffic varies significantly by time of day and day of the week, particularly during weekday peak hours. Crash data for the study area was evaluated based on the period of occurrence on the crash with respect to time of the day, week, and month.

- Approximately 63 percent of crashes occur between 7AM and 7PM. Crashes typically occur during peak travel periods, with a notable increase from 9PM to 10PM. Crashes by time of day are shown in Figure 20.
- Around 72 percent of crashes occur during weekdays. The fewest crashes occur on Sundays, and the most on Fridays. Crashes by day of week are shown in Figure 21.
- The highest number of vehicular crashes occur between October and December and during the month of August, with 43 percent of crashes occurring during these months over the analysis

[7] https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813115

period. Challenging winter road conditions including snow, sleet, and ice can contribute to a higher number of crashes during the winter months.

- The Sturgis Motorcycle Rally, consistently bringing near half a million visitors to the County, would logically increase crashes during the month of August. Crashes by month of the year, aggregated over the analysis period, are shown in Figure 22. Further detail is provided on the number of crashes by month for each analysis year in Figure 23.

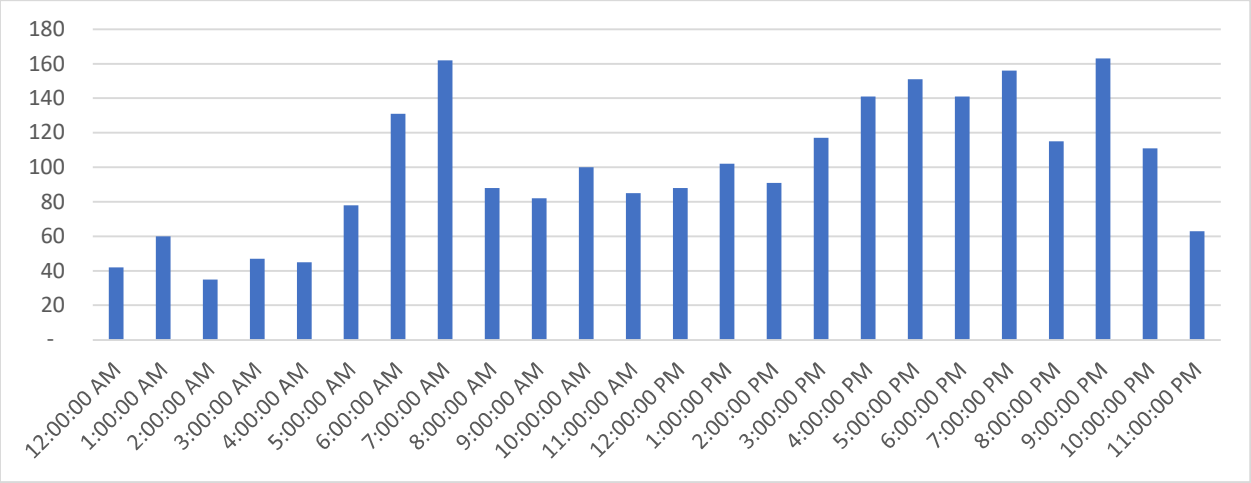


Figure 20: Crashes by Time of Day (2016 – 2020)

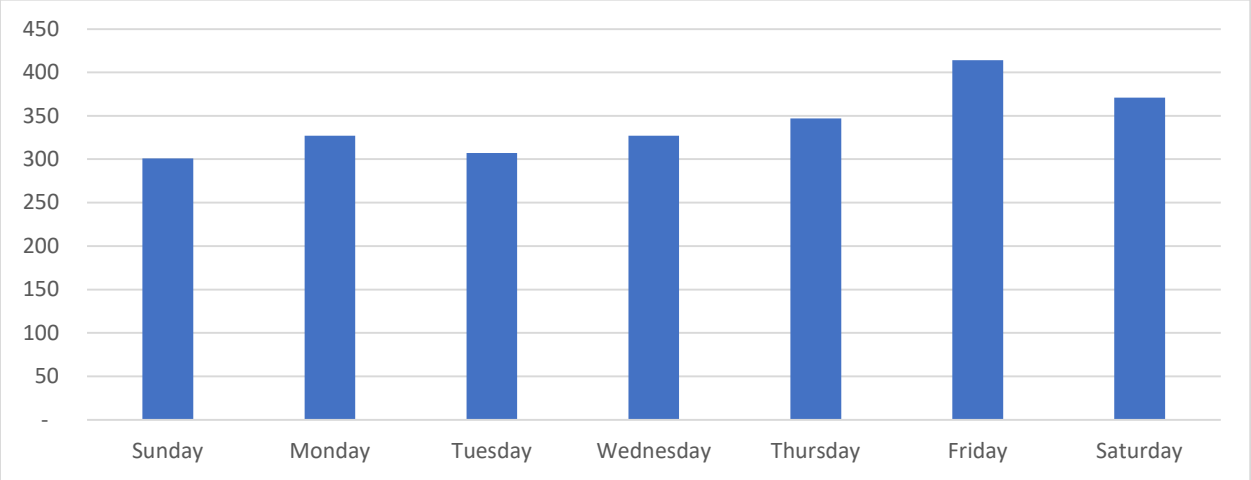


Figure 21: Crashes by Day of Week (2016 – 2020)

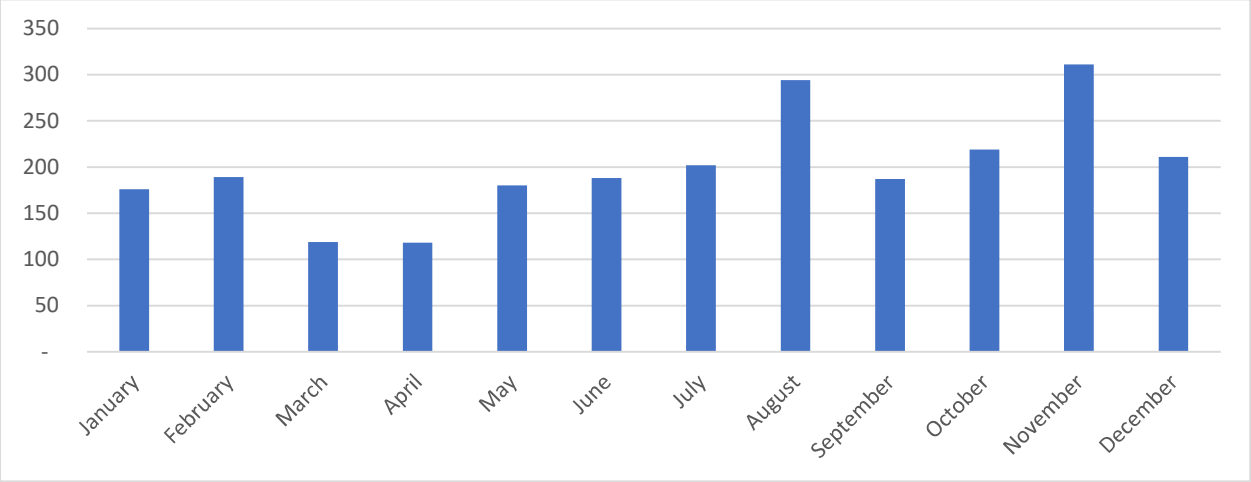


Figure 22: Crashes by Month (2016 – 2020)

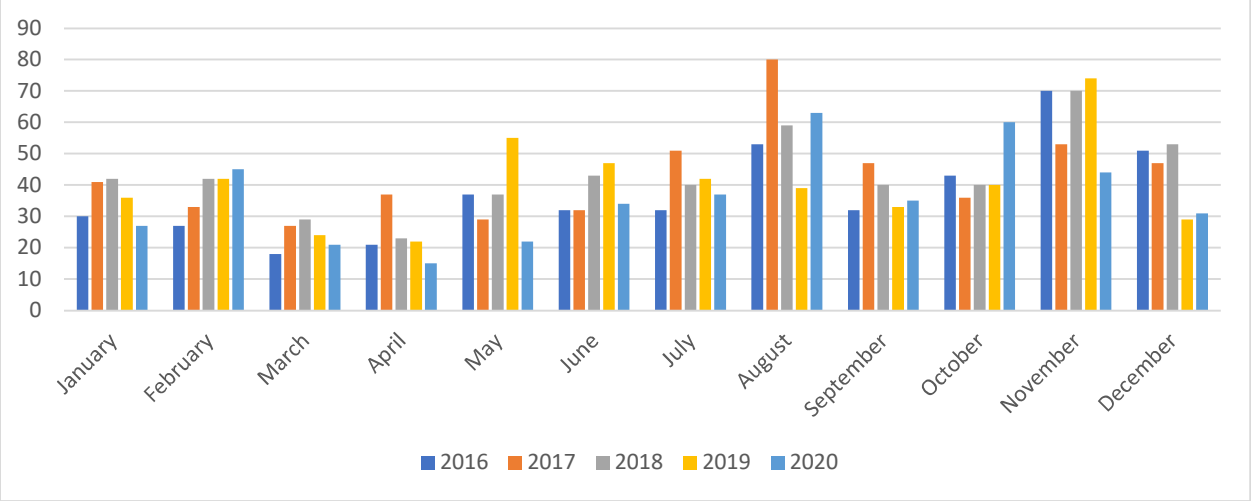


Figure 23: Crashes by Month, by Analysis Year

Crashes Involving Impaired Drivers

From 2016 to 2020, there were 155 crashes that involving impaired drivers. This corresponds to 6.5 percent of all crashes in Meade County. The statewide average crashes involving impaired drivers during the same time frame was 5.5 percent. Nine of the 17 fatal crashes were alcohol related, which corresponds to 53 percent of all fatal crashes in Meade County over the analysis period. The statewide average fatal crashes involving impaired drivers during the same time frame was 43 percent.

Crashes Involving Wild Animals

From 2016 to 2020, there were 849 crashes that involved wild animals which corresponds to an average of 170 such crashes per year. This is likely understated as many animal-vehicle collisions go unreported if the crash does not involve property damage or injury. South Dakota is the fourth-ranked state in the Nation for insurance claims from a collision with an animal (Table 7).

Rank	State
1	West Virginia
2	Montana
3	Pennsylvania
4	**South Dakota**
5	Michigan

Table 7: Top Five States for Claims from a Collision with an Animal (2020)[8]

Meade County sees the highest number of wild animal-related crashes in November (Figure 24), which is in line with the deer breeding season that runs from October and into December (peaking in mid-November). Of the animal-vehicle collisions within the study area, the majority occurred on high-volume, high-speed roadways, with over 50% occurring on I-90 alone. Wild animal crash locations are shown in Figure 25.

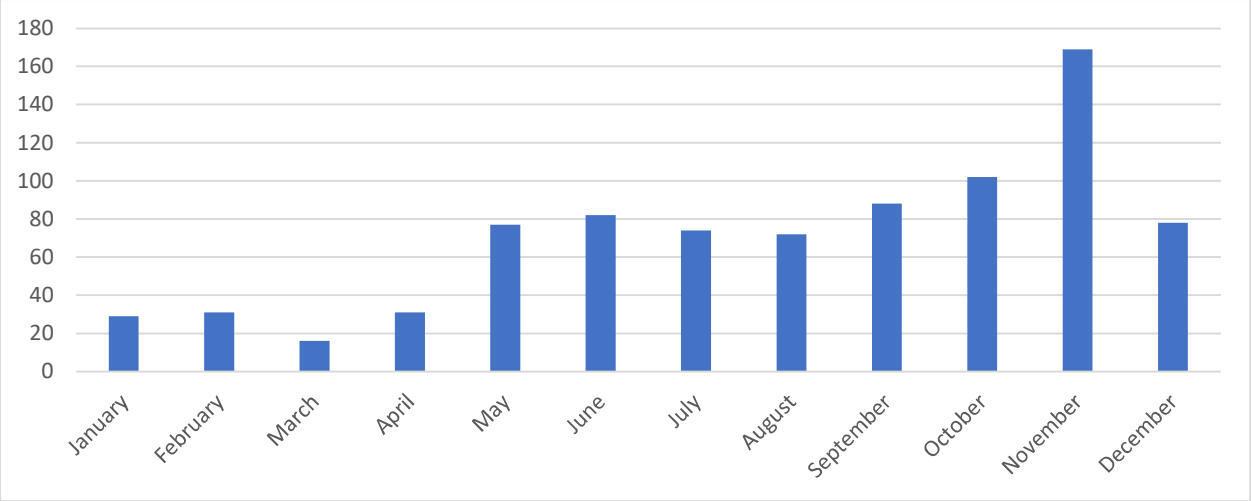
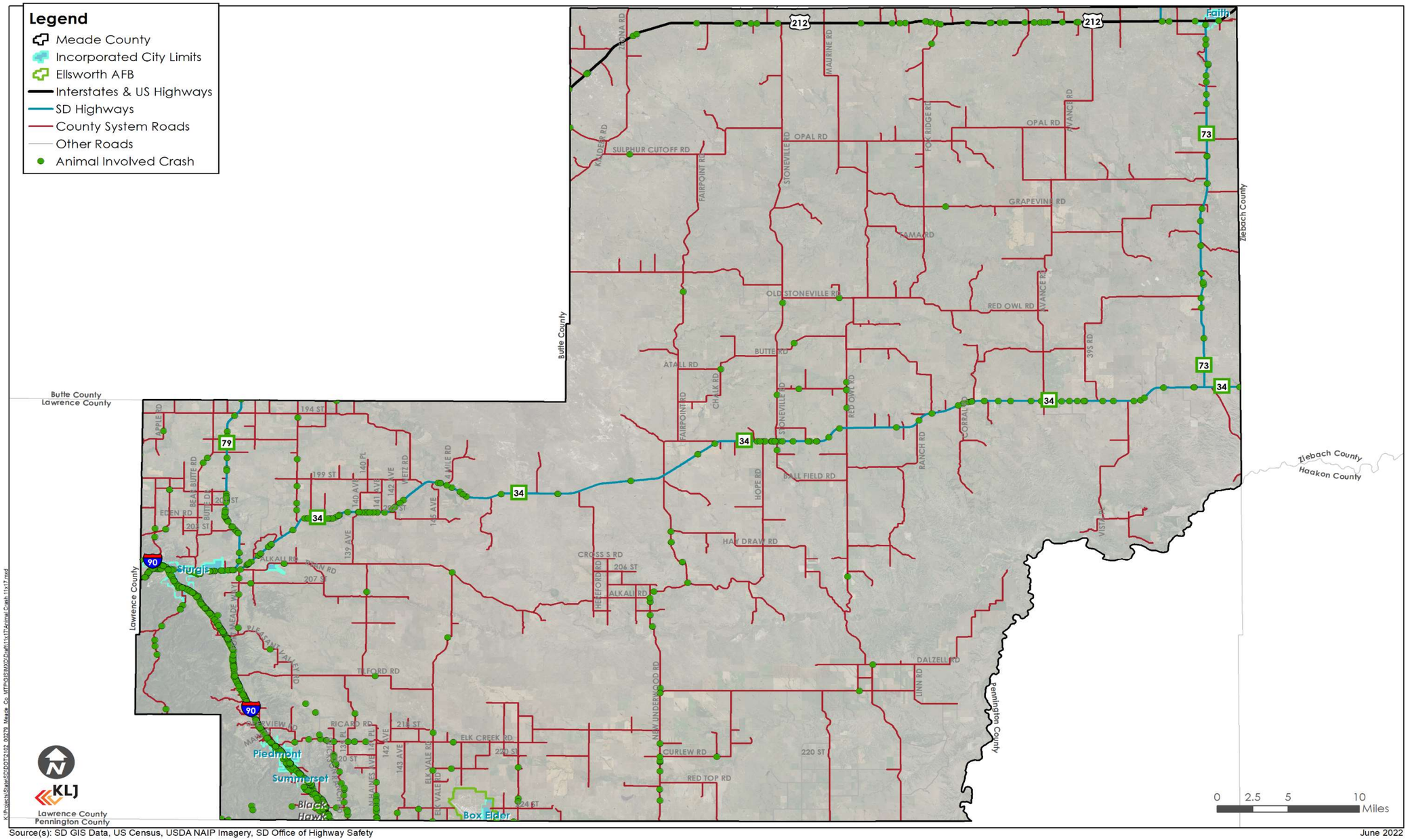


Figure 24: Crashes Involving a Wild Animal by Month (2016 – 2020)

Figure 25: Locations of Crashes Involving a Wild Animal (2016 – 2020)



Bicycle and Pedestrian Crashes

From 2016 to 2020, there were 12 crashes that involved pedestrians, and six crashes that involved bicyclists. Pedestrian crashes included one fatal and five serious injury type crash. Bicyclist crashes included two serious injury type crashes. The crashes involving pedestrians and bicyclists (non-motorized crashes) are shown in Figure 26. Eleven of the 18 non-motorized crashes were experienced in Sturgis. There were two crashes that occurred within ¼ mile of Sturgis Intermediate School.

Highest Crash Frequency Intersections

To assess the safety performance of intersections within the study area, ten intersections were identified with the highest number of crashes during the analysis period. Table 8 summarizes the number of crashes for each high-crash intersection, with Figure 27 showing the location of the intersections. The intersection of Peaceful Pines Road with Sturgis Road experienced the highest number of crashes (16), followed by the intersection of Sturgis Road with Elk Creek Road (13). Five intersections along SD Hwy 34 were among the top 10 highest crash intersections in the County.

Figure 26: Crashes Involving Pedestrians and Bicyclists (2016 – 2020)

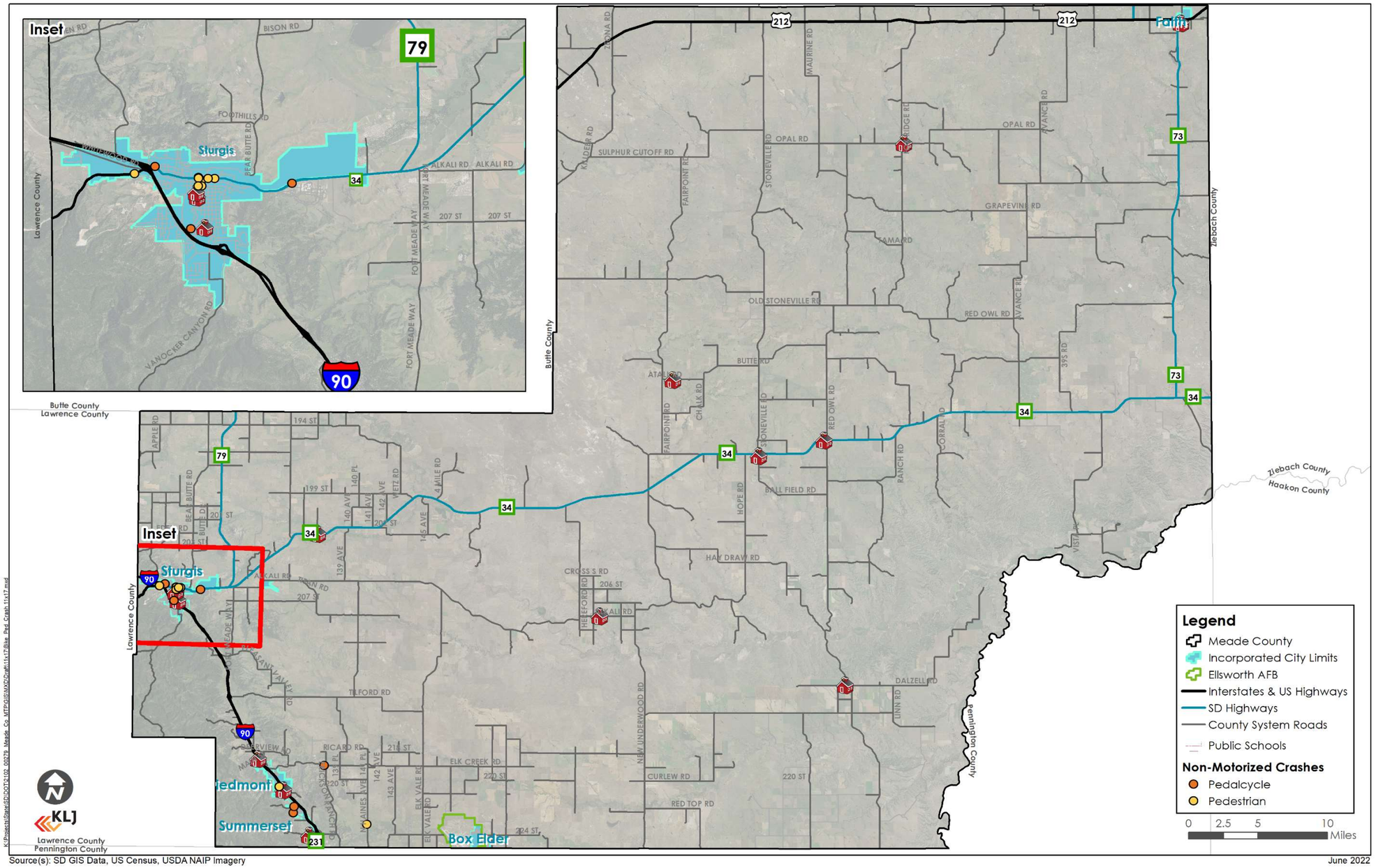
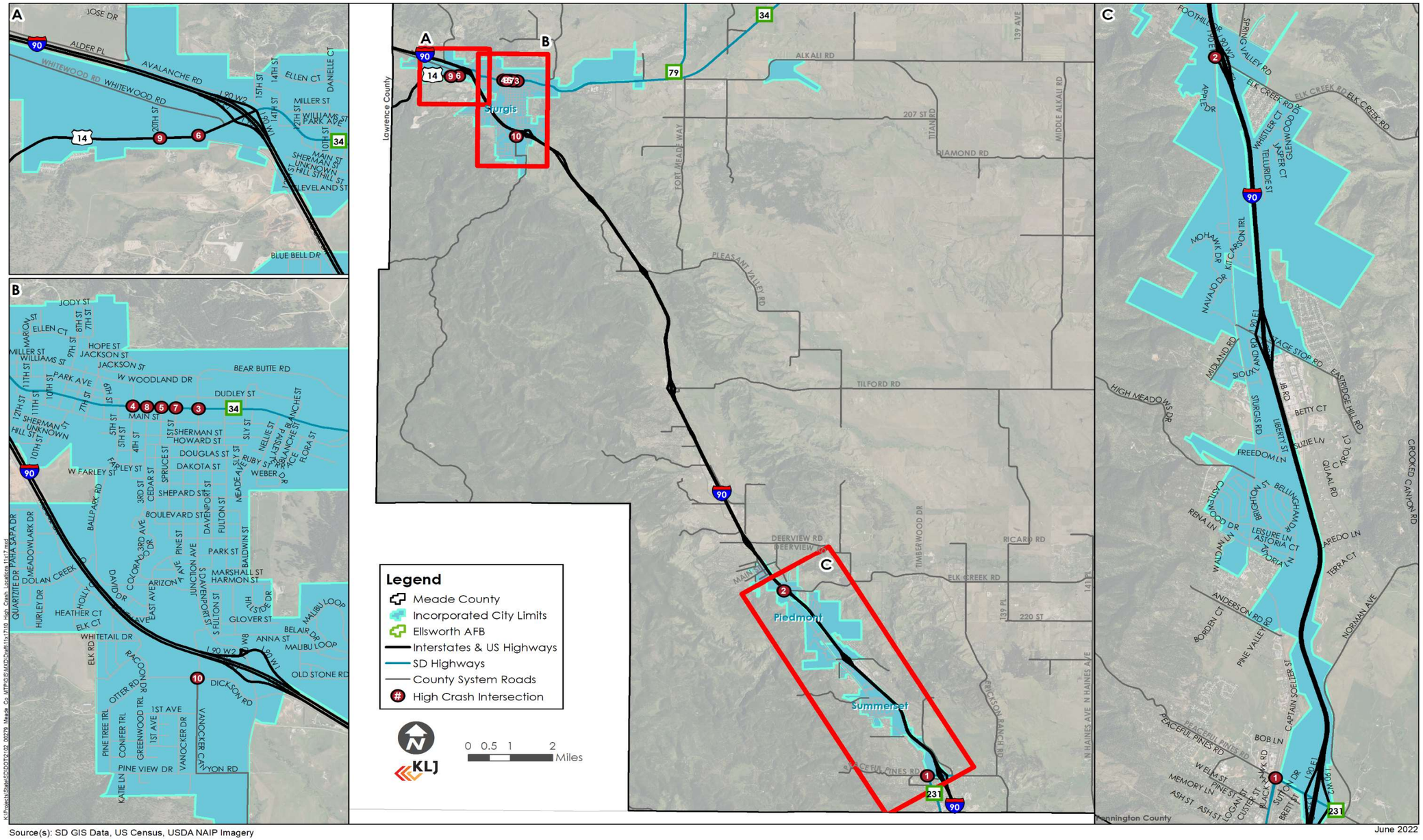


Table 8: Top 10 High Frequency Crash Locations

Rank	Intersection	Traffic Control	Frequency
1	Peaceful Pines Rd & Sturgis Rd	Signal	16
2	Sturgis Rd & Elk Creek Rd	TWSC[1]	13
3	SD Hwy 34 & Junction Ave	Signal	11
4	SD Hwy 34 & 4th St	Signal	8
5	SD Hwy 34 & 2nd St	Signal	8
6	US Hwy 14A & Moose Dr	TWSC[1]	8
7	SD Hwy 34 & 1st St	TWSC[1]	7
8	SD Hwy 34 & 3rd St	TWSC[1]	5
9	US Hwy 14A & 20th St	TWSC[1]	5
10	Vanocker Canyon Dr & Otter Rd	TWSC[1]	5

1. TWSC- Two way Stop Controlled

Figure 27: Top 10 High Frequency Crash Locations (2016 – 2020)



Source(s): SD GIS Data, US Census, USDA NAIP Imagery

June 2022

Culverts and Bridges

Culverts and bridges are important supporting components of a transportation system. Culverts allow a roadway to cross minor waterways and irrigation ditches, whereas bridges allow a roadway to cross more significant features such as other roads, railroads, and major waterways. Meade County manages 118 bridges and box culverts, in addition to approximately 2,700 documented corrugated metal pipe (CMP) and reinforced concrete pipe (RCP) culverts.

Condition of Culverts and Bridges

A bridge's sufficiency rating measures a bridge's overall condition based on regular required inspections. The ratings are used to determine when a bridge is eligible for rehabilitation or replacement. A bridge with sufficiency rating greater than 80 is generally considered in good condition. A new bridge will have a sufficiency rating of 100, whereas a sufficiency rating of less than 50 is candidate for replacement. The Federal Highway Administration (FHWA) inspects and assigns bridge sufficiency ratings to all structures that fall within the definition of "bridge,"[8] including County bridges and most County box culverts. The inspection of bridges and determination of sufficiency is conducted in accordance with the FHWA national bridge inspection standards[9].

Of the 118 federally inspected bridges and culverts maintained by the County, 67 (57 percent) have a sufficiency rating of 80 or greater, 33 (28 percent) have a sufficiency rating between 50 and 80, and 18 (15 percent) have a sufficiency rating below 50 (Figure 28). As shown in Figure 29, bridge sufficiency rating is generally correlated with the age of a bridge. Current Bridge sufficiency ratings for the study area are shown in Figure 30.

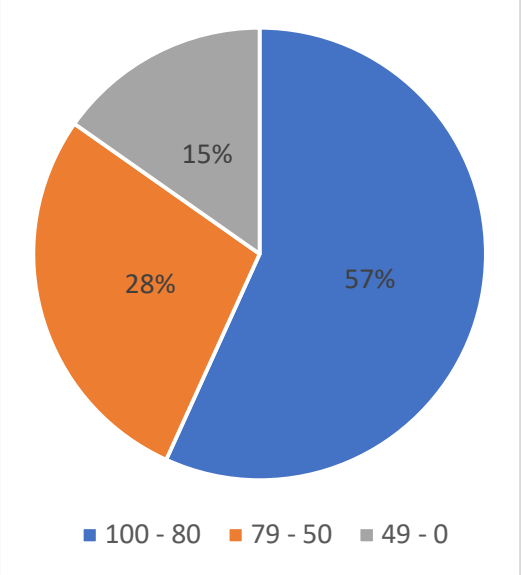


Figure 28: Sufficiency Rating for County Maintained Bridges and Culverts

[8] https://www.law.cornell.edu/cfr/text/23/650.403
[9] https://www.fhwa.dot.gov/bridge/nbis.cfm

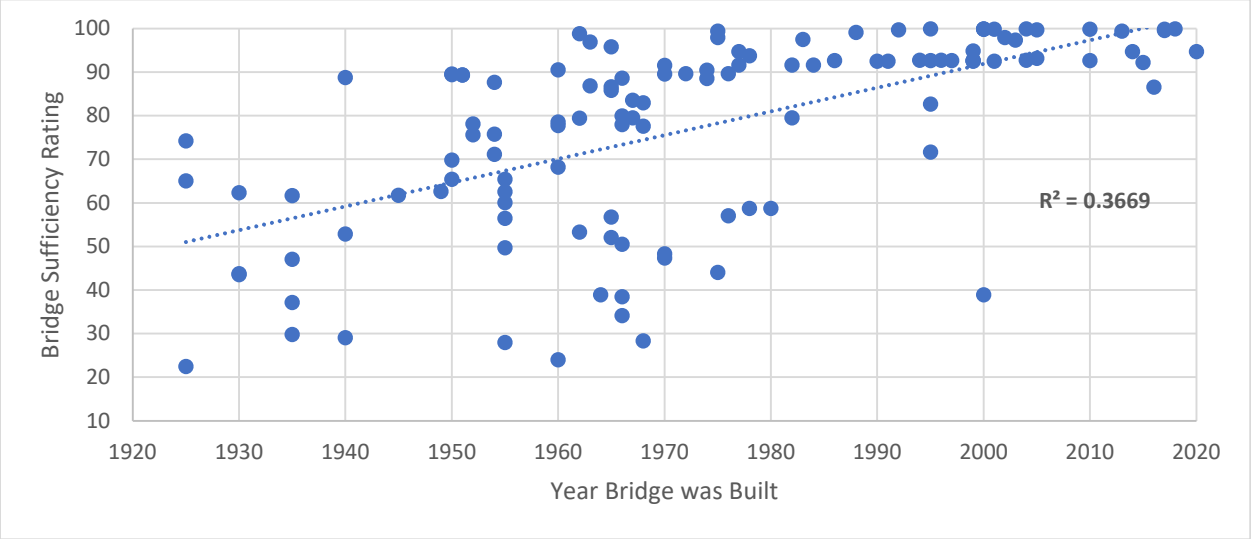
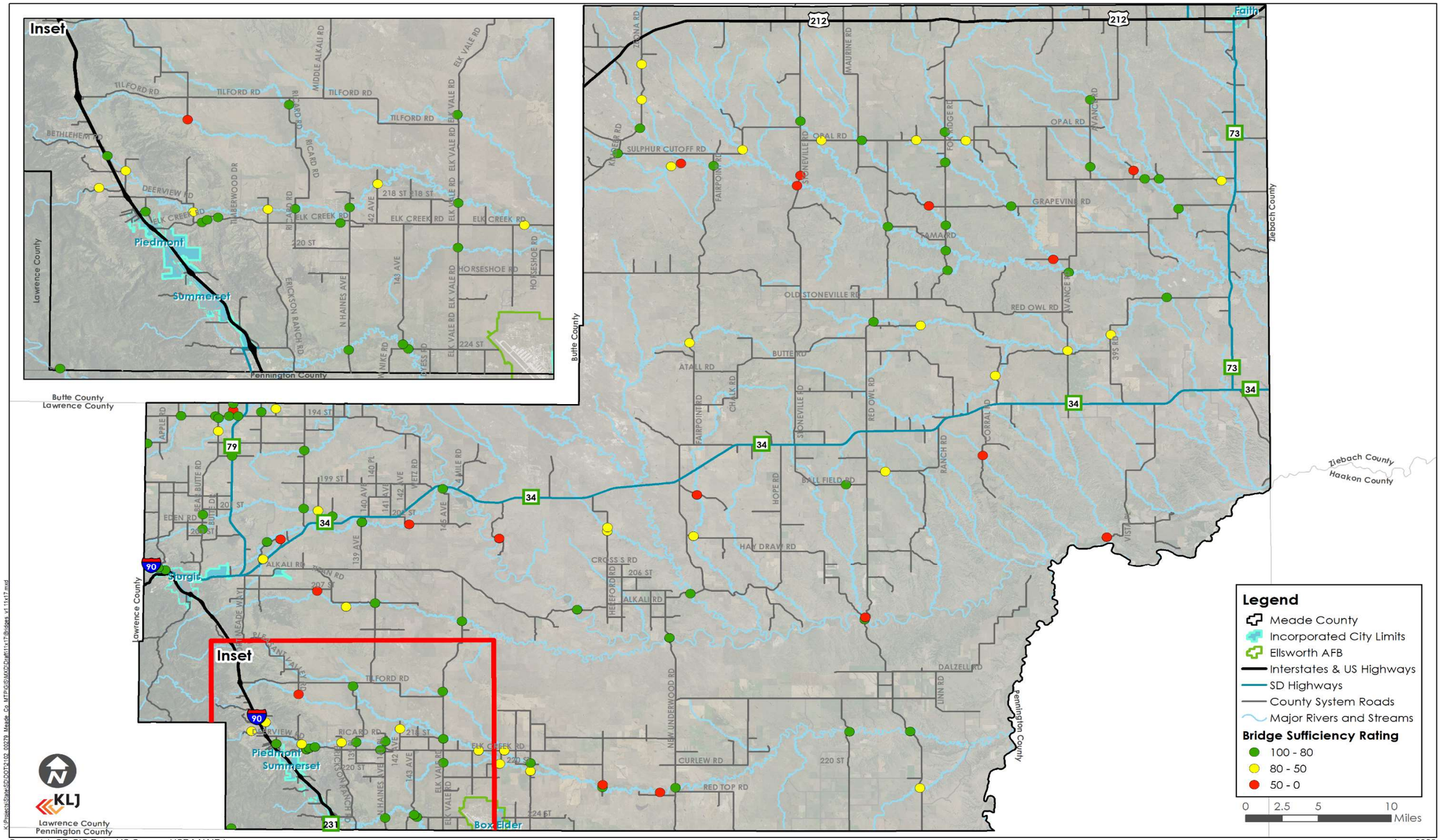


Figure 29: Bridge Sufficiency Rating vs Year Bridge was Built

Figure 30: Bridge and Culvert Condition within the Study Area



There are approximately 2,700 County-maintained pipe culverts which are not assigned a bridge sufficiency rating by the FHWA. These are checked periodically by the County and assigned a condition rating of good, fair, or poor. The condition distribution of County-maintained pipe culverts is shown in Figure 31.

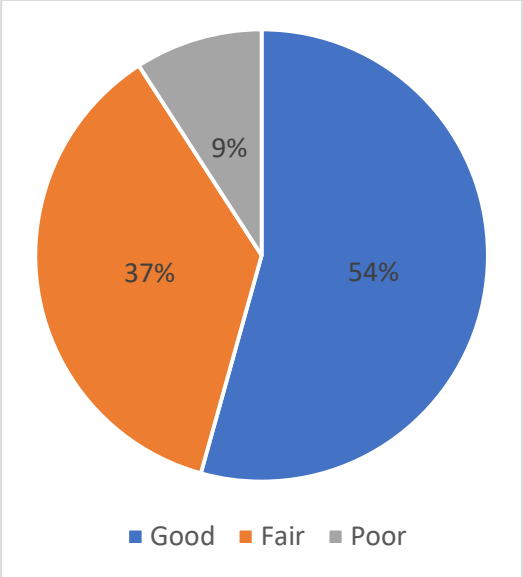


Figure 31: Condition of County-Maintained Pipe Culverts

Freight Systems

Trucks

Most freight travel through Meade County occurs along I-90. I-90 is an interstate roadway passing through the County's southwest corner which serves longer cross-country trips. Truck ADT along I-90 averages around 1,300 south of Sturgis and about 850 west of Sturgis with 625 along the portion of US 14 A within Meade County. Freight travel also occurs along state highways through Meade County including US 212, SD 34, SD 79, and SD 73. SD 79 has the highest truck ADT outside of the I-90 corridor with the most recent count of 400 truck ADT. County highways play an important role in circulating freight traffic to and from destinations within the county, which are mainly agricultural destinations.

Truck ADT data were unavailable from DOT counting locations other than US and State highways. Additionally, Streetlight data did not provide truck ADT for county roads such as Fort Meade Way.

The Interstate, U.S., and State highway facilities mentioned above constitute the National Highway System (NHS) within Meade County. NHS routes are designated as such because of the critical role they serve in national defense, mobility, and economic activity. The importance of NHS roadways is underscored by the priority they are given for federal funding, including funding available through the Moving Ahead for Progress in the 21st Century (MAP-21) Act's largest formula program, the National Highway Performance Program (NHPP). Given the large and growing military presence within Meade, as well as its agricultural industry, the County will continue to rely on the NHS as the backbone of its freight infrastructure.

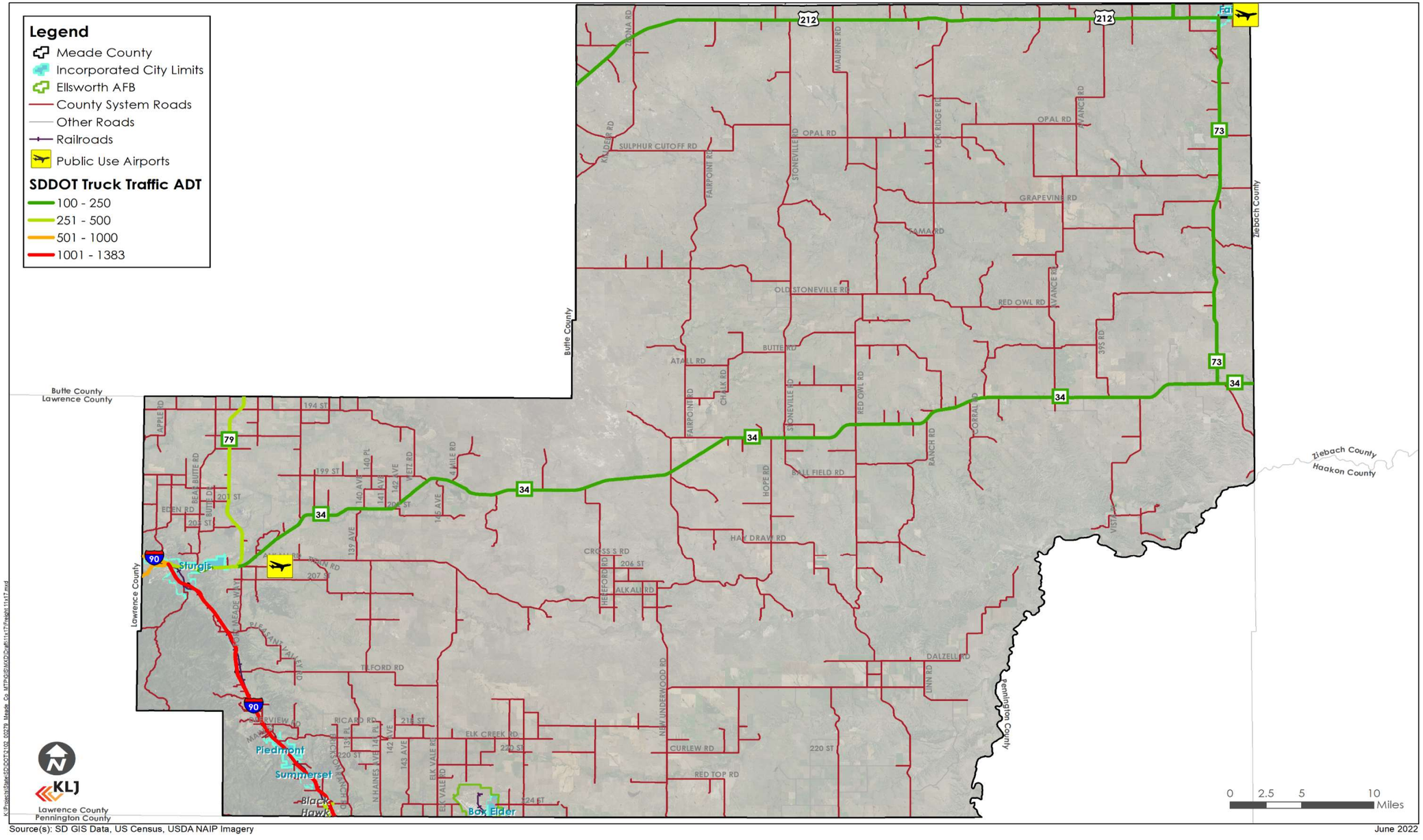
Airports

Meade County is home to two municipal airports. The Sturgis Municipal Airport is a city-owned, public use airport located approximately 4 miles east of Sturgis off SD 34. The Faith Municipal Airport is a city-owned, public-use airport located approximately 1-mile northeast of Faith.

Meade County is also home to Ellsworth Air Force Base, which is located just north of the city of Box Elder. Ellsworth Air Force Base's population is approximately 8,300 and includes military members, family members, and civilian employees. No new airport facilities are anticipated to develop in Meade County in the near term.

Meade County's major freight corridors and airports are shown in Figure 32.

Figure 32: Meade County Major Freight Corridors and Airports



Multimodal Facilities

Transit

Prairie Hills Transit (PHT) currently provides transit service in portions of Meade County. PHT provides public transportation to anyone of any age and ability for any trip purpose. PHT provides in-town service in Sturgis, as well as to Fort Meade and to Rapid City. PHT also provides service from Piedmont to Rapid City. PHT fares range from $2 to $10 based on starting point and final destination. Meade County does not currently provide countywide transit services, nor do any county funds go toward providing a local match for federal transit funding such as PHT.

Bicycle and Pedestrian

Because the Meade County roadway system is primarily rural, non-motorized users are often forced to travel within the vehicular travel lanes, which can create a safety hazard for all travel modes. Some roadways provide wide shoulders, but no continuous network of wide-shouldered roadways or detached paths are currently available in the County. Despite this, bicyclists and pedestrians can be found commuting to work or school. For example, Sturgis Road increasingly serves the more suburbanized communities of Summerset and Piedmont as a route to school for children.

Non-motorized activity in Meade County is generally increasing. Mountain biking and hiking trails are becoming a greater attraction in the western portion of Meade County, particularly in the Black Hills National Forest. Ongoing efforts by trails advocates are seeking to increase the reach of the trail network and fill gaps between key destinations. Trail users have highlighted the challenges of traveling within the region, including from Sturgis to nearby communities, where a lack of dedicated bicycle and pedestrian facilities increases the risk of conflict with motor vehicles. For example, travel from Sturgis to Tilford requires that bicyclists use I-90. While there is a service road running parallel to I-90 between Sturgis and Whitewood, this provides no shoulder for bicyclists. Public input regarding the existing trail system is discussed in more detail later in this document.

Utility Task Vehicle (UTV) Travel

The use of utility task vehicles (UTVs) for recreation has grown in Meade County during the last decade. This activity is mostly practiced in and around the Black Hills National Forest, the northeast corner of which is located within Meade County.

Location: Northern Black Hills National Forest

The Black Hills National Forest is considered among the best locations for UTV use within the state of South Dakota. Among the most popular trailheads for UTV use within the Forest are the Antelope Springs Trailhead, the Bluebird Trailhead, and the South Boxelder Trailhead, which is located just east of Meade County near the community of Nemo. In all, the Forest has 21 designated motorized trailheads and over 3,600 miles of roads and trails designated as open for UTV travel.

Chapter 4: Projected Conditions Analysis

Introduction

A projected conditions analysis helps determine the nature and location of future transportation issues. Results of the analysis aid in developing projects that will anticipate and mitigate these issues as the County grows.

The projected conditions analysis performed for the Meade County MTP focused on ten study intersections as well as roadway segments throughout the study area. The analysis considered recent traffic data and incorporated land use trends to glean an understand of where, and by how much, traffic volumes will grow in the future. The project team conducted the projected conditions analysis in coordination with the SAT, County staff, and SDDOT.

This chapter is comprised of three sections, which are summarized below:

- **Segment Volumes**: Presents the future conditions analysis conducted for County roadways, including the methodology used for projecting traffic volumes and the analysis results.
- **Study Intersections**: Presents and describes the ten study intersections. Discusses the data collection, traffic operations and safety analysis that was conducted for the study intersections.
- **Summary**: Summarizes the results of the projected conditions analysis for the study intersections and roadway segments. Provides an interpretation of the results and discusses conclusions.

Segment Volumes

The project team projected traffic volumes for study area roadway segments using the same growth assumptions used to evaluate future intersection operations. A 25-year growth factor of 1.425 based on SDDOT projections was used.

In addition to this projected traffic growth, additional growth was added to address the isolated growth associated with planned subdivisions described earlier in the report in Figure 8. Trips generated by these developments were estimated and then assigned to the roadway network based on engineering judgment.

The top 19 traffic volume locations by estimated 2045 Average Daily Traffic (ADT) are shown in Table 9. These locations are presented in the table below along with StreetLight-based traffic projections for other locations. More information on StreetLight is provided later in this chapter.

Table 9: Twenty Highest Traffic Volume Locations by 2045 ADT Estimate

Site ID	Source	Corridor	Description	2021 ADT	2045 Estimate	2045 With Development
547041	SDDOT Traffic Count Location	Stage Stop Rd	Between J B Rd & I-90W	3,320	4,731	5,013
547042	SDDOT Traffic Count Location	Elk Creek Rd	Between Hills View Dr & I-90W	2,713	3,866	4,097
547303	SDDOT Traffic Count Location	Whitewood Rd	Between Us14A & 20Th St - Sturgis	1,714	2,442	2,588
547062	SDDOT Traffic Count Location	Erickson Ranch Rd	Between Peaceful Pines Rd & West Ridge Rd	1,320	1,881	1,993
547304	SDDOT Traffic Count Location	Whitewood Rd	Between Industry Rd & Meade/Lawrence County Line	1,058	1,508	1,598
547302	SDDOT Traffic Count Location	Vanocker Canyon Rd	South of Junction Ave - Sturgis	1,032	1,471	1,558
547050	SDDOT Traffic Count Location	Elk Creek Rd	Between Ricard Rd & Golden Valley Dr	815	1,161	1,231
547060	SDDOT Traffic Count Location	New Underwood Rd	Between Red Top Rd & Curlew Rd	679	968	1,025
552921	SDDOT Traffic Count Location	150 Pl	Between Airway Ct & 225 St - Box Elder	524	747	791
547072	SDDOT Traffic Count Location	New Underwood Rd	Between 209 St & Alkali Rd	469	668	708
547067	SDDOT Traffic Count Location	Avalanche Rd	Between Eden Rd & Elm St	445	634	672
547073	SDDOT Traffic Count Location	New Underwood Rd	Between Hay Draw Rd & Wilcox Rd	378	539	571
547049	SDDOT Traffic Count Location	Elk Vale Rd	Between Prairie Meadows Rd & Horseshoe Rd	354	504	535
547295	SDDOT Traffic Count Location	Vanocker Canyon Rd	Between 1St Ave & Otter Rd - Sturgis	321	457	485
547070	SDDOT Traffic Count Location	Alkali Rd	Between 135 Ave & 132 Ave	244	348	368
547045	SDDOT Traffic Count Location	Pleasant Valley Rd	Between 130 Ave & I-90E	214	305	323

547014	SDDOT Traffic Count Location	Elk Creek Rd	Between School Rd & Horseshoe Rd	210	299	317
547064	SDDOT Traffic Count Location	Elk Creek Rd	Between 144 Ave & Elk Vale Rd	198	282	299
547046	SDDOT Traffic Count Location	Cemetery Entrance Road	Main Black Hills National Cemetery Entrance	164	234	NA
1010	StreetLight Analysis Zone	Fort Meade Way	Between Pleasant Valley Rd & SD Hwy 34	900	1,300	1,350
1020	StreetLight Analysis Zone	Alkali Rd	West of Junction with 139 Ave	250	350	400
1030	StreetLight Analysis Zone	134th Ave/Pleasant Valley Rd	North of Junction with Tilford Rd	230	350	350
1040	StreetLight Analysis Zone	Tilford Rd	East of Junction with Ricard Rd	-	-	-
1050	StreetLight Analysis Zone	Elk Vale Rd	Between Tilford Rd & Alkali Rd	200	300	300
1060*	StreetLight Analysis Zone	Elk Vale Rd S	Between Tilford Rd & Elk Creek Rd	250	350	400
1070	StreetLight Analysis Zone	I-90	Between Sturgis & Rapid City	18,400	24,500	25,600
1080*	StreetLight Analysis Zone	Erickson Ranch Rd	Between Peaceful Pines Rd & West Ridge Rd	1,450	2,100	2,200
1090	StreetLight Analysis Zone	Haines Ave	Between Peterson Rd & Virginia Ln	1,500	2,150	2,300
1100*	StreetLight Analysis Zone	Elk Vale South S	Between Prairie Meadows Rd & Horseshoe Rd	900	1,300	1,400
1110*	StreetLight Analysis Zone	New Underwood Rd North	Between Hope Rd & Hay Draw Rd	600	900	900
1120*	StreetLight Analysis Zone	New Underwood Rd Center	Between West Elm Springs Rd & Alkali Rd	700	1,000	1,050
1130*	StreetLight Analysis Zone	New Underwood Rd South	Between Red Top Rd & Curlew Rd	800	1,150	1,200
1140*	StreetLight Analysis Zone	Elm Spring Rd North	Between Boneita Rd & Hay Draw Rd	150	200	250

1150	StreetLight Analysis Zone	Elm Spring Rd	North of Pennington County Line	200	300	300
1160	StreetLight Analysis Zone	Antelope Creek Rd	Between Elk Creek Rd & 224 St	650	950	1,000
2010	StreetLight Analysis Zone	I-90	NW of Sturgis	12,200	16,200	17,000
2020	StreetLight Analysis Zone	Hwy 79	South of Butte County Line	2,000	2,700	2,800
2030	StreetLight Analysis Zone	Hwy 34	East of Junction with Elm Springs Rd	700	950	1,000
2040	StreetLight Analysis Zone	I-90	East of Rapid City	8,000	10,600	11,100
2050	StreetLight Analysis Zone	Hwy 73	South of Faith	800	1,100	1,100
2060	StreetLight Analysis Zone	US 212	West of Faith	500	700	700

**Duplicate Count Location with SDDOT Traffic Count Locations*

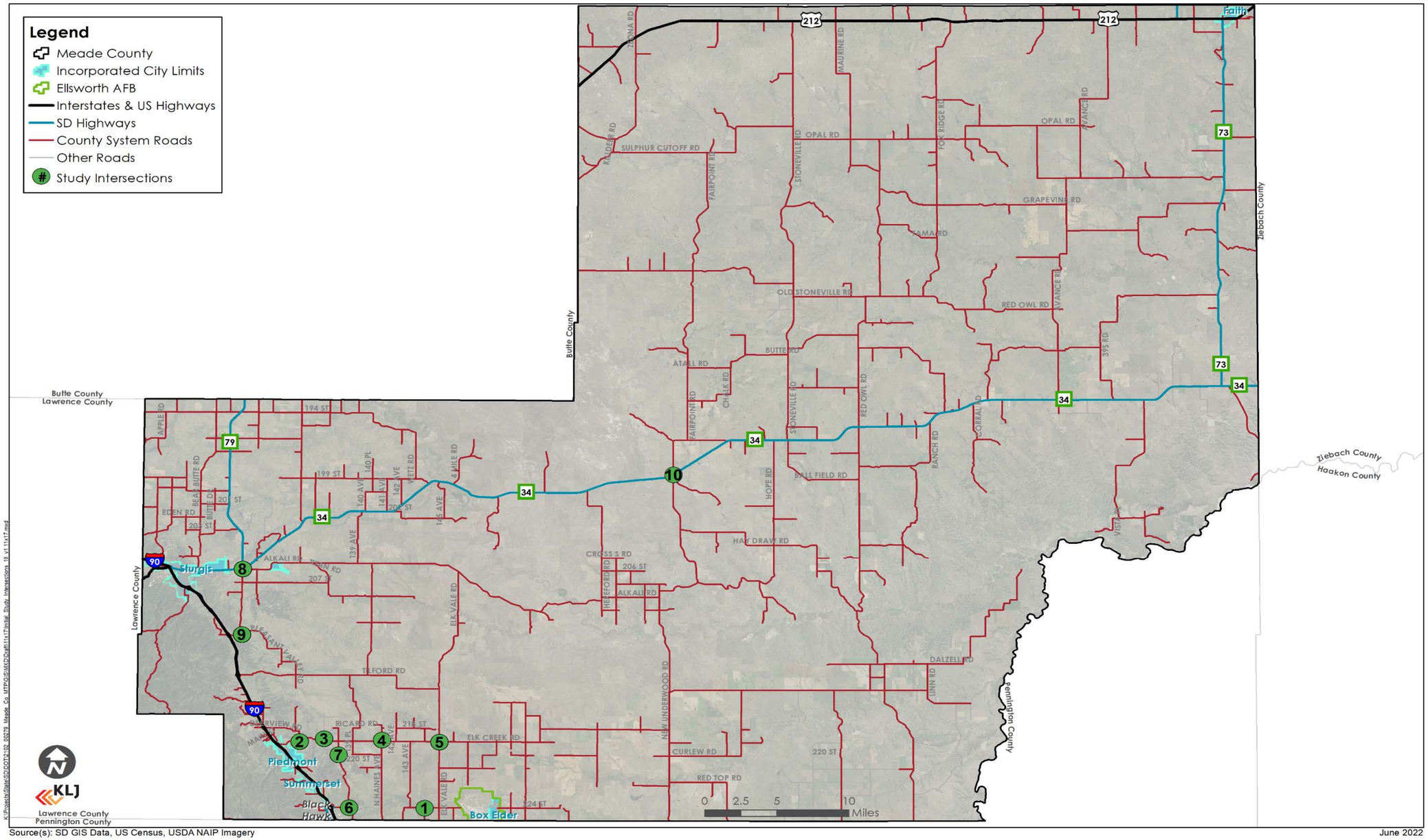
Traffic Operations

A key component of the projected conditions analysis was a detailed evaluation of ten intersections to evaluate traffic operations. The ten intersections were selected in coordination with County staff and the SAT and represent locations with particular importance to the County regarding safety, mobility, and development trends. The ten study intersections are listed in Table 10 and shown in Figure 33.

