

Bridges of Davison County

Davison County currently maintains 88 of the 124 bridges under inspection throughout the County. Each bridge is rated on a scale of zero to 100 percent, with 100 percent representing an “entirely sufficient bridge.” Based on the level of bridge sufficiency, Davison County bridges are currently in good condition. The 2014 county-wide bridge sufficiency average is 78.5 percent.

The Davison County Master Transportation Plan uses a rating system to prioritize bridge repairs and replacement within the county based on the following bridge characteristics:

- Sufficiency Rating
- Estimated Average Daily Traffic
- Bypass, Detour Length, Out-of-Distance Travel
- Bridge Posting
- Bridge Width
- Bridge Length
- Located on Priority Route (Major Collectors or Minor Collectors)
- Key Industry/Traffic Generator Route

Functionally Obsolete

Bridges are considered functionally obsolete when the deck geometry, load carrying capacity (comparison of the original design load to the current State legal load), clearance, or approach roadway alignment no longer meet the usual criteria for the system of which it is an integral part. In general, functionally obsolete means that the bridge was built to standards that are not used today.

Structurally Deficient

Bridges are considered structurally deficient if significant load carrying elements are found to be in poor condition due to deterioration and/or damage, or the adequacy of the waterway opening provided by the bridge is determined to be extremely insufficient to the point of causing overtopping with intolerable traffic interruptions.

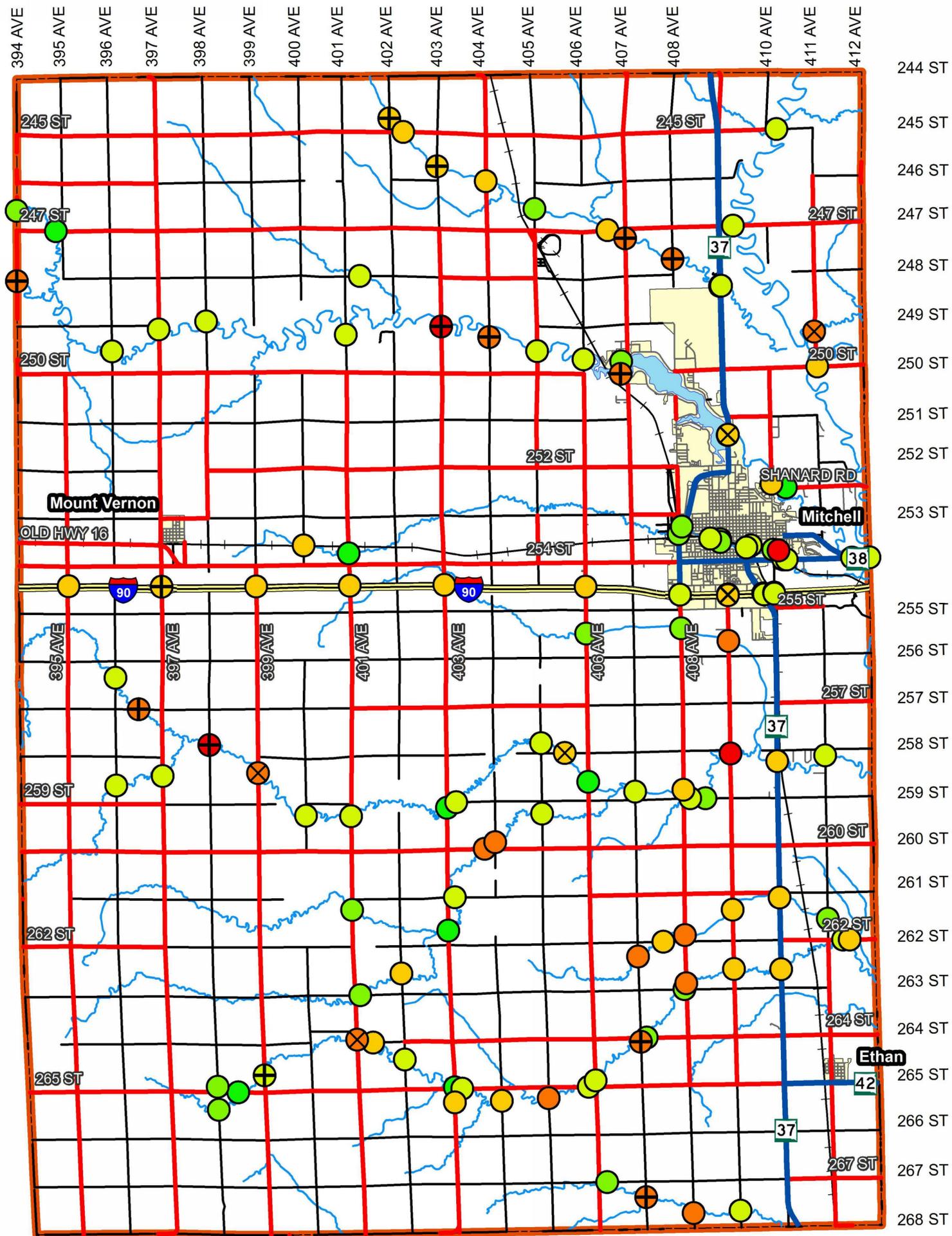
← The map (left) shows the age of bridges within Davison County with bridge deficiency type. There are 6 functionally obsolete and 13 structurally deficient bridges maintained by Davison County.

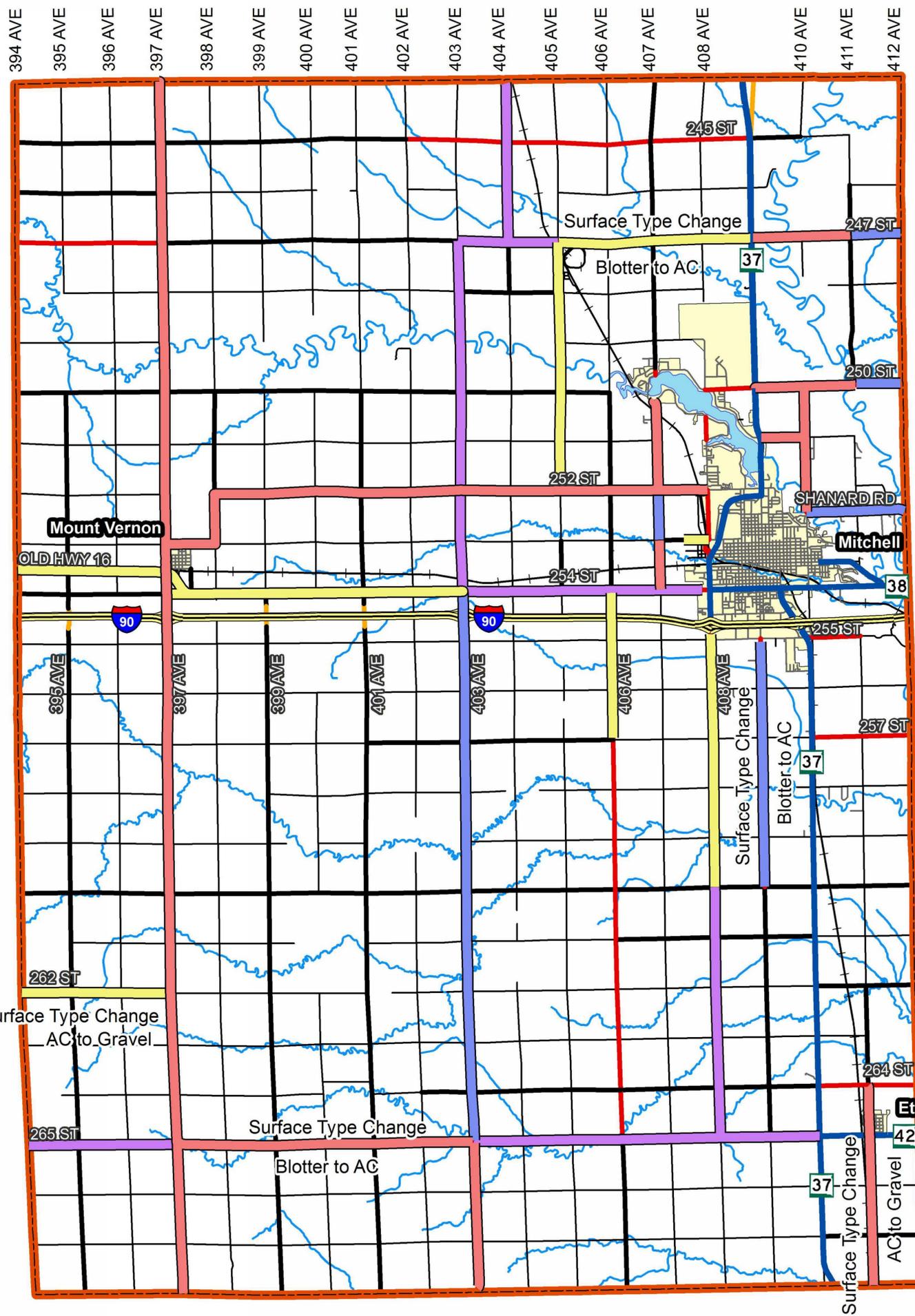
Three levels of bridge needs are identified in the Davison County Master Transportation Plan. The table below provides the need level, number of bridges, and total cost per level. ↓