Table 10: Study Intersections

Map ID	Road #1	Road #2
1	Dyess Road	224th Street
2	Elk Creek Road	Deerview Road
3	Elk Creek Road	Timberwood Drive
4	Elk Creek Road	Haines Avenue
5	Elk Creek Road	Elk Vale Road
6	Erickson Ranch Road	Peaceful Pines Road
7	Erickson Ranch Road	220th Street
8	Fort Meade Way	SD 34
9	Fort Meade Way	Pleasant Valley Road
10	New Underwood Road	SD 34

Figure 33: Study Intersections



Study Intersections for Traffic Operations

Site visits were conducted for each of the ten study intersections at the project outset to evaluate traffic operation analysis. The visits were necessary to assess existing issues and establish a baseline for evaluating future conditions. A summary of observations for each intersection is provided below.

Location #1: Dyess Road and 224th Street

The Dyess Road and 224th Street intersection is located near the southern border of Meade County. Photos taken during the site visit are shown on the next page.

Location #1 Analysis

Severe downgrade on south approach. Improper traffic control, with stop on north approach and yield on south approach. Poor intersection sight distance. Recommend north-south stop control and improvements to correct limited sight distance.


1
224 ST
DYESS RD
DYESS RD
Legend
Meade County
County System Roads
Other Roads
Study Intersections
KLJ
0
500
1,000
Feet
Source(s): SD GIS Data, US Census, USDA NAIP Imagery
June 2021

Location #2: Elk Creek Road and Deerview Road

The Elk Creek Rd and Deerview Rd intersection is located about one mile east of Summerset. Photos taken during the site visit are shown below:

Location #2 Analysis

Elk Creek Road has horizontal curvature and appears to have adequate sight distance. No Issues identified.

Location #3: Elk Creek Road and Timberwood Drive

The Elk Creek Rd and Timberwood Dr intersection is about 2.5 miles east of Summerset and about one mile west of Erickson Ranch Rd. Photos taken during the site visit are shown below:

Location #3 Analysis

Timberwood Drive and Elk Creek Road are paved. Elk Creek Road has significant horizontal curvature and Timberwood Drive has steep upward approach to intersection, but sight distances appear to be good. No issues identified.

Location #4: Elk Creek Road and Haines Avenue

The Elk Creek Rd and Haines Ave intersection is located about 6.5 miles east of Summerset and 6 miles north of Pennington County. Photos taken during the site visit are shown below:

Location #4 Analysis

Four-way stop condition, no turn lanes. East approach is gravel. Stop warning sign is present for west approach stop sign. This is needed due to lack of visibility. The intersection may benefit from turn lanes in the future.

Location #5: Elk Creek Road and Elk Vale Road

The Elk Creek Rd and Elk Vale Rd intersection is located north of Ellsworth AFB, about six miles north of Pennington County. Photos taken during the site visit are shown below:

Location #5 Analysis

East-west stop control. Only the intersection and the road going south are paved. No turn lanes. Crest of hill is south of the intersection; else it is relatively flat, and it appears to have good sight distance.

Location #6: Erickson Ranch Road and Peaceful Pines Road

The Erickson Ranch Rd and Peaceful Pines Rd intersection is about one mile east of the Black Hawk exit of I-90. An aerial of the site is shown below:

Location #6 Analysis

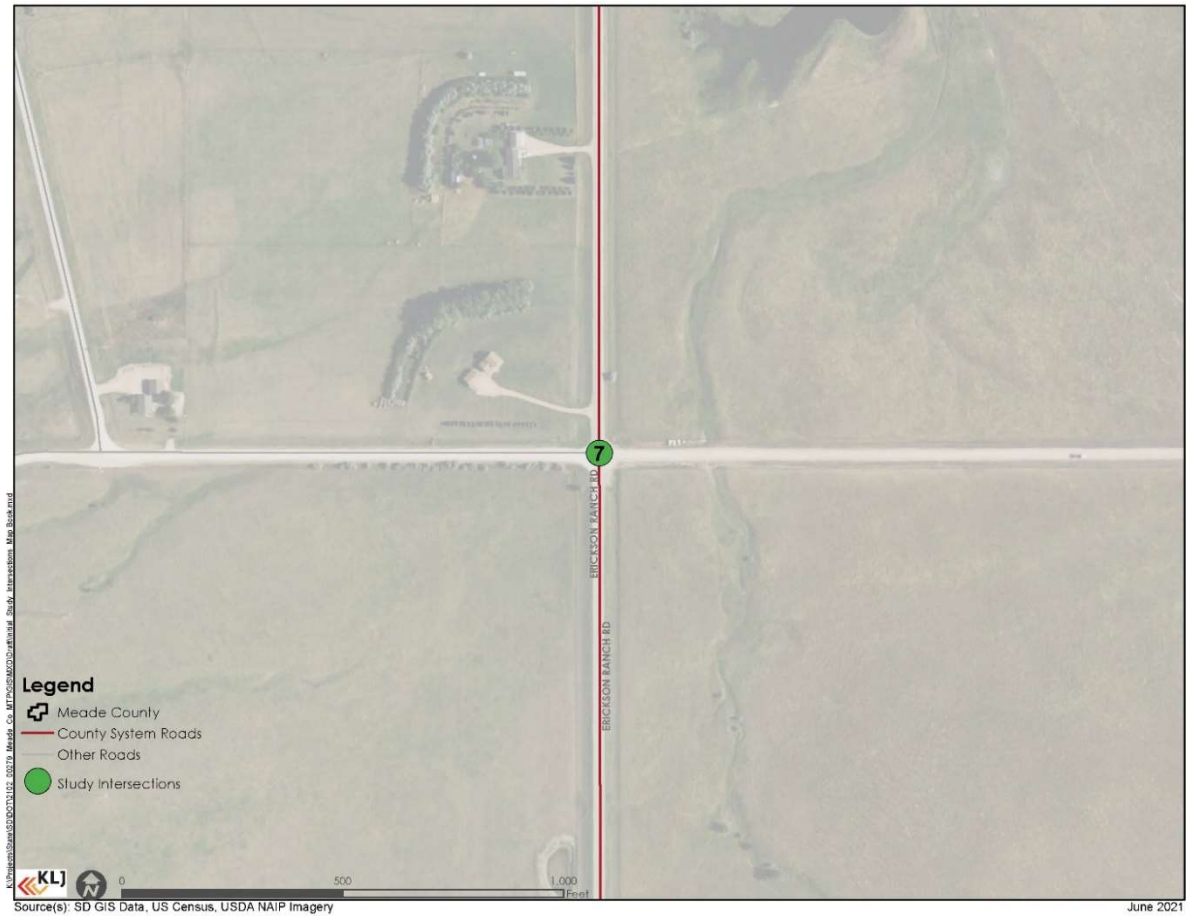
Horizontal curve to the east of the intersection. This is a busy intersection surrounded by development. Better access management, especially on the east approach would improve intersection safety.

Location #7: Erickson Ranch Road and 220th Street

The Erickson Ranch Road and 220th Street intersection is located east of Summerset, about one mile south of Elk Creek Rd. Photos taken during the site visit are shown below:

Location #7 Analysis

East-west stop control. Lack of turn lanes on Erickson Ranch Road. The corridor is relatively flat with good sight distances. Turn lanes may be a safety benefit but no issues were identified.



Location #8: Fort Meade Way and SD 34

The Fort Meade Way and SD 34 intersection is located about one mile east of Sturgis city limits. Photos taken during the site visit are below:

Location #8 Analysis

The intersection is near the crest of a hill along SD 34, as well as being located within a horizontal curve. There appears to be adequate sight distance and turn lanes are present. Fort Meade Way becomes gravel a short distance south of the intersection. Other than the 206th Street intersection being rather close, issues were identified.

Location #9: Fort Meade Way and Pleasant Valley Road

The Fort Meade Way and Pleasant Valley Rd intersection is located east of I-90 exit 37 at the southern terminus of Fort Meade Way. Photos taken during the site visit are shown below:

Location #9 Analysis

The intersection exists as an all-gravel, tee intersection with stop control on the north approach. There appears to be adequate sight distance and no issues were identified.

Location #10: New Underwood Road and SD 34

The New Underwood Road and SD 34 intersection is located about 30 miles east of Sturgis on SD 34. An aerial photo of the site is shown below:

Location #10 Analysis

The intersection has north-south stop control but has a significant skew. Other than visibility concerns with the skew, the intersection appears to have adequate sight distances. Ideally, the skew should be corrected, especially given that the intersection carries a high amount of traffic. Turn lanes should also be considered along SD 34 to improve safety.

Intersection Data Collection

The project team collected turning movement counts (TMCs) for each of the 10 study intersections. The counts were used as a baseline for future traffic operations analysis, as presented in the next section of the Report. TMC data was sourced from the StreetLight platform, and additional in-field counts were conducted to validate the StreetLight data. In-field TMC counts were conducted at three study intersections from 7 a.m. to 9 a.m. and from 4 p.m. to 6 p.m. during September 2021. Peak hour volumes for all study intersections were determined on a per-intersection basis and representative of the AM and PM peak hours. In-Field TMC Counts included:

- Dyess Ave and 224th St
- Elk Creek Rd and Haines Ave
- New Underwood Rd and SD 34

Detailed TMC data is available in Appendix C.

Intersection and Traffic Operations

Traffic operations were evaluated for the ten study intersections using methodologies from the Highway Capacity Manual (HCM) within the PTV Vistro software package. As noted above, peak hour turning movement counts were sourced from StreetLight data and validated by in-field TMCs. Traffic operations are described in terms of level of service (LOS), with levels of service ranging from LOS A to LOS F. Intersection LOS calculations incorporate traffic volumes, intersection geometry, and other parameters to estimate the delay per vehicle at the intersection. LOS A indicates near free-flow traffic conditions with little delay and LOS F indicates breakdown of traffic flow with very high amounts of delay. At oversaturated intersections and approaches, the delay may only reflect the vehicles that can be processed in the analysis period and not the total delay for that intersection, thus underreporting the actual delay experienced by drivers. LOS C or better is considered acceptable. The LOS thresholds for intersection delay are shown in Table 11.

Table 11: Intersection Delay and Level of Service (LOS)

Level of Service	Average Delay (Seconds per Vehicle)		Description
	Unsignalized Intersection	Signalized Intersection	
A	≤ 10	≤ 10	Near free-flow traffic.
B	> 10 and ≤ 15	> 10 and ≤ 20	Minor delays.
C	> 15 and ≤ 25	> 20 and ≤ 35	Some delays, but not resulting in significant traffic congestion.
D	> 25 and ≤ 35	> 35 and ≤ 55	Delays with some traffic congestion.
E	> 35 and ≤ 50	> 55 and ≤ 80	Significant delays with significant traffic congestion, approaching capacity.
F	> 50	> 80	Breakdown of traffic flow, major traffic congestion.

All ten study intersections are unsignalized in the 2021 base year. Overall intersection LOS is undefined for two-way stop-controlled intersections within the HCM. The LOS for the two-way stop-controlled intersections in the analysis is based on the delay experienced by each movement within the intersection, rather than on the overall stopped delay per vehicle at the intersection. This difference from the method used for signalized intersections is necessary since the operating characteristics of stop-controlled intersections are substantially different. Driver expectation and perceptions are entirely different. For two-way stop-controlled intersections the through traffic on the major (uncontrolled) street experiences no delay at the intersection. Conversely, vehicles turning left and going across the major street from the minor street experience more delay than other movements and at times can experience significant delay. Vehicles on the minor street which are turning right from the minor street experience less delay than those turning left or going across from the same approach. Due to this situation, the LOS assigned to a two-way stop-controlled intersection is based on the average delay for vehicles turning left and going

across the major street from the minor street approach and turning left from the major street to the minor street.

Highest Volume Study Intersection

Of the 10 study intersections, four had base vehicle counts per hour greater than 100. However, TMCs at these four intersections remain LOS A except for the southbound leg of Peaceful Pines Rd at Erickson Ranch Rd which is the only LOS B of the ten study intersections. Base volumes are listed in Table 12.

Table 12: Intersection TMC Base Volumes per Hour

Intersection		NB			SB			EB			WB			
Primary Road	**Secondary Road**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**Total**
224 ST	DYESS AVE				41		11	3	21			8	5	89
DEERVIEW RD	ELK CREEK RD	1	2	3	3	22	1	1	2	9	5	1	1	51
ELK CREEK RD	TIMBERWOOD DR	5	1	1	1	1	1	1	10	5	27	1	1	55
ELK CREEK RD	HAINES AVE N	17	6	2	1	16	4	1	3	40	5	4	1	100
ELK CREEK RD	ELK VALE RD	1	24			26	1	1		24				77
PEACEFUL PINES RD	ERICKSON RANCH RD	6		1				6	21			76	6	116
ERICKSON RANCH RD	MEADOW RETREAT DR	1	1	1	10	1	5	5	16	1	1	72	1	115
SD HWY 34	FORT MEADE WAY				1		16	16	1			1	1	36
FORT MEADE WAY	PLEASANT VALLEY RD	77		4				18	24		6	58		187
SD HWY 34	NEW UNDERWOOD RD	2	1	23	1	1	1	1	14	1	22	23	1	91

Existing Traffic Operations Results

Year 2021 was selected as the base year for traffic operations analysis of the study intersections. Results of the analysis show all study intersections and their approaches to operate with acceptable delay and LOS at present, with no intersections or approaches operating at a LOS lower than B during either peak hour. Results of the existing operations analysis are shown in Table 13.

Table 13: Study Intersections Operation Results (2021)

Intersection		PEAK	NB	SB	EB	WB	INT
Primary Road	**Secondary Road**						
224 ST	DYESS AVE	AM	A	A	A	A	A
		PM	A	A	A	A	A
DEERVIEW RD	ELK CREEK RD	AM	A	A	A	A	A
		PM	A	A	A	A	A
ELK CREEK RD	TIMBERWOOD DR	AM	-	A	A	A	A
		PM	-	A	A	A	A
ELK CREEK RD	HAINES AVE N	AM	A	A	A	A	A
		PM	A	A	A	A	A
ELK CREEK RD	ELK VALE RD	AM	A	A	A	A	A
		PM	A	A	A	A	A
PEACEFUL PINES RD	ERICKSON RANCH RD	AM	-	A	A	A	A
		PM	-	B	A	A	A

ERICKSON RANCH RD	MEADOW RETREAT DR	AM	A	A	A	-	A
		PM	A	A	A	-	A
SD HWY 34	FORT MEADE WAY	AM	A	-	A	A	A
		PM	A	-	A	A	A
FORT MEADE WAY	PLEASANT VALLEY RD	AM	-	A	A	A	A
		PM	-	A	A	A	A
SD HWY 34	NEW UNDERWOOD RD	AM	A	A	A	A	A
		PM	A	A	A	A	A

2045 Traffic Operations Results

Year 2045 represents the future year for traffic operations analysis of the study intersections. The 2045 traffic projections are based on a 25-year growth factor of 1.425. This growth factor reflects the growth assumptions established for Meade County by SDDOT. The growth factor was applied to each individual approach turning movement to represent the projected 2045 conditions. Results of the analysis show all study intersections and their approaches to operate with acceptable delay and LOS in 2045, with no intersections or approaches operating at a LOS lower than B during either peak hour. Results of the 2045 operations analysis are shown in Table 14.

Table 14: Study Intersections Operation Results (2045)

Intersection		PEAK	NB	SB	EB	WB	INT
Primary Road	**Secondary Road**						
224 ST	DYESS AVE	AM	A	A	A	A	A
		PM	A	A	A	A	A
DEERVIEW RD	ELK CREEK RD	AM	A	A	A	A	A
		PM	B	B	A	A	A
ELK CREEK RD	TIMBERWOOD DR	AM	-	A	A	A	A
		PM	-	B	A	A	A
ELK CREEK RD	HAINES AVE N	AM	A	A	A	A	A
		PM	A	A	A	A	A
ELK CREEK RD	ELK VALE RD	AM	A	A	A	A	A
		PM	A	A	A	A	A
PEACEFUL PINES RD	ERICKSON RANCH RD	AM	-	A	A	A	A
		PM	-	B	A	A	A
ERICKSON RANCH RD	MEADOW RETREAT DR	AM	A	A	A	-	A
		PM	A	A	A	-	A
SD HWY 34	FORT MEADE WAY	AM	B	-	A	A	A
		PM	A	-	A	A	A
FORT MEADE WAY	PLEASANT VALLEY RD	AM	-	A	A	A	A
		PM	-	A	A	A	A
SD HWY 34	NEW UNDERWOOD RD	AM	A	A	A	A	A
		PM	A	A	A	A	A

StreetLight Origin-Destination Analysis and ADT

In addition to intersection-level analysis, streetlight was used to analyze origin-destination traffic counts at select locations in Meade County. Streetlight Analysis zones can be seen in Figure 34. Streetlight analyses were performed for both 2020 and 2045. Origin-Destination tables can be seen below with their accompanying ID number from the map.

StreetLight data was gathered at selected points for traffic volumes. Data were collected for 2020 and used the 1.425% growth rate to project traffic to 2045. An increased growth rate was used in the event of subdivision growth and development. StreetLight results along with projected volumes at SDDOT count locations are presented in the table below.

Figure 34: StreetLight Data Analysis Zones

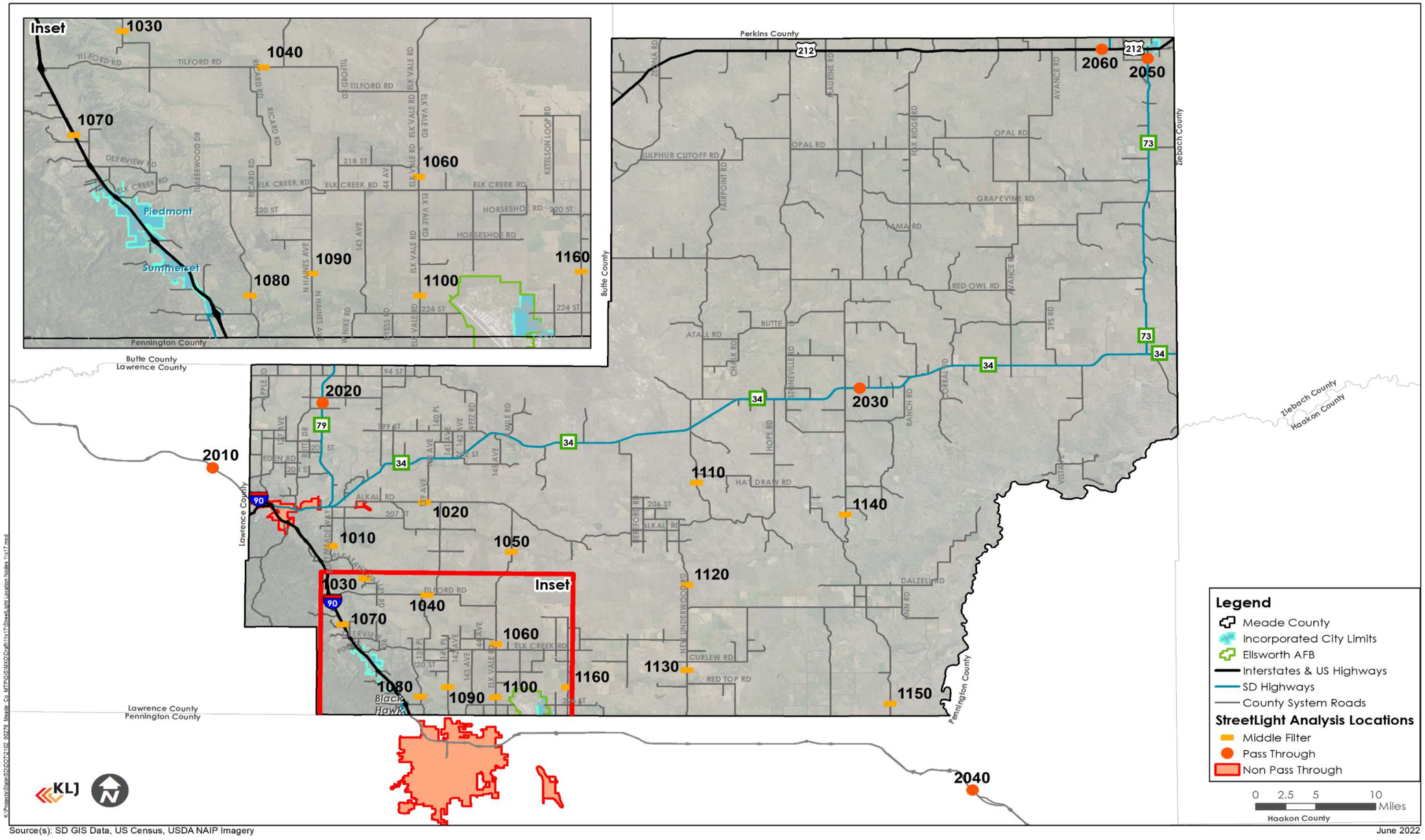


Table 15: Traffic Projections

Site ID	Source	Corridor	Description	2021 ADT	2045 Estimate	2045 With Development
547041	SDDOT Traffic Count Location	Stage Stop Rd	Between J B Rd & I-90W	3,320	4,731	5,013
547042	SDDOT Traffic Count Location	Elk Creek Rd	Between Hills View Dr & I-90W	2,713	3,866	4,097
547303	SDDOT Traffic Count Location	Whitewood Rd	Between Us14A & 20Th St - Sturgis	1,714	2,442	2,588
547062	SDDOT Traffic Count Location	Erickson Ranch Rd	Between Peaceful Pines Rd & West Ridge Rd	1,320	1,881	1,993
547304	SDDOT Traffic Count Location	Whitewood Rd	Between Industry Rd & Meade/Lawrence County Line	1,058	1,508	1,598
547302	SDDOT Traffic Count Location	Vanocker Canyon Rd	South of Junction Ave - Sturgis	1,032	1,471	1,558
547050	SDDOT Traffic Count Location	Elk Creek Rd	Between Ricard Rd & Golden Valley Dr	815	1,161	1,231
547060	SDDOT Traffic Count Location	New Underwood Rd	Between Red Top Rd & Curlew Rd	679	968	1,025
552921	SDDOT Traffic Count Location	150 Pl	Between Airway Ct & 225 St - Box Elder	524	747	791
547072	SDDOT Traffic Count Location	New Underwood Rd	Between 209 St & Alkali Rd	469	668	708
547067	SDDOT Traffic Count Location	Avalanche Rd	Between Eden Rd & Elm St	445	634	672
547073	SDDOT Traffic Count Location	New Underwood Rd	Between Hay Draw Rd & Wilcox Rd	378	539	571
547049	SDDOT Traffic Count Location	Elk Vale Rd	Between Prairie Meadows Rd & Horseshoe Rd	354	504	535
547295	SDDOT Traffic Count Location	Vanocker Canyon Rd	Between 1St Ave & Otter Rd - Sturgis	321	457	485
547070	SDDOT Traffic Count Location	Alkali Rd	Between 135 Ave & 132 Ave	244	348	368

547045	SDDOT Traffic Count Location	Pleasant Valley Rd	Between 130 Ave & I-90E	214	305	323
547014	SDDOT Traffic Count Location	Elk Creek Rd	Between School Rd & Horseshoe Rd	210	299	317
547064	SDDOT Traffic Count Location	Elk Creek Rd	Between 144 Ave & Elk Vale Rd	198	282	299
547046	SDDOT Traffic Count Location	Cemetery Entrance Road	Main Black Hills National Cemetery Entrance	164	234	NA
1010	StreetLight Analysis Zone	Fort Meade Way	Between Pleasant Valley Rd & SD Hwy 34	900	1,300	1,350
1020	StreetLight Analysis Zone	Alkali Rd	West of Junction with 139 Ave	250	350	400
1030	StreetLight Analysis Zone	134th Ave/Pleasant Valley Rd	North of Junction with Tilford Rd	230	350	350
1040	StreetLight Analysis Zone	Tilford Rd	East of Junction with Ricard Rd	-	-	-
1050	StreetLight Analysis Zone	Elk Vale Rd	Between Tilford Rd & Alkali Rd	200	300	300
1060*	StreetLight Analysis Zone	Elk Vale Rd S	Between Tilford Rd & Elk Creek Rd	250	350	400
1070	StreetLight Analysis Zone	I-90	Between Sturgis & Rapid City	18,400	24,500	25,600
1080*	StreetLight Analysis Zone	Erickson Ranch Rd	Between Peaceful Pines Rd & West Ridge Rd	1,450	2,100	2,200
1090*	StreetLight Analysis Zone	Haines Ave	Between Peterson Rd & Virginia Ln	1,500	2,150	2,300
1100*	StreetLight Analysis Zone	Elk Vale South S	Between Prairie Meadows Rd & Horseshoe Rd	900	1,300	1,400
1110*	StreetLight Analysis Zone	New Underwood Rd North	Between Hope Rd & Hay Draw Rd	600	900	900
1120*	StreetLight Analysis Zone	New Underwood Rd Center	Between West Elm Springs Rd & Alkali Rd	700	1,000	1,050
1130*	StreetLight Analysis Zone	New Underwood Rd South	Between Red Top Rd & Curlew Rd	800	1,150	1,200
1140*	StreetLight Analysis Zone	Elm Spring Rd North	Between Boneita Rd & Hay Draw Rd	150	200	250

1150	StreetLight Analysis Zone	Elm Spring Rd	North of Pennington County Line	200	300	300
1160	StreetLight Analysis Zone	Antelope Creek Rd	Between Elk Creek Rd & 224 St	650	950	1,000
2010	StreetLight Analysis Zone	I-90	NW of Sturgis	12,200	16,200	17,000
2020	StreetLight Analysis Zone	Hwy 79	South of Butte County Line	2,000	2,700	2,800
2030	StreetLight Analysis Zone	Hwy 34	East of Junction with Elm Springs Rd	700	950	1,000
2040	StreetLight Analysis Zone	I-90	East of Rapid City	8,000	10,600	11,100
2050	StreetLight Analysis Zone	Hwy 73	South of Faith	800	1,100	1,100
2060	StreetLight Analysis Zone	US 212	West of Faith	500	700	700

**Duplicate Count Location with SDDOT Traffic Count Locations*

Table 16: OD 2020 (1)

Origin - Destination																	
Origin	**1010**	**1020**	**1030**	**1040**	**1050**	**1060**	**1070**	**1080**	**1090**	**1100**	**1110**	**1120**	**1130**	**1140**	**1150**	**1160**	**Destination**
Rapid City							2215	1	2								2010
Rapid City	93						164										2020
Rapid City							2				70	72	55				2030
Rapid City							1										2040
Rapid City							1				59	60	48				2050
Rapid City	1						5				1	1	1				2060
Sturgis							4										2010
Sturgis																	2020
Sturgis																	2030
Sturgis	1						64										2040
Sturgis																	2050
Sturgis																	2060

Table 17: OD 2020 (2)

Origin - Destination																	
Origin	**1010**	**1020**	**1030**	**1040**	**1050**	**1060**	**1070**	**1080**	**1090**	**1100**	**1110**	**1120**	**1130**	**1140**	**1150**	**1160**	**Destination**
2010	1						2189	1	1								Rapid City
2020	72				5	2	148			1							Rapid City
2030											113	119	100				Rapid City
2040							1										Rapid City
2050							1				93	97	83				Rapid City
2060	1						1			6		4	4				Rapid City
2010							13										Sturgis
2020	1																Sturgis
2030																	Sturgis
2040	1						70										Sturgis
2050																	Sturgis
2060																	Sturgis

Table 18: OD 2045 (1)

Origin - Destination																	
Origin	**1010**	**1020**	**1030**	**1040**	**1050**	**1060**	**1070**	**1080**	**1090**	**1100**	**1110**	**1120**	**1130**	**1140**	**1150**	**1160**	**Destination**
Rapid City							2935	2	3								2010
Rapid City	133						218										2020
Rapid City							3				100	103	79				2030
Rapid City							2										2040

Rapid City							2				85	86	69				2050
Rapid City	2						7				2	2	2				2060
Sturgis							6										2010
Sturgis																	2020
Sturgis																	2030
Sturgis	2						85										2040
Sturgis																	2050
Sturgis																	2060

Table 19: OD 2045 (2)

Origin - Destination																	
Origin	**1010**	**1020**	**1030**	**1040**	**1050**	**1060**	**1070**	**1080**	**1090**	**1100**	**1110**	**1120**	**1130**	**1140**	**1150**	**1160**	**Destination**
2010	2						2901	2	2								Rapid City
2020	103				8	3	197			2							Rapid City
2030											162	170	143				Rapid City
2040							2										Rapid City
2050							2				133	139	119				Rapid City
2060	2						2			9		6	6				Rapid City
2010							18										Sturgis
2020	2																Sturgis
2030																	Sturgis
2040	2						93										Sturgis
2050																	Sturgis
2060																	Sturgis

Safety Operations

Another key component of the projected conditions analysis was a detailed evaluation of high frequency crash intersections. To assess the safety performance of intersections within the study area, ten intersections were identified with the highest number of crashes during the five-year analysis period

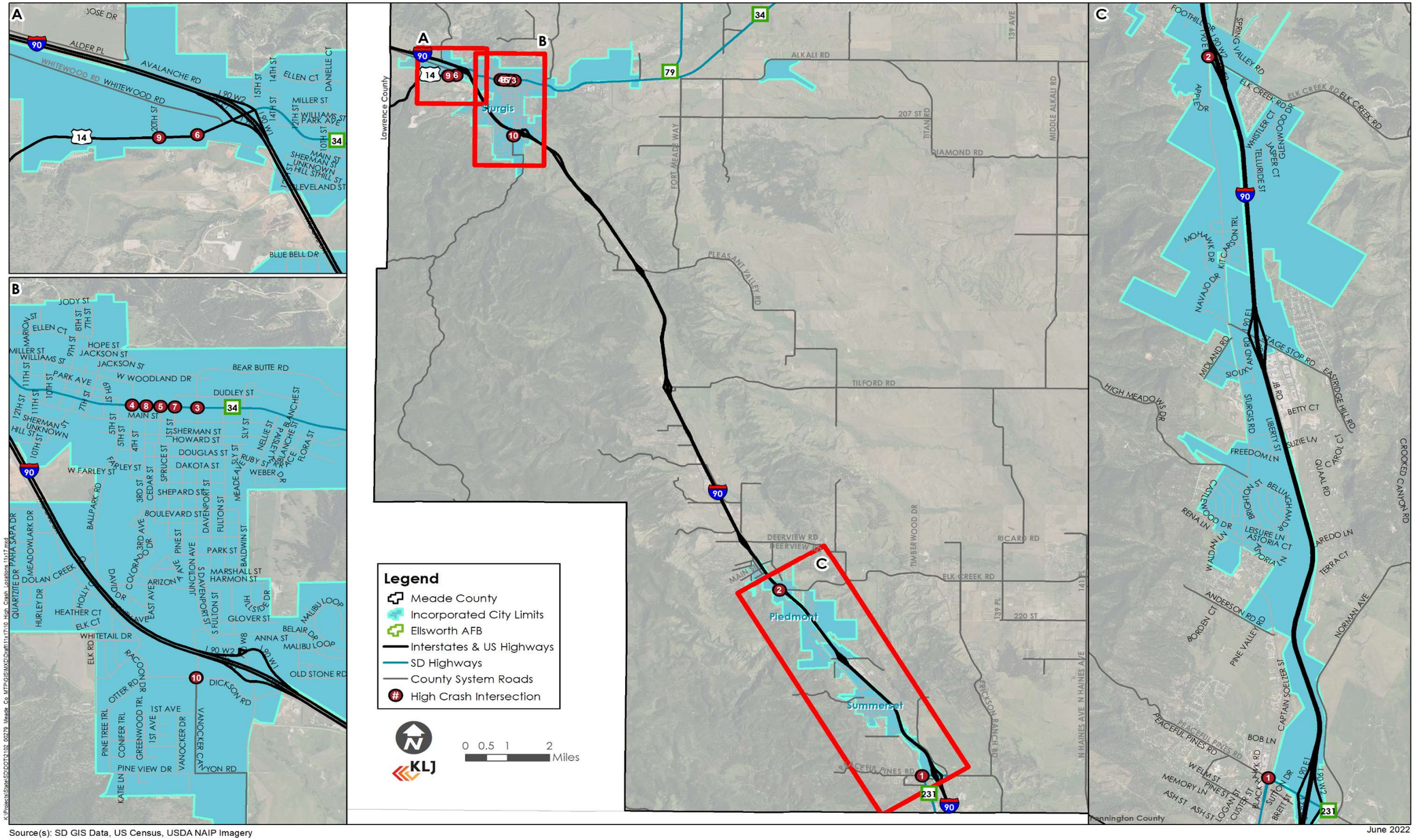
between January 1, 2016 through December 31,2020. Table 20 summarizes the number of crashes for each high-crash intersection, with Figure 35 showing the location of the intersections. The intersection of Peaceful Pines Road with Sturgis Road experienced the highest number of crashes (16), followed by the intersection of Sturgis Road with Elk Creek Road (13). Five intersections along SD Hwy 34 were among the top 10 highest crash intersections in the County.

Table 20: Top 10 High Frequency Crash Locations

Rank	Intersection	Traffic Control	Frequency (Number of Crashes)
1	Peaceful Pines Rd & Sturgis Rd	Signal	16
2	Sturgis Rd & Elk Creek Rd	TWSC[1]	13
3	SD Hwy 34 & Junction Ave	Signal	11
4	SD Hwy 34 & 4th St	Signal	8
5	SD Hwy 34 & 2nd St	Signal	8
6	US Hwy 14A & Moose Dr	TWSC[1]	8
7	SD Hwy 34 & 1st St	TWSC[1]	7
8	SD Hwy 34 & 3rd St	TWSC[1]	5
9	US Hwy 14A & 20th St	TWSC[1]	5
10	Vanocker Canyon Dr & Otter Rd	TWSC[1]	5

2. TWSC- Two way Stop Controlled

Figure 35: Top 10 High Frequency Crash Locations (2016 – 2020)



Summary and Conclusion

Ten intersections were selected in coordination with County staff and the SAT to evaluate the existing and 2045 traffic operations. Based on the analysis conducted, all ten intersections are expected to operate with acceptable delay and LOS, with no intersections expected to operate worse than LOS A through 2045.

Crash records between January 1, 2016 and December 31, 2020 were analyzed to identify top ten high frequency crash intersections. The intersection of Peaceful Pines Road with Sturgis Road experienced the highest number of crashes (16), followed by the intersection of Sturgis Road with Elk Creek Road (13). Five intersections along SD Hwy 34 were among the top 10 highest crash intersections in the County.

Chapter 5: Project Development, Identification, and Prioritization

Introduction

The project identification process was used to define three categories of projects: Roadways, Bridges, and Multimodal (Bike and Ped) projects. This process is outlined below:

- First, a preliminary set of project recommendations was developed in coordination with the Study Advisory Team and county staff. These preliminary recommendations were based on available data, transportation priorities as expressed by the county, the 2016 transportation plan, and public input received during the planning process.
- Second, the set of project recommendations was assessed against current and historical conditions, such as roadway safety within the study area.
- Third, the set of project recommendations was assessed against projected conditions, including future traffic operations, and forecast areas of concentrated population and employment growth.
- Fourth, the set of projects was refined by working closely with stakeholders and staff.

This process provided a progressive approach by which the project team could narrow, adjust, and refine the universe of projects based on existing and projected conditions. It should be noted that future roadway projects developed should include accommodations for bicycle and pedestrian users as this will aid in securing funding and provide for those users as well.

Paving of Gravel Roads

One of the key challenges facing Meade County is the decision on whether to pave a gravel road. Several gravel corridors were identified either through public input or from SAT members as being good candidates for paving. The benefits of paving are numerous, but planners must also consider long term maintenance. Upkeep on any kind of paved surface is significantly more expensive than for a gravel road. SDDOT has researched return on investment for paving of gravel roads throughout South Dakota[10]. Low Volume Roads (LVR) present a unique challenge to South Dakota counties. SDDOT determined that an asphalt road is not cost effective until the road reaches an ADT of 650, while a blotter surface is cost effective starting at an ADT of 150.

> *A review of this model shows that when only average agency costs are considered, gravel, blotter, and HMA seem to be the most cost effective surface between ADT ranges of 0 to 150 vpd [vehicles per day], 150 to 660 vpd, and 660 vpd and greater, respectively. The findings are in line with values expected by the research team and*

[10] Local Road Surfacing Criteria. SDDOT. 2004

correspond with other current studies on this subject matter. As mentioned in the literature review section of this report, researchers working on a study for MnDOT determined that an ADT range of 100 to 200 vpd provided an acceptable traffic level for upgrading a gravel road…

The results of SDDOT's findings can be seen in Figure 36 below. The point where two linear trend lines cross is the point where switching from one surface treatment to another becomes feasible. For example, the 20-year average costs for gravel approach $40,000 as ADT approaches 150. At this point, a blotter treatment costs the same on average.

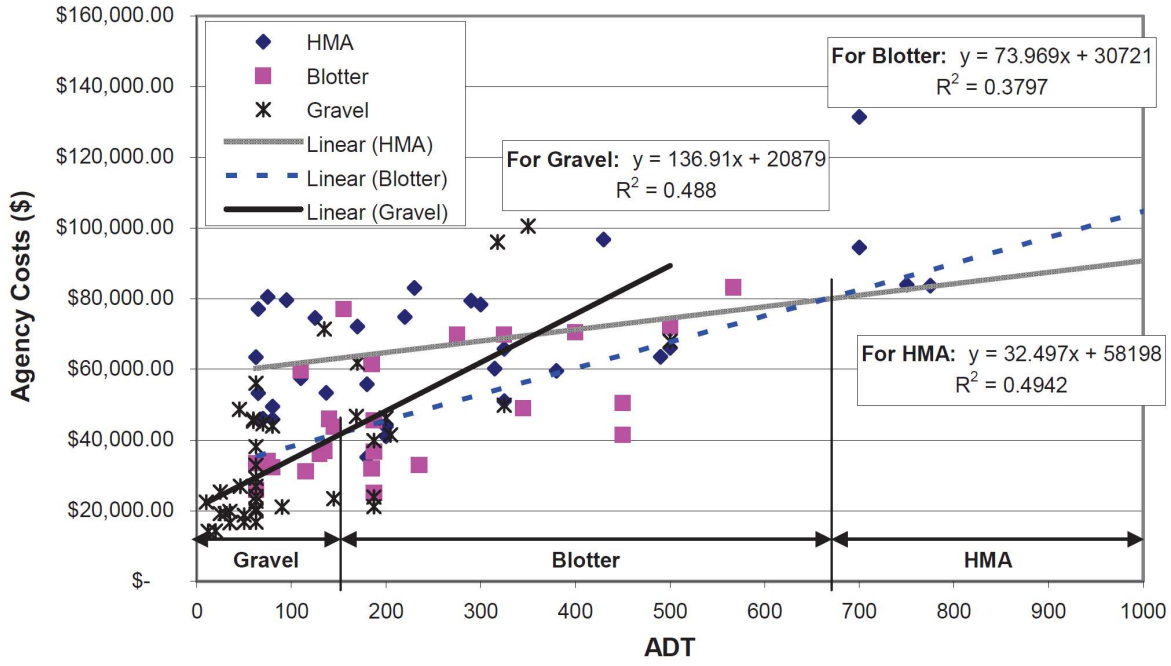


Figure 36: Default 20-Year Agency Cost Models (per mile)

Some projects on the long-range road projects list are currently listed as candidates for paving from gravel. Where available, their most recent ADT has been listed in Table 21 below.

Table 21: Long-Range Roadway Projects – Gravel to Paved

Corridor	From	To	ADT	Year Collected
Antelope Creek Road	Pennington County Line	Elk Creek Road	NA	NA
Elk Creek Road	Elk Vale Road	Antelope Creek Road	120	2017
Elk Creek Road	Elk Vale Road	Haines Avenue	136	2015
Pleasant Valley Road	I-90 Exit 37	Fort Meade Way	249	2015

Roadway Projects

The roadway recommendations list reflects improvements that have been identified as necessary for a corridor to meet the needs of the county in terms of its growth and connectivity or to ensure maintenance of a functioning system. Recommended projects on this list include larger corridor-level investments such as infrastructure upgrades, major overlay and rehabilitation projects, and the addition of new connections or extensions.

Projects were included regardless of their initial feasibility and have been separated into three categories

1) Short—Range Projects. These projects exist in the county's 5-year highway plan and are listed here as short-range, although funding may not exist to cover all projects.
2) Long-Range Projects. These projects illustrate needs in the county's overall system and areas where good management or new construction would help meet the county's goals. It is expected that they will not be implemented within the next 5 years and could be completed within 5-20 years or more.
3) Special Projects. These projects are known issues in the county and have been brought to the attention of SAT and county staff but are not necessarily a county-led project. These projects include projects that are not county jurisdiction. Unique projects are shown in Table 24 and shown in Figure 37.

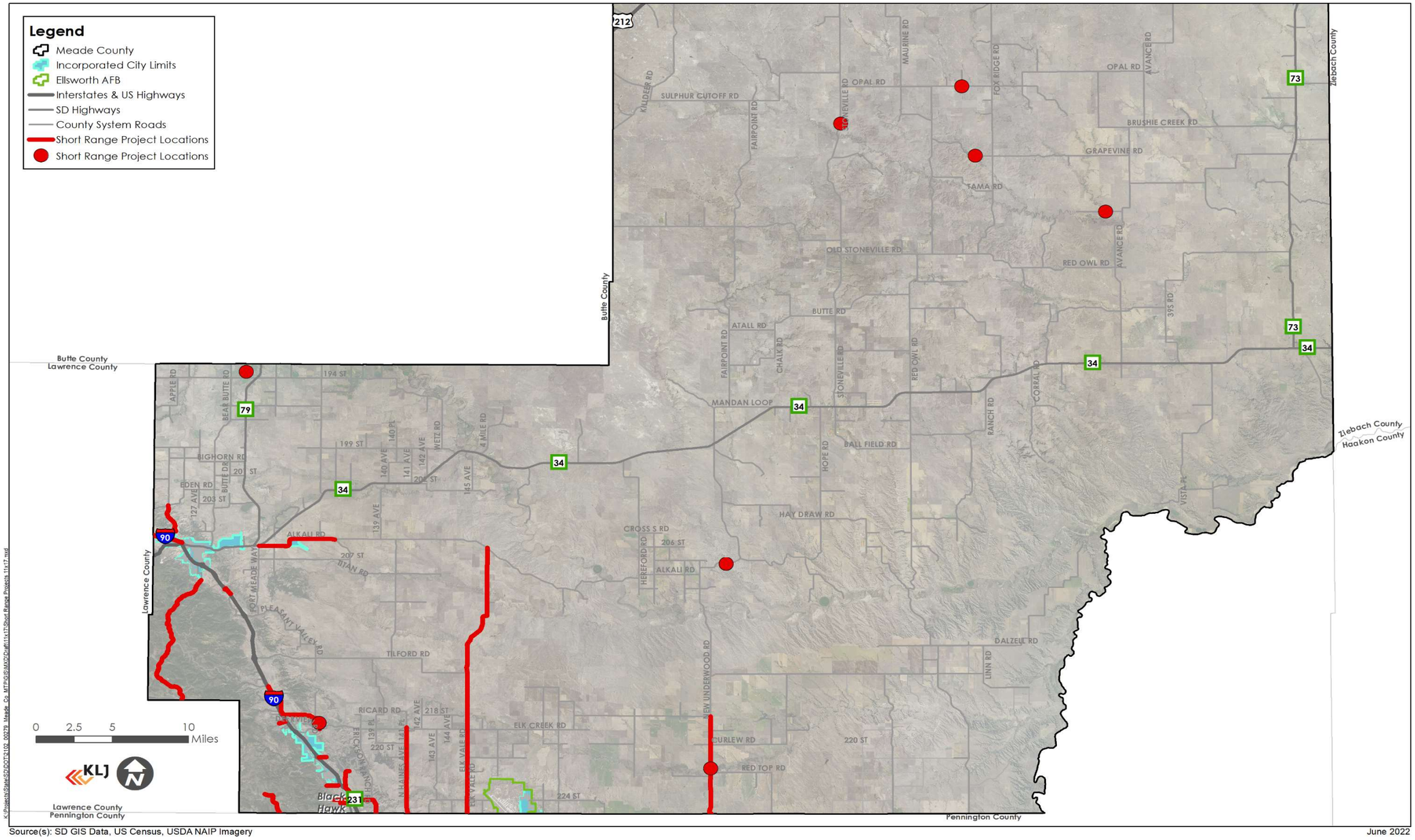
Short-Range Projects

Short-Range projects were drafted from the County's 5-year plan and condensed where applicable. It is assumed that these will remain the county's priority in the short term. Short-range projects are listed with a location, brief description, and cost. Projects with a listed year of 2021 were assumed to have been completed and have been omitted. Short range projects are listed in Table 22.