Planning Level Assessment	Number of Bridges	Reconstruction Cost (2015 \$)
Replacement	7	1,850,000
Rehabilitation	8	2,310,000
Watch List	7	2,900,000

Legend

Bridge Age	Bridge Deficiency	Interstate
● Older than 100 Years (4)	× Functionally Obsolete (8)	— State Highways
● 76 to 100 Years (19)	+ Structurally Deficient (14)	— County Roads
● 51 to 75 Years (31)		— Township Roads
● 26 to 50 Years (43)		— Rail Lines
● 11 to 25 Years (19)		— Rivers & Streams
● 10 Years or Less (8)		— Cities
		— Study Area (Davison County)





Preservation & Maintenance

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The Preservation and Maintenance Plan looks at long-range aspects of incorporating new construction, reconstruction, preservation, and maintenance to extend the useful life of County infrastructure investments. The plan maps out the preservation and maintenance activities for each roadway investment, along with their respective frequency and estimated costs, through the anticipated design life of the asset.

The plan defines two scenarios for the estimation of roadway preservation and maintenance needs in Davison County over the next 20 years:

- Maintaining the system as it currently exists
- Maintaining existing system with potential changes
 - 1) Incorporate roadway segments identified for evaluation of surface modification
 - 2) Incorporate changes along proposed jurisdictional transfer segments

The following lists planning-level design lives for various roadway elements assuming appropriate preservation and maintenance activities:

- Bridges and concrete culverts — 75 years
- Asphalt pavement — 20 years
- Concrete pavement — 40 to 50 years
- Gravel surfacing — 4 to 6 years
- Signs — 5 to 8 years
- Pavement markings — 1 to 7 years

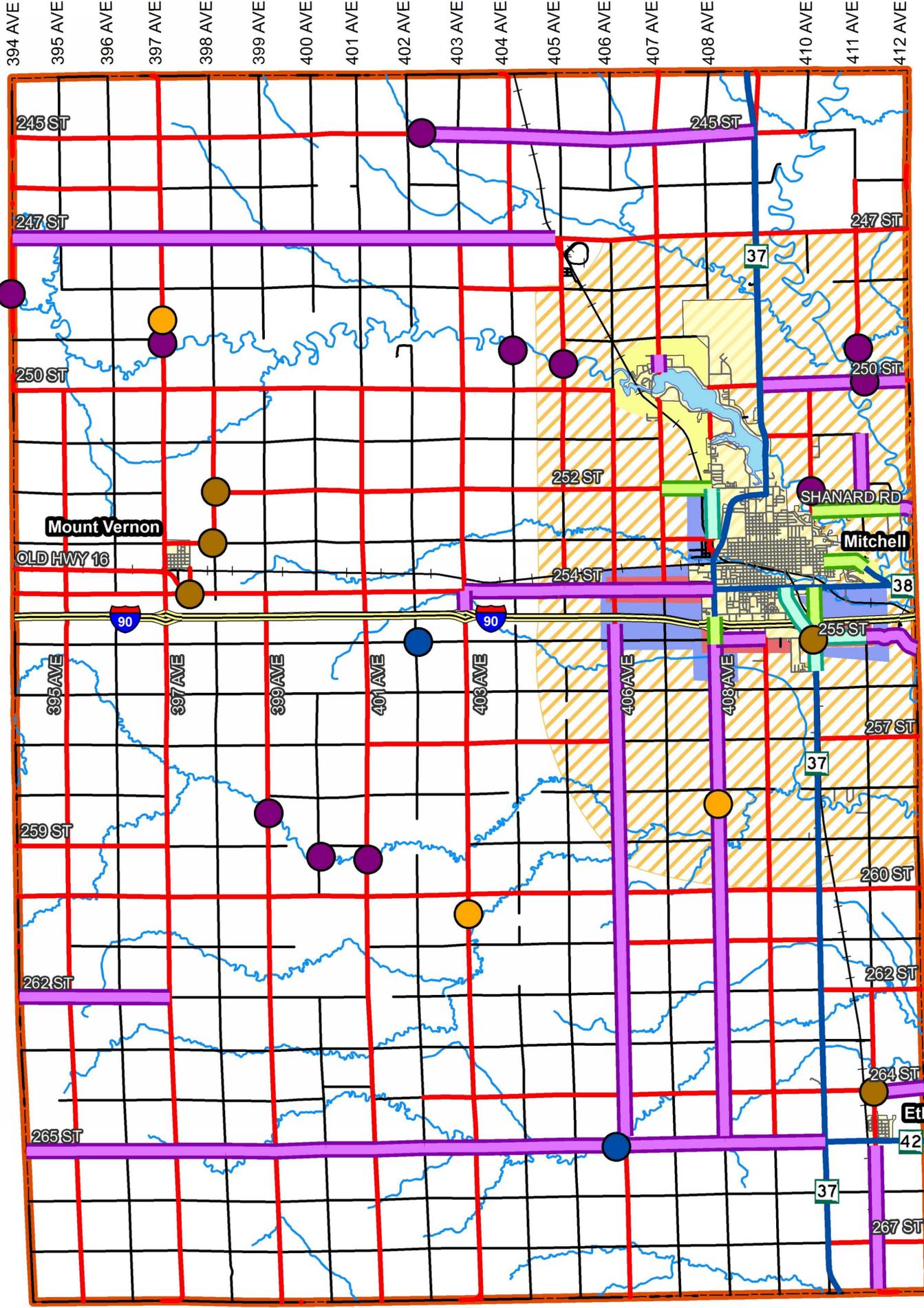
Estimated Costs of Preservation & Maintenance Scenarios in Davison County

	Existing System (Costs, 2015 \$)	Modified System with Proposed Changes (Costs, 2015 \$)
Total 20-Yr Costs	\$110,970,900	\$110,247,300
Total Annualized Cost	\$5,548,545	\$5,512,365

← This map provides the estimated timeframe for the next major investment along county roadway corridors. Surface type changes (noted on map) will be analyzed during the identified timeframe.

Legend

Timeframe	County Roads	Interstate
2016-2020 (60 mi)	Surface Type	State Highways
2021-2025 (30 mi)	Gravel	Township Roads
2026-2030 (20 mi)	Bituminous	Rail Lines
2031-2035 (32 mi)	Concrete	Rivers & Streams
		Cities
		Study Area (Davison County)



Transportation Needs

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Throughout the planning process for the Davison County Master Transportation Plan existing and future transportation needs were identified. Nine need types were identified for further evaluation. The nine need types include:

- Bridge
- Intersection
- Drainage
- Traffic
- Unofficial Bypass Routes
- Corridor
- Pedestrian/Bicycle
- Maintenance
- Urbanized Growth-related