Table 22: Short-Range Roadway Projects

Corridor/Project Location	Description	Total Project Cost (in Thousands)	Source
Multiple Projects	Chip Seal	1,510	County 5-Year Plan
Structure No. 47-541-100, 9 mi. S. & 5 mi. E. of Maurine	Replace Structure (Already in Progress)	1,867	County 5-Year Plan
Structure No. 47-635-190, 6 mi. E. & 12 mi. N. of White Owl on Whitetail Rd.	Replace Structure	550	County 5-Year Plan
Structure No. 47-549-149, 21.1 mi. W. & 13.9 mi. S. of Faith on Pine Creek Rd.	Replace Structure	462	County 5-Year Plan
Rolling Hills Rd from Nemo Road North 2 mi.	Fix Drainage	34	County 5-Year Plan
N Haines Ave. from Pennington Co. line 6.12 mi. North to Elk Creek Rd.	Change to 24' Deck with 4' Shoulders	6,500	County 5-Year Plan
Alkali Rd from Ft. Meade Way east 5 mi. to Titan Rd.	2" overlay	2,000	County 5-Year Plan
New Underwood Rd from Pennington Co. line to Elk Creek Rd 7 miles	Reconstruct & New AC Surfacing	7,500	County 5-Year Plan
Mnt. Shadows Rd. off of 2nd Street in Piedmont	Chip Seal	31	County 5-Year Plan
Norman Ave. from Peaceful Pines N to end of county asphalt	Chip Seal	78	County 5-Year Plan
Deadwood Ave and Peaceful Pines east of I-90 to Pennington County Line	Chip Seal	67	County 5-Year Plan
Sidney Stage Rd	Full depth reclamation and AS Surfacing	1,100	County 5-Year Plan
Structure No. 47-460-128, 11.8 mi S of Hwy 212 on Stoneville Rd.	Replace Bridge	400	County 5-Year Plan
Avalanche Rd from Alder Pl. N 3 mi to Eden Rd	Reconstruct & New AC Surfacing	3,200	County 5-Year Plan
Ft. Meade Way from Hwy 34 2.4 miles South	Regrade	1,000	County 5-Year Plan
Structure No. 47-060-305, 3 mi. E &12.5 mi. N of Sturgis (130th Ave)	Replace Bridge	500	County 5-Year Plan
Engineer North 2.4 miles Ft. Meade Way	PE Engineering	35	County 5-Year Plan
Structure No. 47-114-553, 8.4 mi. E &12.3 mi. S. of Sturgis (Deerview Rd.)	Replace Bridge	750	County 5-Year Plan
Deerview Rd.	Reconstruct & New AC Surfacing	6,000	County 5-Year Plan

Figure 37: Short-Range Project Locations



Long-Range Roadway Projects

Long-Range Projects were created by first carrying forward projects from the 2016 Master Transportation Plan. Projects that no longer apply were deleted and additional projects were identified through the processes identified at the beginning of this chapter.

Each project is listed with a corresponding Map ID, location information, a brief description, and a source, which details whether the project came from the 2016 plan or from efforts of this plan. The projects are not listed in any order of priority, and it will be up to the County to decide in the future which projects should be implemented over time. Approximate costs have also been listed. Long-range projects are shown in Table 23 and shown in Figure 38.

Table 23: Long-Range Roadway Projects

Map ID	Corridor	From	To	Description	Source	Estimated Cost ($M)
1	Antelope Creek Road	Pennington County Line	Elk Creek Road	Asphalt paving	2016 Transportation Plan	10.2
2	Elk Creek Road	I-90 Exit 46	Edgewood Place	Acquire ROW for improvements, Realignment of roadway	2016 Transportation Plan	4.8
3	Elk Creek Road	Elk Vale Road	Antelope Creek Road	Asphalt paving	2016 Transportation Plan	10.2
4	I-90 Service Road	Exit 40	Vanocker Canyon Road	Corridor Preservation	2016 Transportation Plan	12.8
5	Elk Creek Road	Elk Vale Road	Haines Avenue	Asphalt paving to rural arterial	2016 Transportation Plan	6.9
6	New Corridor	Erickson Ranch Rd	143rd Ave	New collector road	MCC Study 2020	7.5
7	Pleasant Valley Road	Tilford	Fort Meade Way	Asphalt Paving	Newly Identified	13
8	Haines Ave	Pennington County Line	Elk Creek Road	Reconstruct	Newly Identified	10.4

Special Roadway Projects

Throughout the planning process of this plan, a few key corridors have drawn the attention of SAT members and planning staff. These corridors present unique challenges as they are not strictly under the county's jurisdiction, or the county has expressed an interest in the state taking over jurisdiction. Each unique corridor is listed below and is listed in Table 24 and shown in Figure 38.

Fort Meade Way

Fort Meade Way has long been an identified corridor need east of Sturgis. The corridor runs from Pleasant Valley Rd to SD 34 near the Buffalo Chip campground. Previous efforts from the county to turn the corridor over to the SDDOT have not been successful. The corridor is unpaved but high traffic volumes indicate the need for paving. Although the county may not be interested in taking on the project itself, the project is listed here to support future coordination efforts.

Quaal Road

Quaal Road is roughly parallel to I-90 on the east side of Summerset between Stagestop Road and Norman Avenue. The road serves rural subdivision housing and was not constructed to be a major connection for the county. Quaal Road is maintained by a Road District, but they possess insufficient funds to upgrade the corridor as a major through corridor. This plan identifies Quaal Road as a potential

candidate for conversion to a three-lane corridor: two-lanes with a center lane turning lane. Further coordination between Summerset, the Road District, and the County will be needed to ensure proper planning and usage of Quaal Road, and to identify needed funding.

150th Avenue

This project was moved from the list of long-range projects to the special projects as this road was deemed by SAT members to be of greater importance to the City of Box Elder and Pennington County, even though the landfill at the end of this corridor is in Meade County. Coordination is needed to determine jurisdictional responsibilities and to prioritize implementation.

Sly Hill Road

Sly Hill Road leaves the City of Sturgis and heads north into surrounding Meade County. The road transfers to Meade County jurisdiction at the top of the hill at city limits. This road serves current and future development and may need to be paved in the future.

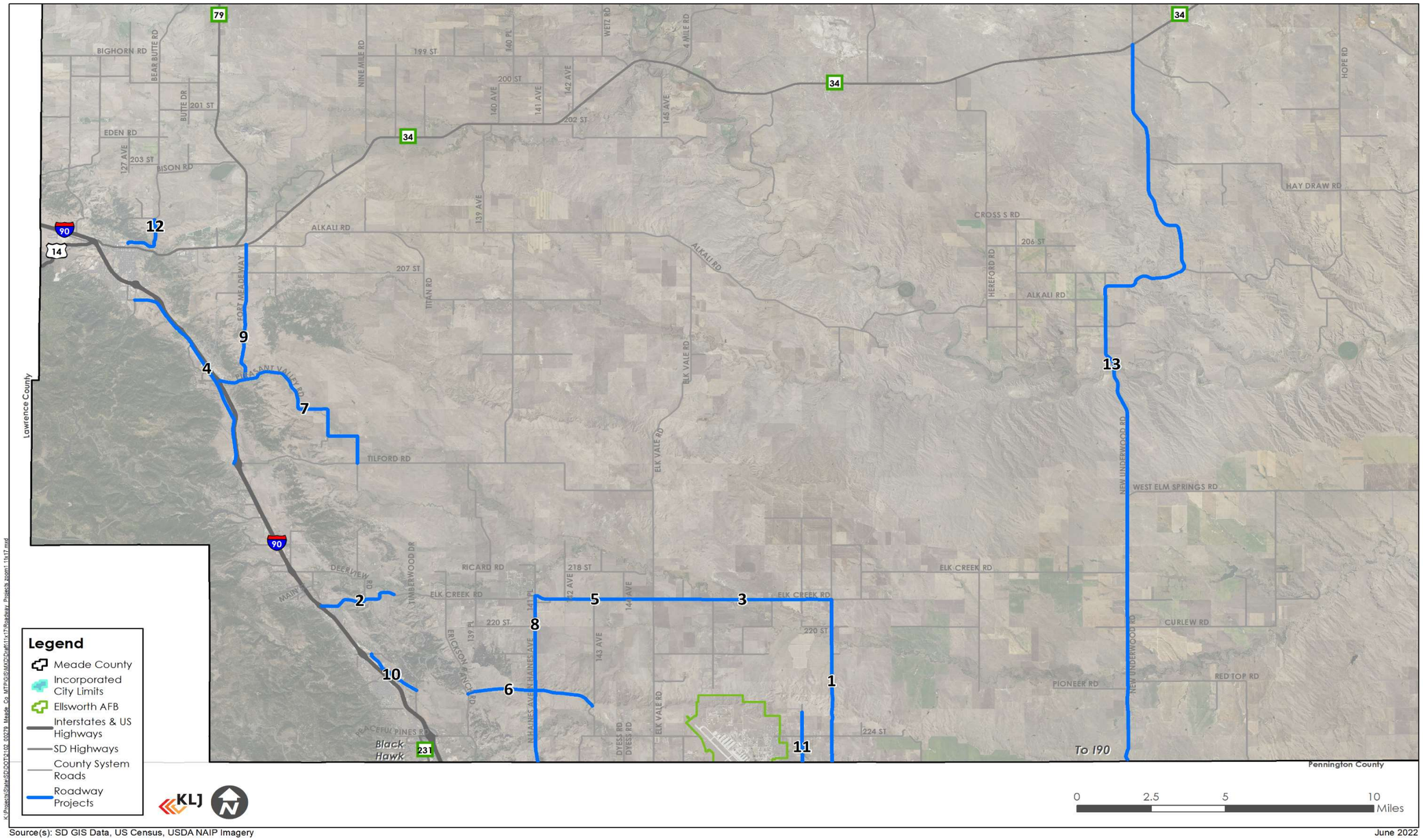
New Underwood Road

Additional study will be needed to assess improvement needs, jurisdictional responsibilities, and funding participation along the entirety of the New Underwood Road corridor from I-90 in Pennington County to its junction with SD 34.

Table 24: Special Roadway Projects

Map ID	Corridor	From	To	Description	Source	Estimated Cost ($M)
9	Fort Meade Way	Pleasant Valley Road	SD 34	Pave Roadway	Public Meeting Feedback	8.7
10	Quaal Road	Stagestop Road	Norman Avenue	Convert to three-lane with TWCLTL	Public Meeting Feedback	3.5
11	150th Avenue	Pennington County Line	North (Eagle Ranch Rd)	Asphalt paving as minor arterial	2016 Transportation Plan	3.1
12	Sly Hill Rd	Junction Ave	Foothills Rd	Pave Roadway	SAT Feedback	3.3
13	New Underwood Rd	I-90	SD 34	Corridor Study, Assess Needs	SAT Feedback	0.2

Figure 38: Long-Range and Unique Projects



Bike/Ped Projects

In addition to roadway projects, the master transportation plan sought to identify potential projects needs for non-automobile transportation. These projects often coincide with roadway projects and should be considered along with them when planning for roadway projects. This will help to ensure funding in cases where bike and pedestrian needs must be addressed. Also, planning for bike and ped users will help to serve more residents of Meade County, especially those who cannot drive or need off-street infrastructure for general travel or for recreational purposes.

Projects for UTV users were considered however input from county staff and the SAT concluded that projects for UTVs were not a Meade County priority. The county is amenable to UTV users however limited funding is available to improve facilities for these users.

Bike/Ped projects were considered regardless of whether they would be a county-led project. In many instances a bike/ped project may require cooperation among more than one jurisdiction and include the county. Projects were developed using the following criteria:

- Filling in sidewalks around area schools
    - Some schools in the county lack complete sidewalk access.
    - Gaps were filled to connect the schools to already existing sidewalk networks.
    - Rural schools with no surrounding housing were not considered.
- Creating shared use for community use
    - Potential sites for shared use paths or sidewalks were identified to connect existing networks or to bridge gaps.
    - A potential link from the Pennington County line north through the communities of Black Hawk, Summerset, and Piedmont was identified for a shared use path to roughly parallel Sturgis Rd, making use of existing shared use path where it exists.

School Sidewalk Gaps

1) Approximately 0.2 miles to connect Black Hawk Elementary to housing with an existing sidewalk network on the east side of Sturgis Rd.
2) Construct 350 ft of sidewalk in the city of Faith to connect the school to the sidewalk at Main St.

Shared Use Paths

3) Construct 3 miles of shared use path (SUP) from the Pennington County line to connect to an existing SUP that terminates at Leisure Ln/Castlewood Dr in Summerset. This project is part of a series of projects parallel to Sturgis Rd. The sections closest to Pennington County are considered the most feasible.
4) Construct 1.2 miles of SUP to continue where the SUP in Summerset terminates at High Meadows Rd and continue north to the existing SUP at approximately Stagestop Rd.
5) Construct the final 2.1 miles of SUP along Sturgis Rd to connect where project 5 leaves off and connect to the city of Piedmont.
6) Construct a sidewalk or SUP to connect housing subdivision on the east side of I-90 east of the community of Summerset. The bridge over I-90 already contains a separated sidewalk, however, the approaches on either side would be difficult for bike/ped users.

7) Construct new facilities to connect housing on across I-90 and to connect to the SUP proposed in Project 6. Currently, the bridge over the interstate has no bike/ped facilities. This project would involve at a minimum three jurisdictions: Meade County, Summerset, and Piedmont.

Table 25: Bike/Ped Projects

Map ID	Corridor	From	To	Length (Miles)
1	Elm St in Black Hawk	Black Hawk Elementary	Meadow Rose Ln	0.2
2	W 1st Ave in Faith	5th St	1st St	0.07
3	Sturgis Rd	County Line	Leisure Ln/Castlewood Dr	3.1
4	Sturgis Rd	High Meadows Rd	Stagestop Rd	1.19
5	Sturgis Rd	Stables Dr	Park St	2.14
6	Stagestop Rd	Renata Dr	I-90 Bridge	0.53
7	Elk Creek Rd	Sturgis Rd	Glenwood Dr	0.67

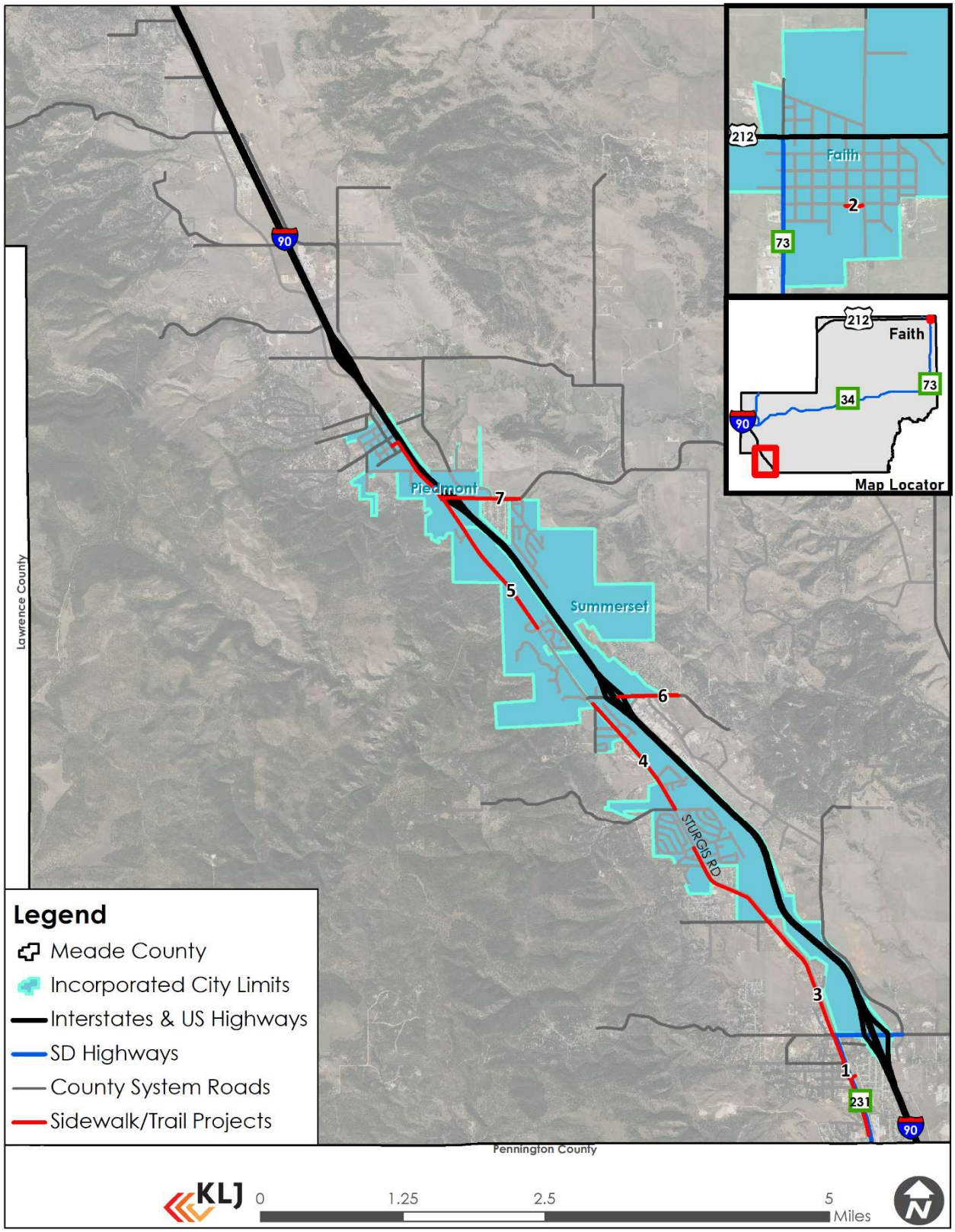


Figure 39: Bike/Ped Projects

Bridges

Three categories were established for the 30 lowest ranked bridges in the County: primary system, secondary system, and single access routes. Bridge project priorities were developed using Bridge Improvement Grant (BIG) scoring criteria, as well as other factors. Bridge priorities are listed Table 26.

Table 26: Bridge Project Priorities

Route Type	Bridge Number	Rural Collector	Struct. Deficient	Load Posted	Low Condition	Daily Traffic	B.I.G. Score	Budgetary Replacement Cost
Primary System	47-460-128	x	x		4	233	37.0	$600,000
	47-378-444	x			5	233	36.0	$4,074,000
	47-459-135	x	x		3	233	25.3	$1,050,000
	47-750-132	x		x	5	29	36.5	$814,000
	47-499-460	x	x		3	60	27.3	$431,000
	47-065-619	x			6	500	35.0	$1,115,000
	47-170-612	x			7	1895	30.0	$777,000
	47-363-476	x			6	280	29.2	$3,675,000
	47-117-558	x			6	240	21.0	$494,000
	47-050-322	x	x		4	33	14.5	$440,000
Secondary System	47-183-390		x	x	1	50	50.0	$339,000
	47-549-149		x	x	2	18	56.7	$582,000
	47-541-100		x	x	4	59	54.5	$1,302,000
	47-093-404		x	x	4	33	46.7	$524,000
	47-060-305		x	x	4	33	44.0	$370,000
	47-270-575		x		4	56	37.0	$840,000
	47-475-100			x	6	60	55.8	$592,000
	47-375-253		x		4	65	31.6	$339,000
	47-580-338			x	5	10	54.9	$499,000
	47-320-392			x	5	55	47.3	$872,000
Single Access	47-377-117		x	x	2	30	67.0	$539,000
	47-110-518		x	x	1	10	60.9	$539,000
	47-635-190		x	x	3	10	58.9	$1,124,000
	47-320-585		x	x	4	10	45.9	$599,000
	47-243-401		x	x	4	10	52.9	$1,176,000
	47-120-441			x	0	5	58.0	$630,000
	47-689-123			x	5	21	60.0	$432,000
	47-382-368		x	x	4	15	44.9	$490,000
	47-088-539		x		4	30	38.0	$615,000
	47-079-547			x	6	11	49.9	$524,000

Chapter 6: Financial Analysis

Background

This plan seeks to incorporate planning produced from the previous transportation plan (2016) and the county's 5-year highway plan, as well as project needs based on analysis for this MTP. Meade County produces a 5-year plan to help prioritize highway and bridge projects. Projects on the 5-year plan are non-binding and the County Commission can pick and choose projects to pursue as funding allows. Project costs on the current 5-year plan outpace available known funding, including local, state, federal, and BIG grants. The current plan costs exceed funding by $6 million.

This financial plan used the existing 5-year plan (excluding plan year 2021) as the basis for creating annual project costs as well as annual project funds. The County's ability to construct roads is constrained due to lack of funding. 30 percent of the County's 5-year plan is currently used for maintenance and repair of existing roads. The remaining 70 percent is slated towards larger projects including replacing bridges and complete reconstruction of roads. The County has a high number of road miles serving a large geographic area of somewhat low density, with most development occurring in the southwest portion of the County along the I-90 corridor.

In broad categories, the 5-year plan allocates funding to the following types of projects:

- Bridge/Drainage
- Chip/Crack Seal
- Gravel Work
- Miscellaneous
- Reconstruction (Roads)

Reconstruction is by far the largest expenditure in the plan, representing 77 percent of the costs of the plan. On average, road reconstruction costs $6.1 million per year, with the next largest category being bridge/drainage, at $1.1 million per year. A list of project categories and their average annual costs is available in Table 27, with percentages shown on Figure 40.

Table 27: 5-Year Plan Project Costs by Category

Category	Average Investment	Percent of Total
Bridge/Drainage	$1,141,000	14.3%
Chip Seal/Crack Seal	$422,000	5.3%
Gravel	$250,000	3.1%
Miscellaneous	$9,000	0.1%
Reconstruct/Overlay	$6,163,000	77.2%
Total	**$7,984,000**	**100.0%**

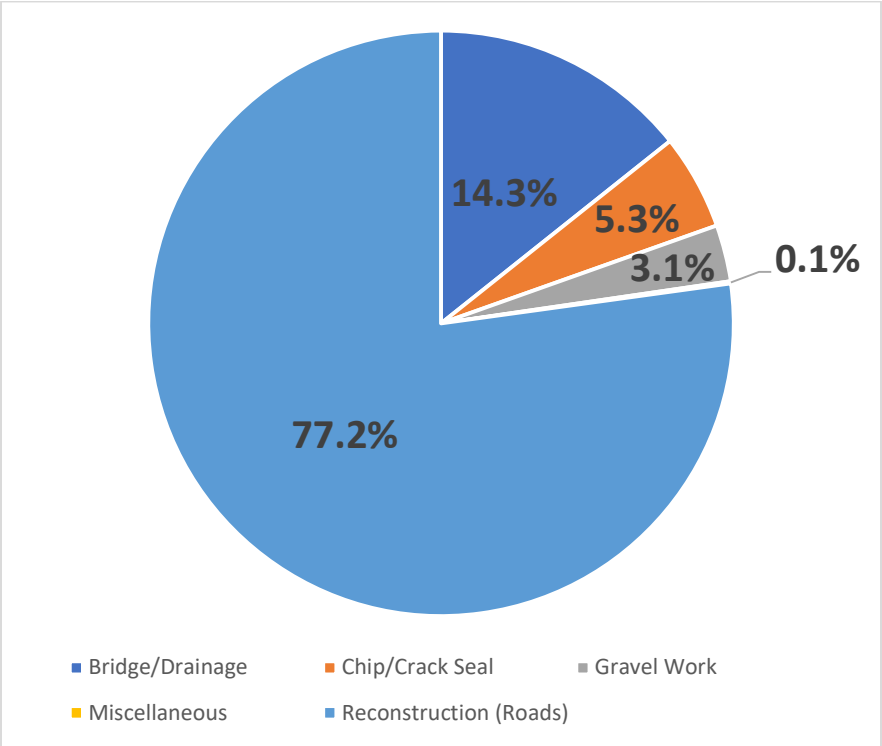


Figure 40: 5-Year Plan Project Cost by Category

Meade County has a current annual average investment in the 5-year plan of nearly $7 million per year. Assuming four percent inflation in project costs, the $7 million per year would grow to about $15.2 million by 2042. Average 5-year plan expenditures can be seen in Figure 41.

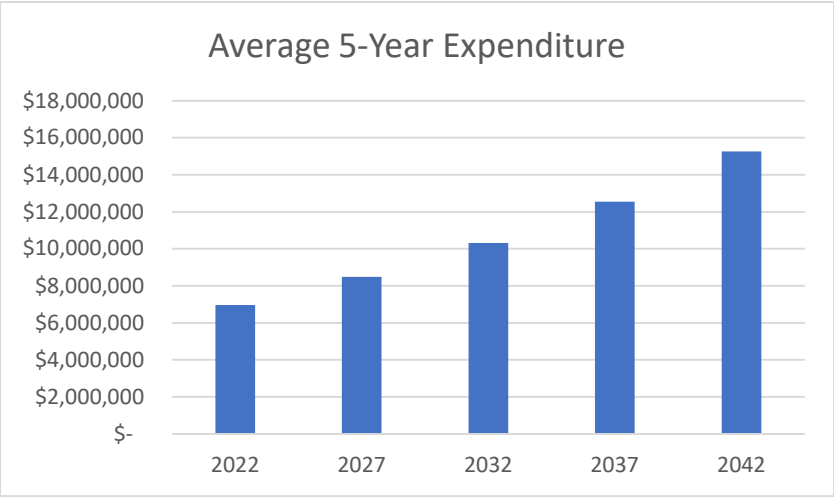


Figure 41: Average 5-year Plan Expenditures

Current (2022) revenue is approximately $4.6 million per year. By 2045, assuming only increases in local funding (and no increase in wheel tax), revenues increase to $4.8 million per year. This increase can be seen in Figure 42. The current 5-year plan projects total costs are about $6 million more than available funding.

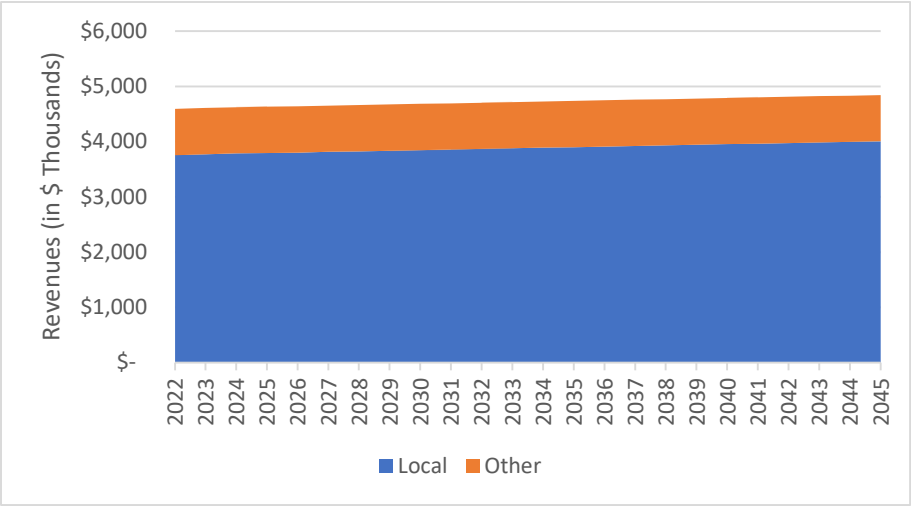


Figure 42: Meade County Revenue Increases by Source

Financial Scenarios

Based on existing Highway Department revenue, two scenarios were developed to allocate resources to meet system wide transportation needs. One scenario assumes the county continues its recent population growth for the next 20 years, the other scenario assumes similar growth and revenues with the addition of newly available federal monies.

Scenario 1 – Use of Known Funding

Base year, or existing condition investments in the Meade County highway system are the basis for the development of this future potential funding scenario. Meade County has a current annual average investment in the 5-year plan of nearly $7 million per year. Existing known revenues for Meade County are approximately $4.6 million per year. This will allow Meade County to complete roughly 2/3 of their programmed projects using available funding. The remaining projects in the 5-year plan may either be moved further out into the long range or can be completed if additional funding becomes available.

Other options exist for completing projects with limited funding. These could include phasing, with phases of less deficient segments being moved into the long range. Also, partnerships that spread the costs among multiple jurisdictions can help to complete the projects in the short term.

Using four percent inflation, the $7 million per year would grow to about $15.2 million by 2042. If population and revenue continue to grow, most transportation needs of the county are reasonable as the 5-year plan is non-binding and commissioners are allowed to pick and choose projects. As such, some projects on the 5-year plan are considered “must haves” while others are much lower in priority and were added to the list in the interest of completeness and to be eligible for funding.

Scenario 2 – Influx of New Funding

Scenario 2 assumes an increase in federal funding availability. In this scenario, county revenues increase as in scenario 1, however new federal funding creates significant new opportunities to fund projects. With the likely incoming of large amounts of previously unavailable federal funding due to recent congressional infrastructure bills, Meade County may be able to fund projects which were previously not feasible.

In the event new federal monies become available, the county will need to act quickly and decisively to apply for grants and other funding sources and to have "shovel ready" projects applicable for funding. One such project is a potential corridor study on New Underwood Road. County staff and SAT members have noted a potential future need for improvements on the corridor between I-90 in Pennington County and SD 34 in Meade County. At a minimum, the corridor could be studied to determine what future project improvements should be considered, whether the project should be phased, and how multiple jurisdictions should work together to see the improvements implemented.

Other projects from the long-range list of road projects that are currently considered to be low priority may suddenly have the opportunity to become fully funded, and the county will need to be prepared. Under scenario 2, the County simply adopts a more aggressive stance with regards to project planning and design.

Funding Strategy Recommendations

Having considered both scenarios, it would be appropriate for Meade County to be prepared for either scenario to occur. Meade County should look for ways to phase or delay some projects, or to choose a lesser improvement on some short-range projects if possible. Meade County should also be aggressive in pursuing other funding sources, including grants, to increase their financial resources for completing projects. This may require more emphasis on early project planning and completion of design to be more competitive for grants that require "shovel ready" projects. County efforts in grant applications should be coordinated with the SDDOT to seek support and to avoid potential overlaps or issues with other projects and priorities.

Chapter 7: Standards

Introduction

The chapter defines county standards for roadway cross-sections. It also discusses access management and level of service standards. The transportation system principles and standards included in this Plan create the foundation for developing the transportation system, evaluating its effectiveness, determining future system needs, and implementing strategies to fulfill the goals and objectives identified.

Typical Roadway Cross-Sections

This MTP reviewed and provided recommendations to the functional classification systems, both federal and county. Functional classification is relevant to establishing standards for roadways that fall within each functional classification. This section of the report provides updated recommendations for roadway cross sections with the various functional classification designations.

Roadway cross-sections are essential for understanding the function, capacity and speed, as well as the road's look and feel. Geometric design standards are directly related to a roadway's functional classification and the amount of traffic that the roadway is designed to carry.

For both Arterials and Collectors there are different cross-sections shown for roads in urban and rural areas. Urban cross-sections, for both Arterial and Collectors, include curbs, gutters and sidewalks adjacent to the travel lanes, while rural cross-sections have paved shoulders but no curb, gutter or sidewalk. Cross sections are also provided for rural unpaved (gravel) arterial and collector roadways. These are typical cross-sections; however, particular road segment cross-sections may vary depending on specific intersection improvements, topographical and environmental features, or roadside constraints.

Table 28 presents the typical cross-section standards for roadways in Meade County. The application of these standards is up to the judgment of the County Engineer.

Table 28: Typical Cross-Section Standards for Roadways in Meade County

Road Classification	Arterials		Collectors		Hwy Service Rd	Local
	Rural	Urban	Rural	Urban		
Surface Material	Gravel	Paved	Gravel	Paved	Gravel	Gravel
Surface Width	24'	24'	24'	24'	24'	24'
Minimum Lane Widths	12'	12'	12'	12'	12'	12'
Shoulder Material	Gravel	Paved	Gravel	Paved	Gravel	Gravel
Shoulder Widths [(A)]	2'	4'	2'	2'	2'	2'
Min ROW	100'	100'	80'	80'	66' [(B)]	66' [(B)]
Max Grade	No more than 10% on any portion of road, and 12% for mountainous roads					
Max Degree of Curvature	Shall not exceed 21%					
Min Crown Rate	4%	2.5% for Asphalt, and 2% for Concrete	4%	2.5% for Asphalt, and 2% for Concrete	4%	4%
Max Super Elevation Rate	Must meet current AASHTO Standards					

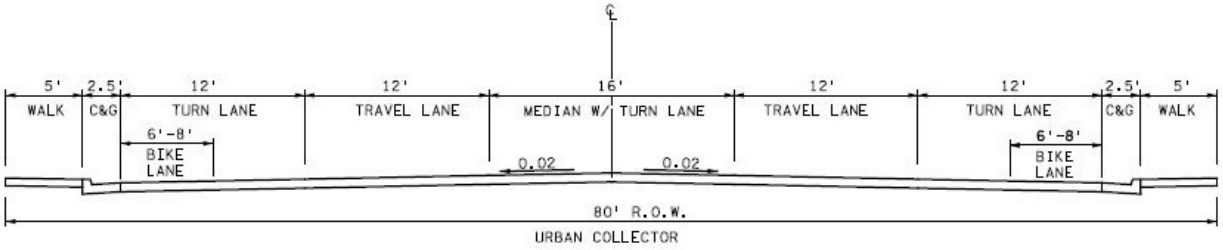
A. If the truck traffic exceeds 40%, the Minimum Shoulder Width shall be 4.0' (feet) from the edge of the road.
B. 50' dedicated public ROW is acceptable for roads within a High-Density Multi-Family-Residential subdivision

Updates to Typical Sections

Working closely with Meade County, typical sections were produced which were based off of the existing typical sections included in ordinance 10 with some key changes.

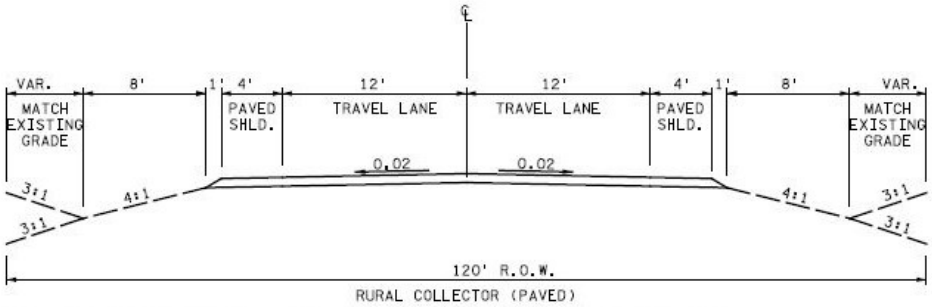
- Urban Collector
  - 120' ROW reduced to 80'
  - ROW width subject to approval of Meade County
- Rural Collector (Paved)
  - 80 to 120' ROW
  - ROW width subject to approval of Meade County
- Rural Collector (Gravel)
  - 80 to 120' ROW
  - ROW width subject to approval of Meade County
- Rural Local (Paved)
  - Nearside ditch width changed from 11' to 12'
- Rural Local (Gravel)
  - 28' feet total for travel lanes optionally narrowed to 24' to provide room for ditch
  - ROW may be increased to accommodate ancillary lanes (i.e. ATV/bike)
- Local with Curb and Gutter
  - ROW may be increased to accommodate ancillary lanes (i.e. ATV/bike)
- Rural Arterial (Paved)
  - In addition to center left turn lane, a right turn lane may be provided as needed
- Arterial with Curb and Gutter
  - In addition to center left turn lane, a right turn lane may be provided as needed

Updated typical sections are provided in the figures below:



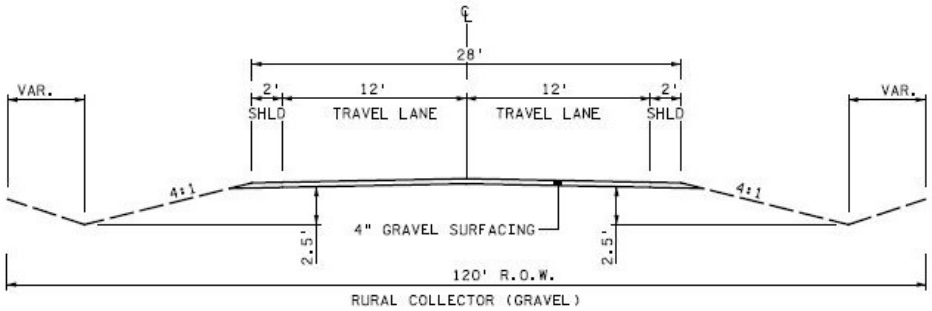
URBAN COLLECTOR

RIGHT-OF-WAY WIDTH SUBJECT TO APPROVAL OF MEADE CO.



RURAL COLLECTOR (PAVED)

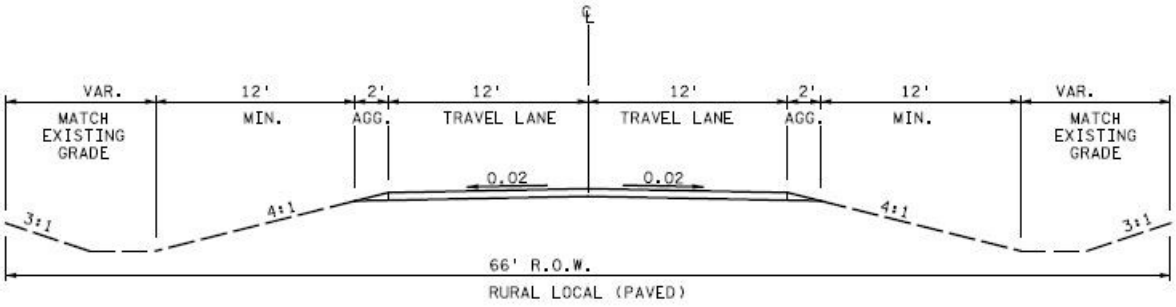
RIGHT-OF-WAY MAY BE INCREASED TO ACCOMODATE ACCILLARY LANES (I.E. ATV/BIKE) OR TURN LANES
RIGHT-OF-WAY WIDTH SUBJECT TO APPROVAL OF MEADE CO.



RURAL COLLECTOR (GRAVEL)

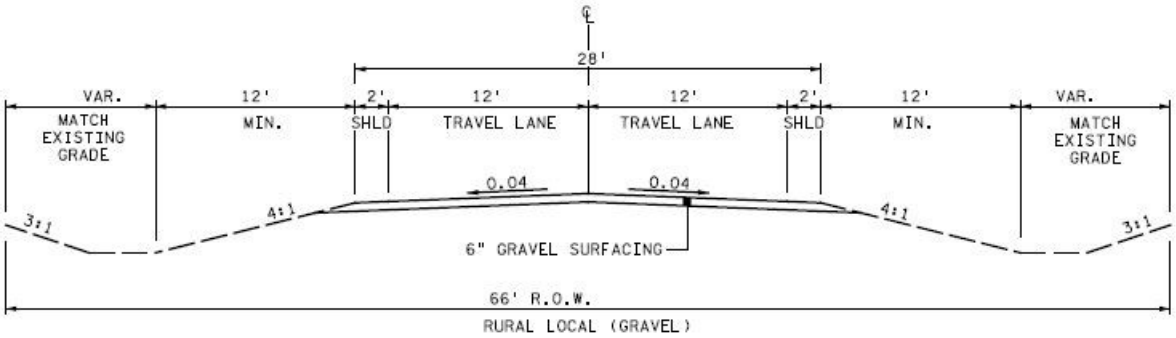
MAXIMUM SLOPE IS 4 TO 1, CURRENT STANDARD OF S.D. DEPARTMENT OF TRANSPORTATION.
STEEPER SLOPES SUBJECT TO APPROVAL OF MEADE CO.

RIGHT-OF-WAY WIDTH SUBJECT TO APPROVAL OF MEADE CO.



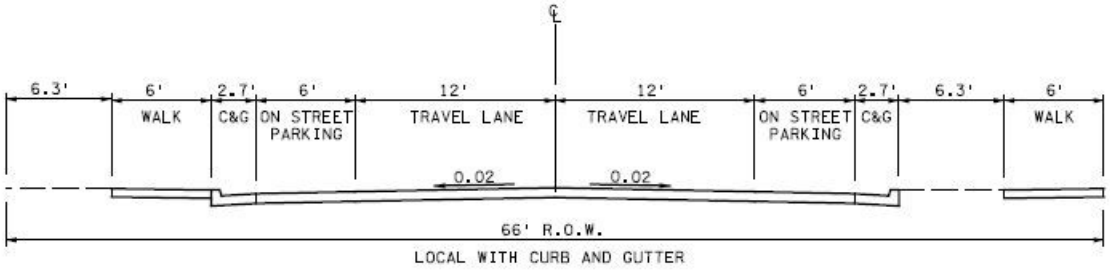
RURAL LOCAL (PAVED)

RIGHT-OF-WAY MAY BE INCREASED TO ACCOMODATE ACCILLARY LANES (I.E. ATV/BIKE) OR TURN LANES



RURAL LOCAL (GRAVEL)

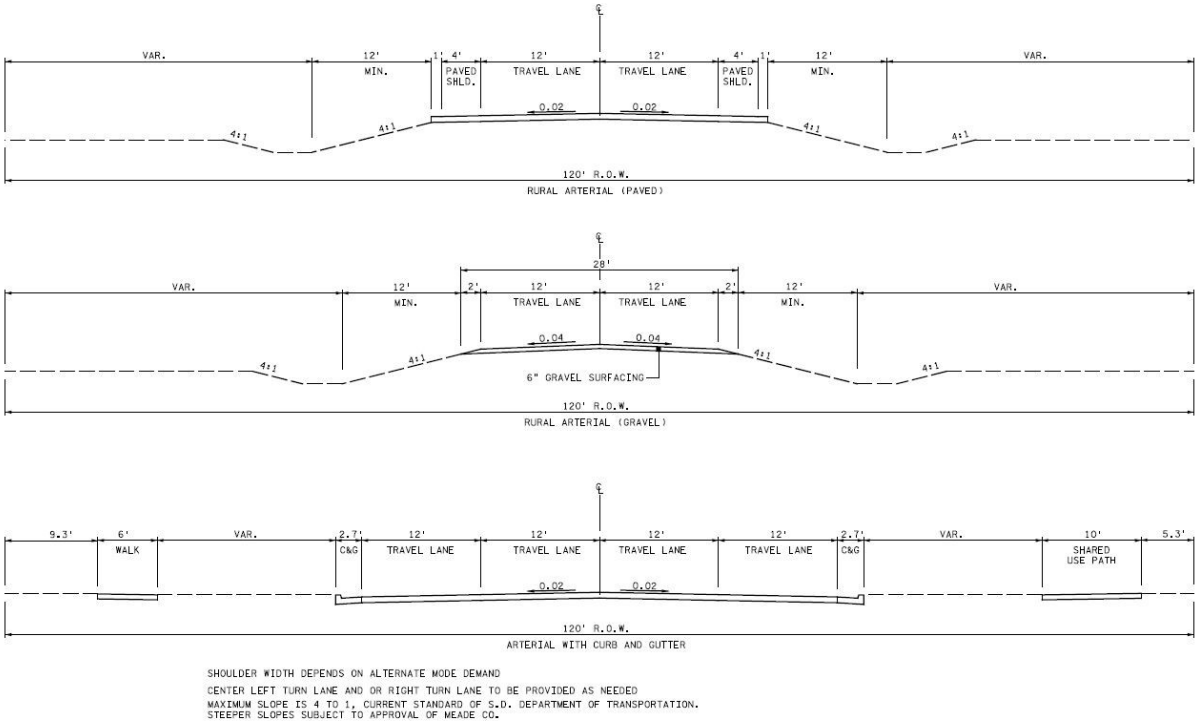
RIGHT-OF-WAY MAY BE INCREASED TO ACCOMODATE ACCILLARY LANES (I.E. ATV/BIKE) OR TURN LANES



LOCAL WITH CURB AND GUTTER

MAXIMUM SLOPE IS 4 TO 1, CURRENT STANDARD OF S.D. DEPARTMENT OF TRANSPORTATION.
STEEPER SLOPES SUBJECT TO APPROVAL OF MEADE CO.

RIGHT-OF-WAY MAY BE INCREASED TO ACCOMODATE ACCILLARY LANES (I.E. ATV/BIKE) OR TURN LANES



SHOULDER WIDTH DEPENDS ON ALTERNATE MODE DEMAND

CENTER LEFT TURN LANE AND OR RIGHT TURN LANE TO BE PROVIDED AS NEEDED

MAXIMUM SLOPE IS 4 TO 1, CURRENT STANDARD OF S.D. DEPARTMENT OF TRANSPORTATION. STEEPER SLOPES SUBJECT TO APPROVAL OF MEADE CO.

Access Spacings

Access management policies and spacing guidelines are developed to maintain traffic flow on the roadway network so each roadway can provide its functional duties while providing adequate access for private properties to the transportation network. The degree of mobility depends on many factors, including the ability of the roadway system to perform its functional duty, the capacity of the roadway, and the operational level of service on the roadway system. Access is the relationship between adjacent land use and the transportation system.

The SDDOT's Road Design Manual includes access management standards. For rural roadways, the standard number of accesses is five per side per mile, or accesses spaced approximately 1,000 feet apart. This is an appropriate standard for Meade County's rural roads as well. Many sections of the Meade County Road system already meet the standard. It is appropriate for urbanized roads to allow for shorter access spacing on low volume access points.

Highway volume access locations may become signalized in the future as traffic grows. Traffic signal spacing is typically recommended to be 1/8 to 1/2-mile apart. as population and commerce continue to grow in Meade County, access requests will increase, and county standards should be expanded to include recommended spacing of accesses along roadways of various classifications.

The following table presents the Meade County Access Spacing Guidelines, including direction for signal spacing, intersection spacing, driveway access density, and direct property access.

Table 29: Meade County Access Spacing Guidelines

Road Class		Cross Street	Signal	Access Density	Direct Access
Arterial	Rural	1,000	1/4-mile	5 per mile	Exception Only
	Urban	2,640 Full 1,320 Partial	1/2-mile	1/4-mile	Exception Only
Collector	Rural	1,000	1/4-mile	5 per mile	Yes
	Urban	1,320	1/4-mile	5 per mile	Yes
Local	Local	Not Applicable			

Access management guidelines and practices should generally be implemented at the county and local levels (cities and townships with active land use planning programs) as these agencies are typically involved at the planning stages of development proposals. However, effective access management requires mutual support and effective communication at all governmental levels. Therefore, it is important to consider how access management guidelines are implemented as part of county planning and development review procedures.

APPENDIX A

PUBLIC INPUT

Public Input and Stakeholder Meeting 1

Meade County Master Transportation Plan
Public Input Meeting #1
September 29, 2021
5:30 – 7:00 P.M. MST

Meeting Discussion Points

Meeting Attendees:

- Steve Gramm
- Stacy Bartlett
- Nick Broyles
- Phil Anderson
- Talbot Wieczorek
- Marlo Kapsa
- Bill Rich
- Sarah Gilkerson
- Rhea Crane
- Erin Muldoon
- Steve Grabill
- Zach Chappell
- Kevin Morello
- Brad and Barb Morgan
- Mike and Pat Reagan
- Davis and Gwen Vogt
- Deveron Zubke
- Monty Hight
- Floyd Orp
- Chris Matusiak
- Irv Hoyt
- Peggy Corr
- Rhonda Hook

- **Welcome & Presentation**
  - Steve Grabill welcomed attendees to the meeting.
  - Steve Grabill and Zach Chappell gave an overview of the project background and need, baseline conditions, and plan Goal Areas.
  - Steve Grabill gave an overview of the project website, including the interactive mapping tool and goals prioritization survey.
  - Steve Grabill presented the Goals Prioritization Exercise and invited attendees to participate after the presentation.

- **Public Comments**
  - Following the presentation, Steve Grabill led a discussion of transportation needs and issues within Meade County.
  - Attendee comment: I live on Quaal Road, which is a road district. I am concerned that the new subdivision off Norman Avenue will greatly increase traffic along Quaal Road. When a new subdivision is built, who is responsible for building and maintenance of new roads? Who will be responsible for the additional maintenance costs along Quaal Road?
    - Steve Grabill explained that part of the approval process for new subdivisions in a traffic impact study (TIS), which evaluates the traffic changes that may occur as a result of the development.

- Bill Rich explained that, unless a change is made to the incorporated road district, the responsibilities of landowners within the road district would remain the same (regardless of increased traffic).

- Attendee comment: If subdivision developments have several phases, how do we account for all of the future impacts of a new development?
  - Steve Grabill explained that TIS evaluations are meant to account for all phases of a project. Based on a TIS, Summerset engineers will determine what needs exist for each phase.
- Attendee comment: The City of Summerset is giving conflicting messages. We understood that they would be providing the necessary infrastructure for the new subdivision, including along Quaal. This is very confusing for the residents.
  - Bill Rich explained that the new subdivision along Norman Avenue will be annexed by the City of Summerset. The County cannot get involved with a City's subdivision regulations – it can comment, but cannot get involved. Summerset's ordinances determine criteria for approval of new subdivisions, including road requirements.
- Steve Grabill reminded the group that the Meade County LRTP, as a county plan, focuses on issues and needs with regard to their impacts on the county as a whole. The purpose of the plan is not to make detailed, project-specific recommendations.
- Bill Rich suggested that individuals concerned about the new development attend City of Summerset public meetings to express their concerns.
- Commissioner Talbot Wieczorek emphasized that a city can't prevent developers from building within the limits of their ordinances.
- Steve Grabill assured attendees that the KLJ team will look at Quaal Road as part of the Meade County LRTP.
- Attendee comment: Is it possible for the plan to identify roads that are currently maintained by road districts, and make recommendations about which roads should be changed to County maintenance?
- Attendee comment: I would be interested in seeing research about whether subdivisions have success in conducting their own maintenance programs.
- Attendee comment: I was surprised by the number of wild animal-related crashed along the I-90 corridor. Have animal crossings (wildlife overpasses) been considered?
  - Steve Grabill explained that this option requires that there be good crossing locations, where solid migration patterns exist. Such migration patterns are not present within the study area.
  - Steve Grabill emphasized the very high cost of such options. Such a project would decrease the funding available for other needs.
  - Steve Grabill highlighted several lower-cost solutions that can be considered to decrease wild animal crashes, such as widening shoulders and increasing visibility by managing roadside/ditch weeds and grasses.