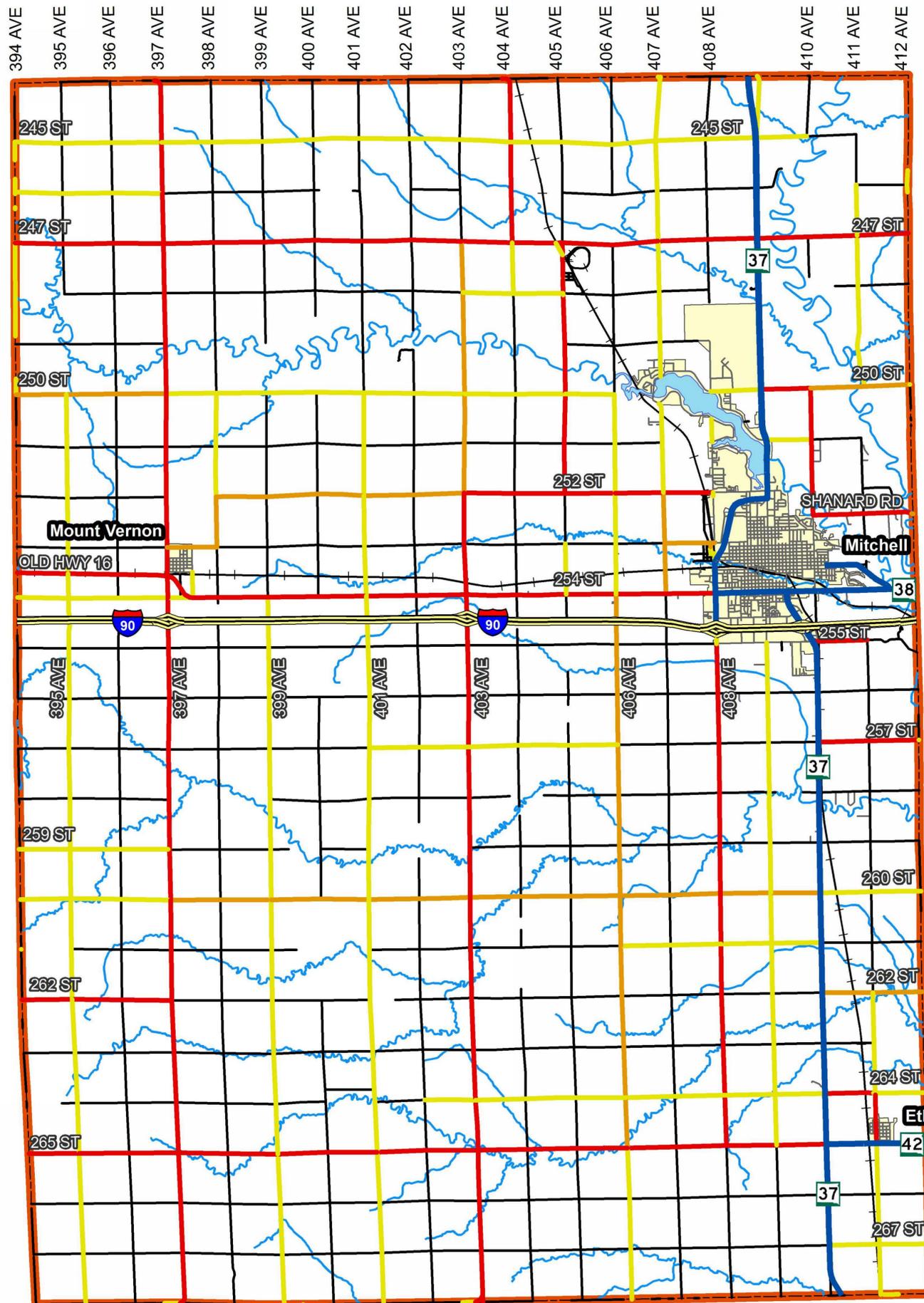
Overall, the Davison County transportation system provides roadway users a well-connected network of roads that are in good condition. Like any transportation network, there are issues that need to be addressed to maintain user mobility, safety, and an acceptable level of service.

Corridor issues impact numerous areas within the County and affect the mobility and safety of many roadway users. Recommendations are outlined in the plan to address both general and location specific issues noted. Standards and policies are identified that are transferable and adaptable as existing issues are addressed and future issues are identified.

As **Urbanized Growth** continues, the transportation network will continue to transition from rural to urban design standards. The Master Transportation Plan identifies areas around the City of Mitchell that may experience the transition during the planning horizon. Recommendations for design and policy of these roadways are included to insure consistency as the City of Mitchell expands.

← The location of transportation issues and needs within Davison County are shown on the map (left). The Davison County Master Transportation Plan identifies projects or county wide transportation standards and policies to address identified needs.

Legend		
Need Type	City of Mitchell Growth Areas	Interstate
● Bridge	Acres and Low-Density Development	State Highways
● Drainage	Commercial Development	County Roads
● Intersection	Industrial Development	Township Roads
● Maintenance	Suburban Residential Development	Rail Lines
— Traffic		Rivers & Streams
— Pedestrian/Bicycle		Cities
— Corridor		Study Area (Davison County)



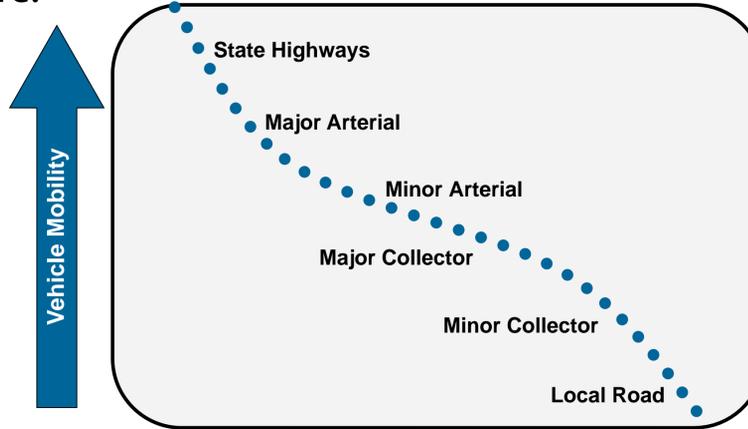
Major Roads Plan

The Davison County Master Transportation Plan proposes a Major Roads Plan developed in partnership with Davison County and SDDOT staff. The Major Roads Plan uses common terminology and classification characteristics to maintain consistent linkages between roadway type, establish design guidance and standards, and identify future funding opportunities.

Priority routes within Davison County are primarily roadways identified as **Major Collectors** in the County Roadway Classification. These roadways support county-wide and regional trips and typically carry the greatest traffic volumes of County jurisdiction roadways. The priority routes also provide continuity along regional roadways for trips destined for counties surrounding Davison County.

As the primary traffic carriers within the County roadway system, the identified routes will have priority for improvements and maintenance as the County outlines projects and implementation for the future.

← The Major Roads Plan (left) categorizes roadways based on a County Roadway Classification System to establish design standards, provide consistent linkages, and prioritize transportation system needs.