ATTENDANCE LIST

Public Meeting #1

KLJ

Meade County Master Transportation Plan

Wednesday, September 29, 2021

Name	Organization/Business/Address/Email
Kevin Morello	5969 Terra Ct Black Hawk, SD 57718 KMore2942@aol.com
Steve Gramm	700 E. Broadway Ave. Pierre SD Steve.gramm@state.sd.us
Brad & Barb Morgan	11375 Lefty Pines Rd Black Hawk, SD 57718 beatmorgan@gmail.com
Mike | Pat Keegan	10505 Norman Avy BH SD 57718 amcek5@gmail.com
Davis / Gwen Vogt	6019 Hillside Drive Black Hawk S.D. 57718
Deveron Zubke	6795 Suziehome Blackhawk devzubke@gmail.com
Nick Broyles	Meade County
Monty Hight	13535 Dark Timber Ct. 14116 Sturgis Rd
Russ Crane	Meade Co DOE
Marlo Kypfer	Meade Co DOE
Bill Rich	Meade Co DOE / bill.r@meadeco.sd.gov
Sarah Gilkerson	SDDOT / ON FILE

ATTENDANCE LIST

KLJ

Meade County Master Transportation Plan

Wednesday, September 29, 2021

Name	Organization/Business/Address/Email
FLOYD OOP	13537 FRONTIER LOOP PIEDMONT S.D 57769
Chris Matusiak	10495 Norman Ave, BH 57718
Tru Hoyt	10990 Amber Lane BHawk
Talbot Wieczorek	5415 Stone Tree Ct. Piedmont
STACY BARTLETT	SDDOT – RC REGION
Phil Anderson	City of Piedmont
ERIN Muldoon	LGA-SDDOT
Peggy Corr	10779 Amber LN, BHawk
Rhonda Hook	9435 Norman Ave, BH.
Steve Grabill	KLJ
Zach Chappell	KLJ

Meade County Master Transportation Plan
Stakeholder Meeting #1
September 30, 2021
9:00 – 10:30 A.M. MST

Meeting Discussion Points

Meeting Attendees:

- Steve Gramm
- Stacy Bartlett
- Eric Pearson
- Kailey Snyder
- Nick Broyles
- Lisa Schieffer
- Bill Rich
- Daniel Velder
- Sarah Gilkerson
- Kip Harrington
- Erin Muldoon
- Nate Jagim
- Steve Grabill
- Zach Chappell

- **Welcome & Presentation**
  - Steve Grabill welcomed attendees to the meeting.
  - Steve Grabill and Zach Chappell gave an overview of the project background and need, baseline conditions, and plan Goal Areas.
  - Steve Grabill gave an overview of the project website, including the interactive mapping tool and goals prioritization survey.
  - Steve Grabill presented the Goals Prioritization Exercise and invited attendees to participate after the presentation.

- **Stakeholder Comments**
  - Following the presentation, Steve Grabill led a discussion of transportation needs and issues within Meade County.
  - Stakeholder comment: Will the Meade County LRTP consider trails? Looking at trails will be important both from a recreation perspective and as an essential travel option.
    - Steve Grabill confirmed that the Plan will include recommendations for bicycle and pedestrian. Steve encouraged attendees to provide any further input they have on this subject.
  - Stakeholder comment: Fort Meade Way gets lots of activity, especially during the rally. In general, Fort Meade Way gets lots of through traffic and truck (freight) traffic.
  - Stakeholder comment: Fort Meade Way should be a state road given that it provides a direction connection between a state highway (SD-34) and an interstate (I-90).

- Stakeholder comment: New Underwood Road has many of the same issues as Fort Meade Way given that it is one of the only larger north-south connectors in central-eastern Meade County.
- Stakeholder comment: Growth of Ellsworth AFB will have impacts on all of the surrounding roads. While most people will continue to use the Interstate for north-south travel, general growth in the area will put increasing pressure on the smaller routes such as Antelope Creek Road, Elk Vale Road, and Elk Creek Road. Are these roads set up for this?
- Stakeholder comment: Older subdivisions have been grandfathered in with a single access point – this is a safety issues in some cases.
- Stakeholder comment: There is currently no service road (frontage road) along some sections of I-90, for example, between Tilford and Sturgis. A frontage road would help with non-recurring congestion, such as that caused by accidents and weather events. A lack of continuous frontage roads also presents gaps in the bike/ped network.
- Stakeholder comment: 650 vehicles per day is the general threshold for paving. We are going to have a number of roads hitting this number soon. It would be helpful if you could highlight in the Plan the roads that are approaching this threshold.
- Stakeholder comment: Current roads are not designed for the type of traffic that is using them, and that will increasingly use them. Many freight routes use gravel roads, increasing maintenance costs and causing safety issues.
- Stakeholder comment: Biking and walking on roads has become less safe as traffic volumes have increased. Competitive Transportation Alternatives funding (federal) is available for bike/ped infrastructure.
    - Steve Grabill confirmed that the Plan will look to identify gaps in the bike/ped network.
- Stakeholder comment: UTV travel can be an issue for routes connecting to Black Hills National Forest. Sometimes there are groups of over twenty UTV traveling at a slow speed – this presents a safety issue. Vanocker Canyon Road and Bethlehem Road are examples.

ATTENDANCE LIST

Stakeholder #1

KLJ

Meade County Master Transportation Plan

Thursday, September 30, 2021

Name	Organization/Business/Address/Email
Zach Chappell	KLJ
Steve Grabill	4807 W. Main Rapid City
Steve Gramm	SDDOT 700 E. Broadway Ave Pierre
SARAH GILKERSON	SDDOT " "
Eric Pearson	Meade Co. EM
EREN Muldoon	SD DOT 700 E. ~~BROADWAY~~ BROADWAY PIERRE, SD.
Bailey Snyder	BHCLG
Nate Jagim	Meade Co. Highway + WTP
Nick Broyles	Meade County
Bill Rich	Meade Co billr@meadecountysd.org
STACY BARTLETT	SDDOT

Meade County Master Transportation Plan
Stakeholder Meeting #2
September 30, 2021
2:30 – 4:00 P.M. MST

Meeting Discussion Points

Meeting Attendees:

- Steve Gramm
- Stacy Bartlett
- Bill Rich
- Sarah Gilkerson
- Amanda Anglin
- Barb Cline
- Steve Grabill
- Zach Chappell
- Brad Sudbeck
- Gene Williams
- Mike Golliher

- **Welcome & Presentation**
  - Steve Grabill welcomed attendees to the meeting.
  - Steve Grabill and Zach Chappell gave an overview of the project background and need, baseline conditions, and plan Goal Areas.
  - Steve Grabill gave an overview of the project website, including the interactive mapping tool and goals prioritization survey.
  - Steve Grabill presented the Goals Prioritization Exercise and invited attendees to participate after the presentation.

- **Stakeholder Comments**
  - Following the presentation, Steve Grabill led a discussion of transportation needs and issues within Meade County.
  - Stakeholder comment: I represent Prairie Hills Transit. We operate exclusively deviated fixed-route service at this time. Many of our users are elderly or have a medical condition.
    - Our customers have not expressed additional transit needs – they are generally satisfied with the service that they are receiving.
    - We maintain two waiting areas for school children.
  - Stakeholder comment: There are sections of the I-90 corridor which would benefit from a frontage road. Specifically, a frontage road would be useful on the west of I-90 from Tilford to Sturgis. Beyond providing an alternative route when there is congestion/accidents on I-90, this would increase connectivity for bicyclists.

ATTENDANCE LIST

Stakeholder #2

KLJ

Meade County Master Transportation Plan

Thursday, September 30, 2021

Name	Organization/Business/Address/Email
Steve Gramm	SDDOT 700 E. Broadway Ave. steve.gramm@state.sd.us
Sarah Gilkerson	SDDOT " "
Amanda Anglin	Sturgis Economic Dev. Corp. amanda@sturgisdevelopment.com
Steve Grabill	4807 W. Main Rapid City
STACY BARTLETT	
Barb Cline	Prairie Hills Transit Spearfish bkcline@prairiehillstransit.com
Bill Rice	Meade County
Zach Chappell	KLJ

Meade County Master Transportation Plan
Public Input Meeting #2
September 30, 2021
5:30 – 7:00 P.M. MST

Meeting Discussion Points

Meeting Attendees:

- Steve Gramm
- Stacy Bartlett
- Marlo Kapsa
- Bill Rich
- Sarah Gilkerson
- Rhea Crane
- Steve Grabill
- Zach Chappell
- Rod Woodruff
- Rod Baumberger

- **Welcome & Presentation**
  - Steve Grabill welcomed attendees to the meeting.
  - Steve Grabill and Zach Chappell gave an overview of the project background and need, baseline conditions, and plan Goal Areas.
  - Steve Grabill gave an overview of the project website, including the interactive mapping tool and goals prioritization survey.
  - Steve Grabill presented the Goals Prioritization Exercise and invited attendees to participate after the presentation.

- **Public Comments**
  - Following the presentation, Steve Grabill led a discussion of transportation needs and issues within Meade County.
  - Attendee comment: I live on Fort Meade Way and own a couple of businesses on the road. There is lots of truck traffic and through-traffic at all hours of the day. This road is intended to provide access to the VA Medical Center, and provides a direct connection between Hwy 34 and the Interstate. This should really be a state highway.
  - Attendee comment: Truck and freight traffic along Fort Meade Way have increased substantially over the years. It is simply a better option than traveling through Sturgis, given farther distances and very narrow lanes on Hwy 34 within the city. Truck and freight use has deteriorated the road – all of my vehicles now have broken windshields from rocks flying up. We need to pave this road urgently, both for safety and economic development reasons.
  - Attendee comment: It would be interesting to understand where most of the trips along Fort Meade Way are coming from. Should regional through-traffic and freight traffic really be using a gravel road? There is a strong case for paving this road.

- Attendee comment: New Underwood Road was built and is maintained by the county, but everyone uses it. Why doesn't the state take over this roadway?

ATTENDANCE LIST

Public Meeting #2

KLJ

Meade County Master Transportation Plan

Thursday, September 30, 2021

Name	Organization/Business/Address/Email
Steve Gramm	SDDOT 700 E. Broadway ; Pierre Steve.gramm@state.sd.us
SARAH GILKERSON	SDDOT " sarah.gilkerson@state.sd.us
Steve Grabill	KLJ 4807 W. Main Rapid City
Rod Woodruff	20622 Fort Meade Way - Sturgis
Rod Baumbergy	21050 Fort Meade Way - Sturgis
BILL Rich	Meade Co.
Rhea Crow	Meade Co
Zach Chappell	KLJ

Meade County Master Transportation Plan

Public Input Meeting

Existing Conditions, Issues and Needs

September 2021

ENGINEERING, REIMAGINED

SINCE 1938

KLJENG.COM

KLJ

Agenda

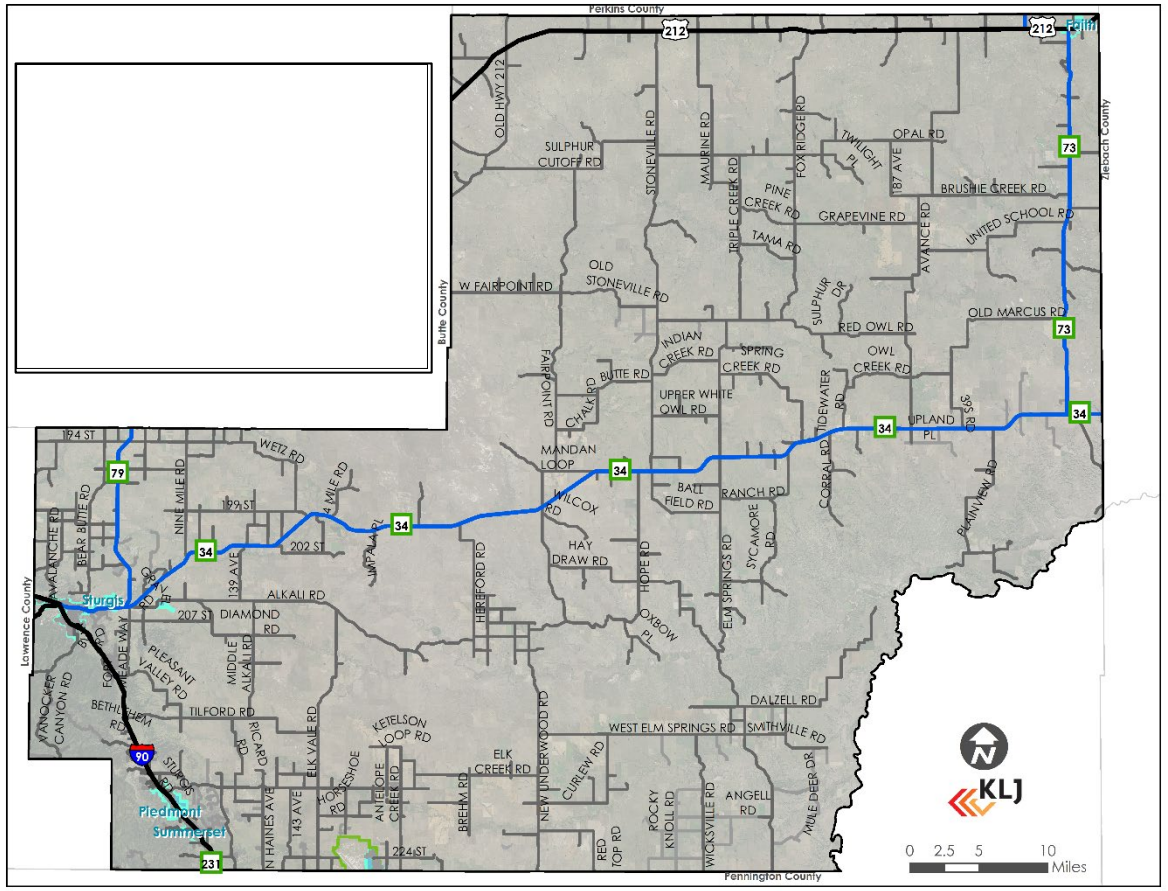
1. Introduction
2. Baseline Conditions
3. Vision, Goals & Objectives
4. Issues Discussion

Introduction

Introduction

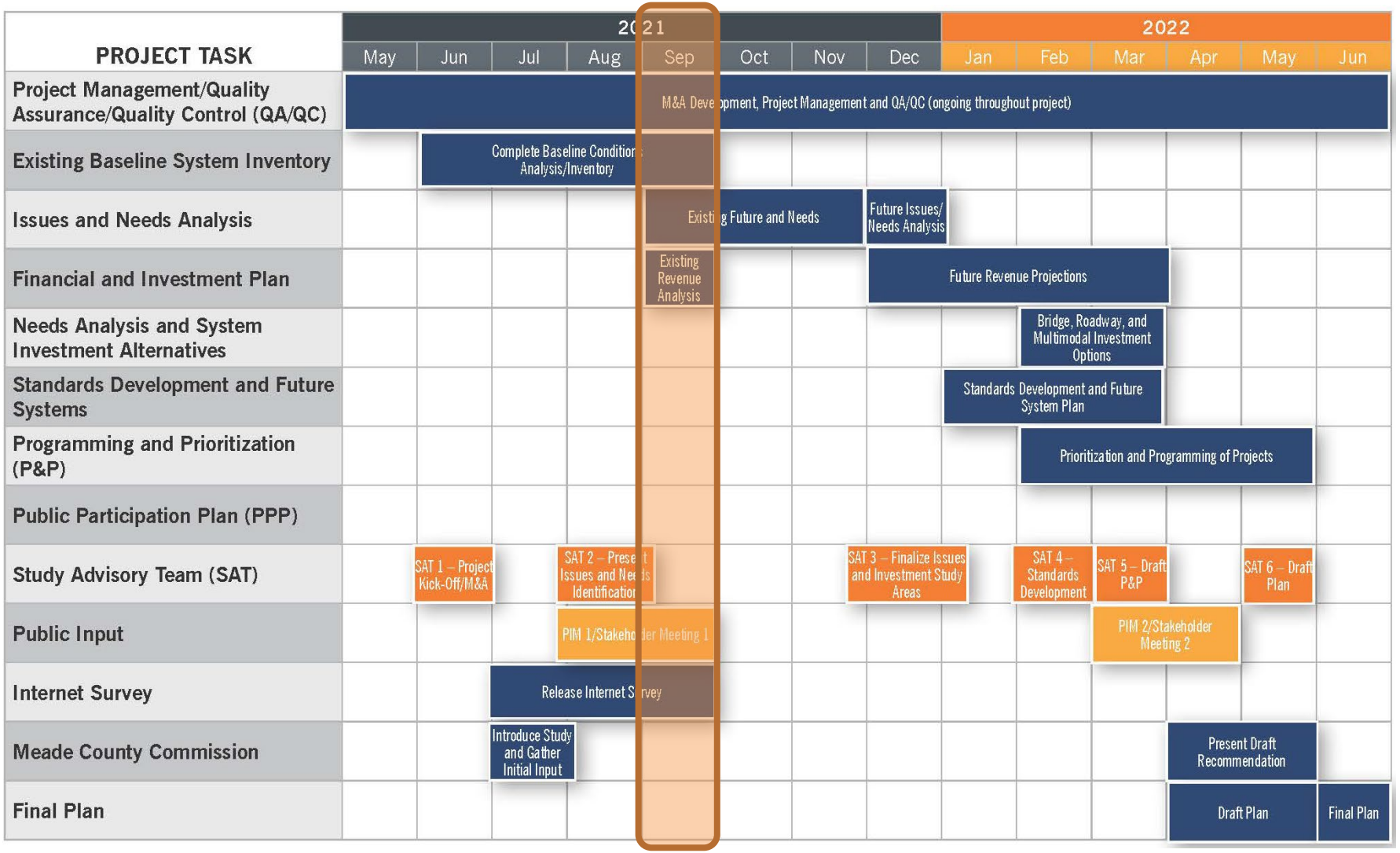
- Meade County in process of updating its MTP (20-year horizon)
- Update responds to changing conditions within Meade County
  - Increasing residential development
  - Growing + diversifying economy
  - Changing travel patterns and volumes
- Plan → set of goals and project recommendations which address current and future needs

Study Area



Introduction

We are here

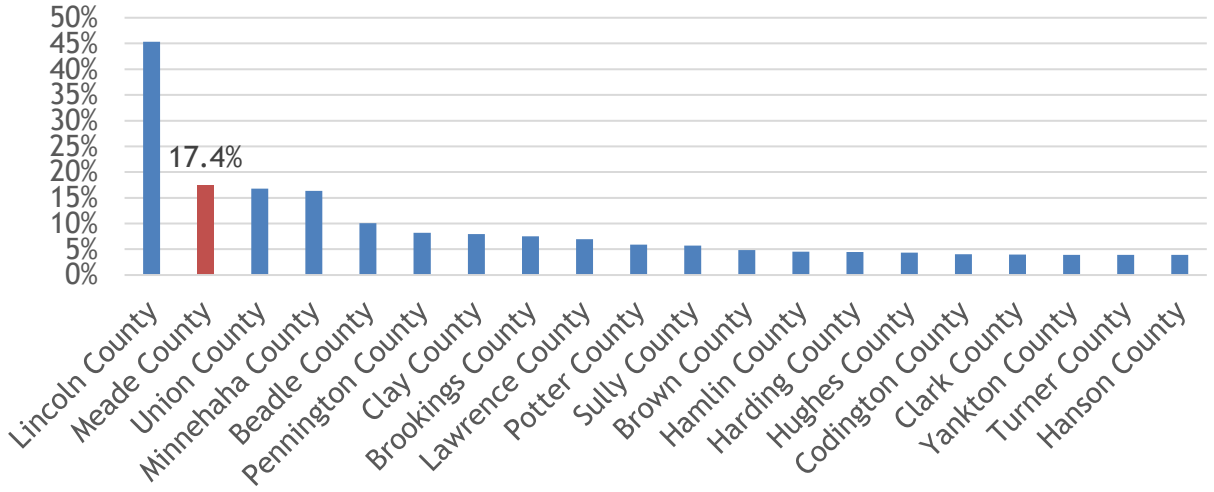


Baseline Conditions

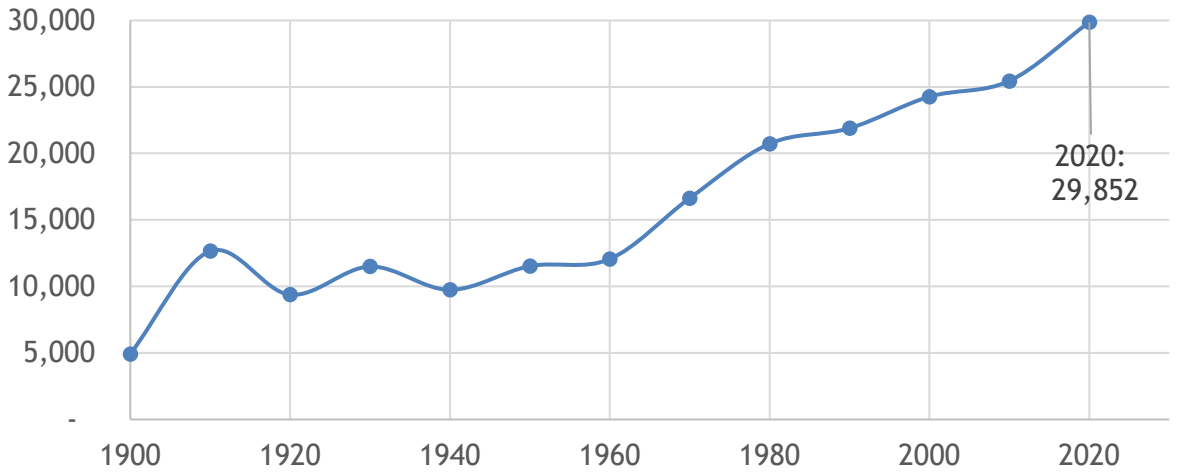
Population: Growth Trends

- Meade → Second fastest population growth among SD counties (2010-2020)
- Population grew by 4,418 (17.4%) during last decade
- Population growth steady over the last century

South Dakota's Top 20 Counties by Population Growth (2010 - 2020)

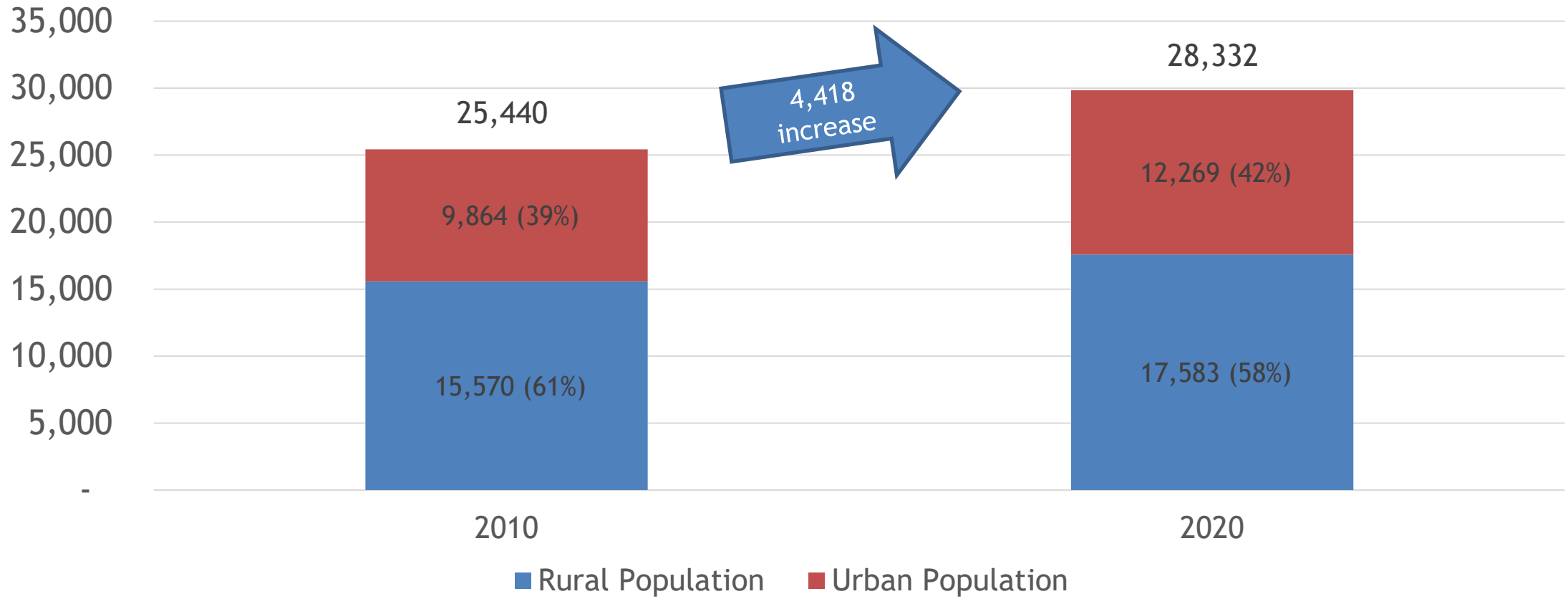


Meade County Population Growth throughout 20th Century



Population: Urban vs Rural Growth

- Both urban and rural populations increased from 2010-2020

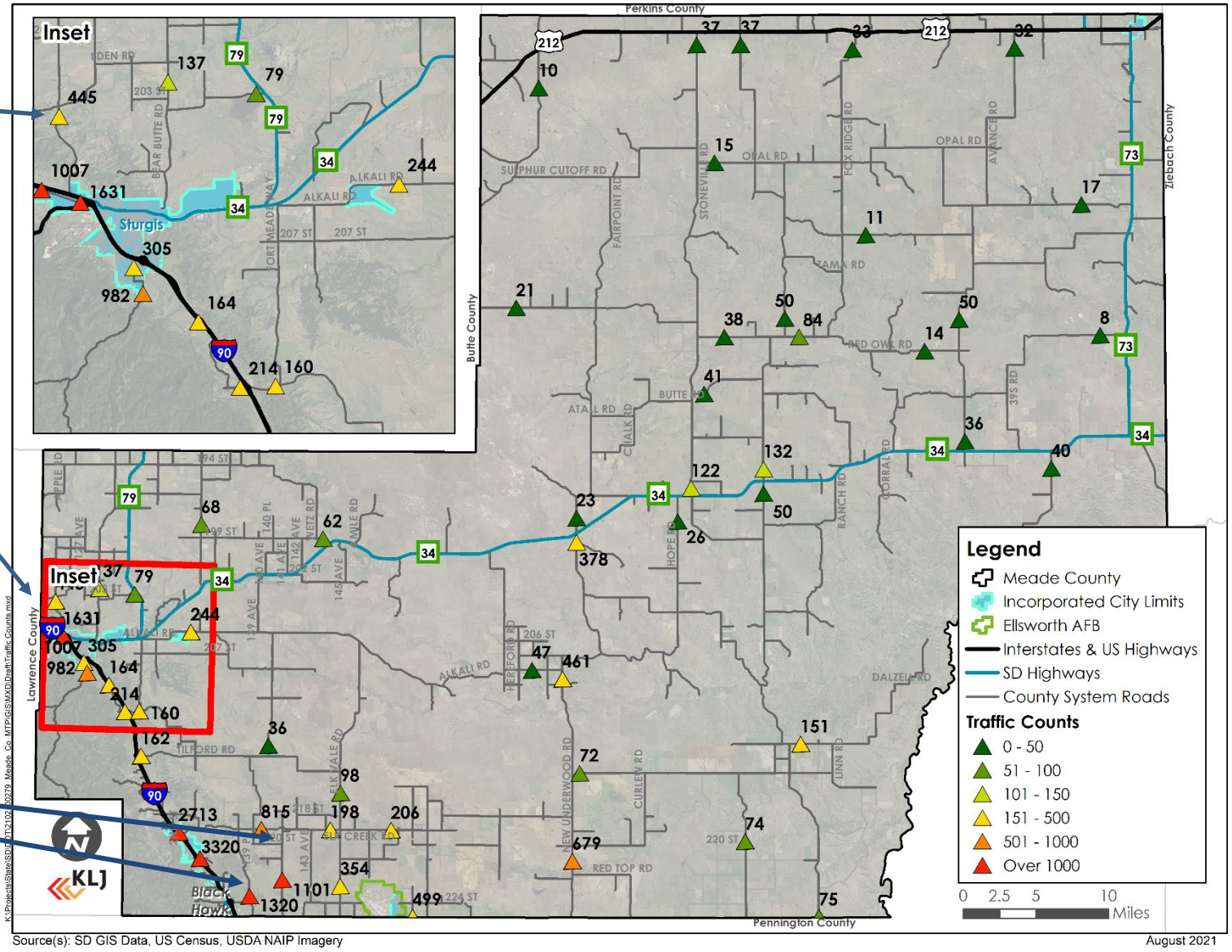


Roadway: Current Traffic Volumes

Avalanche Road (445 VPD in 2020) had the highest traffic volume counted on a gravel-surfaced road

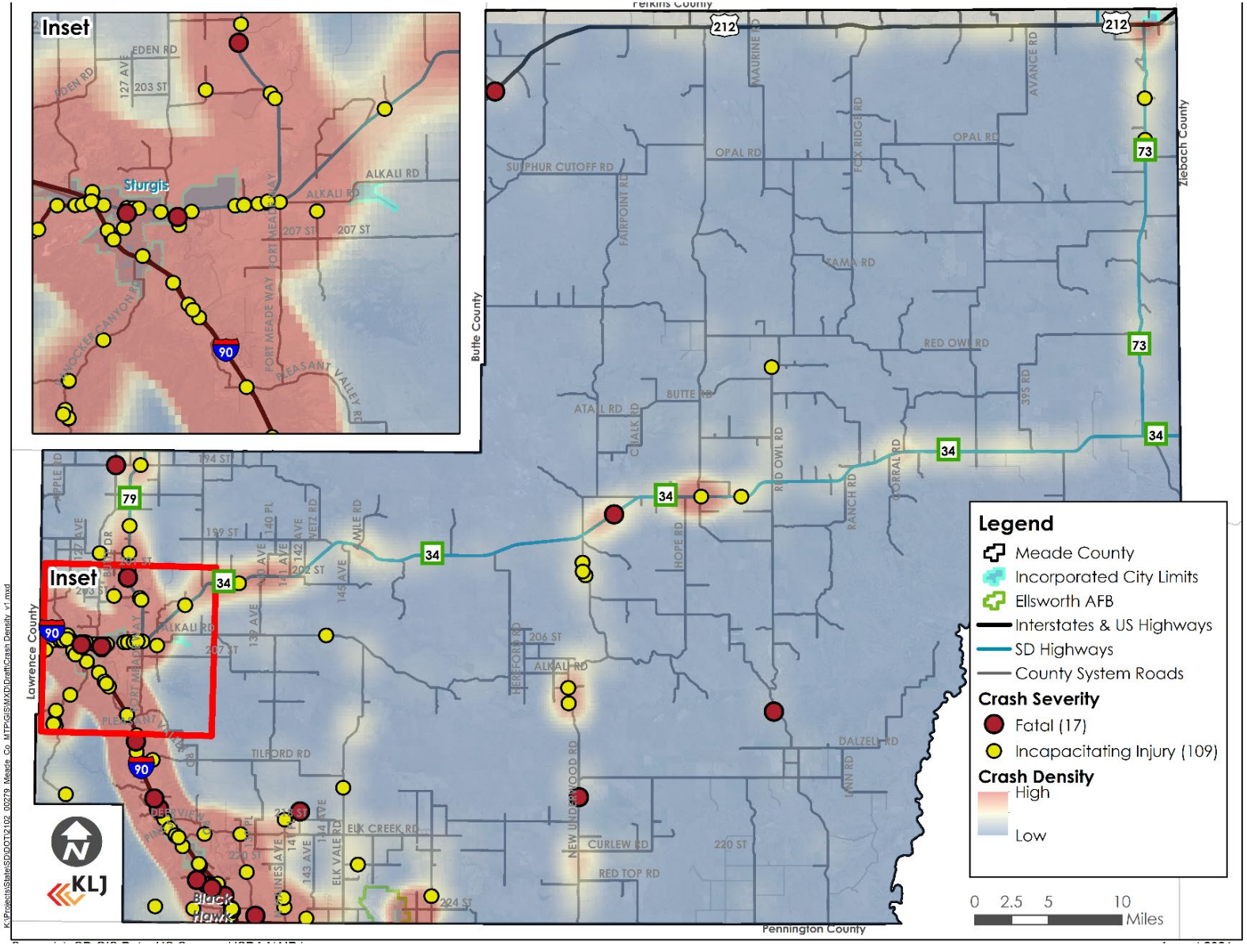
Highest volumes surround I-90 (Elk Creek Rd, Stagestop Rd, etc.)

Some north-south connections have higher volumes, including segments of Erickson Ranch Road (>1,300) and N Haines Avenue (>1,100)



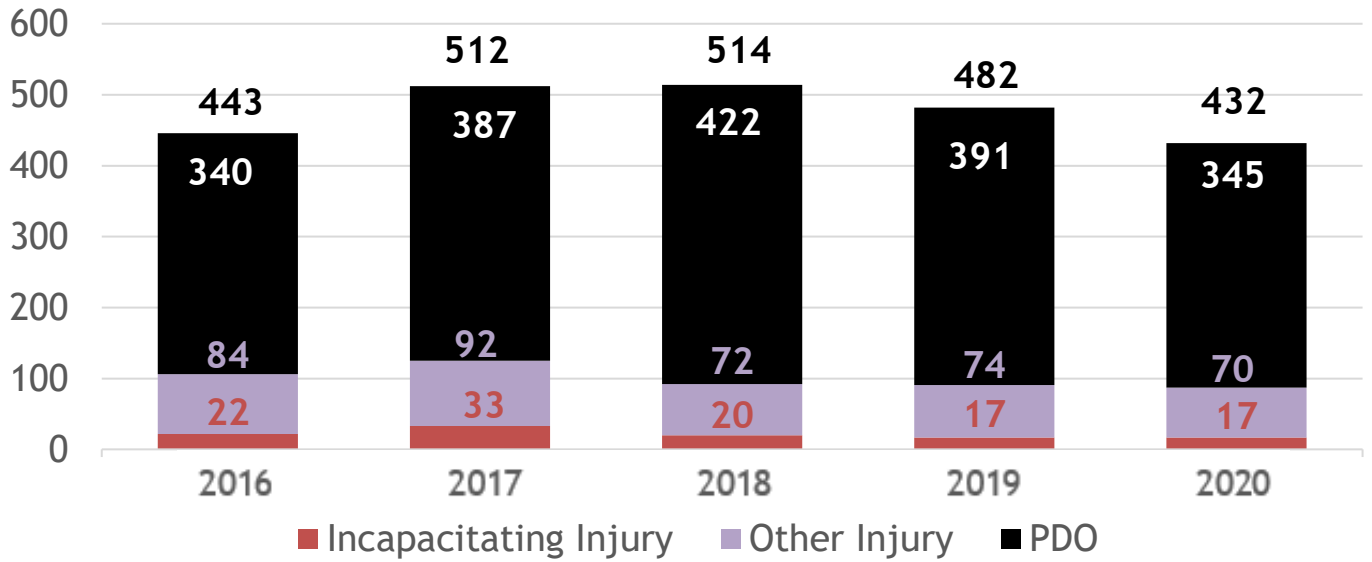
Roadway: Crash Severity/Density

Crash statistics from 2016-2020



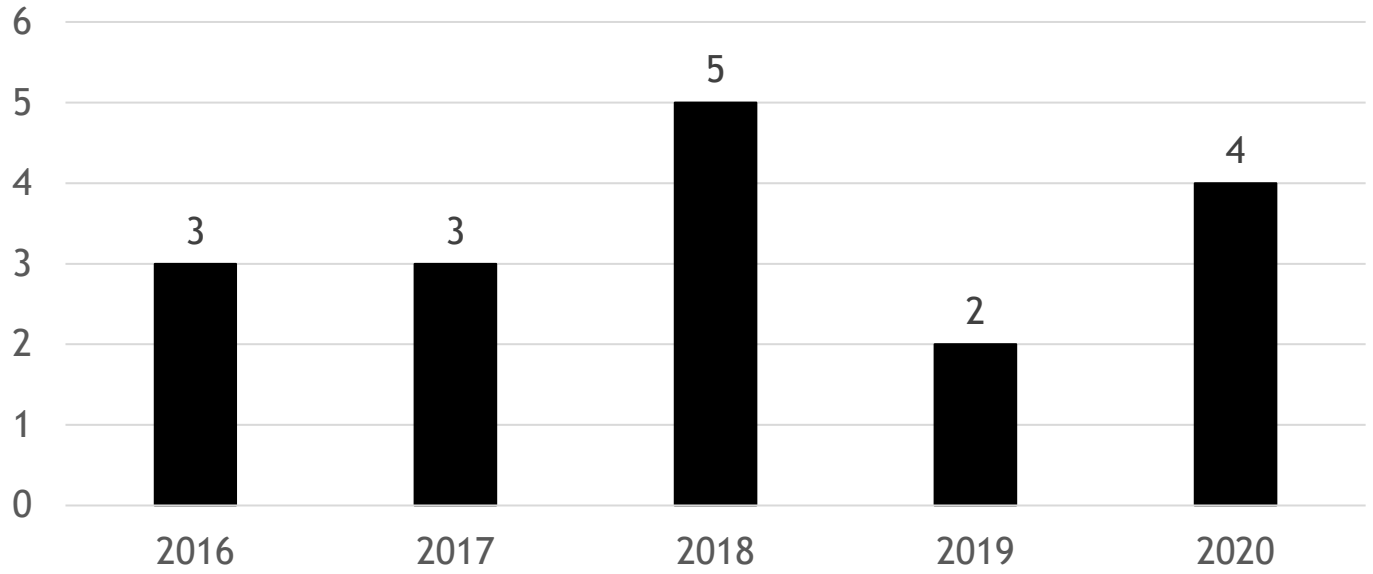
Roadway: Crash Type

- Injury and PDO crashes have decreased over analysis period
- Despite effects of COVID-19, 2020 total in line with downward trend beginning in 2018
  - Total crashes decreased by 6% from 2018-2019 and 10% from 2019-2020



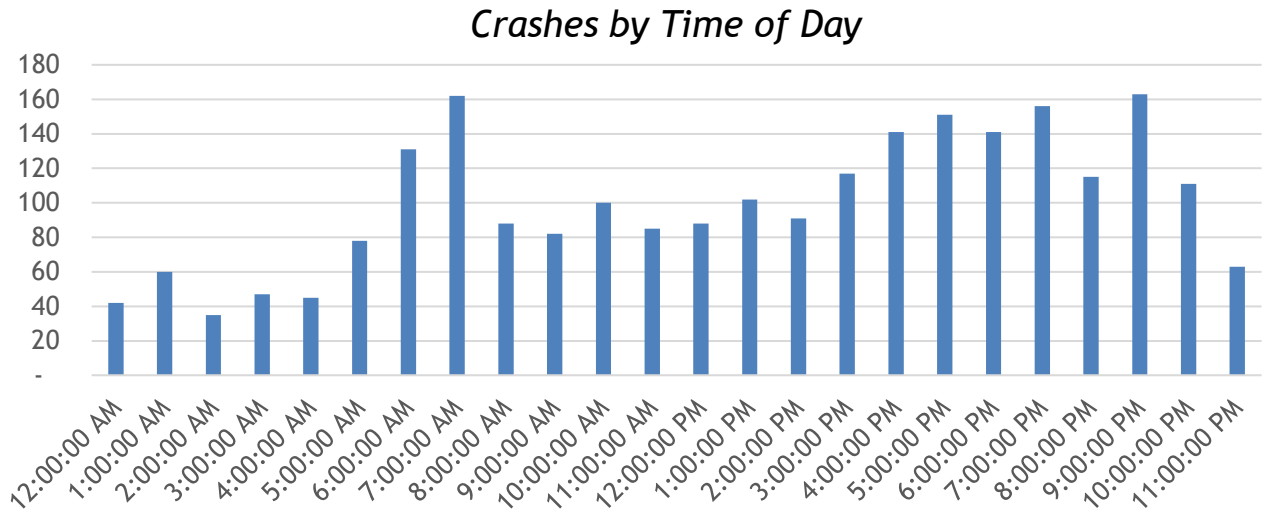
Roadway: Crash Type

- Traffic-related fatalities increased by two from 2019-2020
- 2020 increase follows national trend, with traffic fatalities increasing by 7.2% nationally from 2019 to 2020

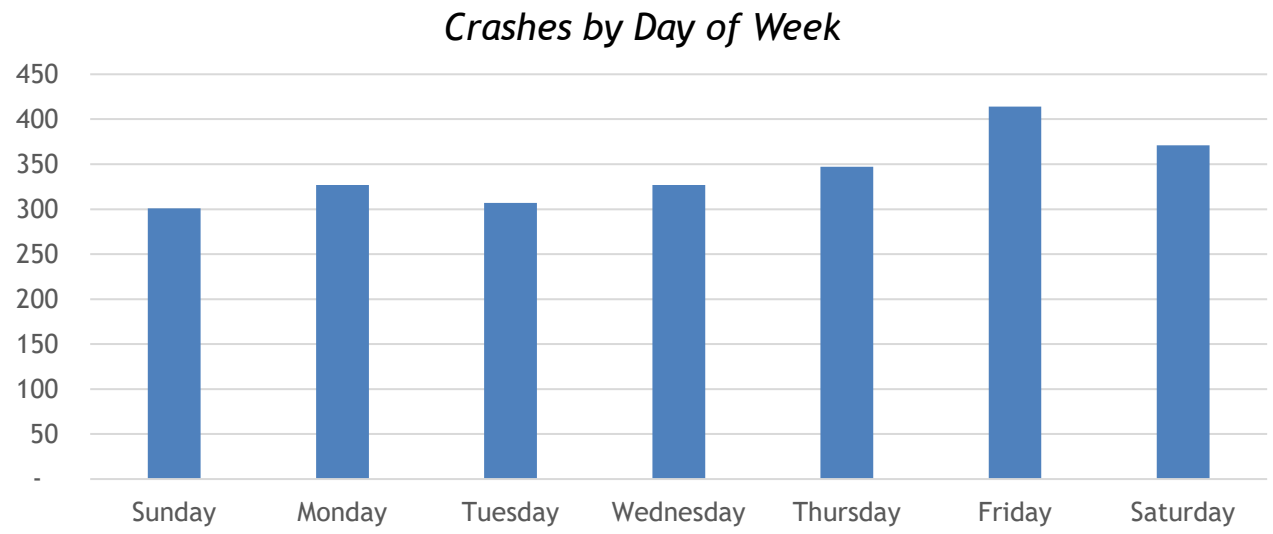


Roadway: Crash Occurrence

- Crashes typically occur during peak travel periods
- There was a notable increase from 9PM to 10PM

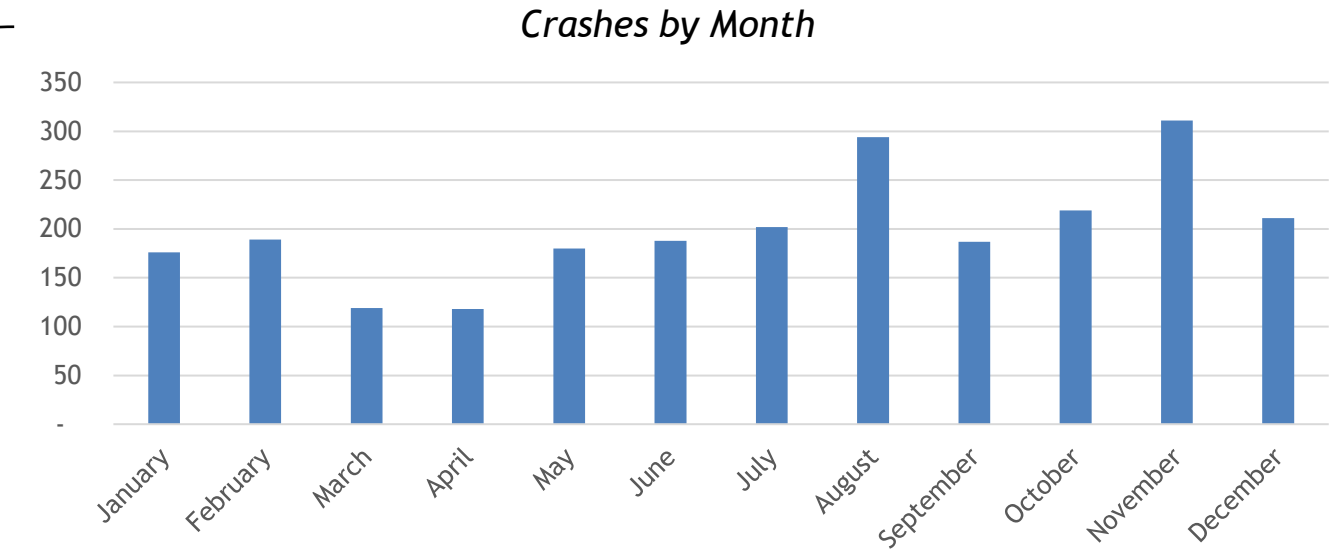


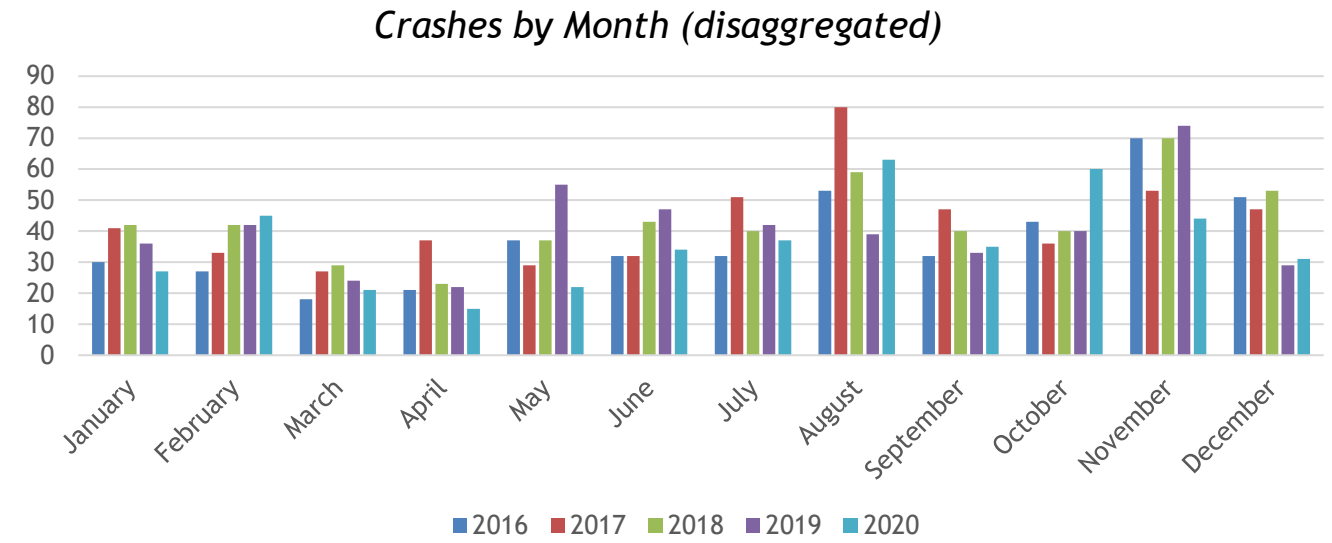
- The fewest crashes occur on Sundays, and the most on Fridays



Roadway: Crash Occurrence

- Highest number of crashes occur between October and December and during the month of August (43%)
- Winter road conditions and motorcycle rally are important factors





Roadway: Impaired Drivers

- There were 155 crashes involving impaired drivers – 6.5% of all crashes during the analysis period
- Statewide average for crashes involving impaired drivers during the same period: 5.5%
- Nine of 17 fatal crashes were alcohol related (53% of all fatal crashes)

Roadway: Wild Animal Crashes

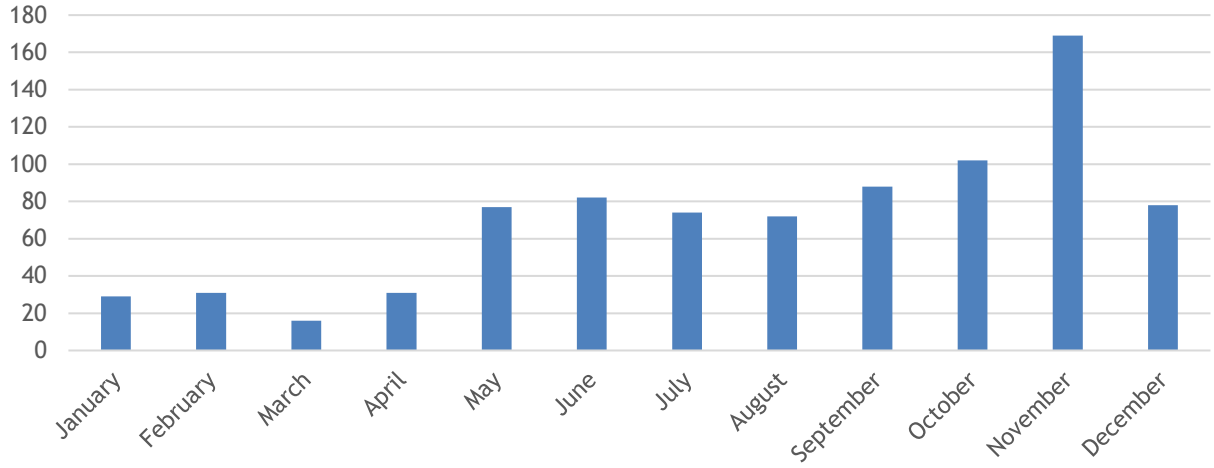
- There were 849 crashes involving a wild animal during the analysis period

- Highest animal crashes during November
  - Deer breeding season runs from October-December, peaking in mid-November

Top Five States for Claims from an Animal Collision (2020)

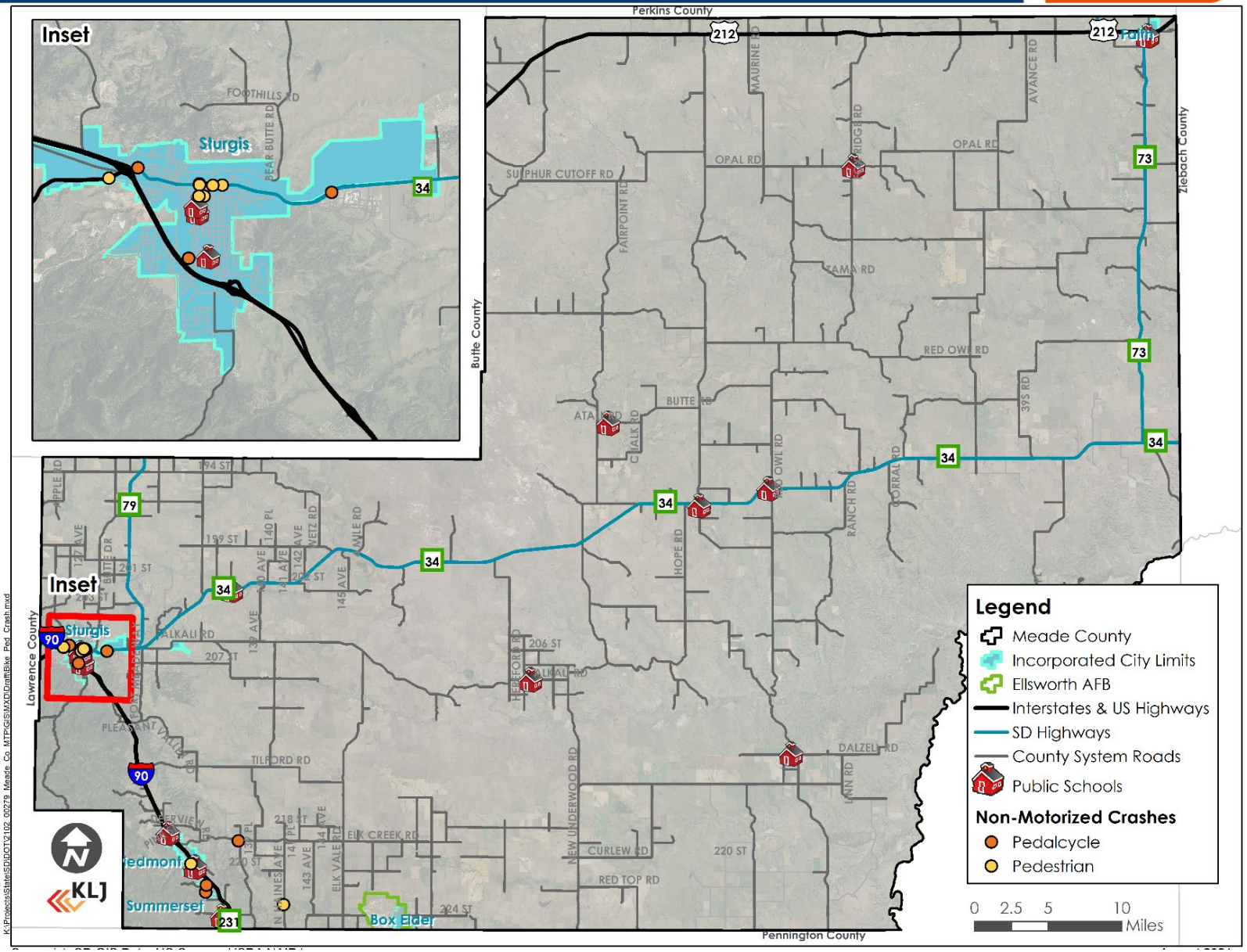
Rank	State
1	West Virginia
2	Montana
3	Pennsylvania
4	**South Dakota**
5	Michigan

Wild Animal Crashes by Month



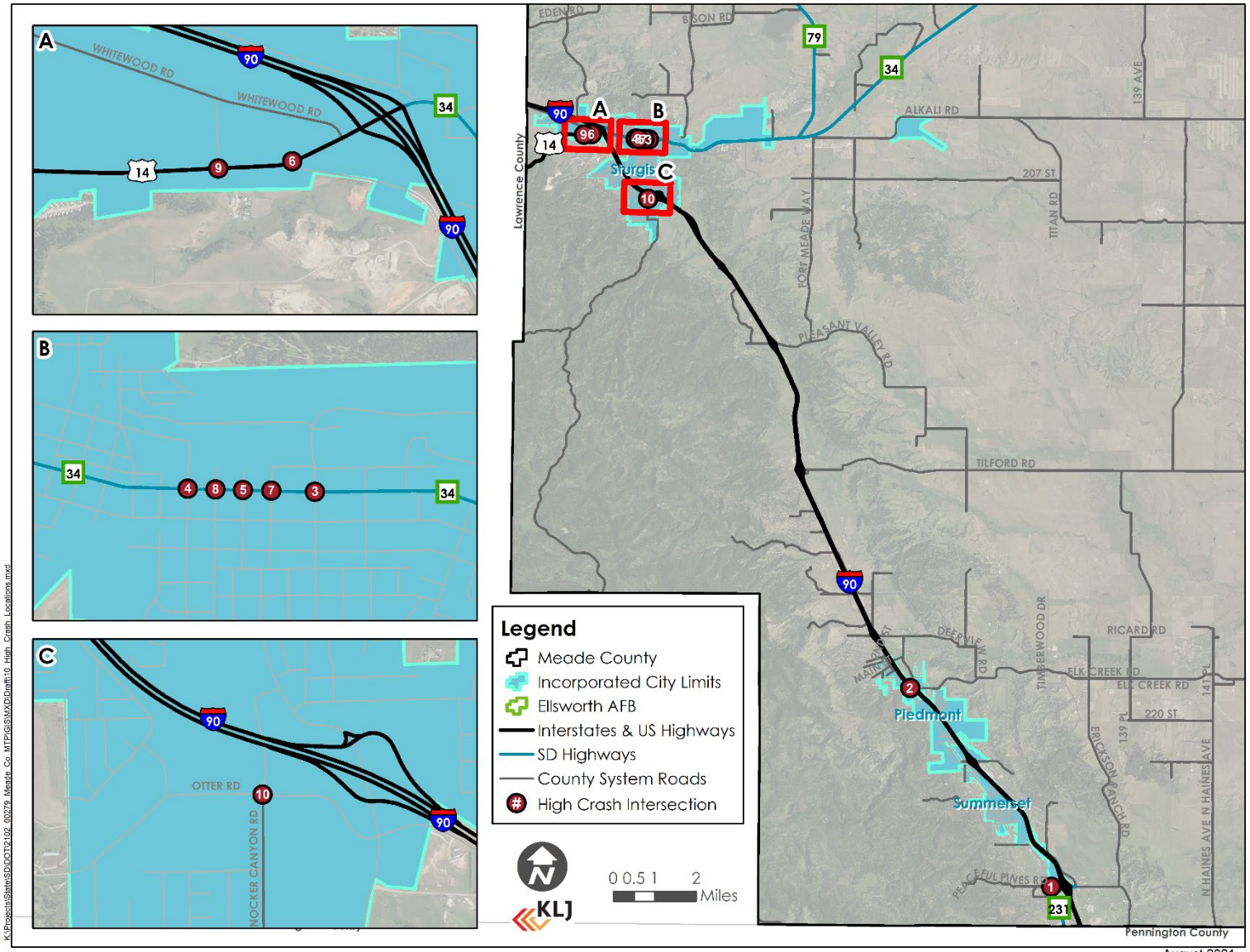
Roadway: Bike and Ped Crashes

- There were 18 crashes involving a pedestrian or bicyclist during the analysis period
- One crash was fatal and seven resulted in serious injury
- 11 of the 18 crashes occurred in Sturgis

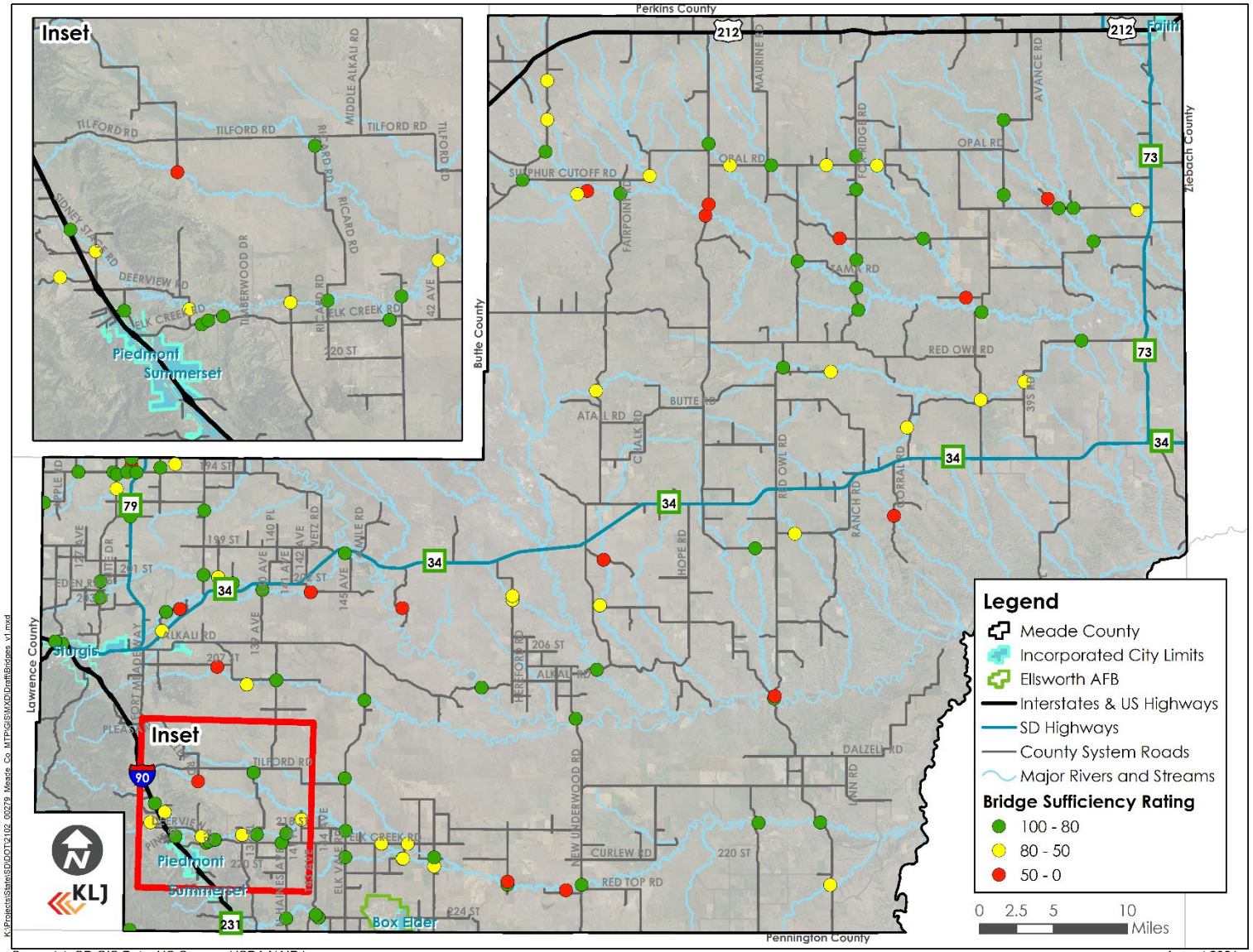


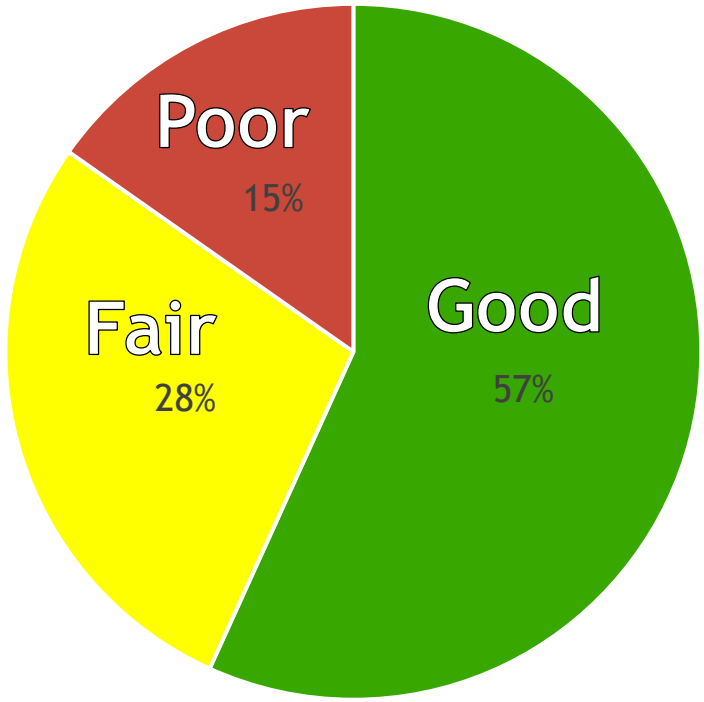
Roadway: High-Crash Locations

Rank	Intersection	Traffic Control	Total
1	Peaceful Pines Rd & Sturgis Rd	Signal	16
2	Sturgis Rd & Elk Creek Rd	TWSC	13
3	SD Hwy 34 & Junction Ave	Signal	11
4	SD Hwy 34 & 4th St	Signal	8
5	SD Hwy 34 & 2nd St	Signal	8
6	US Hwy 14A & Moose Dr	TWSC	8
7	SD Hwy 34 & 1st St	TWSC	7
8	SD Hwy 34 & 3rd St	TWSC	5
9	US Hwy 14A & 20th St	TWSC	5
10	Vanocker Canyon Dr & Otter Rd	TWSC	5



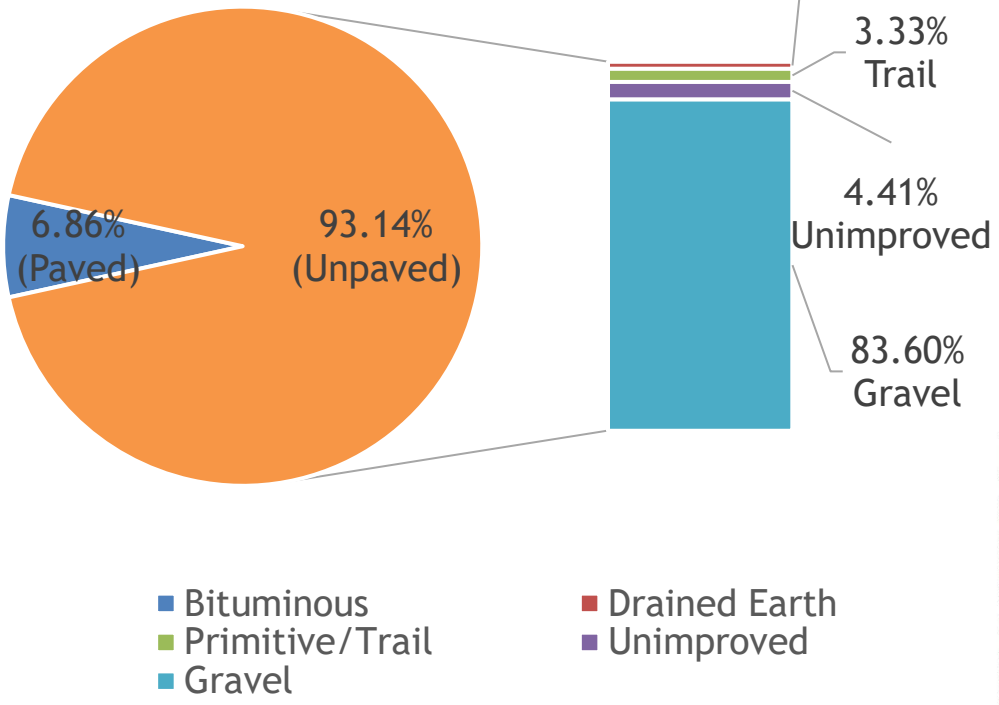
Roadway: Bridges and Culverts

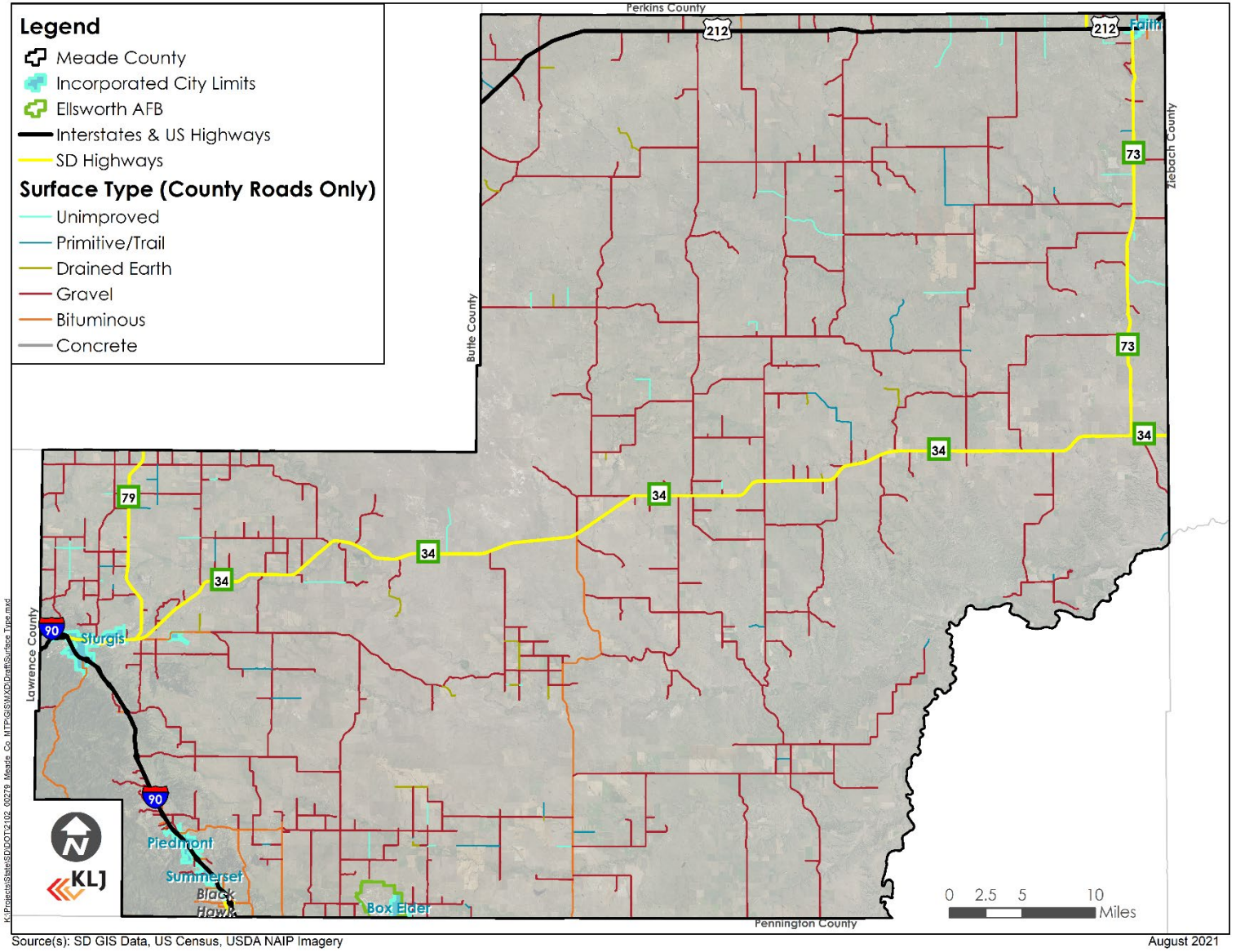




- Nearly 60% of County maintained bridges and culverts are in good condition

Roadway: Surface Management





Vision, Goals and Objectives

Vision, Goals and Objectives

- Vision
  - Aspirational statement outlining a desired future
- Goals:
  - Broad statements that describe a desired end state
  - Represent key priorities
  - Visionary in nature
- Strategies
  - Specific actions → support the achievement of goals

Vision, Goals and Objectives

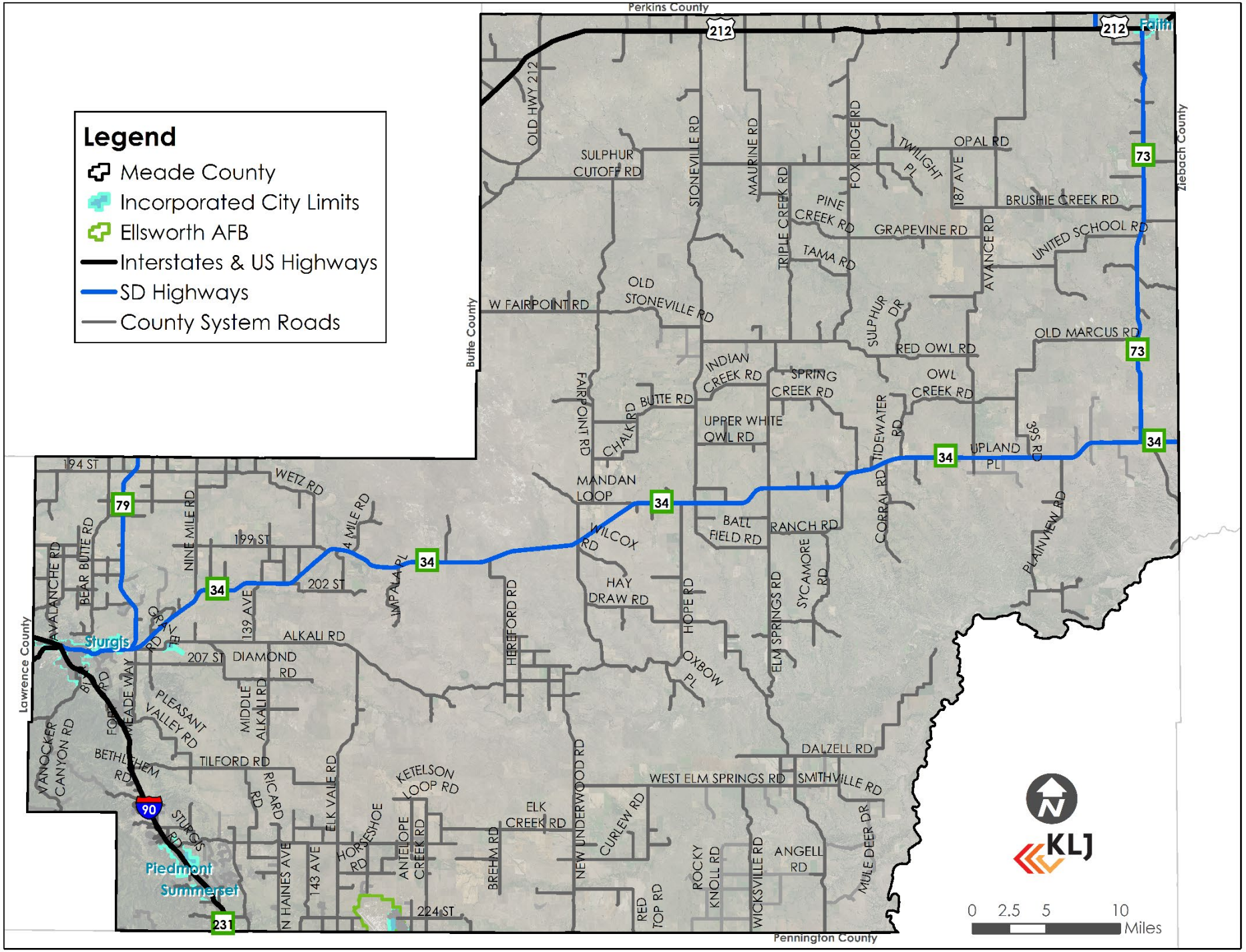
- Goal Areas

Safety	System Preservation	Mobility, Reliability, & Accessibility	Economic Vitality	Environmental Sustainability	Innovative Transportation Technologies
• Incorporate safety and security throughout all modes, for all users	• Preserve and maintain existing transportation system infrastructure	• Optimize mobility and connectivity for minimal travel times and delays	• Support industry and commerce through efficient movement of people and goods	• Prioritize environmental stewardship in development and maintenance of the system	• Introduce ITS technologies to reduce congestion, improve traffic management, and increase safety

Issues Discussion

Issues Discussion

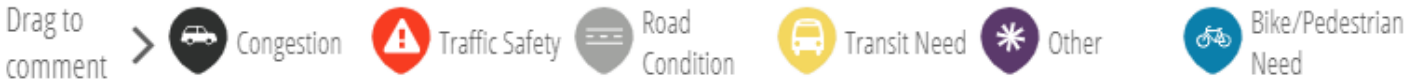
- *What transportation needs exist in Meade County?*
  - How has development affected travel?
  - Is travel to/from certain locations difficult because of road condition or capacity?
  - What routes could be added to make travel easier? What routes could be improved?
  - Does bike/ped travel feel convenient and safe? How about UTV travel?
  - Do current transit services meet your needs?


Legend
Meade County
Incorporated City Limits
Ellsworth AFB
Interstates & US Highways
SD Highways
County System Roads
Perkins County
Butte County
Lawrence County
Ziebach County
Pennington County
Faith
Sturgis
Piedmont
Summerset
212
73
34
79
90
231
OLD HWY 212
SULPHUR CUTOFF RD
STONEVILLE RD
MAURINE RD
FOX RIDGE RD
TWILIGHT PL
OPAL RD
187 AVE
BRUSHIE CREEK RD
PINE CREEK RD
TRIPLE CREEK RD
GRAPEVINE RD
AVANCE RD
UNITED SCHOOL RD
TAMA RD
OLD STONEVILLE RD
W FAIRPOINT RD
SULPHUR DR
RED OWL RD
OLD MARCUS RD
INDIAN CREEK RD
SPRING CREEK RD
OWL CREEK RD
FAIRPOINT RD
CHALK RD
BUTTE RD
UPPER WHITE OWL RD
TIDEWATER RD
UPLAND PL
396 RD
MANDAN LOOP
BALL FIELD RD
RANCH RD
CORRAL RD
PLAINVIEW RD
WILCOX RD
HAY DRAW RD
HOPE RD
SYCAMORE RD
ELM SPRINGS RD
OXBOW PL
HEREFORD RD
194 ST
WETZ RD
NINE MILE RD
4 MILE RD
199 ST
202 ST
IMPALA RD
AVALANCHE RD
BEAR BUTTE RD
GRAVEL RD
139 AVE
ALKALI RD
207 ST
DIAMOND RD
MEADE WAY
PLEASANT VALLEY RD
MIDDLE ALKALI RD
VANOCKER CANYON RD
BETHLEHEM RD
TILFORD RD
RICARD RD
ELK VALLE RD
KETELSON LOOP RD
ELK CREEK RD
STURGIS RD
N HAINES AVE
143 AVE
HORSESHOE RD
ANTELOPE CREEK RD
BREHM RD
NEW UNDERWOOD RD
CURLEW RD
DALZELL RD
WEST ELM SPRINGS RD
SMITHVILLE RD
ROCKY KNOLL RD
WICKSVILLE RD
ANGELL RD
MULE DEER DR
RED TOP RD
224 ST
KLJ
0 2.5 5 10
Miles

Social Pinpoint Overview

https://Meadecounty.transportationplan.net

- Webpage
- Interactive Map Survey



Meade County Master Transportation Plan

Public Input Meeting

Existing Conditions, Issues and Needs

September 2021

ENGINEERING, REIMAGINED

SINCE 1938

KLJENG.COM

KLJ

Public Input Meeting 2

ATTENDANCE LIST

KLJ

Meade County Master Transportation Plan

Tuesday, June 28, 2022

Name	Organization/Business/Address/Email
Cassidy Trapp	KLJ Rapid City
Kim Anderson	Box 77 Piedmont kim.ander311@gmail.com
Steve Grabill	KLJ Rapid City
Pat Keegan	BlackHawk amcek5@gmail.com
Todd Woods	Meade County
Jack Parks	Piedmont City Counsel VP
Sarah Gilkerson	SDDOT
Teresa Thompson	Piedmont Resident
JARED HICOZAUS	PETE LIEN & SONS
Jennifer Bergstrom	Meade County
TALBOT Wiczorek	Meade County
Nathan Jagim	Meade Co. Hwy

10

ATTENDANCE LIST

KLJ

Meade County Master Transportation Plan

Tuesday, June 28, 2022

Name	Organization/Business/Address/Email
Bill & Teri Rich	Meade Co
Mike Lee	Simon Contractors mlee@simonteam.com
Larry Dean	SDDOT
Hailey Snyder	Black Hills Council of Local Gov.
Lori Schumacher	City of Box Elder
Phil Anderson	Piedmont
Mike Bartl	Black Hawk
Mike Gollihar	Pete Lien & Sons mgollihar@petelien.com

ATTENDANCE LIST

Meade County Master Transportation Plan

Wednesday, June 29, 2022

Name	Organization/Business/Address/Email
Cassidy Trapp	KLJ Rapid City
Steve Grabill	KLJ Rapid City
Steve Gramm	SDDOT
Bill Rich	Meade Co.
Ron Rosenboom	DOT Commission
Jennifer Bergstrom	Meade Co.
Nathan Jaeger	Meade Co.

Meade County Master Transportation Plan

Public Input Meeting Presentation

June 28, 2022

ENGINEERING, REIMAGINED

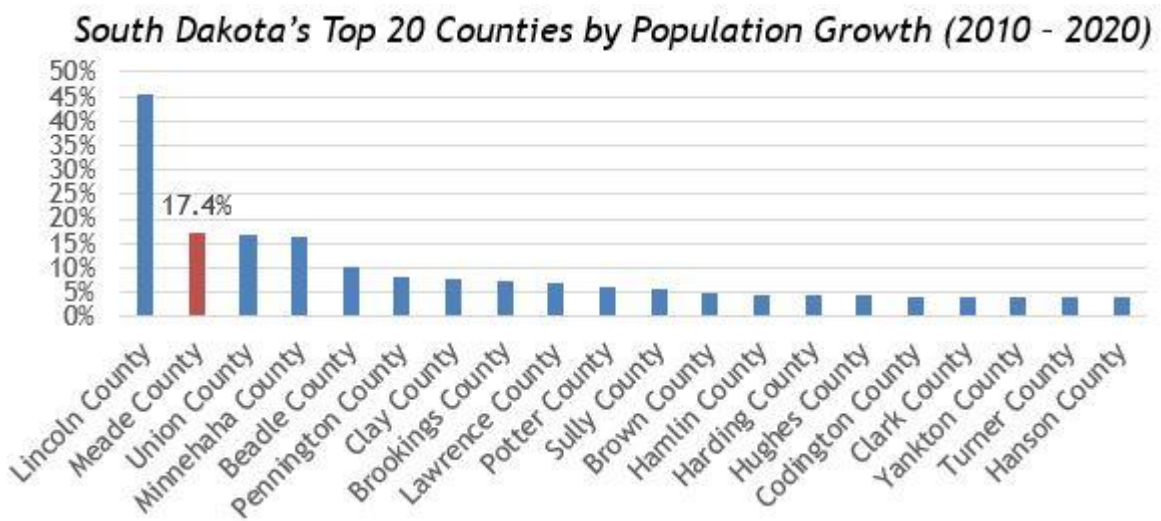
SINCE 1938

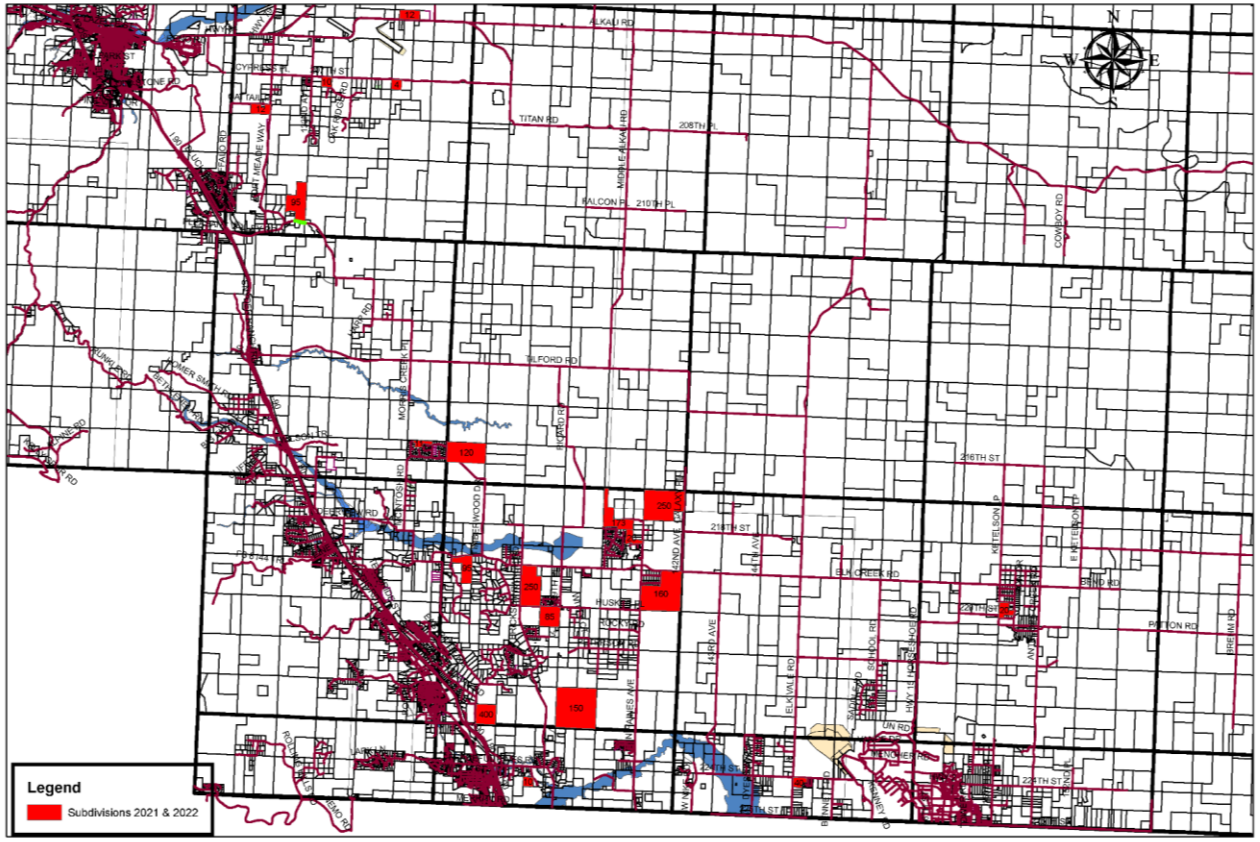
KLJENG.COM

KLJ

MTP Analysis Efforts

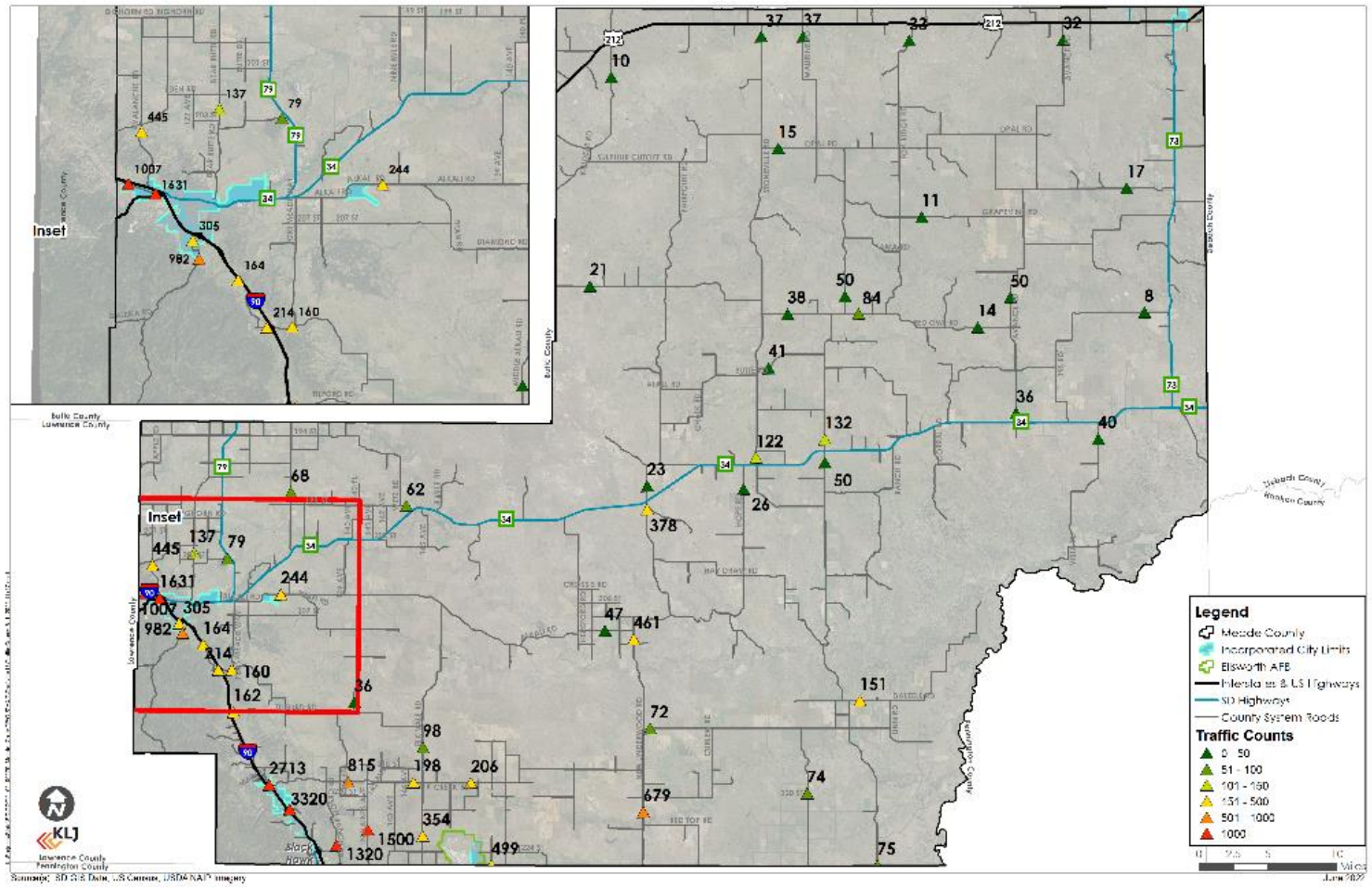
- Growth and Trends





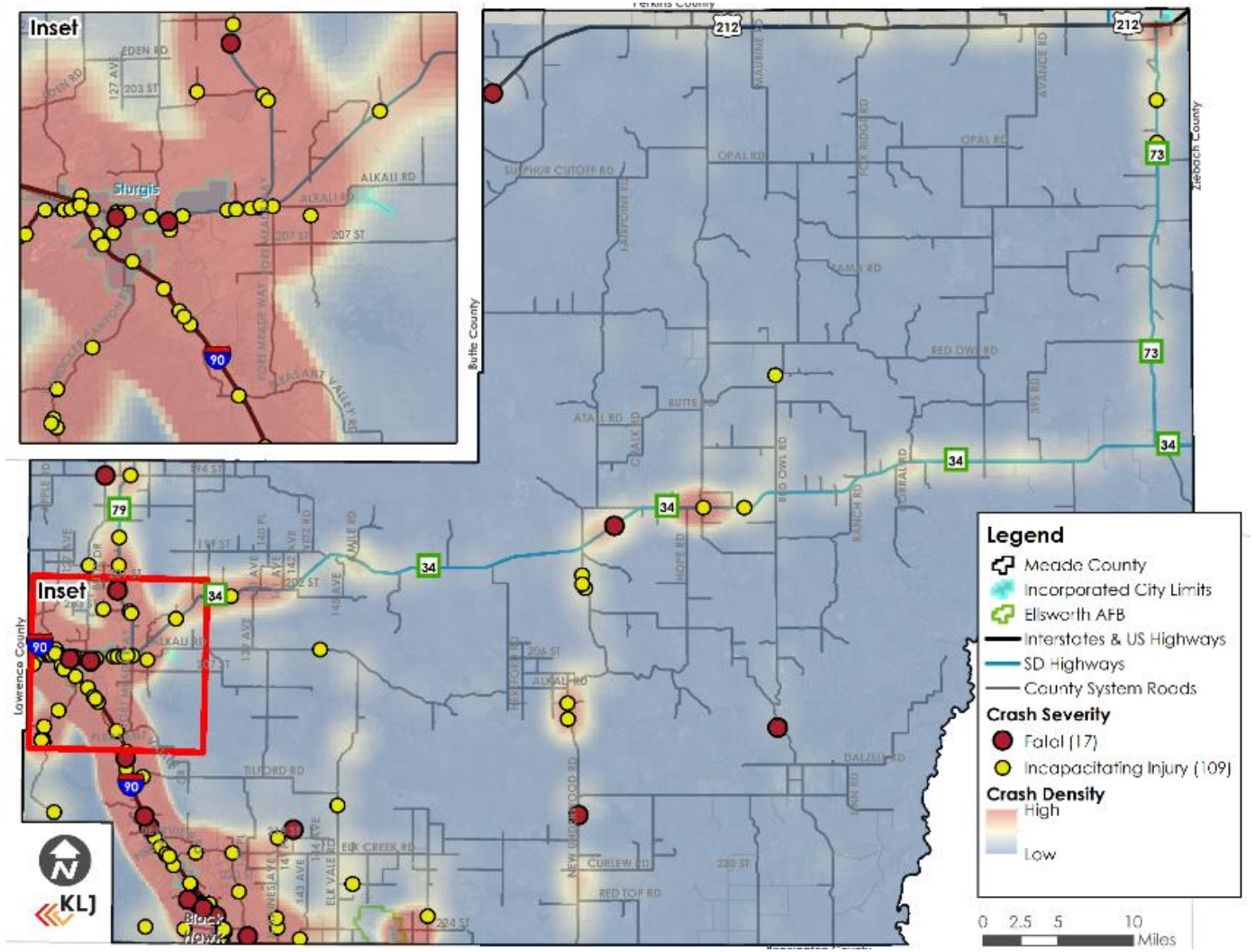
MTP Analysis Efforts

- Traffic Analysis



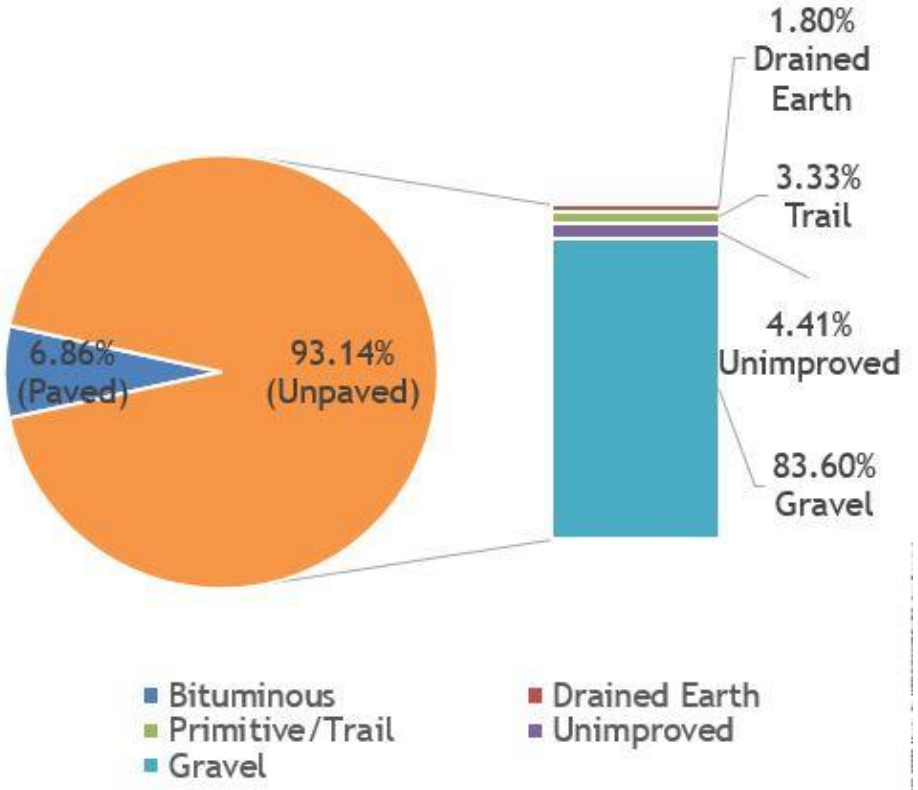
MTP Analysis Efforts

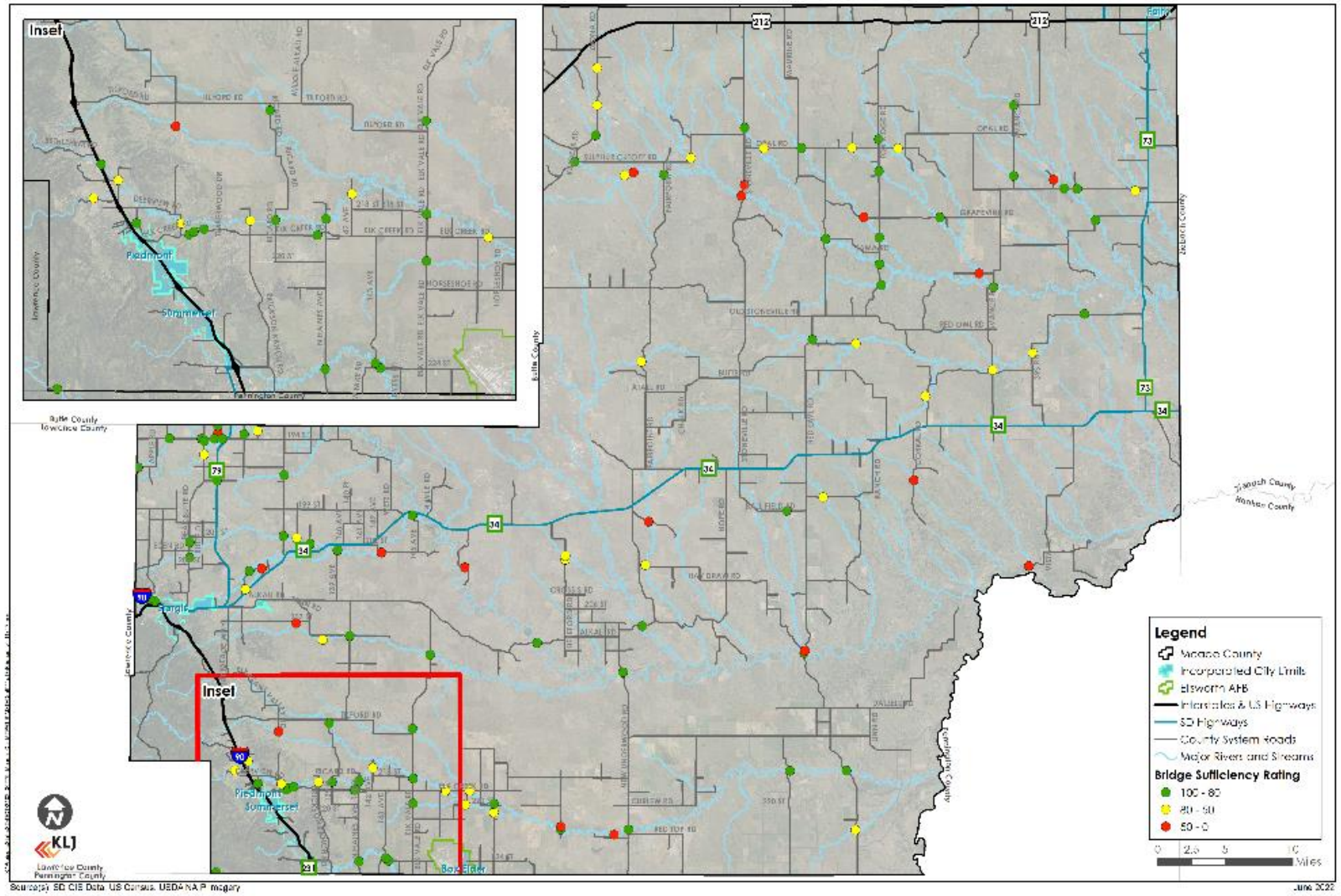
- Safety Analysis



MTP Analysis Efforts

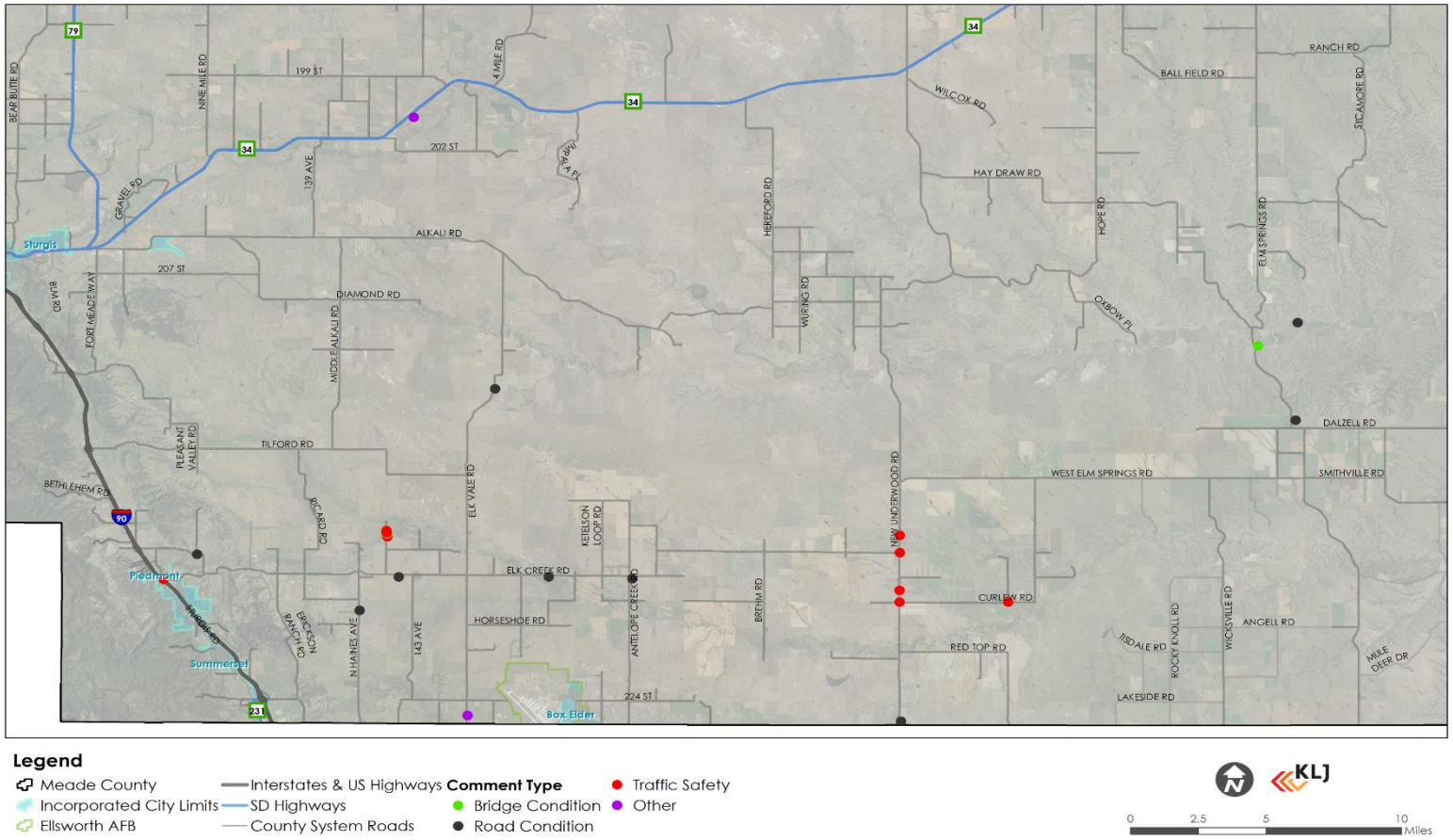
- Facility Conditions Analysis – All Modes





MTP Analysis Efforts

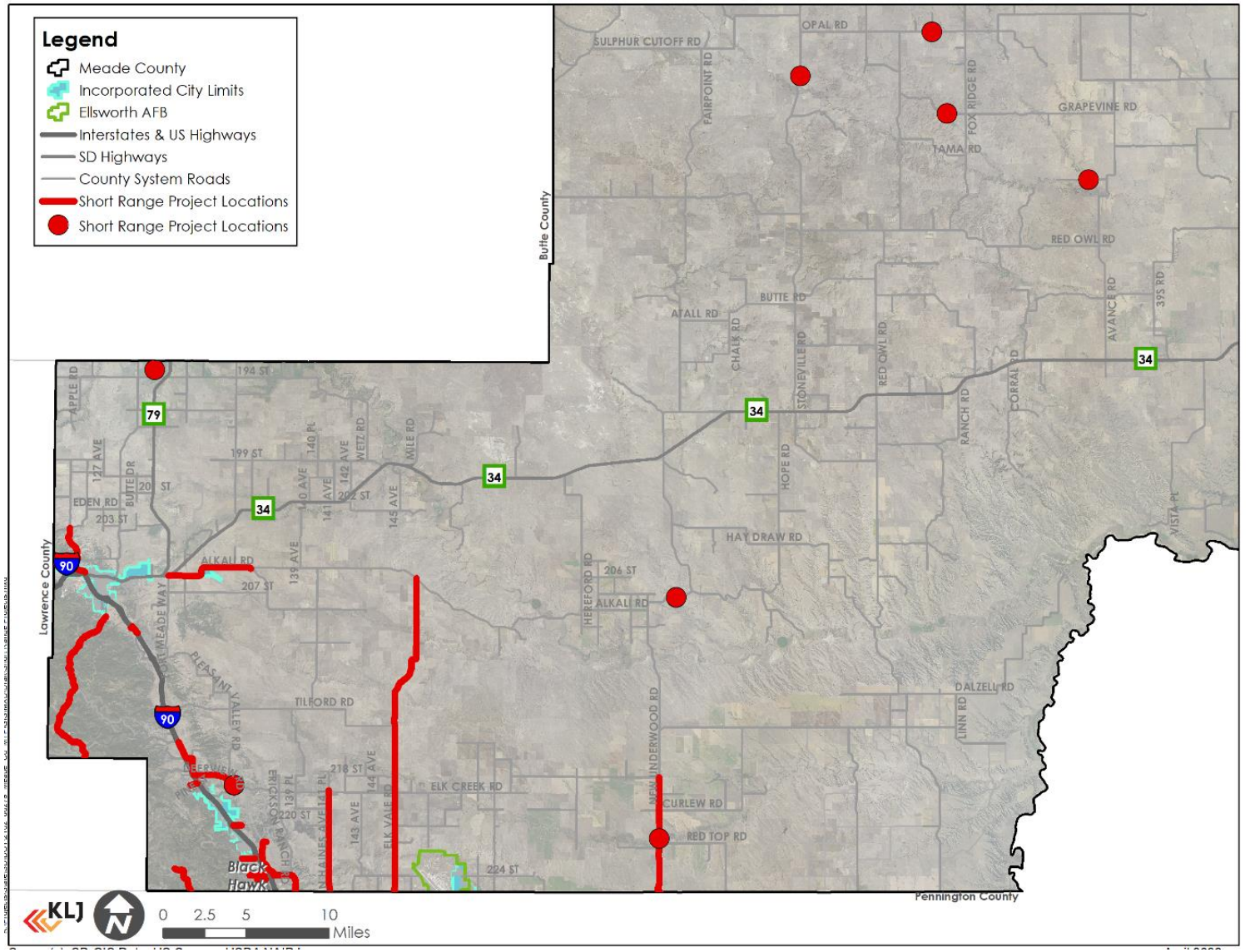
- Technical and Public Input
  - Study Advisory Team
  - Public Input Meetings – Sept. 2021
  - Website/Social PinPoint
  - Meade County Commission
  - Metropolitan Planning Organization



Report Recommendations

Short Range Roadway Projects

Corridor/Project Location	Description	Total Project Cost (in Thousands)	Source
Multiple Projects	Chip Seal	1,510	County 5-Year Plan
Structure No. 47-541-100, 9 mi. S. & 5 mi. E. of Maurine	Replace Structure (Already in Progress)	1,867	County 5-Year Plan
Structure No. 47-635-190, 6 mi. E. & 12 mi. N. of White Owl on Whitetail Rd.	Replace Structure	550	County 5-Year Plan
Structure No. 47-549-149, 21.1 mi. W. & 13.9 mi. S. of Faith	Replace Structure	462	County 5-Year Plan
Rolling Hills Rd from Nemo Road North 2 mi.	Fix Drainage	34	County 5-Year Plan
N Haines Ave. from Pennington Co. line 6.12 mi. North to Elk Creek Rd.	Change to 24' Deck with 4' Shoulders	6,500	County 5-Year Plan
Alkali Rd from Ft. Meade Way east 5 mi. to Titan Rd.	2" overlay	2,000	County 5-Year Plan
New Underwood Rd from Penn. Co. line to Elk Creek Rd 7 miles	Reconstruct & New AC Surfacing	7,500	County 5-Year Plan
Mnt. Shadows Rd. off of 2nd Street in Piedmont	Chip Seal	31	County 5-Year Plan
Norman Ave. from Peaceful Pines N to end of county asphalt	Chip Seal	78	County 5-Year Plan
Deadwood Ave and Peaceful Pines east of I-90 to Pennington County Line	Chip Seal	67	County 5-Year Plan
Sidney Stage Rd	Full depth reclam and AS Surfacing	1,100	County 5-Year Plan
Structure No. 47-460-128, 11.8 mi S of Hwy 212 on Stoneville Rd.	Replace Bridge	400	County 5-Year Plan
Avalanche Rd from Alder Pl. N 3 mi to Eden Rd	Reconstruct & New AC Surfacing	3,200	County 5-Year Plan
Ft. Meade Way from Hwy 34 2.4 miles South	Regrade	1,000	County 5-Year Plan
Structure No. 47-060-305, 3 mi. E &12.5 mi. N of Sturgis (130th Ave)	Replace Bridge	500	County 5-Year Plan
Engineer North 2.4 miles Ft. Meade Way	PE Engineering	35	County 5-Year Plan
Structure No. 47-114-553, 8.4 mi. E &12.3 mi. S. of Sturgis (Deerview Rd.)	Replace Bridge	750	County 5-Year Plan
Deerview Rd.	Reconstruct & New AC Surfacing	6,000	County 5-Year Plan



Long Range Roadway Projects

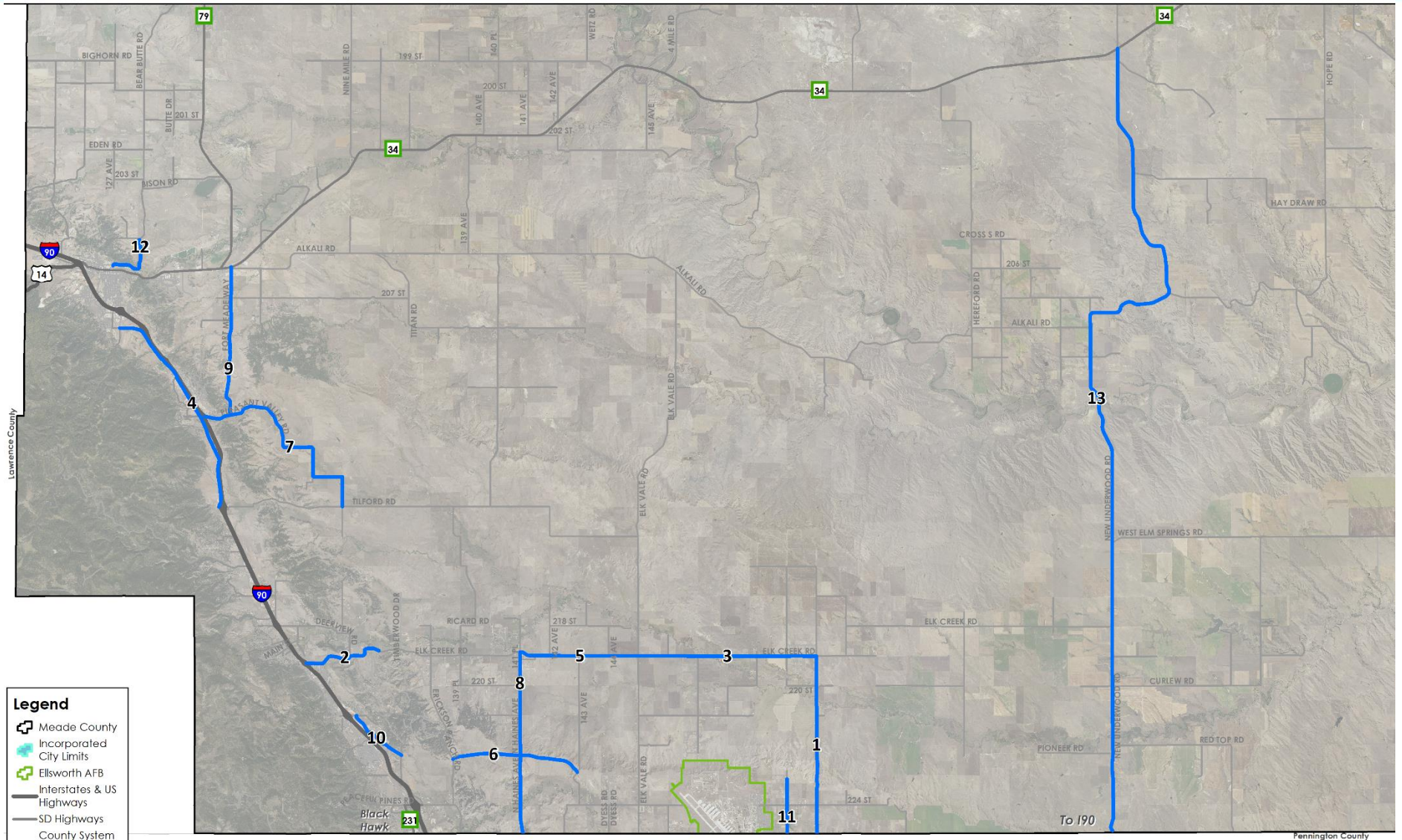
Map ID	Corridor	From	To	Description	Source	Estimated Cost ($M)
1	Antelope Creek Road	Pennington County Line	Elk Creek Road	Asphalt paving	2016 Transportation Plan	10.2
2	Elk Creek Road	I-90 Exit 46	Edgewood Place	Acquire ROW for improvements, Realignment of roadway	2016 Transportation Plan	4.8
3	Elk Creek Road	Elk Vale Road	Antelope Creek Road	Asphalt paving	2016 Transportation Plan	10.2
4	I-90 Service Road	Exit 40	Vanocker Canyon Road	Corridor Preservation	2016 Transportation Plan	12.8
5	Elk Creek Road	Elk Vale Road	Haines Avenue	Asphalt paving to rural arterial	2016 Transportation Plan	6.9
6	New Corridor	Erickson Ranch Rd	143rd Ave	New collector road	MCC Study 2020	7.5
7	Pleasant Valley Road	I-90 Exit 37	Fort Meade Way	Asphalt Paving	Newly Identified	13
8	Haines Ave	Pennington County Line	Elk Creek Road	Reconstruct	Newly Identified	10.4

Special Roadway Projects

- Present unique challenges
- Potentially multi-jurisdictional

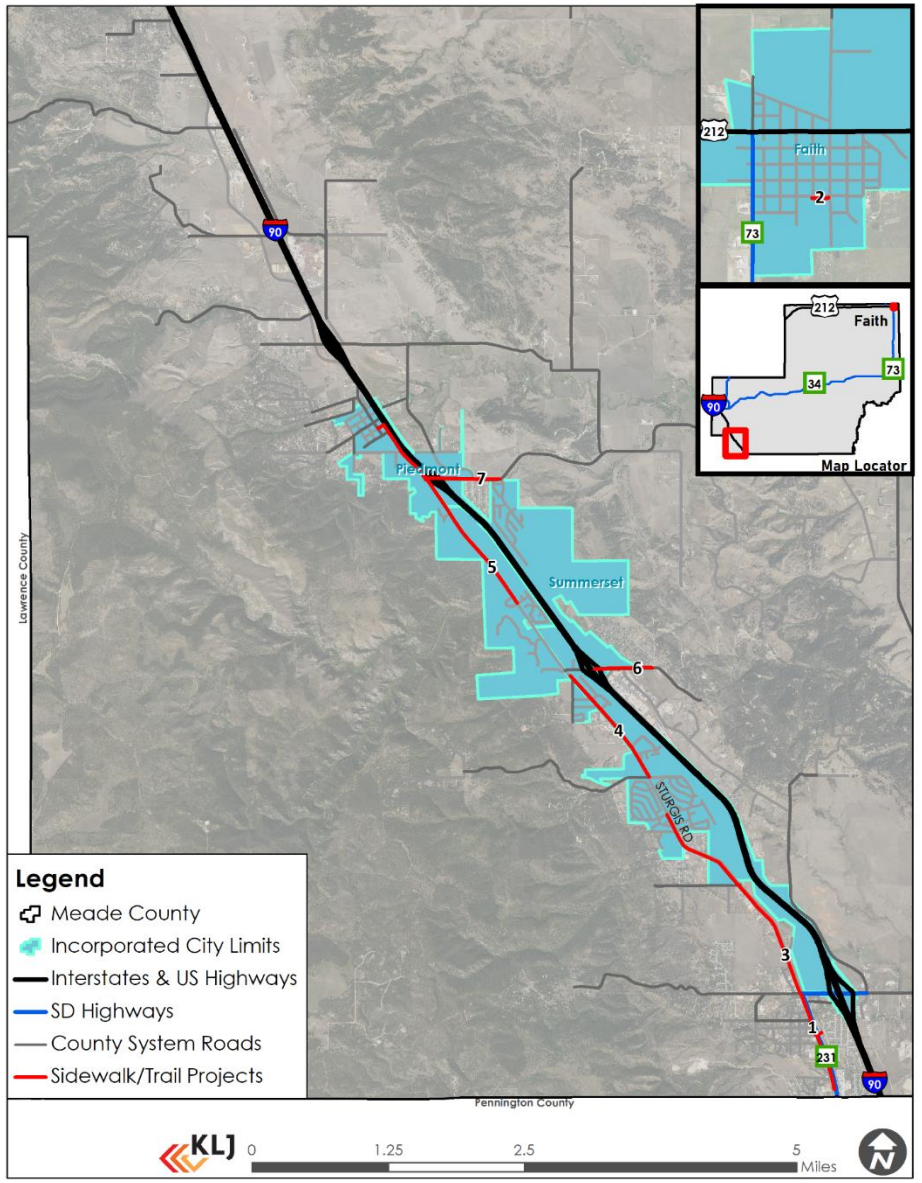
Map ID	Corridor	From	To	Description	Source	Estimated Cost ($M)
9	Fort Meade Way	Pleasant Valley Road	SD 34	Pave Roadway	Public Meeting Feedback	8.7
10	Quaal Road	Stagestop Road	Norman Avenue	Convert to three-lane with TWCLTL	Public Meeting Feedback	3.5
11	150th Avenue	Pennington County Line	North (Eagle Ranch Rd)	Asphalt paving as minor arterial	2016 Transportation Plan	3.1
12	Sly Hill Rd	Junction Ave	Foothills Rd	Pave Roadway	SAT Feedback	3.3
13	New Underwood Rd	I-90	SD 34	Corridor Study, Assess Needs	SAT Feedback	0.2

Long Range and Unique Road Projects



Bike/Ped Projects

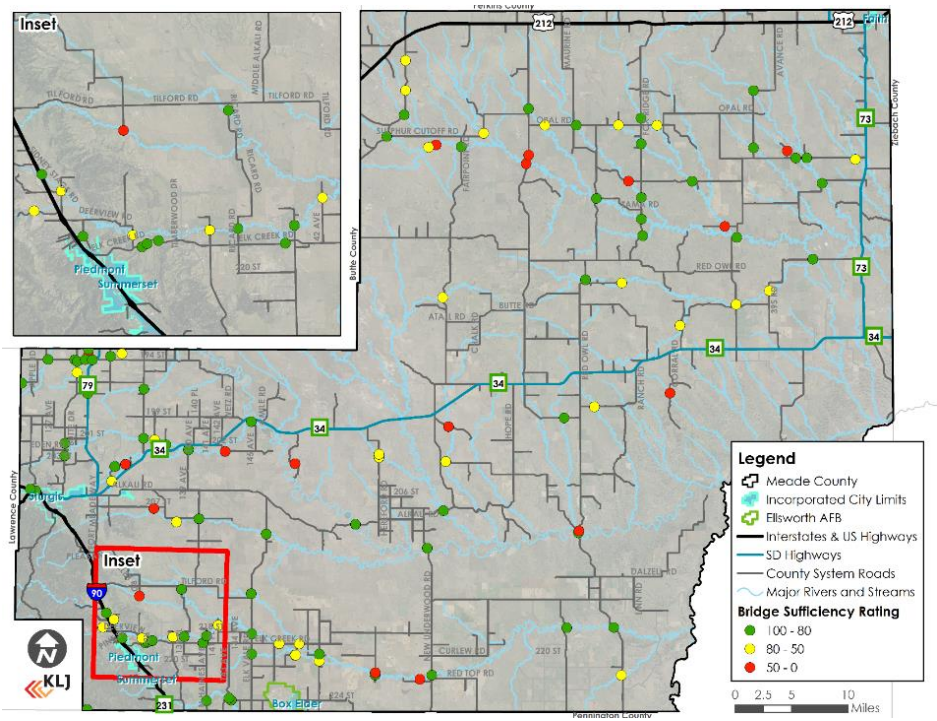
Map ID	Corridor	From	To	Length (Miles)
1	Elm St in Black Hawk	Black Hawk Elementary	Meadow Rose Ln	0.2
2	W 1st Ave in Faith	5th St	1st St	0.07
3	Sturgis Rd	County Line	Leisure Ln/Castlewood Dr	3.1
4	Sturgis Rd	High Meadows Rd	Stagestop Rd	1.19
5	Sturgis Rd	Stables Dr	Park St	2.14
6	Stagestop Rd	Renata Dr	I-90 Bridge	0.53
7	Elk Creek Rd	Sturgis Rd	Glenwood Dr	0.67



Bridge Projects

- Three categories
  - Primary system
  - Secondary system
  - Single access
- 30 lowest ranked bridges

Route Type	Bridge Number	Rural Collector	Struct. Deficient	Load Posted	Low Condition	Daily Traffic	B.I.G. Score	Budgetary Replacement Cost
Primary System	47-460-128	x	x		4	233	37.0	$600,000
	47-378-444	x			5	233	36.0	$4,074,000
	47-459-135	x	x		3	233	25.3	$1,050,000
	47-750-132	x		x	5	29	36.5	$814,000
	47-499-460	x	x		3	60	27.3	$431,000
	47-065-619	x			6	500	35.0	$1,115,000
	47-170-612	x			7	1895	30.0	$777,000
	47-363-476	x			6	280	29.2	$3,675,000
	47-117-558	x			6	240	21.0	$494,000
	47-050-322	x	x		4	33	14.5	$440,000
Secondary System	47-183-390		x	x	1	50	50.0	$339,000
	47-549-149		x	x	2	18	56.7	$582,000
	47-541-100		x	x	4	59	54.5	$1,302,000
	47-093-404		x	x	4	33	46.7	$524,000
	47-060-305		x	x	4	33	44.0	$370,000
	47-270-575		x		4	56	37.0	$840,000
	47-475-100			x	6	60	55.8	$592,000
	47-375-253		x		4	65	31.6	$339,000
	47-580-338			x	5	10	54.9	$499,000
	47-320-392			x	5	55	47.3	$872,000
Single Access	47-377-117		x	x	2	30	67.0	$539,000
	47-110-518		x	x	1	10	60.9	$539,000
	47-635-190		x	x	3	10	58.9	$1,124,000
	47-320-585		x	x	4	10	45.9	$599,000
	47-243-401		x	x	4	10	52.9	$1,176,000
	47-120-441			x	0	5	58.0	$630,000
	47-689-123			x	5	21	60.0	$432,000
	47-382-368		x	x	4	15	44.9	$490,000
	47-088-539		x		4	30	38.0	$615,000
	47-079-547			x	6	11	49.9	$524,000



Financial Scenarios

- Use of Known Funding
  - Phasing projects
  - Partnerships
  - Acknowledge high inflation
- Influx of New Funding
  - Preparation of “shovel ready” projects for grant applications
  - Conduct corridor studies to determine priority and needs (New Underwood Road)

Meade County Master Transportation Plan

Public Input Meeting Presentation

June 28, 2022

ENGINEERING, REIMAGINED

SINCE 1938

KLJENG.COM

KLJ

Meade County Master Transportation Plan
Public Input Meeting #2
June 28, 2022
5:30 – 7:00 P.M. MST
Piedmont, SD

Meeting Discussion Points

Meeting Attendees:

- Kim Anderson
- Pat Keegan
- Todd Woods
- Jack Parks
- Sarah Gilkerson
- Teresa Thompson
- Jared Hicozaus
- Jennifer Bergstrom
- Talbot Wieczorek
- Nathan Jagim
- Steve Grabill
- Bill & Jeri Rich
- Mike Lee
- Larry Dean
- Kailey Snyder
- Lori Schumacher
- Phil Anderson
- Mike Bartel
- Mike Geliher
- Cassidy Trapp

- **Welcome & Presentation**
  - Steve Grabill welcomed attendees to the meeting.
  - Steve Grabill presented the MTP Analysis Efforts for the growth and trends, traffic, safety, and facility conditions of the county.
  - Steve Grabill presented the report recommendations. The recommendations consisted of the short range and long-range roadway projects along with special roadway projects, bike and pedestrian projects, and bridge projects.
  - Steve Grabill presented on the different financial scenarios and invited attendees to participate in a discussion after the presentation.

- **Public Comments**
  - Following the presentation, Steve Grabill led a discussion of transportation needs and issues within Meade County and received any comments attendees wished to make regarding the draft Report.
  - Attendee comment: Is the difference between truck traffic and car traffic considered?
    - Steve Grabill explained that the different types of traffic are considered in the MTP. There is limited traffic data for truck traffic, but the number of trucks is increasing and can have a profound impact on road conditions.
  - Attendee comment: Where were the two fatalities in Piedmont that were shown on the map?

- Larry Dean explained that the SD DOT has an interactive map that shows where fatalities occur and gives a brief description about the crashes.

- Attendee comment: How does Quaal Rd, which is in the road district, play a part in the long-range plans, because it is not a county road?
  - The MTP classified Quaal Rd as a Special project because it won't necessarily be a County Rd project. However, coordination between the County, Summerset, and the Road District was recommended.
- Attendee comment: Is there any reconstruction of Deerview Rd in the long-range plans?
  - Steve Grabill explained that Deerview Rd was shown as a short-range reconstruction project with new AC surfacing.
- Attendee comment: Is there any reconstruction of Sydney Stage Rd in the long-range plans?
  - Steve Grabill explained that the MTP recommends Sydney Stage Rd be a short-range project with full depth reclamation and asphalt surfacing.
- Attendee comment: Can the plans be relabeled based on the direction the road lies from interstate, because it would make it easier to understand?
  - Steve Grabill stated that he would review the labeling of the plans.
- Attendee comment: When is the SD DOT going to give Piedmont back their ROW along the western side of I-90? The State took the east side of Piedmont Sturgis Road ROW when the interstate came through in the 1950s. Piedmont has been trying for the last 17 years to have the ROW returned to them. Piedmont was told the ROW would be returned to them so a three-lane road could be constructed. It is for the safety of the public that a wider Sturgis Road needs to be constructed, because people drive so fast on the frontage road and the posted 35-mph speed limit is way too fast.
  - Attendees agreed that Sturgis Road is too narrow. Larry Dean was going to look into the ROW and who has jurisdiction of it.
- Attendee comment: It sounds like the State wants Piedmont to pay to pave the shared use path?
  - Larry Dean recommended that the City could apply for a TAP grant to help cover the costs of paving the shared use path.
- Attendee comment: Is the information from the MTP shared with the SDDOT, so they can use it for their future projects?
  - Steve Grabill explained that KLJ has had ongoing communication with the SDDOT, who regularly attended the Study Advisory Team meetings. Larry Dean and Sarah Gilkerson are here from the DOT tonight to be a part of the public meetings.
- Attendee comment: Who pays for the cost of the planning?
  - Steve Grabill explained that Meade County paid for 20% of the MTP and the SDDOT paid the remainder.
- Attendee comment: Does Meade County have haul road agreements?

- County staff explained that they typically don't have haul road agreements. Haul roads are such a small percentage of the truck volume.

- Attendee comment: Sly Rd has a history of sloughing and that should be accounted for.
  - Larry Dean explained that a good subgrade is needed for the road, which requires geotechnical recommendations. He recommended checking with the LTAP for local road recommendations for the subgrade and pavements.
- Attendee comment: Does Meade County put mag water on any of their roads?
  - County staff explained that the county is indeed putting mag water on certain roads. The application of mag water to the road's accounts for $400,000 of the counties' budget annually.

With no further input, the meeting was adjourned. Some attendees stayed for informal discussions after the meeting.

Meade County Master Transportation Plan
Public Input Meeting #2
June 29, 2022
5:30 – 7:00 P.M. MST
Sturgis, SD

Meeting Discussion Points

Meeting Attendees:

- Steve Gramm
- Bill Rich
- Ron Roseudoom
- Jennifer Bergstrom
- Nathan Jagim
- Steve Grabill
- Cassidy Trapp

- **Welcome & Presentation**
  - Steve Grabill welcomed attendees to the meeting.
  - Due to the small number of attendees the meeting was very short and most discussion was informal. Steve Grabill gave a PowerPoint presentation overview of the draft MTP to attendees.

- **Public Comments**
  - Following the presentation, Steve Grabill led a discussion of transportation needs and issues within Meade County.
  - Attendee comment: Does the MTP address the curves on Elk Creek Rd?
    - Steve Grabill explained that the curves were looked at, but on more of a system level. Detailed analysis of the curves along Elk Creek Road will be addressed in future project development for that corridor.
  - Attendee comment: Did the MTP look at continuing the service road from Tilford to Sturgis?
    - Steve Grabill explained that extending the road has been considered in the long range MTPs for quite some time. However, due to the length of the road and current ownership along the corridor, implementation would be a challenge.
  - County staff pointed out an error in a long-range projects table. Steve Grabill said he would correct the error.

County Commission Meeting 1

Meade County Master Transportation Plan
County Commission Presentation #1
October 26, 2021
9:30 – 10:00 A.M. MST

Meeting Discussion Points

- **Meeting Attendees**
  - Meade County Commission
  - Bill Rich
  - Nick Broyles
  - Steve Grabill
  - Commission Meeting Audience

- **Meeting Presentation**
  - Steve Grabill provided a self-introduction
  - Steve Grabill gave a brief overview of the project background and need.
  - Steve Grabill summarized the input received from the public and stakeholders in September. He said he was seeking early input from the Commission

- **Commissioner Comments**
  - New Underwood Road should be a State Highway. It has already received millions of dollars of funding from the County and the State should take it over.
  - The study should review the large subdivisions north of Elk Creek Road. Many of them are single access and need better access and better roads. Golden Valley and Timberland Park were named.
  - Need a new corridor extending north from Tilford Road.
  - Resources should be placed on roads with higher consistent ADT's rather than on Fort Meade Way. Brosz did environmental when Fort Meade Way was upgraded and NEPA requirements may have been met. The Commissioners felt that there were higher priorities within the County than paving Fort Meade Way, plus they felt that the State should take over Fort Meade Way.
  - Developments are increasing costs faster than they are providing revenues. Should consider impact fees, such as a one-time fee on platted lots. The Commission expressed significant concern over the ability to maintain infrastructure for existing and future developments.
  - A commissioner who attended the Piedmont Public Meeting highlighted the need for the County, Summerset, and the Road District to work together to resolve issues with Quaal Road.
  - If frontage roads are installed along I-90, the State should take the lead on them. It might make more sense for the county to extend roads ½-1 mile back from I-90.

Meade County Master Transportation Plan

County Commission Presentation
Existing Conditions, Issues and Needs

October 2021

ENGINEERING, REIMAGINED

SINCE 1938

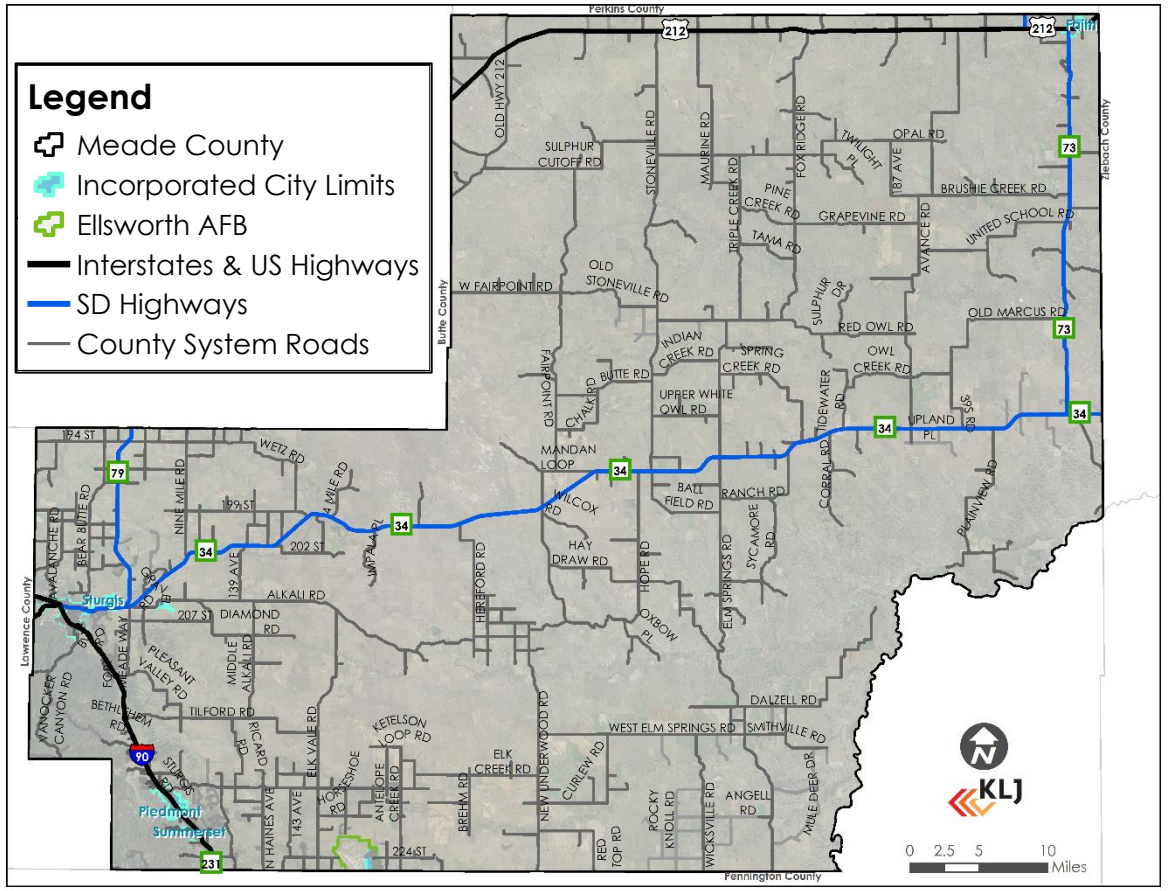
KLJENG.COM

KLJ

Introduction

- Meade County in process of updating its MTP (20-year horizon)
- Update responds to changing conditions within Meade County
  - Increasing residential development
  - Growing + diversifying economy
  - Changing travel patterns and volumes
- Plan → set of goals and project recommendations which address current and future needs

Study Area



Engagement – Week of Sept 27th

Public Meeting Input Received

- Piedmont Meeting
  - Quaal Road – Road District can't handle traffic from proposed subdivision
  - Can Meade County take over Quaal Road?
- Sturgis Meeting
  - Fort Meade Way needs to be paved
  - High increase in car and truck traffic along Fort Meade Way
  - Need for future roads?

Engagement – Week of Sept 27th

Stakeholder Meeting Input Received

- Stakeholder Group #1
  - Fort Meade Way should be a State Highway
  - New Underwood Road has similar issues to Fort Meade Way
  - Subdivisions should have more than one access
  - Need I-90 frontage road from Tilford to Sturgis
  - Need to highlight busy roads approaching a threshold for paving
- Stakeholder Group #2
  - Prairie Hills Transit has upped their service for elderly and users with a medical condition due to COVID-19
  - Additional funding support would be appreciated

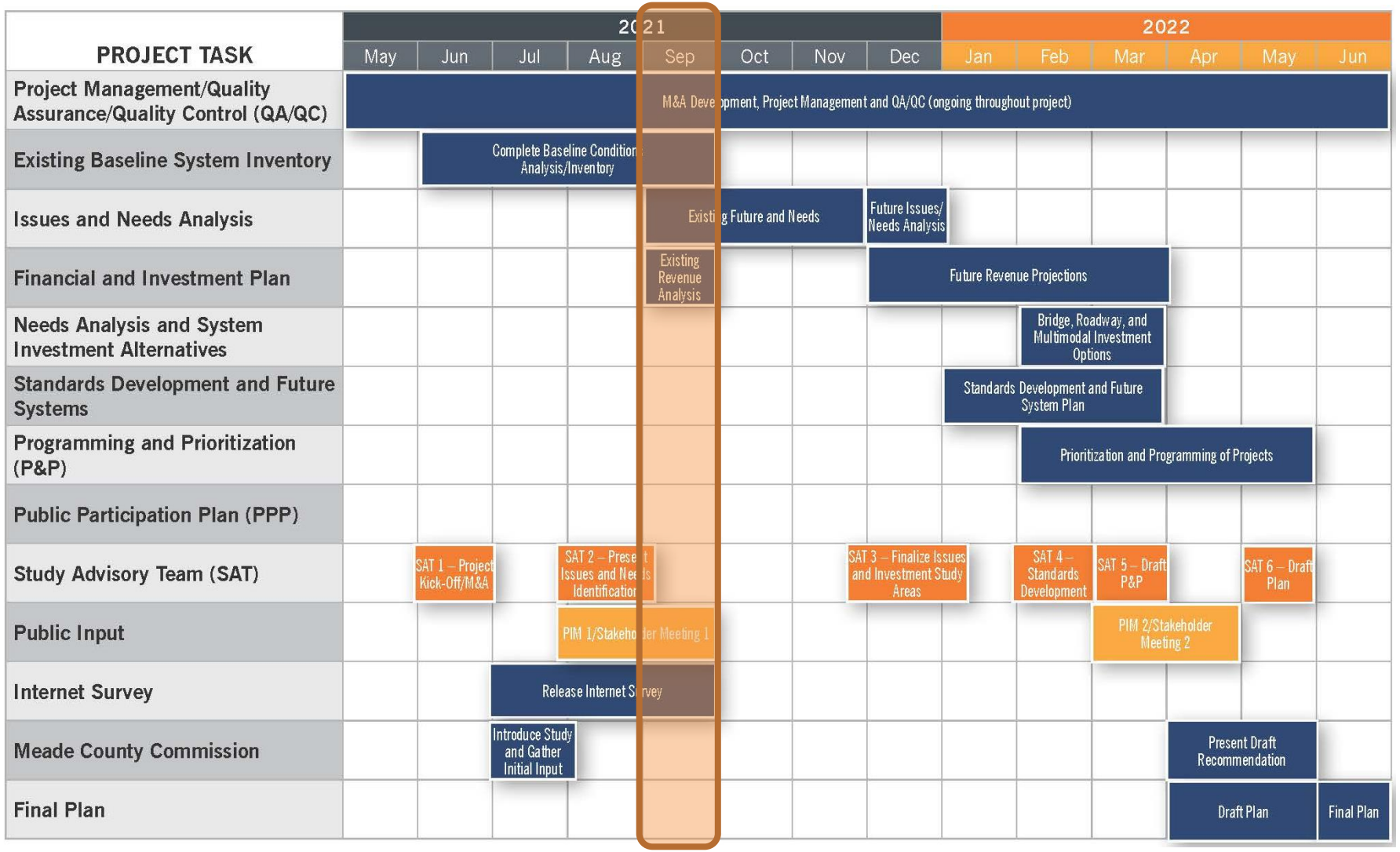
Project Website

https://Meadecounty.transportationplan.net

- Webpage
- Interactive Map Survey

Schedule

We are here



Meade County Master Transportation Plan

County Commission Presentation
Existing Conditions, Issues and Needs

October 2021

ENGINEERING, REIMAGINED

SINCE 1938

KLJENG.COM

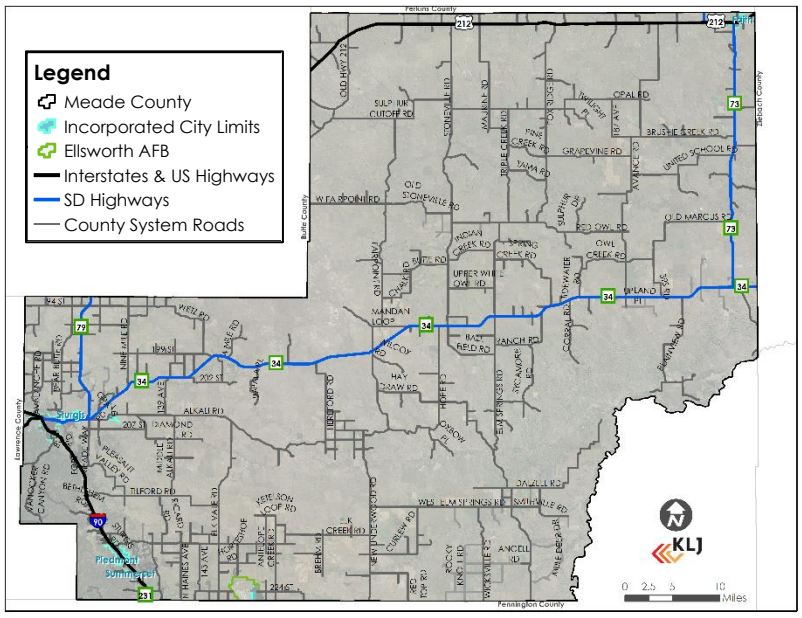
KLJ

NOTICES
and
SOCIAL MEDIA

Meade County Master Transportation Plan

Background

Meade County is in the process of updating its Master Transportation Plan (MTP), a key planning document that will guide transportation investment and policy over the next 20 years. The MTP update is a collaborative effort between Meade County and the South Dakota Department of Transportation (SDDOT). The MTP will reflect needs and priorities with respect to the Meade County transportation system.



The MTP update responds to changing conditions within Meade County, with significant growth occurring since the current MTP was adopted. Residential development has grown along the I-90 corridor, and the economy continues to diversify as population increases. These processes are expected to contribute to changes in traffic levels and patterns over the coming years. The MTP will consider current trends, anticipate future needs, and support Meade County in addressing further population growth and economic development.

The MTP has a 20-year planning horizon which considers transportation needs through the year 2045. Recent trends suggest continued development within both urban and rural areas of the County over the next two decades. The Plan will establish a set of goals and project recommendations which address current needs and position the county to harness the benefits of future growth.

The Meade County MTP emphasizes a balanced approach to meeting future transportation demands. A focus on improving sustainable transportation options such as biking, walking and public transit reduces roadway congestion and supports stewardship of the County's natural resources. The MTP will consider a range of project recommendations in order to address the community's diverse transportation needs.

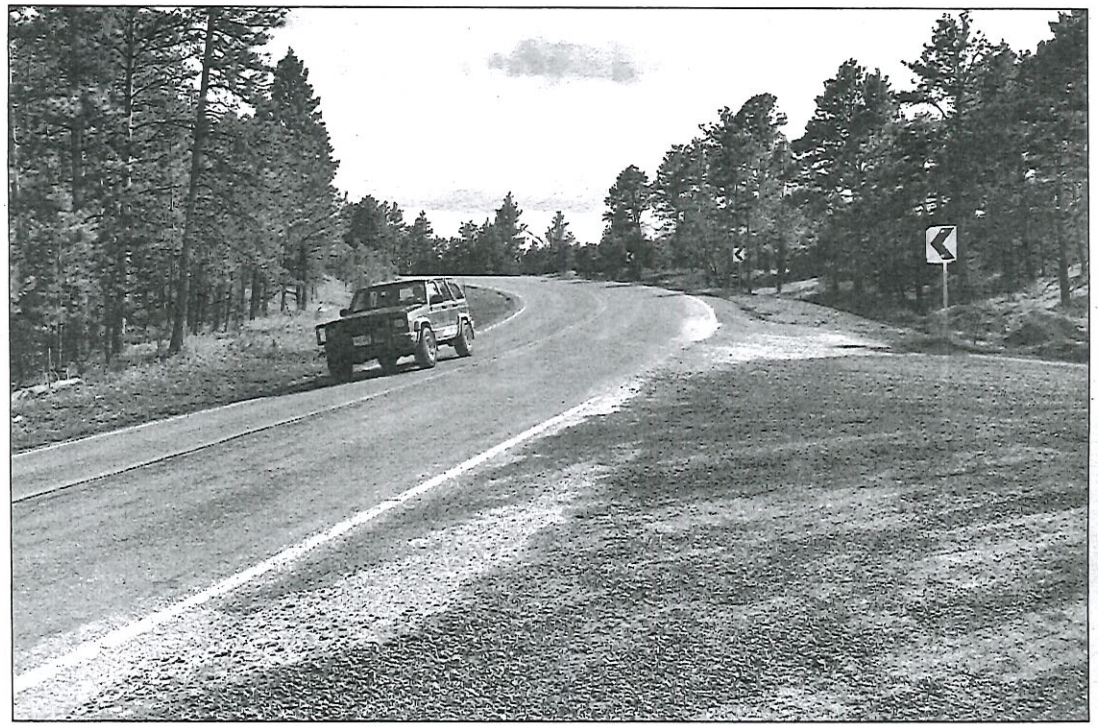
Stay Connected & Get Involved

Members of the public are invited to visit the Meade County MTP website at https://meadecounty.transportationplan.net. Visitors to the website are encouraged to:

- Provide input on issues and needs using the project Interactive Map tool
- Complete the Transportation Plan Goals Survey
- Review additional project information and the project schedule

Written comments should be sent to the attention of KLJ, Attn: Meade County MTP, 330 Knollwood Drive, Rapid City, SD 57701, or by email to steve.grabill@kljeng.com. Written public comment will be accepted on the Meade County MTP through October 15th, 2021.

Meade County Commission hears update on transportation plan



Meade County is in the process of updating its master transportation plan. The plan will include changing conditions within Meade County which may affect traffic volumes and patterns. *Pioneer file photo*

By Deb Holland
Black Hills Pioneer

STURGIS – Meade County is in the process of updating its master transportation plan given that the county continues to see substantial population growth.

Steve Grabill, with KLJ engineering of Rapid City, said KLJ was selected by Meade County and the South Dakota Department of Transportation to update the county's plan. Grabill said Tuesday at the Meade County Commission meeting that the engineering firm and county are in the preliminary stages of the study mainly gathering data, analysis and issues identification.

The plan will provide a 20-year long range transportation plan for county and is

TRANSPORTATION Pg 6

[Pioneer Photo of the Day]

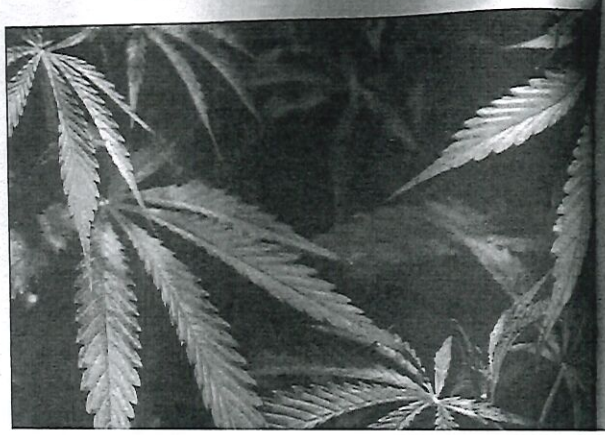
Road work at th intersection of 1(and Michigan Str

SPEARFISH — The city of Spearfish Streets Department has begun preparing the intersection of 10th and Michigan streets to patch and overlay, Thursday. Please use caution when driving in this area, be on the lookout for workers and equipment, and choose an alternate route when possible.

The intersection will be closed to through traffic beginning Monday, for approximately two to three days, or until the asphalt is completed. Detours will be in place during the closure. Traffic north of the intersection will need to go north on 10 west on Rushmore Str continue their route f Avenue. Traffic south tersection will need to south to Jackson Boul go west on Lincoln Str north on State Street, on Michigan Street, a ue their route from N Street. Please use caut driving in this area an your routes around the tion during the closure.

For more information tact Spearfish Public W Department at (605) 642

Whitewood prepp cannabis ordinan for 1st reading



from Pg 2

TRANSPORTATION

being updated because of sizeable growth happening in Meade County, Grabill said. The county had the second fastest population growth among South Dakota counties between 2010 and 2020. According to the 2020 Census, population grew by 4,418 – or 17.4% - during last decade.

Within the study, KLJ took a look at some of the larger subdivisions that are beginning to spring up around the county and how that will impact transportation, especially along the I-90 corridor south of Sturgis, Grabill said.

KLJ hosted two public meetings in September, one in Piedmont and another in Sturgis, to gather public comment on the plan.

The Piedmont meeting brought in a large group of concerned citizens who wanted to address a large development being planned in the Summerset area.

"Their concern was that they have a road district for Quall Road that is really intended just to handle the traffic that is there today. They are very concerned that this (the new subdivision) is going to overwhelm that road," Grabill said.

He told the board that Quall Road is a very narrow high-access corridor that was really never designed to handle the traffic it will carry. Citizens at the Piedmont meeting told KLJ they want the county to take a more pro-active approach to planning for increased traffic along the corridor.

At the second meeting held in Sturgis there were only a handful of participants and those individuals wanted to talk about Fort Meade Way.

"I heard numbers that during the Rally there were over 70,000 vehicles on that gravel road," Grabill said.

Grabill said he had spoken to county staff about ways to improve the road and maybe see it paved.

"I think that was the desire from the people that came to talk about Fort Meade Way," he said.

Meade County Commission Chairman Ted Seaman asked Grabill at what point does it become the responsibility of the state to take on projects, such as Fort Meade Way, to upgrade them to accommodate a crush of out-of-state traffic.

"The state gets tax dollars - sales tax and gas tax – for all these vehicles coming in, and we get nothing but court costs and a little income from property taxes," he said. "As a commission, that is the problem we face. We simply don't get the revenues to have the money to upgrade these roads the way we would like."

Grabill said some at the meeting asked if Fort Meade Way could become a state highway.

"There needs to be some coordination with the state DOT about the future of this road," Grabill said of Fort Meade Way.

"We ask the state to get involved and they don't get involved," Seaman said. "They should have taken the lead on that bypass and unfortunately they didn't. We're stuck with maintenance on Fort Meade Way, and I don't see where the revenues are going to come to build it the way it should have been built."

Grabill suggested beginning conversations with the state to see if there is a collaborative way forward on Fort Meade Way.

Mention of working with the state on Fort Mead Way set the commission off in a heated discussion about trying to get the state of South Dakota to take over the responsibility and maintenance of New Underwood Road.

"Before we try to get the state to take over Fort Meade Way, we need to get them to take over New Underwood," commissioner Doreen Creed said.

Seaman said research shows that Meade County has invested more than $18 million on New Underwood Road over the last 20 years.

"We have a lot of state traffic using that road, and we haven't gotten state funding for it. We've had very little success on getting the state to move on anything," Seaman said.

Preliminary information contained in the study show that the highest traffic levels are on county roads surrounding the I-90 corridor in southwest Meade County.

Interestingly, one of the highest traffic counts on a gravel road was Avalanche Road which runs parallel to the Interstate just past the Runnings store. That road leads to the city dump, but new subdivisions are planned in the area in the near future.

The highest volumes of traffic surround Interstate 90 including Elk Creek Road and Stagestop Road. Some north-south connections have higher volumes, including segments of Erickson Ranch Road and North Haines Avenue.

Grabill said the plan update responds to changing conditions within Meade County which may affect traffic volumes and patterns. These conditions include growing development, need for additional regional connectivity, and the desire to better accommodate bicycle and pedestrian travel, among others.

The plan will establish a set of goals and project recommendations which address current and future needs, he said.

A draft plan is scheduled to be completed in April with the final plan done in June. You can find the plan online at https://Meadecounty.transportationplan.net

from Pg 3

PLUMBING

The ordinance goes on to say the director of public works or his or her designee is responsible to determine if a grease interceptor is necessary in Deadwood. The building official will approve design, sizing, and installation. All kitchen drainage receiving grease shall pass through the interceptor and it shall be easily accessible for cleaning and inspection. Responsibility for cleaning and maintaining the interceptor is that of the owner and/or lessee. Single family dwelling units are exempt from the requirements. Existing interior replacements may be allowed when proper sizing and installation can be accomplished. An inline grease trap may be approved by the city if a full-size grease interceptor outside the building proves to be impractical or unnecessary, due to the nature or size of a food establishment. Expense will not be considered sufficient reason to waive the requirements for full-size grease interceptors.

Second reading of both ordinances is slated for the Nov. 1 city commission meeting.

Date: September 20th, 2021

For Immediate Release

Contact: KLJ Project Manager, Steve Grabill at 605.721.5553

Public Open House & Informational Meeting for Meade County Master Transportation Plan September 29 & 30

The South Dakota Department of Transportation (SDDOT) in conjunction with Meade County will hold an open house and public input meeting to discuss and receive public comment on the development of a Master Transportation Plan (MTP). The purpose of this public meeting is to gather information on community needs and desires as input into a long-range, multi-modal plan to address future transportation needs of Meade County.

The MTP is developed through a funding partnership with SDDOT to develop a long range (20-year) plan for current and projected transportation needs. Information will be available at the meeting documenting the existing condition of transportation systems in Meade County. Two public open house and informational meetings are being planned:

September 29, 2021
Piedmont American Legion Post #311
101 Pine Street - Piedmont, SD
5:30 to 7:00 PM

September 30, 2021
Meade County Courthouse – Commission Room
1300 Sherman Street - Sturgis, SD
5:30 to 7:00 PM

Staff from Meade County, SDDOT and their consultant will be available to discuss the Meade County MTP. Information about the Meade County MTP is available online at https://meadecounty.transportationplan.net.

Written comments should be sent to the attention of KLJ, Attn: Meade MTP, 330 Knollwood Drive, Rapid City, SD 57701, or by email to steve.grabill@kljeng.com. Written public comment will be accepted on the Meade County MTP through October 15th, 2021.

###

philes from SURF, enzymatic genes to of them have the both survive deep d accelerate car- ion," Lingwall said.

ning the

's microbiolo- rough microbial searchers are n just how quickly ation takes place hiles.

e types of ex- plicated in n laboratory en you are con- e investigations e limited to the sition, pressure gical activi- n offer," said petrologist ure geochemist uty of experi- you are the ature—putting system. You ge parameters, t away see the parameter in system."

and engi- irst described d pressures rch, Ustunisik eratures and low tempera-

studies olution of Earth, those low. In ology lab, replicate con- the Earth's mantle, egin at 1,400 degrees

, both the subsurface s for each les must be ve the upper rock forma- vast enough on, without es. overlap.

expertise

Currently, the two major inquiries—understanding the extremophiles and pinpointing carbon mineralization rates—are being done in parallel. In 2022, the group will introduce the microbes to the carbon mineralization process to see if the rate ticks up.

Many questions will guide the next phase of the research: Can SURF extremophiles accelerate the carbon mineralization process? If so, by how much? Can they adapt to different rock environments? Or are they limited to their native rock formations?

The effort, funded by an Eager Award from the National Science Foundation, brings together experts in geology, engineering, chemistry, petrology and microbiology.

"The novelty of this project is not necessarily the microbial acceleration of carbon mineralization. The real innovation is the bringing together of a team of different backgrounds to study this new, interesting, complex problem in a different way," Lingwall said.

The current NSF grant supports two years of initial research. If, by the end of that period, the experiment's results are promising, a larger experiment will be undertaken.

And, perhaps, these extremophiles might be worth their back rent after all.

SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION
MEADE COUNTY
Notice of
Public Open House & Informational Meeting
Meade County Master Transportation Plan

The South Dakota Department of Transportation (SDDOT) in conjunction with Meade County will hold an open house and public input meeting to discuss and receive public comment on the development of a Master Transportation Plan (MTP). The purpose of this public meeting is to gather information on community needs and desires as input into a long-range, multi-modal plan to address future transportation needs of Meade County.

The MTP is developed through a funding partnership with SDDOT to develop a long range (20-year) plan for current and projected transportation needs. Information will be available at the meeting documenting the existing condition of transportation systems in Meade County. Public comment will be solicited on the needs of the public and interested persons on transportation issues throughout Meade County. Two public open house and informational meetings are being planned:

September 29, 2021
Piedmont American Legion Post #311
101 Pine Street - Piedmont, SD
5:30 to 7:00 PM

September 30, 2021
Meade County Courthouse – Commission Room
1300 Sherman Street - Sturgis, SD
5:30 to 7:00 PM

Staff from Meade County, SDDOT and their consultant will be available to discuss the Meade County MTP. All persons interested in these issues are invited to attend either of these meetings to share their views and concerns. Public and written comments will be taken as part of the public input meeting specific to the Meade County MTP.

Written comments should be sent to the attention of KLJ, Attn: Meade MTP, 330 Knollwood Drive, Rapid City, SD 57701, or by email to steve.grabill@kljeng.com. Written public comment will be accepted on the Meade County MTP through October 15th, 2021.

For more information regarding the Meade County MTP contact KLJ Project Manager, Steve Grabill at 605.721.5553. Information about the Meade County MTP is available online at https://meadecounty.transportationplan.net. An interactive issue and needs survey are available on the website to provide input into transportation issues in Meade County.

Notice is further given to individuals with disabilities that this open house meeting is being held in a physically accessible place. Any individuals with disabilities who will require a reasonable accommodation in order to participate in the open house should submit a request to the department's ADA Coordinator at 605-773-3540 or 1-800-877-1113 (Telecommunication Device for the Deaf). Please request accommodations no later than 2 business days prior to the meeting in order to ensure accommodations are available.

Notice published twice at the approximate cost of $798.00

SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION
MEADE COUNTY
Notice of
Public Open House & Informational Meeting
Meade County Master Transportation Plan

The South Dakota Department of Transportation (SDDOT) in conjunction with Meade County will hold an open house and public input meeting to discuss and receive public comment on the development of a Master Transportation Plan (MTP). The purpose of this public meeting is to gather information on community needs and desires as input into a long-range, multi-modal plan to address future transportation needs of Meade County.

The MTP is developed through a funding partnership with SDDOT to develop a long range (20-year) plan for current and projected transportation needs. Information will be available at the meeting documenting the existing condition of transportation systems in Meade County. Public comment will be solicited on the needs of the public and interested persons on transportation issues throughout Meade County. Two public open house and informational meetings are being planned:

September 29, 2021
Piedmont American Legion Post #311
101 Pine Street - Piedmont, SD
5:30 to 7:00 PM

September 30, 2021
Meade County Courthouse – Commission Room
1300 Sherman Street - Sturgis, SD
5:30 to 7:00 PM

Staff from Meade County, SDDOT and their consultant will be available to discuss the Meade County MTP. All persons interested in these issues are invited to attend either of these meetings to share their views and concerns. Public and written comments will be taken as part of the public input meeting specific to the Meade County MTP.

Written comments should be sent to the attention of KLJ, Attn: Meade MTP, 330 Knollwood Drive, Rapid City, SD 57701, or by email to steve.grabill@kljeng.com. Written public comment will be accepted on the Meade County MTP through October 15th, 2021.

For more information regarding the Meade County MTP contact KLJ Project Manager, Steve Grabill at 605.721.5553. Information about the Meade County MTP is available online at https://meadecounty.transportationplan.net. An interactive issue and needs survey are available on the website to provide input into transportation issues in Meade County.

Notice is further given to individuals with disabilities that this open house meeting is being held in a physically accessible place. Any individuals with disabilities who will require a reasonable accommodation in order to participate in the open house should submit a request to the department's ADA Coordinator at 605-773-3540 or 1-800-877-1113 (Telecommunication Device for the Deaf). Please request accommodations no later than 2 business days prior to the meeting in order to ensure accommodations are available.

Published September 15, & 22, 2021 at the total approximate cost of $61.71.

September 17,, 2021 L35820

SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION
MEADE COUNTY
Notice of
Public Open House & Informational Meeting
Meade County Master Transportation Plan

The South Dakota Department of Transportation (SDDOT) in conjunction with Meade County will hold an open house and public input meeting to discuss and receive public comment on the development of a Master Transportation Plan (MTP). The purpose of this public meeting is to gather information on community needs and desires as input into a long-range, multi-modal plan to address future transportation needs of Meade County.

The MTP is developed through a funding partnership with SDDOT to develop a long range (20-year) plan for current and projected transportation needs. Information will be available at the meeting documenting the existing condition of transportation systems in Meade County. Public comment will be solicited on the needs of the public and interested persons on transportation issues throughout Meade County. Two public open house and informational meetings are being planned::

September 29, 2021
Piedmont American Legion Post #311
101 Pine Street - Piedmont, SD
5:30 to 7:00 PM

September 30, 2021
Meade County Courthouse – Commission Room
1300 Sherman Street - Sturgis, SD
5:30 to 7:00 PM

Staff from Meade County, SDDOT and their consultant will be available to discuss the Meade County MTP. All persons interested in these issues are invited to attend either of these meetings to share their views and concerns. Public and written comments will be taken as part of the public input meeting specific to the Meade County MTP..

Written comments should be sent to the attention of KLJ, Attn: Meade MTP, 330 Knollwood Drive, Rapid City, SD 57701, or by email to steve.grabill@kljeng.com. Written public comment will be accepted on the Meade County MTP through October 15th, 2021..

For more information regarding the Meade County MTP contact KLJ Project Manager, Steve Grabill at 605.721.5553. Information about the Meade County MTP is available online at https://meadecounty.transportationplan.net. An interactive issue and needs survey are available on the website to provide input into transportation issues in Meade County..

Notice is further given to individuals with disabilities that this open house meeting is being held in a physically accessible place. Any individuals with disabilities who will require a reasonable accommodation in order to participate in the open house should submit a request to the department's ADA Coordinator at 605-773-3540 or 1-800-877-1113 (Telecommunication Device for the Deaf). Please request accommodations no later than 2 business days prior to the meeting in order to ensure accommodations are available.

(Notice published once at the approximate cost of $159.98)

MEADE COUNTY

Notice of Public Open House & Informational Meeting
Meade County Master Transportation Plan

The South Dakota Department of Transportation (SDDCT) in conjunction with Meade County will hold an open house and public input meeting to discuss and receive public comment on the development of a Master Transportation Plan (MTP). The purpose of this public meeting is to gather information on community needs and desires as input into a long-range, multi-modal plan to address future transportation needs of Meade County.

The MTP is developed through a funding partnership with SDDOT to develop a long range (20-year) plan for current and projected transportation needs. Information will be available at the meeting documenting the existing condition of transportation systems in Meade County. Public comment will be solicited on the needs of the public and interested persons on transportation issues throughout Meade County. Two public open house and informational meetings are being planned:

September 29, 2021
Piedmont American Legion Post #311
101 Pine Street - Piedmont, SD
5:30 to 7:00 PM

September 30, 2021
Meade County Courthouse – Commission Room
1300 Sherman Street - Sturgis, SD
5:30 to 7:00 PM

Staff from Meade County, SDDOT and their consultant will be available to discuss the Meade County MTP. All persons interested in these issues are invited to attend either of these meetings to share their views and concerns. Public and written comments will be taken as part of the public input meeting specific to the Meade County MTP.

Written comments should be sent to the attention of KLJ, Attn: Meade MTP, 330 Knollwood Drive, Rapid City, SD 57701, or by email to steve.grabill@kljeng.com. Written public comment will be accepted on the Meade County MTP through October 15th, 2021.

For more information regarding the Meade County MTP contact KLJ Project Manager, Steve Grabill at (605)721.5553. Information about the Meade County MTP is available online at https://meadecounty.transportationplan.net. An interactive issue and needs survey are available on the website to provide input into transportation issues in Meade County.

Notice is further given to individuals with disabilities that this open house meeting is being held in a physically accessible place. Any individuals with disabilities who will require a reasonable accommodation in order to participate in the open house should submit a request to the department's ADA Coordinator at (605)773-3540 or 1-800-877-1113 (Telecommunication Device for the Deaf). Please request accommodations no later than 2 business days prior to the meeting in order to ensure accommodations are available.

Notice published once at the total approximate cost of $320.00.

Meade County Transportation Plan

The Plan will provide a 20-year long range transportation plan for Meade County. The planning process responds to continued pressure to address a range of transportation mobility needs in Meade County.

Documents

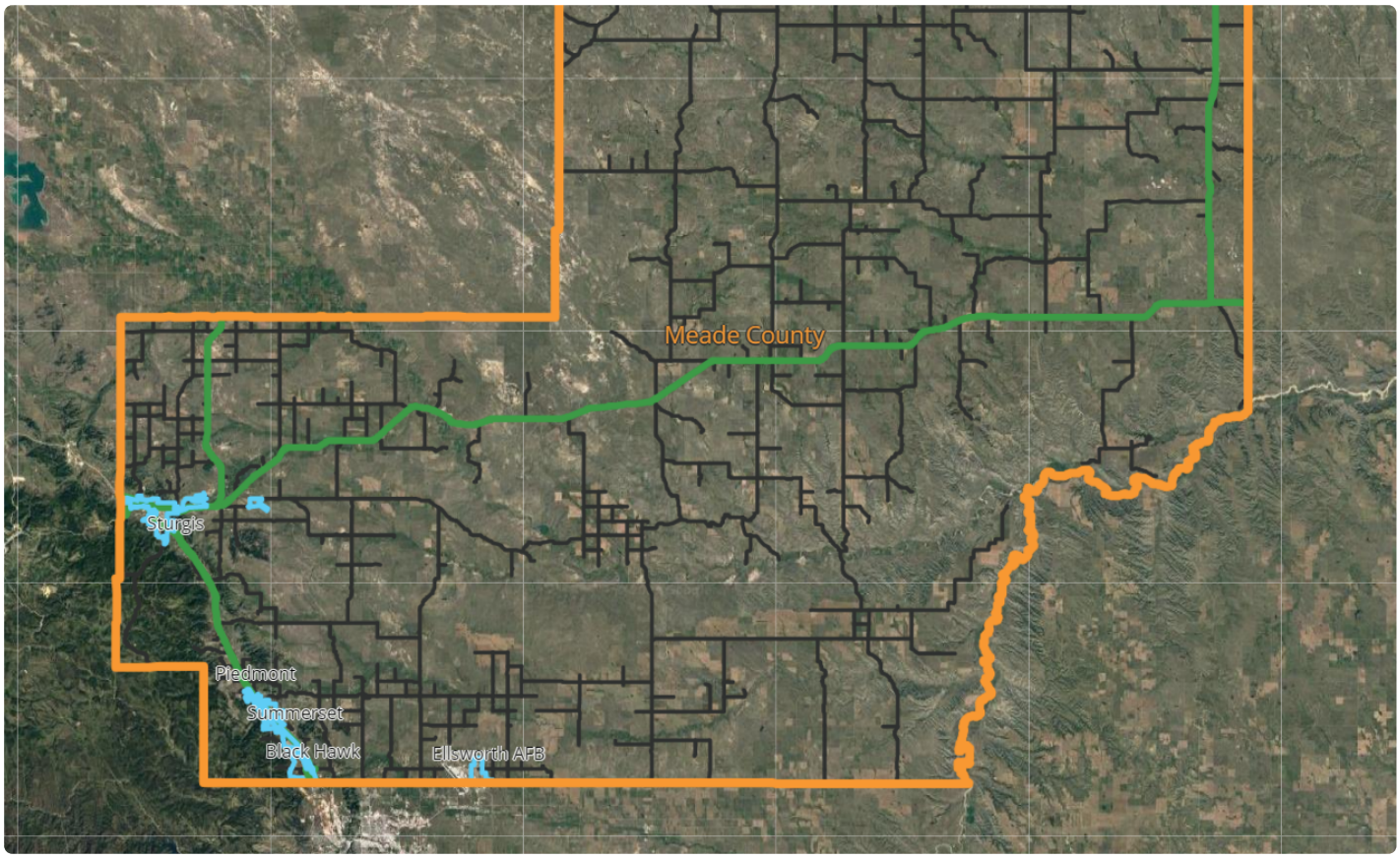
Public Engagement Presentation (September 2021)

west-2.amazonaws.com/mysocialpinpoint/uploads/redactor_assets/documents/4d2c85db07a6967771d73b235941f7ee723bf3798d0260a71b6e28338d9c9886/45191/F

Public Engagement Posters (September 2021)

:onaws.com/mysocialpinpoint/uploads/redactor_assets/documents/16c9b1e2fdd7f06797f9fa3077a46ec8c5b4f778c2917edb04e4d794e8a1a604/45208/Meade_County

Share Your Ideas



Interactive Map

Shape the future of transportation in Meade County by adding your ideas and concerns to the map!

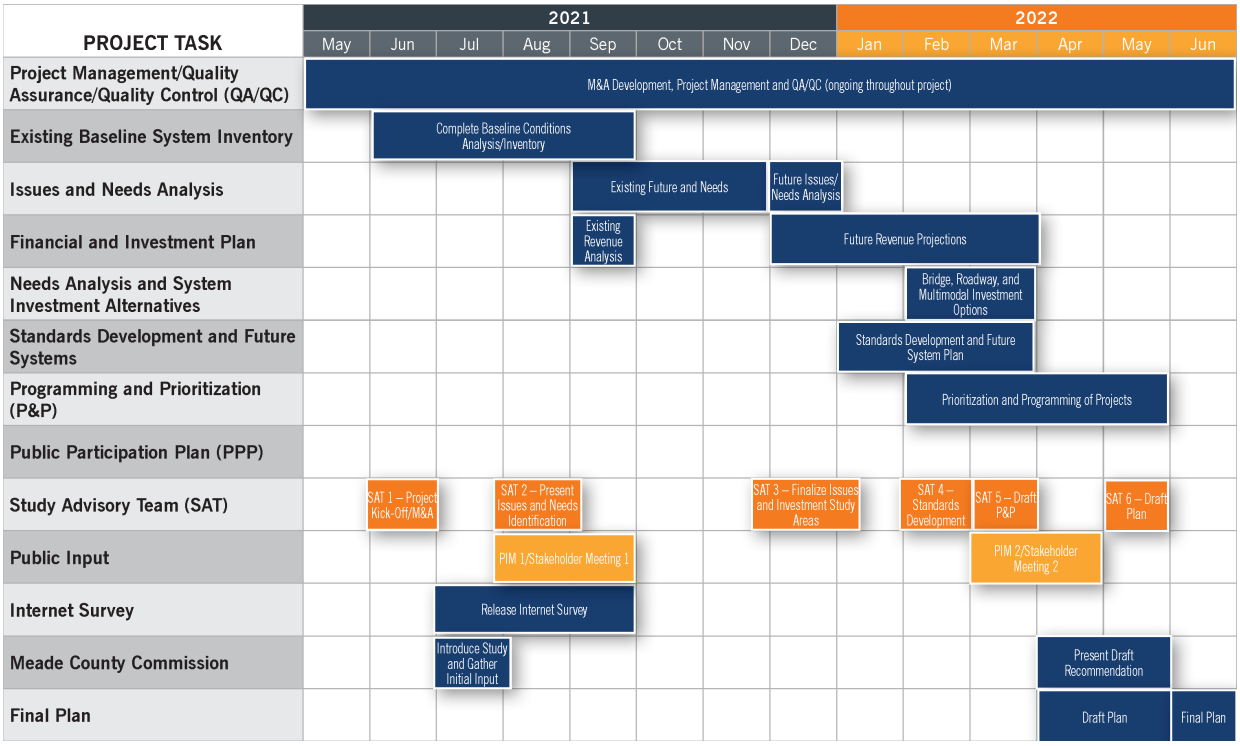
See Project Map (https://klj.mysocialpinpoint.com/meade-county-transportation-plan/map)

Transportation Plan Goals Survey

Help determine the County's transportation priorities by rating the Plan Goals!

Take the Survey (https://klj.mysocialpinpoint.com/meade-county-transportation-plan/transportation-plan-goals-survey)

Project Schedule



The Interactive Map and Goals Survey will be open into mid-October 2021. To sign up and stay connected, send an email to **steve.grabill@kljeng.com** to be added to our interested persons list.

Contact Us

P 605-721-5553 (tel:605-721-5553)

E steve.grabill@kljeng.com (mailto:steve.grabill@kljeng.com)
M 330 Knollwood Drive, Rapid City, SD 57701-6611

APPENDIX B

STUDY ADVISORY TEAM (SAT)

MEETINGS

SAT 1

Meade County Master Transportation Plan
Study Advisory Team Meeting 1
June 10, 2021
8:00 – 10:00 A.M. MST
9:00 – 11:00 CDT

Meeting Discussion Points

Meeting Attendees:

- Steve Gramm
- Stacy Bartlett
- Nick Broyles
- Scott Tegethoff
- Marlo Kapsa
- Bill Rich
- Sarah Gilkerson
- Kip Harrington
- Talbot J Wieczorek
- Ron Merwin
- Steve Grabill
- Wade Kline
- Zach Chappell

1. Welcome & Introductions

- Steve Grabill welcomed attendees to the meeting and self-introductions were made.
- Steve Grabill indicated that some small modifications have been made to the project schedule, including moving PIM #1 to September.
- Steve Grabill asked attendees if there are any changes to the list of SAT members. There are none.
- Bill Rich confirmed that he will be the main point of contact for the County throughout the project.

2. Discuss Study Expectations

- Attendees commented that there has been a surge in subdivision development, which has increased traffic volumes. Traffic flow and system efficiency should be a focus during the study.
- Attendees commented that the study should explore seasonal trends related to the Sturgis Rally.
- Bill Rich said we may need to rethink how major corridors are used and prioritized. Is another north-south connection needed from Elk Creek to Fort Meade?
- Talbot Wieczorek commented that in the context of increasing development, it is important to consider the role/adequacy of the main corridors. Example: is there need for an additional north-south connector on the east side of the ridge? Development will continue on the back side of the ridge and will push farther north.
- Attendees noted UTV traffic considerations. Bethlehem Rd will be a good candidate for improvement due to the UTV traffic.

- Marlo Kapsa highlighted the importance of considering who will provide maintenance for new development roads, which are not maintained by the County. HOAs, road districts, and other such entities are often not sufficient. The County will need to be proactive in planning for this.
    - New subdivisions will increase traffic on County-maintained roads, leading to higher upkeep costs.
- Expectations for Forest Service Trails Analysis: The focus is on connectivity between local systems and forest system trails. There are also some BLM trails.
    - KLJ should reach out to local mountain biking groups, other stakeholders. Focus on Sturgis area for trails development.
    - Kevin Forrester, Meade County Auditor is a good contact for further information.
- Wade Kline asked who the County GIS contact is. Marlo Kapsa will provide their contact information.

3. Review Draft M&A Document

- Public Input Meetings (PIM) Approach and Locations:
    - Wade Kline proposed a hybrid meeting approach – live meetings will be streamed online in real time. Attendees supported this idea.
    - Steve Grabill asked what the preferred PIM meeting time is. Attendees agreed that 6:00pm to 8:00pm is a good time.
    - Steve Grabill asked if there are mediums – besides print newspapers – that the County would like to use to provide notice. The County would like to consider using social media.
        - Wade Kline asked that the relevant contact be provided to KLJ.
        - Sarah Gilkerson requested that meeting notifications be sent to her in order to host them on the SDDOT website.
- Stakeholder Meetings:
    - Steve Grabill asked that the County assemble a list of stakeholders to engage.
    - Rather than in-person stakeholder meetings, Steve Grabill suggested that meetings be conducted by phone call or video call. Attendees agreed that this is the preferred approach, with Teams meetings used to the degree possible.
- Project Website
    - Attendees support the proposed domain name.
- Analysis Years/Periods
    - Marlo Kapsa recommended that existing conditions reference 2021 rather than 2019 data, given that there has been considerable development since 2019.
    - Attendees decided that the most recent data available will be used for existing conditions.
- StreetLight Analysis

- Attendees commented that a focus should be seasonal activity due to the Sturgis Rally.
    - Ron Merwin suggested that the analysis look at alternative routes for rally traffic.
- Another focus: Rapid City is a major job center: what is the change from 2019 to 2021 along I-90 and other major corridors?
- Steve Grabill: KLJ will put together a more detailed methodology for StreetLight analysis and include this in the updated M&A document.

- Study Intersections:
    - Steve Grabill asked if additional study intersections have been identified beyond the initial ten?
        - Steve Grabill reminded the group that each additional intersection would require three StreetLight zones.
    - Steve Gramm commented that in-field turning movement counts should wait till September to account for school traffic.
    - Wade Kline proposed that we wait until after the first PIM meeting to identify additional intersections. All attendees agreed.
    - An attendee specified one additional intersection for consideration: Elk Creek @ Nettle Creek
- Existing Infrastructure Assessment:
    - Marlo Kapsa commented that there is a maintenance schedule for gravel roads according to type. There is currently no asphalt management plan.
    - Wade Kline requested that the maintenance schedule for gravel roads be provided to KLJ.

4. Next Steps

- SAT #2 is tentatively scheduled for mid to late August.

5. Additional Comments

- No additional comments were received.

6. Adjournment

- Mr. Grabill adjourned the meeting at 9:45 a.m.

SAT 2

Meade County Master Transportation Plan
Study Advisory Team Meeting #2
August 26, 2021
9:00 – 11:00 A.M. MST
10:00 – 12:00 A.M. CDT

Meeting Discussion Points

Meeting Attendees:

- Steve Gramm
- Stacy Bartlett
- Nick Broyles
- Scott Tegethoff
- Marlo Kapsa
- Bill Rich
- Sarah Gilkerson
- Kip Harrington
- Kelly Brennan
- Rhea Crane
- Mike Carlson
- Erin Muldoon
- Steve Grabill
- Wade Kline
- Zach Chappell

- **Welcome & Introductions**
  - Steve Grabill welcomed attendees to the meeting.
  - Steve Grabill gave an overview of the agenda.

- **Baseline Report**
  - Steve Grabill presented a summary of the Baseline Conditions Report.
  - Regarding population trends, Steve Grabill indicated that new 2020 Census data would be integrated as it becomes available (to be reflected in subsequent Plan drafts).
  - Regarding bridges and culverts, Steve Gramm wondered whether the most recent bridge sufficiency data is reflected in the analysis. Steve Gramm will confirm the most recent available data and follow up with Steve Grabill.
  - Regarding bridges and culverts, Wade highlighted County bridges which have received Bridge Improvement Grant (BIG) awards from 2016-2020. KLJ will follow up with staff to confirm which bridges had been improved to date. KLJ will also confirm with staff the prioritization process used to select the 2016 plan bridge projects.
  - Bill Rich said that Scott Tegethoff is leaving, and suggested Steve Grabill discuss the project with him within the next week to receive any historical input he may have that is pertinent to the plan. Steve Grabill said he would do that.

- **Goals & Objectives**
    - Zach gave an overview of the Vision, Goals, and Strategies approach.
    - Zach presented the proposed set of six Plan Goal Areas.
        - SAT members expressed approval of the proposed Goal Areas.
    - Wade mentioned that a Transportation Plan Goals Survey would be added to the project website, which will allow community members to provide feedback on the Goals.

- **Future Conditions**
    - Zach presented the proposed future conditions analysis methodology, including study intersection locations, data collection approach, and forecast factor recommendations.
    - Zach indicated that growth rates from the Rapid City MPO TDM would be used to validate the proposed forecast factors.
    - SAT members expressed approval of the proposed forecast factors for rural and urban facilities.

- **Issues Identification**
    - Wade gave an overview of key issues highlighted by SAT members during SAT Meeting #1.
    - The group discussed FHWA functional classification in comparison to Meade County road/street classifications as defined within Ordinance #10, and expressed through the Major Road Plan.
        - Bill Rich confirmed that Ordinance #10 is being updated currently, with a new version to be adopted mid-September.
    - Steve Gramm mentioned that the FHWA functional classification will be reconfigured as a result of 2020 Census data. Therefore, it made sense that the 2016 Meade County functional classifications be used as a starting point.
    - Steve Gramm confirmed that KLJ should focus on the Major Road Plan when developing project recommendations.
    - Wade presented the recommendation that a set of Regionally Significant Corridors (RSCs) be established for the study area. These will be developed though public engagement and in coordination with the SAT.
        - SAT members expressed approval of this approach.
    - Wade mentioned that KLJ will use the 2016 Plan transportation projects as a foundation for new project recommendations. Wade will follow up with County staff

to confirm which projects have been completed, which are committed, and where new needs exist.
- Bill Rich mentioned that the County is in the process of finalizing its Five Year Plan, which will be adopted in September. Steve Grabill will follow up with Bill for a copy of the Plan near the end of September.

- **PIM Framework #1**
  - Wade gave an overview of planned public engagement activities. Wade discussed the Plan website and Social Pinpoint interactive map survey, as well as upcoming stakeholder and public input meetings.
  - Wade presented tentative stakeholder lists for focus group meetings.
  - Wade outlined the materials and agenda to be used at PIM #1.
  - The stakeholder meetings and PIM #1 are scheduled for the end of September (final locations, dates, and times to be confirmed).

- **Next Steps**
  - Steve Grabill discussed next steps, which include:
    - Stakeholder meetings and PIM #1 at the end of September.
    - Comments on Baseline Conditions Chapter requested from SAT members by September 1st.

SAT 3

Meade County Master Transportation Plan
Study Advisory Team Meeting #3
December 9, 2021
9:00 – 11:00 A.M. MST
10:00 – 12:00 A.M. CDT

Meeting Discussion Points

Meeting Attendees:

- Steve Gramm
- Logan Gran
- Stacy Bartlett
- Nick Broyles
- Marlo Kapsa
- Bill Rich
- Sarah Gilkerson
- Kip Harrington
- Doreen Creed
- Rhea Crane
- Erin Muldoon
- Steve Grabill
- Wade Kline
- Zach Chappell

- **Welcome & Introductions**
  - Steve Grabill welcomed attendees to the meeting.
  - Steve Grabill gave an overview of the agenda. He reviewed the project schedule and stated that the project is proceeding on schedule.

- **Public Engagement Summary**
  - Steve Grabill gave an overview of public engagement activities completed in September 2021. These included two stakeholder and two public input meetings, as well as interaction with the project website and social pinpoint feedback.
  - Feedback that was received was reviewed. Over half the comments pertained to concerns over infrastructure conditions. The top priority goal was listed as Safety. Doreen commented that it was a very small sample size, and this was acknowledged. It was also noted that further opportunities for input would be provided once the draft MTP is available for review.

- **Future Conditions Analysis**
  - Steve Grabill provided an overview of the future conditions analysis. He said that the traffic operations analysis shows Level of Service (LOS) A for both the existing and future conditions. Traffic volume maps showing projected traffic volumes were also shared.
  - Steve Grabill asked the SAT for input on how growth areas analysis should be handled. He questioned whether he has access to where the larger developments that are planned within the County are being planned.

- Doreen said that there needs to be clarity on how we are defining large vs. small developments. She also suggested that other definitions be provided within the MTP.
- It was decided that Bill and Steve Grabill should meet and agree on where growth is occurring, as well as the likely impacts on the surrounding road system.
- Steve Gramm suggested that perhaps the MPO's travel demand model could help with the analysis. Steve Grabill said he would coordinate growth planning with Kip.
- The Methods and Assumptions document will need to be revised to account for the change in the future conditions analysis.

- **Meade Functional Classification**

  - Steve Grabill introduced the topic of functional classification planning and said that KLJ met with County staff to discuss how this should be addressed. From that meeting, there was agreement that the Federal Functional Classification and the Local Functional Classification were separate and distinct issues, and that each should be evaluated on their own merits.
  - Zach presented the analysis of FHWA Functional Classification, stating that while current mileages do not fall within FHWA percentage guidelines, the current functional classification map makes sense. Therefore, no changes were recommended. The SAT did not disagree with this assessment.
  - Steve Grabill said that a preliminary local functional classification map had been provided by Nick, and KLJ also felt that the changes Nick has proposed addressed much of the issues within the current local functional classification system.
  - Steve Gramm suggested that to avoid future confusion, it would be helpful to use classifications that were clearly different than those used by FHWA. After much discussion, the SAT agreed that this should be explored, and a revised local functional classification system would be prepared for review in future meetings.

- **Streetlight Analysis Approach**

  - Zach provided some background information into how StreetLight data was collected and how it is used. He showed a map of locations that were being proposed for pass-through and non-pass-through zones, as well as middle filter locations where traffic volume data would be collected.
  - The SAT wanted more information to be provided for the north portion of the county. Steve Grabill said the map of analysis locations would be revised and resubmitted to the SAT for further review.

- **Existing and Forecast Revenue Methods**

  - Zach gave an overview of existing and forecast revenue analysis completed to date. The SAT felt that the assumption that the annual revenues would remain the same throughout the planning horizon is reasonable.

- KLJ will monitor the federal funding landscape and adjust assumptions if needed to account for new information.

- **Next Steps**
  - Steve Grabill discussed next steps, which include:
    - Projected conditions element to be provided to the SAT prior to the next SAT meeting, scheduled tentatively for February
    - Topics for SAT meeting #4 include standards development and early review of alternatives. The SAT agreed that provision of new typical section alternatives would be beneficial for County consideration.

SAT 4

Meade County Master Transportation Plan
Study Advisory Team Meeting #4
February 14, 2022
9:00 – 10:00 A.M. MST
10:00 – 11:00 P.M. CST

Meeting Discussion Points

Meeting Attendees:

- Steve Gramm
- Logan Gran
- Stacy Bartlett
- Bill Rich
- Nick Broyles
- Sarah Gilkerson
- Doreen Creed
- Rhea Crane
- Steve Grabill
- Todd Woods
- Kelly Brennan
- Rob Merwin
- Dave Wiosna

- **Welcome & Introductions**
  - Steve Grabill welcomed attendees to the meeting.
  - Steve Grabill gave an overview of the agenda. He reviewed the project schedule and stated that the project is proceeding on schedule with a draft plan anticipated in April or May.

- **Standards Development**
  - Steve Grabill discussed potential typical sections for Meade County roads, noting that they were still in development. He said he would be redlining typical sections contained in Meade County Ordinance 10 for possible addition to the ordinance.
  - Steve Grabill reviewed efforts on functional class planning. Participants were generally in favor of the system that had been worked out during the previous SAT meeting, maintaining two systems. The SAT also concurred that adding, "County" in front of collector or arterial was enough to differentiate the County's functional classification system from the FHWA's.

- **Projected Conditions**
  - Steve Grabill provided an overview of the progress on the projected conditions analysis. He said that the traffic operations analysis shows Level of Service (LOS) A for both the existing and future conditions. Traffic volume maps showing projected traffic volumes were also shared.

- Steve Grabill noted that StreetLight data used for traffic measures had been updated to include new analysis zones, especially those in the northeast corner of the county. StreetLight Origin-Destination tables were presented.
- Steve Grabill presented an updated map of subdivision growth in the county. These subdivisions were used to help inform traffic growth.

- **Review of Initial Alternatives**

  - Steve Grabill reviewed previously identified projects, specifically roadway needs.
  - Steve Grabill presented a list of preliminary road projects.
  - SAT members identified New Underwood Rd as a key corridor. It was noted that a meeting had been held between the County and the SDDOT to discuss New Underwood Road.
  - There was discussion of Quaal Rd among participants:
    - It was noted that Quaal Rd is not a county road and whether it should have its own study or even be included on a projects list.
    - Bill Rich discussed the difficulties of adding or removing a road from the county system and that while Quaal Rd should be discussed with all concerned jurisdictions, it would be unwise for the county to take on the road itself.
  - Representatives of Meade County noted that large scale projects to pave new roads would not likely be undertaken.
  - Steve Grabill suggested a Teams Meeting to gather input on potential projects and how to include projects which would be solely Meade County and those which would have multiple jurisdictions. This could be done in the next few weeks, either in advance of the next SAT meeting or in combination with the next SAT meeting.
  - Multiple SAT members agreed that projects should be presented before the county commission.
  - In addition to roadways, Steve Grabill presented a list of bridge projects and discussed the SD BIG program, which was familiar to the SAT.
  - Steve Gramm noted that it would be advantageous to consider bridge needs when planning roads that use said bridges so that multiple goals can be achieved simultaneously.
  - A brief overview of potential sidewalk connections was given, mainly to reduce gaps around area schools.
  - SAT members noted that Stagebarn Middle School should be included in analysis.
  - Logan Gran noted that bike/ped needs should be included in project planning so as to facilitate federal funding. Project needs along State Highways should not be excluded.

- **Next Steps**
  - Steve Grabill discussed next steps, which include:
    - Continued Analysis of Infrastructure Needs and Typical Sections
    - Preparation for SAT Meeting #5, to be held tentatively in March:
      - Refined alternatives
      - Priorities and programming
      - Draft Report review discussion
      - Schedule and preparation for public input meetings

SAT 5

Meade County Master Transportation Plan
Study Advisory Team Meeting #5
March 25, 2022
11:00 – 1:00 P.M. MDT
12:00 – 2:00 P.M. CDT

Meeting Discussion Points

Meeting Attendees:

- Steve Gramm
- Erin Muldoon
- Stacy Bartlett
- Bill Rich
- Nick Broyles
- Sarah Gilkerson
- Rhea Crane
- Steve Grabill
- Kelly Brennan
- Ron Merwin
- Dave Wiosna

- **Welcome, Introductions, and Schedule**
  - Steve Grabill welcomed attendees to the meeting.
  - Steve Grabill gave an overview of the agenda. He reviewed the project schedule and expressed a desire to make the latter stages of the schedule less aggressive with a draft plan to be submitted to the SAT for review near the end of April.
  - SAT members noted that the MPO would also need to approve the plan, after the county commission. The MPO has no July meeting.

- **Alternatives Development**
  - Steve Grabill introduced the refined set of project alternatives. He presented the inputs used to come up with the list, noting that some of the inputs were not very helpful and that input from the state and county are most important.
  - SAT members noted that a change from gravel to asphalt or vise versa could cause a change in crash characteristics. Steve Grabill noted that different types of improvements could be reviewed.
  - Short Range Roadway Projects:
    - SAT members noted that bridge project Structure No. 47-541-100 was already underway and that design work on Haines Ave is to start this year.
    - SAT members noted that the 5-year plan - which the short-range list is based on - is not binding and that the county commission can pick and choose projects from the list. Projects must be on the list to be considered for funding.
    - SAT members expressed a desire to add New Underwood Road projects to the short range list although it might be considered more of a “placeholder”

- Long Range Roadway Projects:
  - SAT members made changes to or removed several entries. Those changes are as follows:

Project ID	Corridor	From	To	Description	**Changes**
1	150th Avenue	Pennington County Line	North (Eagle Ranch Rd)	Asphalt paving as minor arterial	**Move to Specials**
2	Antelope Creek Road	Pennington County Line	Elk Creek Road	Asphalt paving	**Keep**
3	Elk Creek Road	I-90 Exit 46	Edgewood Place	Acquire ROW for improvements, Realignment of roadway	**Keep**
4	Elk Creek Road	Elk Vale Road	Antelope Creek Road	Asphalt paving	**Keep**
5	Glenwood Drive	Steamboat Road	Stage Stop Road	New Collector Road	**Remove**
6	SB I-90 Service Road	Exit 40	Vanocker Canyon Road	New service road	**Keep**
7	NB I-90 Service Road	Exit 40	Old Stone Road	New Service Road	**Remove**
8	Elk Creek Road	Elk Vale Road	Haines Avenue	Asphalt paving to rural arterial	**Low Priority**
9	Tilford Road	I-90 Exit 40	Ricard Road	Asphalt paving to rural arterial	**Low Priority**
10	Elk Vale Road	Elk Creek Road	Alkali Road	Asphalt paving	**Remove**
11	Tilford Road	Ricard Road	Elk Vale Road	Pave connection east to Elk Vale.	**Remove**
12	Alkali Road	Titan Road	Elk Vale Road	East-west corridor connecting to Elk Vale.	**Remove**
13	Alkali Road	Elk Vale Road	New Underwood Road	East-west corridor connecting to New Underwood.	**Remove**
14	223rd St	Haines Ave	Norman Ave	New Collector Road	**Change to Corridor Identified in MCC 2020**
15	Pleasant Valley Road	I-90 Exit 37	Fort Meade Way	Asphalt paving	**Change Extent**

  -
- Special Roadway Projects:
  - SAT members proposed moving all New Underwood Road projects to the short range list.

- Steve Gramm urged not to include any projects that would require another county's jurisdiction, e.g. an interchange on I90 at Eden Rd.
- Sly Hill Rd coming out of Sturgis was proposed to add to the specials list
- SAT members felt that roads in and around the city of Faith were probably adequate but wished to fully consider needs throughout the county.

- Bridge Projects:
  - Steve Grabill presented the bridge projects list.
- Bike/Ped/UTV Projects:
  - SAT members noted a few sidewalk projects that have recently been completed or are in-process
  - The SAT noted that UTVs/ATVs are not well received by the public at large, at least for the purposes of transportation planning, and that the county is largely not in the business of providing infrastructure to meet UTV/ATV needs.

- **Projected Conditions**

  - Steve Grabill provided an overview of the progress on the projected conditions analysis. He said that the traffic operations analysis shows Level of Service (LOS) A for both the existing and future conditions. Traffic volume maps showing projected traffic volumes were also shared.
  - Steve Grabill noted that StreetLight data used for traffic measures had been updated to include new analysis zones, especially those in the northeast corner of the county. StreetLight Origin-Destination tables were presented.
  - Steve Grabill presented an updated map of subdivision growth in the county. These subdivisions were used to help inform traffic growth.

- **Next Steps**

  - Steve Grabill discussed next steps, which include:
    - Receiving feedback on bridge needs and typical sections
    - Presenting alternatives to the Meade County Commission
    - Submitting a draft plan for SAT Review April 25
    - Planning for SAT Meeting 6 on May 9
      - Draft Report Review
      - Public Meeting Content

APPENDIX C

TURNING MOVEMENT COUNTS

(TMC)

Dyess Ave & 224th St

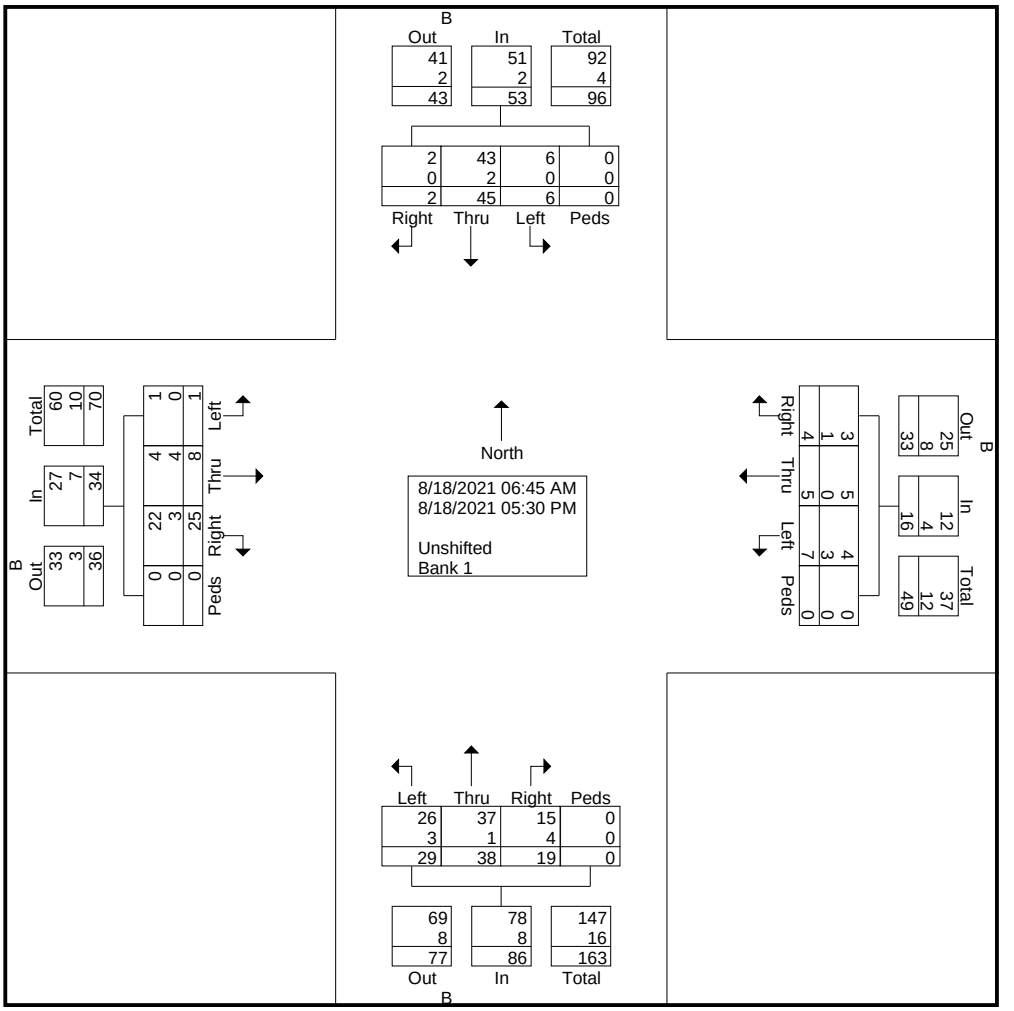
File Name : Dyess Ave and 224th Ave
Site Code : 00000000
Start Date : 8/18/2021
Page No : 1

Groups Printed- Unshifted - Bank 1

	B From North					B From East					B From South					B From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:45 AM	0	4	0	0	4	0	0	3	0	3	3	1	0	0	4	3	2	0	0	5	16
Total	0	4	0	0	4	0	0	3	0	3	3	1	0	0	4	3	2	0	0	5	16
07:00 AM	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	4
07:15 AM	1	11	2	0	14	0	0	1	0	1	0	1	0	0	1	2	0	0	0	2	18
07:30 AM	0	5	0	0	5	0	0	1	0	1	0	0	1	0	1	3	0	0	0	3	10
07:45 AM	0	4	0	0	4	0	0	0	0	0	2	1	1	0	4	1	0	0	0	1	9
Total	1	22	3	0	26	0	0	2	0	2	2	2	2	0	6	7	0	0	0	7	41
08:00 AM	0	2	0	0	2	0	0	0	0	0	0	2	1	0	3	0	1	0	0	1	6
08:15 AM	0	3	0	0	3	0	0	0	0	0	4	0	0	0	4	0	1	0	0	1	8
08:30 AM	0	0	0	0	0	1	1	0	0	2	0	2	3	0	5	3	0	0	0	3	10
*** BREAK ***																					
Total	0	5	0	0	5	1	1	0	0	2	4	4	4	0	12	3	2	0	0	5	24
*** BREAK ***																					
03:45 PM	0	1	0	0	1	0	1	0	0	1	0	2	4	0	6	2	0	1	0	3	11
Total	0	1	0	0	1	0	1	0	0	1	0	2	4	0	6	2	0	1	0	3	11
04:00 PM	0	2	0	0	2	2	0	0	0	2	1	6	2	0	9	2	0	0	0	2	15
04:15 PM	0	2	0	0	2	0	0	0	0	0	2	1	4	0	7	0	1	0	0	1	10
04:30 PM	0	0	1	0	1	0	0	1	0	1	2	2	3	0	7	2	1	0	0	3	12
04:45 PM	1	0	0	0	1	1	1	1	0	3	0	5	2	0	7	1	0	0	0	1	12
Total	1	4	1	0	6	3	1	2	0	6	5	14	11	0	30	5	2	0	0	7	49
05:00 PM	0	2	0	0	2	0	1	0	0	1	2	7	3	0	12	2	2	0	0	4	19
05:15 PM	0	2	2	0	4	0	1	0	0	1	1	5	3	0	9	2	0	0	0	2	16
05:30 PM	0	5	0	0	5	0	0	0	0	0	2	3	2	0	7	1	0	0	0	1	13
Grand Total	2	45	6	0	53	4	5	7	0	16	19	38	29	0	86	25	8	1	0	34	189
Apprch %	3.8	84.9	11.3	0		25	31.2	43.8	0		22.1	44.2	33.7	0		73.5	23.5	2.9	0		
Total %	1.1	23.8	3.2	0	28	2.1	2.6	3.7	0	8.5	10.1	20.1	15.3	0	45.5	13.2	4.2	0.5	0	18	
Unshifted	2	43	6	0	51	3	5	4	0	12	15	37	26	0	78	22	4	1	0	27	168
% Unshifted	100	95.6	100	0	96.2	75	100	57.1	0	75	78.9	97.4	89.7	0	90.7	88	50	100	0	79.4	88.9
Bank 1	0	2	0	0	2	1	0	3	0	4	4	1	3	0	8	3	4	0	0	7	21
% Bank 1	0	4.4	0	0	3.8	25	0	42.9	0	25	21.1	2.6	10.3	0	9.3	12	50	0	0	20.6	11.1

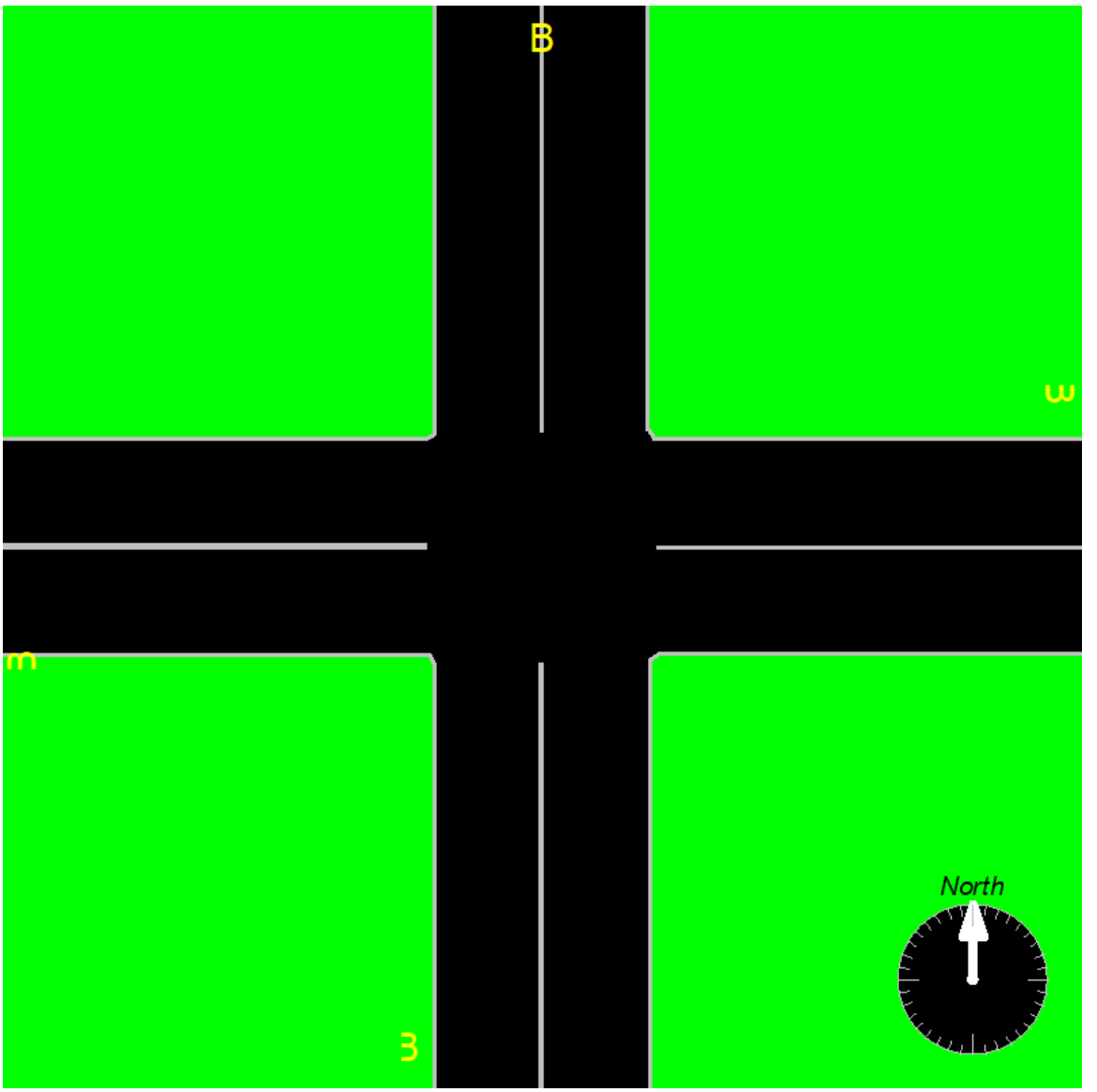
Dyess Ave & 224th St

File Name : Dyess Ave and 224th Ave
Site Code : 00000000
Start Date : 8/18/2021
Page No : 2



Dyess Ave & 224th St

File Name : Dyess Ave and 224th Ave
Site Code : 00000000
Start Date : 8/18/2021
Page No : 3



Elk Creek Rd & Haines Ave

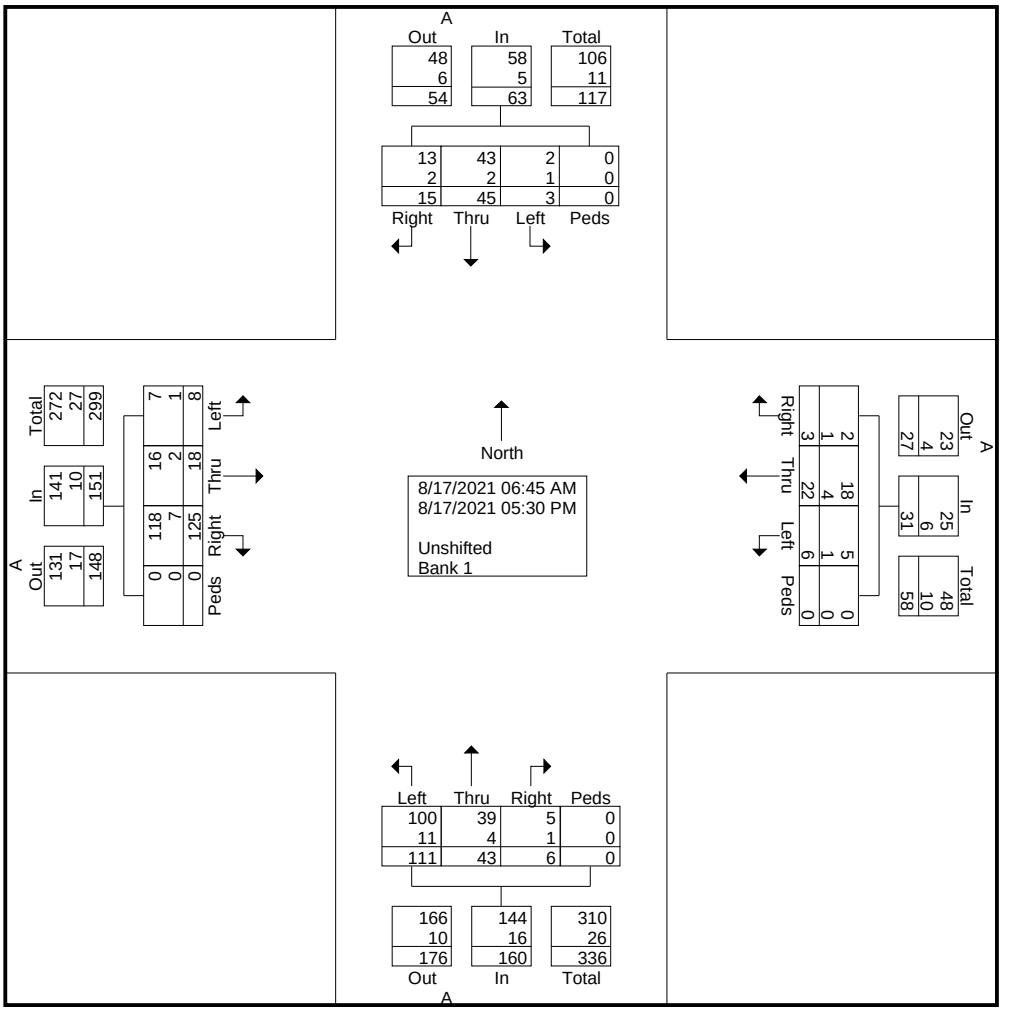
File Name : Elk Creek Rd and Haines Ave
Site Code : 00000000
Start Date : 8/17/2021
Page No : 1

Groups Printed- Unshifted - Bank 1

	A From North					A From East					A From South					A From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:45 AM	2	8	0	0	10	0	0	2	0	2	0	2	2	0	4	8	0	0	0	8	24
Total	2	8	0	0	10	0	0	2	0	2	0	2	2	0	4	8	0	0	0	8	24
07:00 AM	1	3	0	0	4	0	0	0	0	0	2	1	5	0	8	12	1	0	0	13	25
07:15 AM	0	3	0	0	3	0	0	2	0	2	0	0	5	0	5	13	1	0	0	14	24
07:30 AM	1	2	0	0	3	0	4	1	0	5	0	3	5	0	8	7	1	0	0	8	24
07:45 AM	4	2	2	0	8	1	3	0	0	4	0	0	2	0	2	8	0	0	0	8	22
Total	6	10	2	0	18	1	7	3	0	11	2	4	17	0	23	40	3	0	0	43	95
08:00 AM	2	3	0	0	5	0	0	0	0	0	1	1	4	0	6	8	0	0	0	8	19
08:15 AM	0	1	0	0	1	0	1	0	0	1	0	2	1	0	3	7	2	1	0	10	15
08:30 AM	0	5	0	0	5	0	2	0	0	2	0	2	6	0	8	6	1	1	0	8	23
*** BREAK ***																					
Total	2	9	0	0	11	0	3	0	0	3	1	5	11	0	17	21	3	2	0	26	57
*** BREAK ***																					
03:45 PM	0	2	0	0	2	0	1	0	0	1	0	3	7	0	10	5	1	0	0	6	19
Total	0	2	0	0	2	0	1	0	0	1	0	3	7	0	10	5	1	0	0	6	19
04:00 PM	2	0	0	0	2	0	5	0	0	5	0	1	11	0	12	6	2	2	0	10	29
04:15 PM	0	2	0	0	2	2	0	0	0	2	1	6	7	0	14	12	2	1	0	15	33
04:30 PM	0	7	0	0	7	0	1	1	0	2	0	6	16	0	22	7	2	1	0	10	41
04:45 PM	1	2	0	0	3	0	3	0	0	3	1	7	16	0	24	9	0	0	0	9	39
Total	3	11	0	0	14	2	9	1	0	12	2	20	50	0	72	34	6	4	0	44	142
05:00 PM	0	4	1	0	5	0	2	0	0	2	0	4	6	0	10	8	3	2	0	13	30
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	11	0	13	6	1	0	0	7	20
05:30 PM	2	1	0	0	3	0	0	0	0	0	1	3	7	0	11	3	1	0	0	4	18
Grand Total	15	45	3	0	63	3	22	6	0	31	6	43	111	0	160	125	18	8	0	151	405
Apprch %	23.8	71.4	4.8	0		9.7	71	19.4	0		3.8	26.9	69.4	0		82.8	11.9	5.3	0		
Total %	3.7	11.1	0.7	0	15.6	0.7	5.4	1.5	0	7.7	1.5	10.6	27.4	0	39.5	30.9	4.4	2	0	37.3	
Unshifted	13	43	2	0	58	2	18	5	0	25	5	39	100	0	144	118	16	7	0	141	368
% Unshifted	86.7	95.6	66.7	0	92.1	66.7	81.8	83.3	0	80.6	83.3	90.7	90.1	0	90	94.4	88.9	87.5	0	93.4	90.9
Bank 1	2	2	1	0	5	1	4	1	0	6	1	4	11	0	16	7	2	1	0	10	37
% Bank 1	13.3	4.4	33.3	0	7.9	33.3	18.2	16.7	0	19.4	16.7	9.3	9.9	0	10	5.6	11.1	12.5	0	6.6	9.1

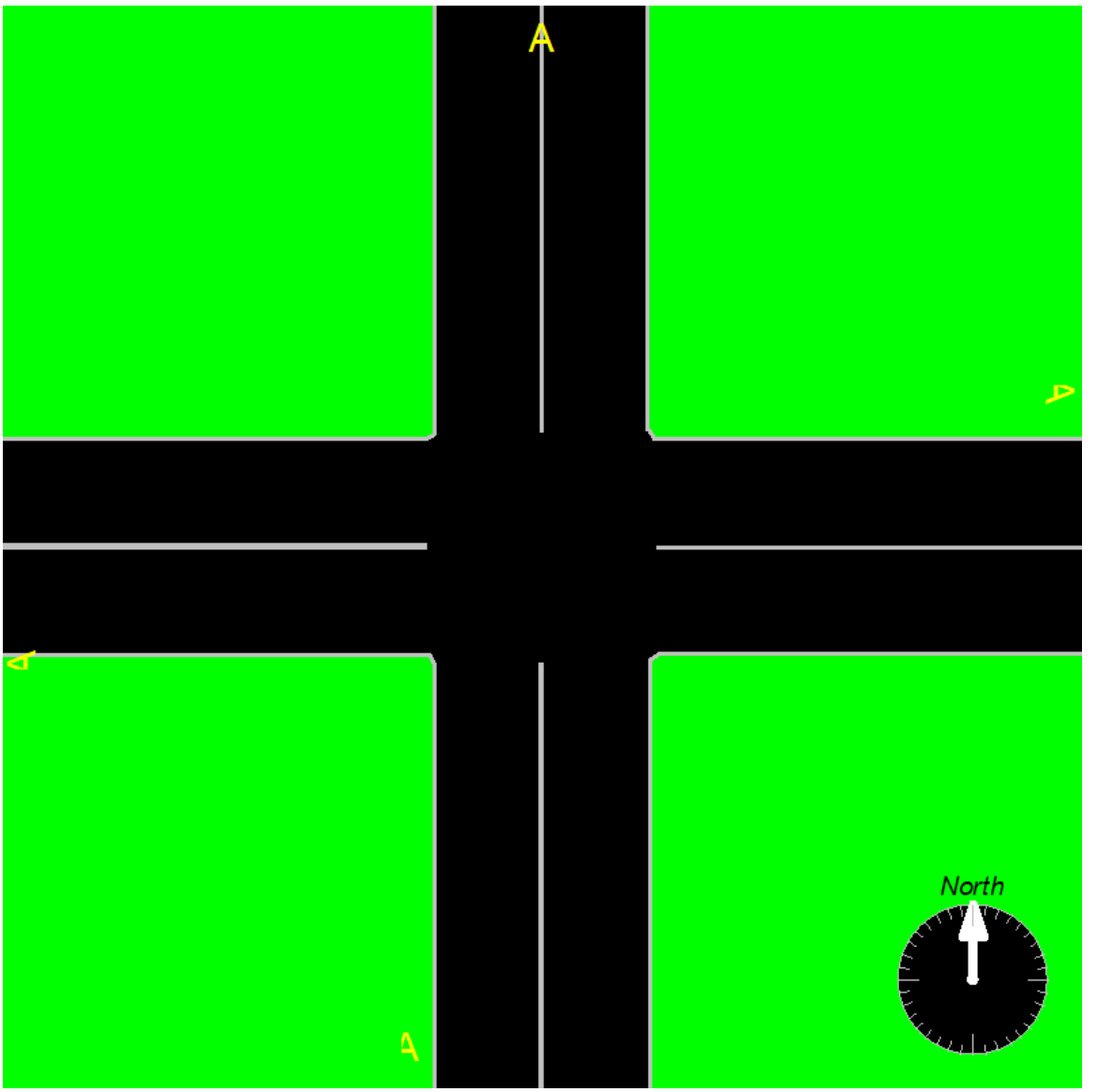
Elk Creek Rd & Haines Ave

File Name : Elk Creek Rd and Haines Ave
Site Code : 00000000
Start Date : 8/17/2021
Page No : 2



Elk Creek Rd & Haines Ave

File Name : Elk Creek Rd and Haines Ave
Site Code : 00000000
Start Date : 8/17/2021
Page No : 3



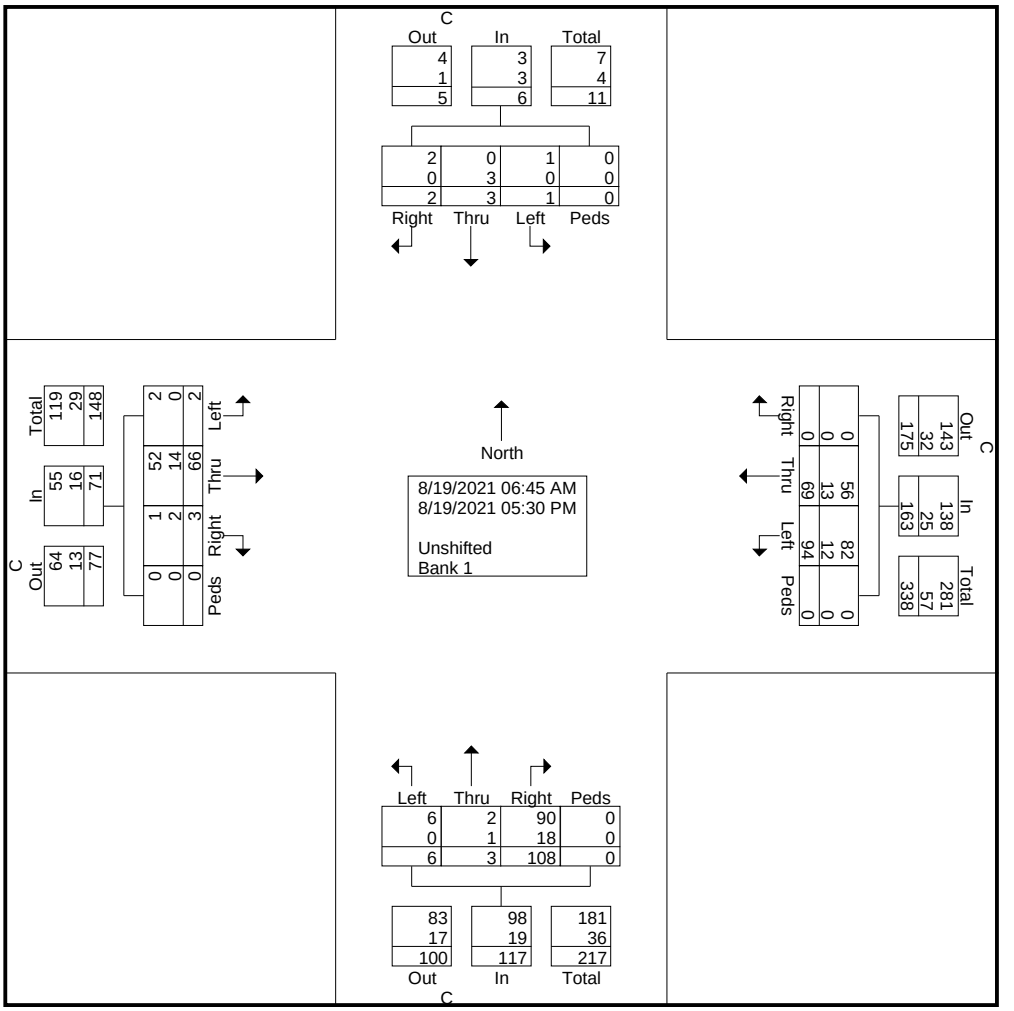
New Underwood & SD Hwy 34

File Name : New Underwood and SD Hwy 34 Traffic Counts
Site Code : 00000000
Start Date : 8/19/2021
Page No : 1

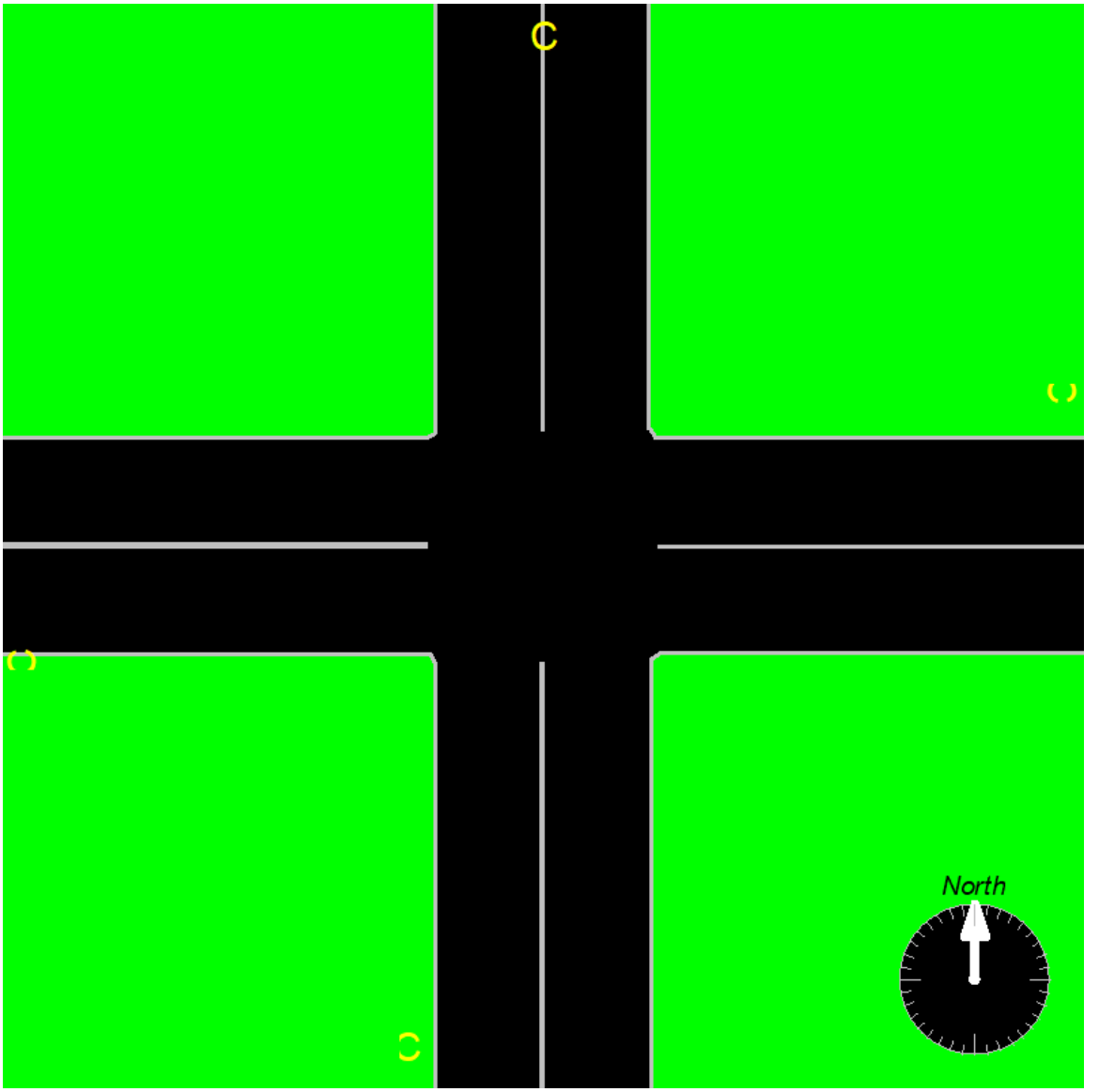
Groups Printed- Unshifted - Bank 1

	C From North					C From East					C From South					C From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:45 AM	1	0	0	0	1	0	5	2	0	7	2	1	0	0	3	0	4	0	0	4	15
Total	1	0	0	0	1	0	5	2	0	7	2	1	0	0	3	0	4	0	0	4	15
07:00 AM	0	0	0	0	0	0	2	5	0	7	14	0	1	0	15	0	2	0	0	2	24
07:15 AM	0	1	0	0	1	0	0	4	0	4	1	0	0	0	1	0	5	0	0	5	11
07:30 AM	0	0	0	0	0	0	2	2	0	4	11	0	0	0	11	0	6	0	0	6	21
07:45 AM	0	0	0	0	0	0	1	5	0	6	7	0	0	0	7	0	4	0	0	4	17
Total	0	1	0	0	1	0	5	16	0	21	33	0	1	0	34	0	17	0	0	17	73
08:00 AM	0	0	0	0	0	0	8	4	0	12	5	0	0	0	5	0	6	0	0	6	23
08:15 AM	0	0	0	0	0	0	5	7	0	12	5	0	1	0	6	0	2	0	0	2	20
08:30 AM	0	0	0	0	0	0	9	6	0	15	6	0	0	0	6	3	2	0	0	5	26
*** BREAK ***																					
Total	0	0	0	0	0	0	22	17	0	39	16	0	1	0	17	3	10	0	0	13	69
*** BREAK ***																					
03:45 PM	0	0	0	0	0	0	7	10	0	17	8	0	1	0	9	0	6	1	0	7	33
Total	0	0	0	0	0	0	7	10	0	17	8	0	1	0	9	0	6	1	0	7	33
04:00 PM	0	0	0	0	0	0	7	12	0	19	8	1	0	0	9	0	3	0	0	3	31
04:15 PM	0	0	0	0	0	0	6	8	0	14	9	0	0	0	9	0	4	0	0	4	27
04:30 PM	0	0	0	0	0	0	5	8	0	13	8	0	0	0	8	0	3	0	0	3	24
04:45 PM	0	0	0	0	0	0	3	7	0	10	5	0	1	0	6	0	1	1	0	2	18
Total	0	0	0	0	0	0	21	35	0	56	30	1	1	0	32	0	11	1	0	12	100
05:00 PM	0	0	1	0	1	0	4	5	0	9	8	0	1	0	9	0	9	0	0	9	28
05:15 PM	0	2	0	0	2	0	5	7	0	12	3	1	1	0	5	0	5	0	0	5	24
05:30 PM	1	0	0	0	1	0	0	2	0	2	8	0	0	0	8	0	4	0	0	4	15
Grand Total	2	3	1	0	6	0	69	94	0	163	108	3	6	0	117	3	66	2	0	71	357
Apprch %	33.3	50	16.7	0		0	42.3	57.7	0		92.3	2.6	5.1	0		4.2	93	2.8	0		
Total %	0.6	0.8	0.3	0	1.7	0	19.3	26.3	0	45.7	30.3	0.8	1.7	0	32.8	0.8	18.5	0.6	0	19.9	
Unshifted	2	0	1	0	3	0	56	82	0	138	90	2	6	0	98	1	52	2	0	55	294
% Unshifted	100	0	100	0	50	0	81.2	87.2	0	84.7	83.3	66.7	100	0	83.8	33.3	78.8	100	0	77.5	82.4
Bank 1	0	3	0	0	3	0	13	12	0	25	18	1	0	0	19	2	14	0	0	16	63
% Bank 1	0	100	0	0	50	0	18.8	12.8	0	15.3	16.7	33.3	0	0	16.2	66.7	21.2	0	0	22.5	17.6

File Name : New Underwood and SD Hwy 34 Traffic Counts
Site Code : 00000000
Start Date : 8/19/2021
Page No : 2



File Name : New Underwood and SD Hwy 34 Traffic Counts
Site Code : 00000000
Start Date : 8/19/2021
Page No : 3



SD34 & Fort Meade Way - TMC

Wed May 12, 2021
Full Length (9:15 PM-5:45 PM, 5:45 PM-6:45 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 838047, Location: 44.417249, -103.428585

Provided by: JEO Consulting (NE)
2000 Q Street, Ste 500,
Lincoln, NE, 68503, US

Leg Direction	East Westbound					South Northbound					West Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2021-05-12 9:15PM	1	0	0	**1**	0	1	3	0	**4**	0	5	1	0	**6**	0	**11**
9:30PM	2	0	0	**2**	0	0	0	0	**0**	0	2	2	0	**4**	0	**6**
9:45PM	2	1	0	**3**	0	0	1	0	**1**	0	4	1	0	**5**	0	**9**
Hourly Total	5	1	0	**6**	0	1	4	0	**5**	0	11	4	0	**15**	0	**26**
10:00PM	2	0	0	**2**	0	0	4	0	**4**	0	2	1	0	**3**	0	**9**
10:15PM	1	0	0	**1**	0	0	0	0	**0**	0	0	2	0	**2**	0	**3**
10:30PM	2	0	0	**2**	0	0	0	0	**0**	0	1	3	0	**4**	0	**6**
10:45PM	0	0	0	**0**	0	0	0	0	**0**	0	1	1	0	**2**	0	**2**
Hourly Total	5	0	0	**5**	0	0	4	0	**4**	0	4	7	0	**11**	0	**20**
11:00PM	1	0	0	**1**	0	0	0	0	**0**	0	0	1	0	**1**	0	**2**
11:15PM	2	0	0	**2**	0	0	0	0	**0**	0	0	0	0	**0**	0	**2**
11:30PM	0	0	0	**0**	0	0	1	0	**1**	0	0	0	0	**0**	0	**1**
11:45PM	2	0	0	**2**	0	0	0	0	**0**	0	0	0	0	**0**	0	**2**
Hourly Total	5	0	0	**5**	0	0	1	0	**1**	0	0	1	0	**1**	0	**7**
2021-05-13 12:00AM	0	1	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	0	**1**
12:15AM	0	0	0	**0**	0	1	1	0	**2**	0	0	1	0	**1**	0	**3**
12:30AM	0	0	0	**0**	0	0	1	0	**1**	0	1	1	0	**2**	0	**3**
12:45AM	0	0	0	**0**	0	0	2	0	**2**	0	0	1	0	**1**	0	**3**
Hourly Total	0	1	0	**1**	0	1	4	0	**5**	0	1	3	0	**4**	0	**10**
1:00AM	0	0	0	**0**	0	0	0	0	**0**	0	2	1	0	**3**	0	**3**
1:15AM	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**0**
1:30AM	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**0**
1:45AM	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**0**
Hourly Total	0	0	0	**0**	0	0	0	0	**0**	0	2	1	0	**3**	0	**3**
2:00AM	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**	0	**2**
2:15AM	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**0**
2:30AM	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**0**
2:45AM	0	0	0	**0**	0	0	0	0	**0**	0	0	1	0	**1**	0	**1**
Hourly Total	1	0	0	**1**	0	0	0	0	**0**	0	1	1	0	**2**	0	**3**
3:00AM	0	0	0	**0**	0	0	1	0	**1**	0	0	0	0	**0**	0	**1**
3:15AM	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	0	**1**
3:30AM	0	0	0	**0**	0	0	1	0	**1**	0	0	0	0	**0**	0	**1**
3:45AM	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	0	**1**
Hourly Total	2	0	0	**2**	0	0	2	0	**2**	0	0	0	0	**0**	0	**4**
4:00AM	1	0	0	**1**	0	0	1	0	**1**	0	0	0	0	**0**	0	**2**
4:15AM	1	0	0	**1**	0	0	0	0	**0**	0	0	1	0	**1**	0	**2**
4:30AM	0	0	0	**0**	0	0	1	0	**1**	0	0	0	0	**0**	0	**1**
4:45AM	1	0	0	**1**	0	0	1	0	**1**	0	1	0	0	**1**	0	**3**
Hourly Total	3	0	0	**3**	0	0	3	0	**3**	0	1	1	0	**2**	0	**8**
5:00AM	1	0	0	**1**	0	0	1	0	**1**	0	1	0	0	**1**	0	**3**
5:15AM	2	0	0	**2**	0	0	1	0	**1**	0	2	2	0	**4**	0	**7**
5:30AM	2	0	0	**2**	0	0	2	0	**2**	0	5	4	0	**9**	0	**13**
5:45AM	6	0	0	**6**	0	0	8	0	**8**	0	7	0	0	**7**	0	**21**
Hourly Total	11	0	0	**11**	0	0	12	0	**12**	0	15	6	0	**21**	0	**44**
6:00AM	4	1	0	**5**	0	0	6	0	**6**	0	6	1	0	**7**	0	**18**
6:15AM	4	2	0	**6**	0	3	6	0	**9**	0	3	5	0	**8**	0	**23**
6:30AM	6	2	0	**8**	0	1	6	0	**7**	0	6	3	0	**9**	0	**24**
6:45AM	8	1	0	**9**	0	1	12	0	**13**	0	6	4	0	**10**	0	**32**
Hourly Total	22	6	0	**28**	0	5	30	0	**35**	0	21	13	0	**34**	0	**97**
7:00AM	10	3	0	**13**	0	1	13	0	**14**	0	7	7	0	**14**	0	**41**
7:15AM	13	1	0	**14**	0	0	22	0	**22**	0	4	3	0	**7**	0	**43**
7:30AM	18	0	0	**18**	0	1	22	0	**23**	0	5	3	0	**8**	0	**49**
7:45AM	17	2	0	**19**	0	2	20	0	**22**	0	8	5	0	**13**	0	**54**

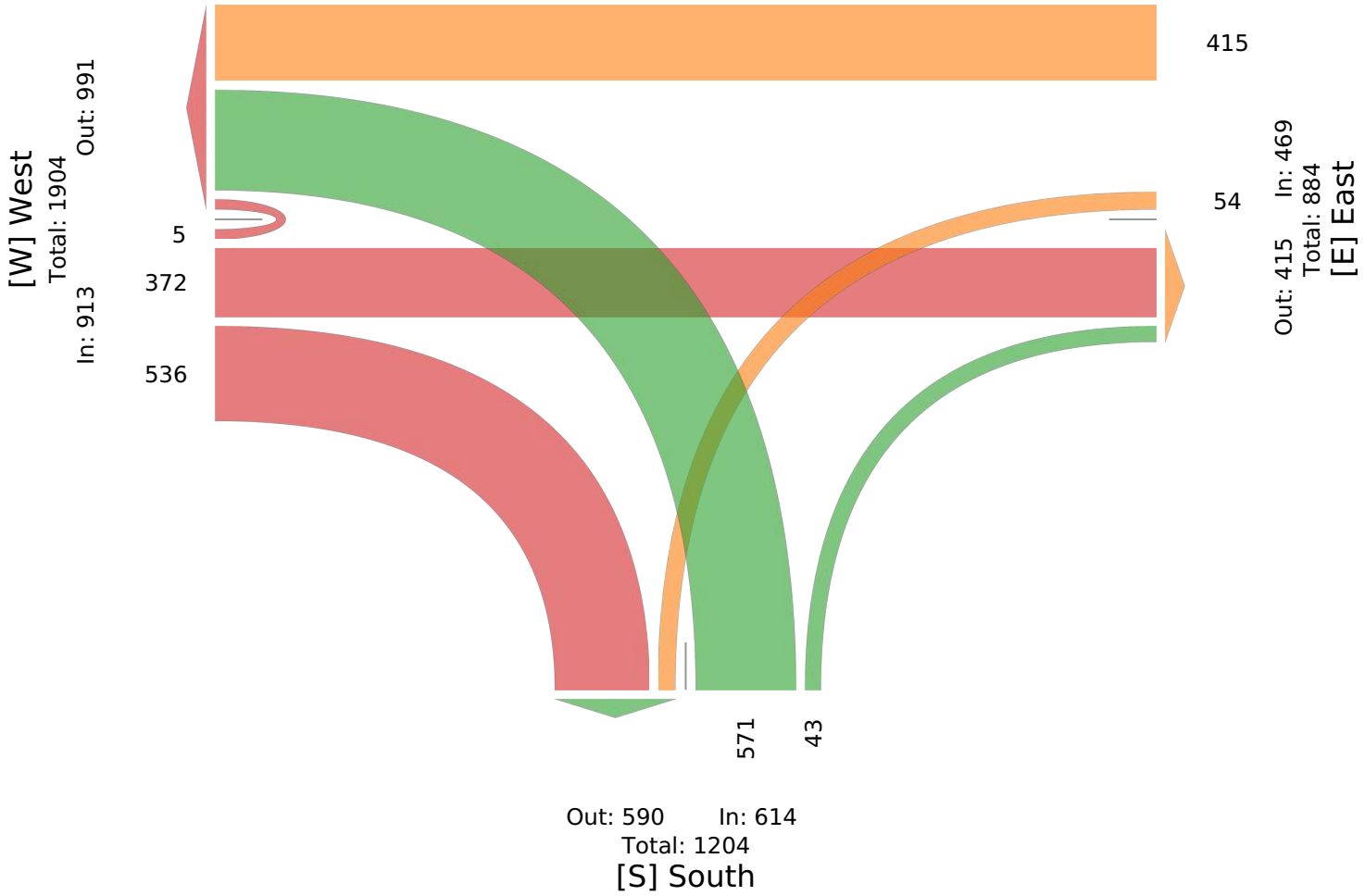
Leg	East					South					West					
Direction	Westbound					Northbound					Eastbound					
Time	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	Int
Hourly Total	58	6	0	**64**	0	4	77	0	**81**	0	24	18	0	**42**	0	**187**
8:00AM	7	0	0	**7**	0	1	13	0	**14**	0	9	7	0	**16**	0	**37**
8:15AM	9	4	0	**13**	0	0	12	0	**12**	0	7	10	0	**17**	0	**42**
8:30AM	4	1	0	**5**	0	0	10	0	**10**	0	10	3	0	**13**	0	**28**
8:45AM	7	1	0	**8**	0	3	9	0	**12**	0	10	4	0	**14**	0	**34**
Hourly Total	27	6	0	**33**	0	4	44	0	**48**	0	36	24	0	**60**	0	**141**
9:00AM	7	1	0	**8**	0	0	9	0	**9**	0	10	3	0	**13**	0	**30**
9:15AM	7	1	0	**8**	0	2	16	0	**18**	0	7	11	0	**18**	0	**44**
9:30AM	5	0	0	**5**	0	0	9	0	**9**	0	9	9	0	**18**	0	**32**
9:45AM	14	0	0	**14**	0	1	8	0	**9**	0	9	10	0	**19**	0	**42**
Hourly Total	33	2	0	**35**	0	3	42	0	**45**	0	35	33	0	**68**	0	**148**
10:00AM	4	0	0	**4**	0	1	6	0	**7**	0	14	7	0	**21**	0	**32**
10:15AM	10	1	0	**11**	0	0	6	0	**6**	0	4	11	0	**15**	0	**32**
10:30AM	5	1	0	**6**	0	4	9	0	**13**	0	7	4	0	**11**	0	**30**
10:45AM	5	1	0	**6**	0	0	4	0	**4**	0	10	7	0	**17**	0	**27**
Hourly Total	24	3	0	**27**	0	5	25	0	**30**	0	35	29	0	**64**	0	**121**
11:00AM	6	0	0	**6**	0	1	12	0	**13**	0	13	3	0	**16**	0	**35**
11:15AM	8	0	0	**8**	0	0	12	0	**12**	0	10	5	0	**15**	0	**35**
11:30AM	7	1	0	**8**	0	0	8	0	**8**	0	8	6	0	**14**	0	**30**
11:45AM	9	0	0	**9**	0	1	8	0	**9**	0	14	7	0	**21**	0	**39**
Hourly Total	30	1	0	**31**	0	2	40	0	**42**	0	45	21	0	**66**	0	**139**
12:00PM	7	1	0	**8**	0	1	14	0	**15**	0	14	8	0	**22**	0	**45**
12:15PM	6	0	0	**6**	0	3	8	0	**11**	0	8	7	0	**15**	0	**32**
12:30PM	4	0	0	**4**	0	1	11	0	**12**	0	10	5	0	**15**	0	**31**
12:45PM	10	1	0	**11**	0	1	20	0	**21**	0	16	8	2	**26**	0	**58**
Hourly Total	27	2	0	**29**	0	6	53	0	**59**	0	48	28	2	**78**	0	**166**
1:00PM	7	1	0	**8**	0	0	6	0	**6**	0	16	5	0	**21**	0	**35**
1:15PM	7	1	0	**8**	0	0	7	0	**7**	0	10	5	0	**15**	0	**30**
1:30PM	11	0	0	**11**	0	1	10	0	**11**	0	5	7	0	**12**	0	**34**
1:45PM	6	1	0	**7**	0	0	13	0	**13**	0	3	5	0	**8**	0	**28**
Hourly Total	31	3	0	**34**	0	1	36	0	**37**	0	34	22	0	**56**	0	**127**
2:00PM	4	2	0	**6**	0	1	10	0	**11**	0	10	7	1	**18**	0	**35**
2:15PM	9	0	0	**9**	0	0	13	0	**13**	0	13	7	0	**20**	0	**42**
2:30PM	10	1	0	**11**	0	1	9	0	**10**	0	9	13	0	**22**	0	**43**
2:45PM	14	3	0	**17**	0	0	15	0	**15**	0	16	10	0	**26**	0	**58**
Hourly Total	37	6	0	**43**	0	2	47	0	**49**	0	48	37	1	**86**	0	**178**
3:00PM	5	1	0	**6**	0	0	18	0	**18**	0	26	6	0	**32**	0	**56**
3:15PM	8	0	0	**8**	0	0	12	0	**12**	0	12	6	0	**18**	0	**38**
3:30PM	7	0	0	**7**	0	1	16	0	**17**	0	12	9	1	**22**	0	**46**
3:45PM	7	2	0	**9**	0	0	16	0	**16**	0	13	15	0	**28**	0	**53**
Hourly Total	27	3	0	**30**	0	1	62	0	**63**	0	63	36	1	**100**	0	**193**
4:00PM	10	4	0	**14**	0	0	7	0	**7**	0	17	13	0	**30**	0	**51**
4:15PM	13	3	0	**16**	0	0	10	0	**10**	0	16	12	0	**28**	0	**54**
4:30PM	8	1	0	**9**	0	1	16	0	**17**	0	14	8	0	**22**	0	**48**
4:45PM	8	0	0	**8**	0	2	7	0	**9**	0	17	11	0	**28**	0	**45**
Hourly Total	39	8	0	**47**	0	3	40	0	**43**	0	64	44	0	**108**	0	**198**
5:00PM	13	1	0	**14**	0	0	15	0	**15**	0	13	12	1	**26**	0	**55**
5:15PM	6	1	0	**7**	0	1	10	0	**11**	0	16	17	0	**33**	0	**51**
5:30PM	8	4	0	**12**	0	3	20	0	**23**	0	16	10	0	**26**	0	**61**
5:45PM	1	0	0	**1**	0	1	0	0	**1**	0	3	4	0	**7**	0	**9**
Hourly Total	28	6	0	**34**	0	5	45	0	**50**	0	48	43	1	**92**	0	**176**
6:00PM	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**0**
6:15PM	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**0**
6:30PM	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**0**
Hourly Total	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	**0**
Total	415	54	0	**469**	0	43	571	0	**614**	0	536	372	5	**913**	0	**1996**
% Approach	88.5%	11.5%	0%	**-**	-	7.0%	93.0%	0%	**-**	-	58.7%	40.7%	0.5%	**-**	-	-
% Total	20.8%	2.7%	0%	**23.5%**	-	2.2%	28.6%	0%	**30.8%**	-	26.9%	18.6%	0.3%	**45.7%**	-	-
Lights	387	45	0	**432**	-	41	546	0	**587**	-	505	337	5	**847**	-	1866
% Lights	93.3%	83.3%	0%	**92.1%**	-	95.3%	95.6%	0%	**95.6%**	-	94.2%	90.6%	100%	**92.8%**	-	93.5%

Leg Direction	East Westbound					South Northbound					West Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
Articulated Trucks	17	4	0	**21**	-	1	13	0	**14**	-	13	22	0	**35**	-	70
% Articulated Trucks	4.1%	7.4%	0%	**4.5%**	-	2.3%	2.3%	0%	**2.3%**	-	2.4%	5.9%	0%	**3.8%**	-	3.5%
Buses and Single-Unit Trucks	11	5	0	**16**	-	1	12	0	**13**	-	18	13	0	**31**	-	60
% Buses and Single-Unit Trucks	2.7%	9.3%	0%	**3.4%**	-	2.3%	2.1%	0%	**2.1%**	-	3.4%	3.5%	0%	**3.4%**	-	3.0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

SD34 & Fort Meade Way - TMC
Wed May 12, 2021
Full Length (9:15 PM-5:45 PM, 5:45 PM-6:45 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 838047, Location: 44.417249, -103.428585

Provided by: JEO Consulting (NE)
2000 Q Street, Ste 500,
Lincoln, NE, 68503, US



SD34 & Fort Meade Way - TMC

Thu May 13, 2021
AM Peak (May 13 2021 7AM - 8 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 838047, Location: 44.417249, -103.428585

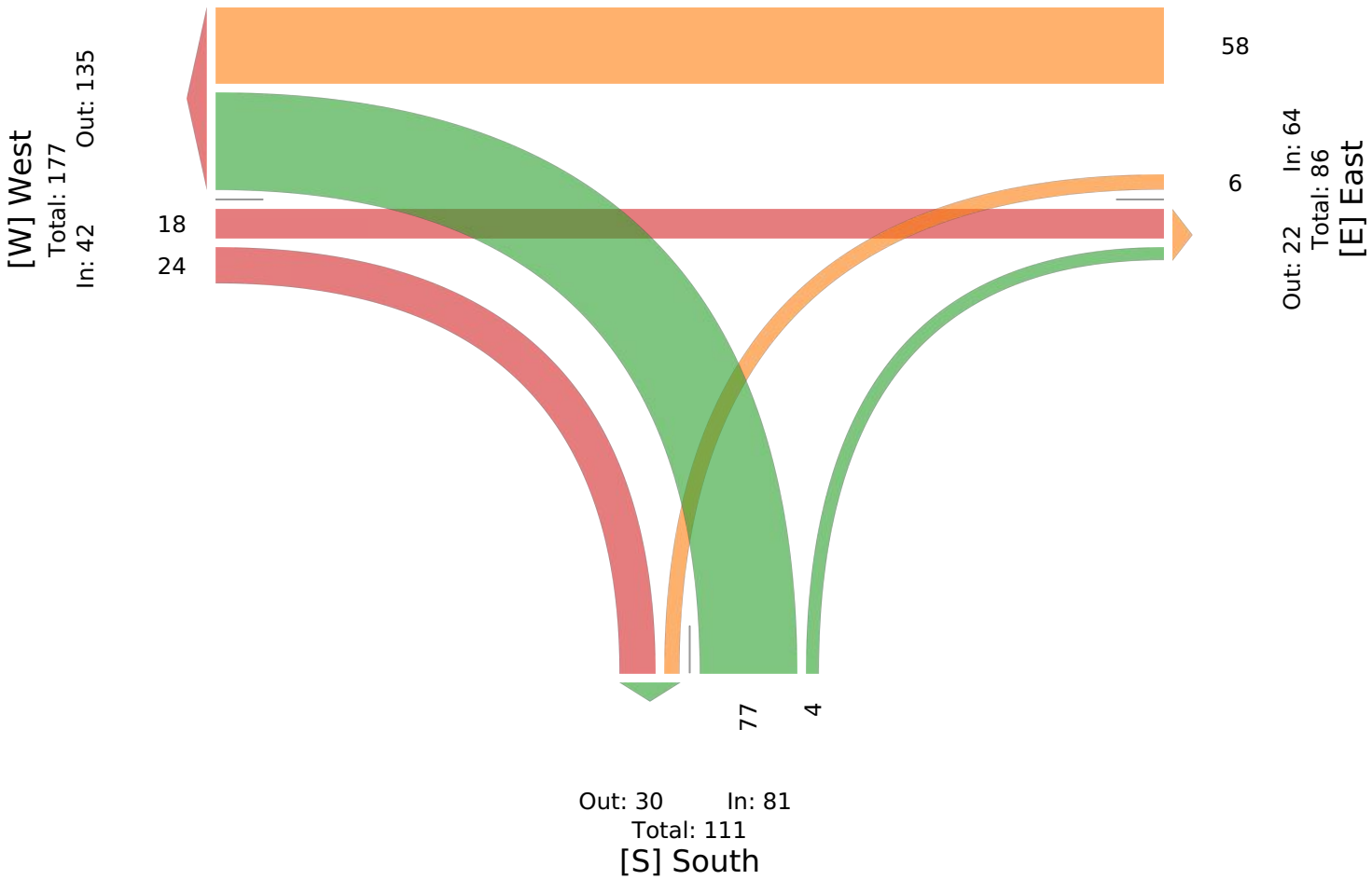
Provided by: JEO Consulting (NE)
2000 Q Street, Ste 500,
Lincoln, NE, 68503, US

Leg Direction	East Westbound					South Northbound					West Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2021-05-13 7:00AM	10	3	0	**13**	0	1	13	0	**14**	0	7	7	0	**14**	0	**41**
7:15AM	13	1	0	**14**	0	0	22	0	**22**	0	4	3	0	**7**	0	**43**
7:30AM	18	0	0	**18**	0	1	22	0	**23**	0	5	3	0	**8**	0	**49**
7:45AM	17	2	0	**19**	0	2	20	0	**22**	0	8	5	0	**13**	0	**54**
Total	58	6	0	**64**	0	4	77	0	**81**	0	24	18	0	**42**	0	**187**
% Approach	90.6%	9.4%	0%	**-**	-	4.9%	95.1%	0%	**-**	-	57.1%	42.9%	0%	**-**	-	**-**
% Total	31.0%	3.2%	0%	**34.2%**	-	2.1%	41.2%	0%	**43.3%**	-	12.8%	9.6%	0%	**22.5%**	-	**-**
PHF	0.806	0.500	-	**0.842**	-	0.500	0.875	-	**0.880**	-	0.750	0.643	-	**0.750**	-	0.866
Lights	55	6	0	**61**	-	4	76	0	**80**	-	22	14	0	**36**	-	177
% Lights	94.8%	100%	0%	**95.3%**	-	100%	98.7%	0%	**98.8%**	-	91.7%	77.8%	0%	**85.7%**	-	94.7%
Articulated Trucks	1	0	0	**1**	-	0	1	0	**1**	-	1	1	0	**2**	-	4
% Articulated Trucks	1.7%	0%	0%	**1.6%**	-	0%	1.3%	0%	**1.2%**	-	4.2%	5.6%	0%	**4.8%**	-	2.1%
Buses and Single-Unit Trucks	2	0	0	**2**	-	0	0	0	**0**	-	1	3	0	**4**	-	6
% Buses and Single-Unit Trucks	3.4%	0%	0%	**3.1%**	-	0%	0%	0%	**0%**	-	4.2%	16.7%	0%	**9.5%**	-	3.2%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

SD34 & Fort Meade Way - TMC
Thu May 13, 2021
AM Peak (May 13 2021 7AM - 8 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 838047, Location: 44.417249, -103.428585

Provided by: JEO Consulting (NE)
2000 Q Street, Ste 500,
Lincoln, NE, 68503, US



SD34 & Fort Meade Way - TMC

Thu May 13, 2021
PM Peak (May 13 2021 4:45PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 838047, Location: 44.417249, -103.428585

Provided by: JEO Consulting (NE)
2000 Q Street, Ste 500,
Lincoln, NE, 68503, US

Leg Direction	East Westbound					South Northbound					West Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2021-05-13 4:45PM	8	0	0	**8**	0	2	7	0	**9**	0	17	11	0	**28**	0	**45**
5:00PM	13	1	0	**14**	0	0	15	0	**15**	0	13	12	1	**26**	0	**55**
5:15PM	6	1	0	**7**	0	1	10	0	**11**	0	16	17	0	**33**	0	**51**
5:30PM	8	4	0	**12**	0	3	20	0	**23**	0	16	10	0	**26**	0	**61**
Total	35	6	0	**41**	0	6	52	0	**58**	0	62	50	1	**113**	0	**212**
% Approach	85.4%	14.6%	0%	**-**	-	10.3%	89.7%	0%	**-**	-	54.9%	44.2%	0.9%	**-**	-	-
% Total	16.5%	2.8%	0%	**19.3%**	-	2.8%	24.5%	0%	**27.4%**	-	29.2%	23.6%	0.5%	**53.3%**	-	-
PHF	0.673	0.375	-	**0.732**	-	0.500	0.650	-	**0.630**	-	0.912	0.735	0.250	**0.856**	-	0.869
Lights	32	4	0	**36**	-	6	50	0	**56**	-	62	49	1	**112**	-	204
% Lights	91.4%	66.7%	0%	**87.8%**	-	100%	96.2%	0%	**96.6%**	-	100%	98.0%	100%	**99.1%**	-	96.2%
Articulated Trucks	1	2	0	**3**	-	0	1	0	**1**	-	0	1	0	**1**	-	5
% Articulated Trucks	2.9%	33.3%	0%	**7.3%**	-	0%	1.9%	0%	**1.7%**	-	0%	2.0%	0%	**0.9%**	-	2.4%
Buses and Single-Unit Trucks	2	0	0	**2**	-	0	1	0	**1**	-	0	0	0	**0**	-	3
% Buses and Single-Unit Trucks	5.7%	0%	0%	**4.9%**	-	0%	1.9%	0%	**1.7%**	-	0%	0%	0%	**0%**	-	1.4%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

SD34 & Fort Meade Way - TMC
Thu May 13, 2021
PM Peak (May 13 2021 4:45PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 838047, Location: 44.417249, -103.428585

Provided by: JEO Consulting (NE)
2000 Q Street, Ste 500,
Lincoln, NE, 68503, US