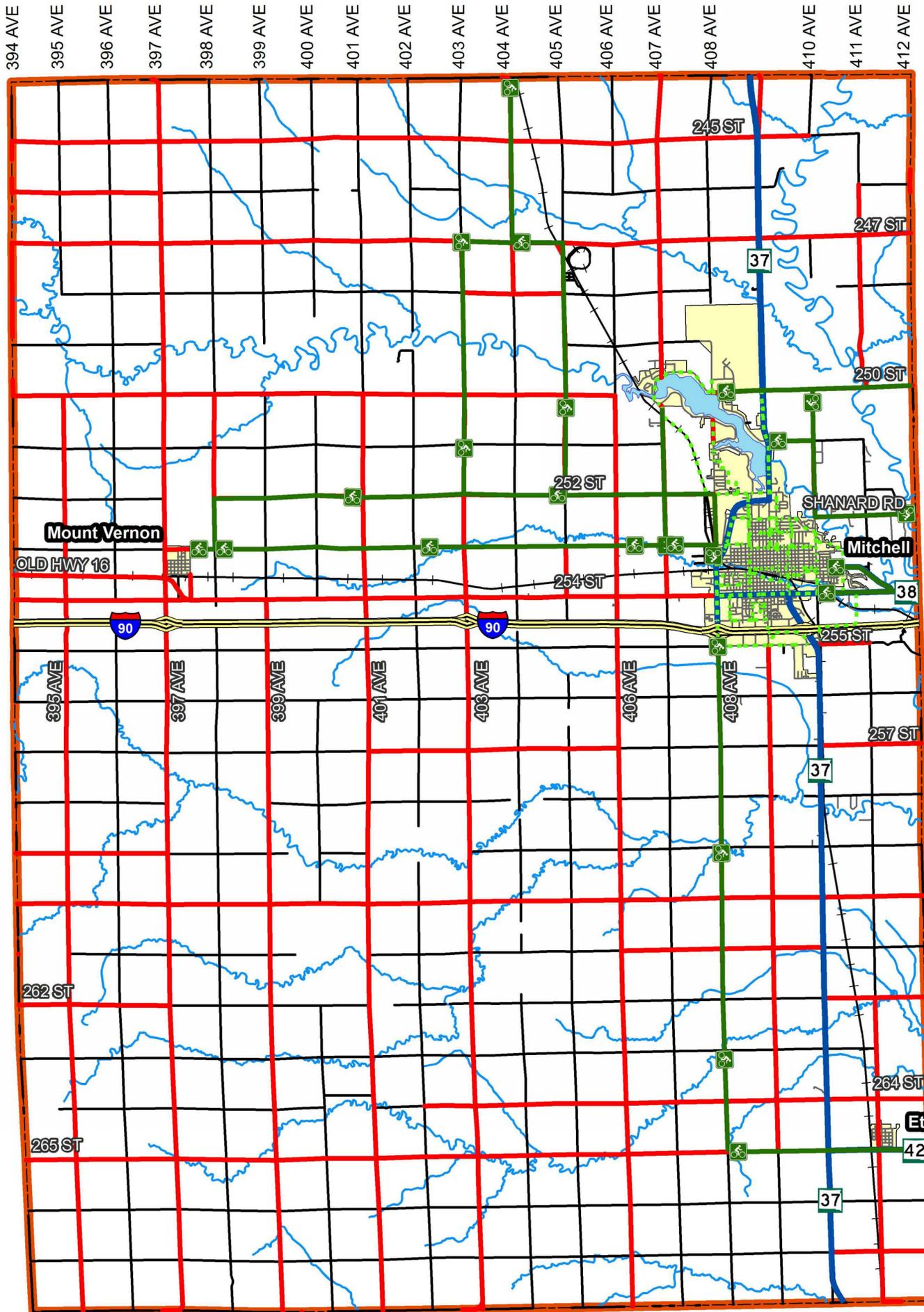


↑ The mobility to access relationship shown in the figure (above) demonstrates that as vehicle mobility increases property access decreases and as mobility decreases property access increases.

Legend

County Roadway Classification	Interstate	Rail Lines
State Highways	Rivers & Streams	Cities
Major Collector	Township Roads	Study Area (Davison County)
Minor Collector		
County Local		

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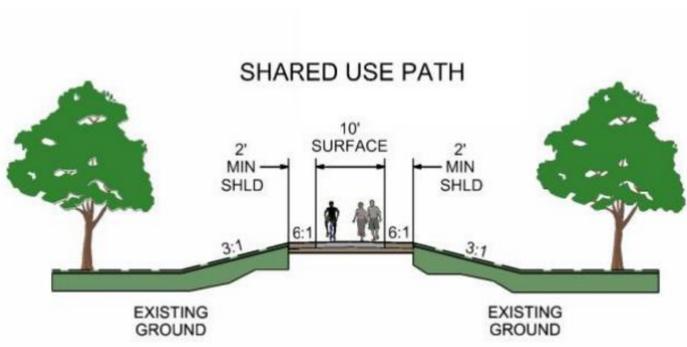
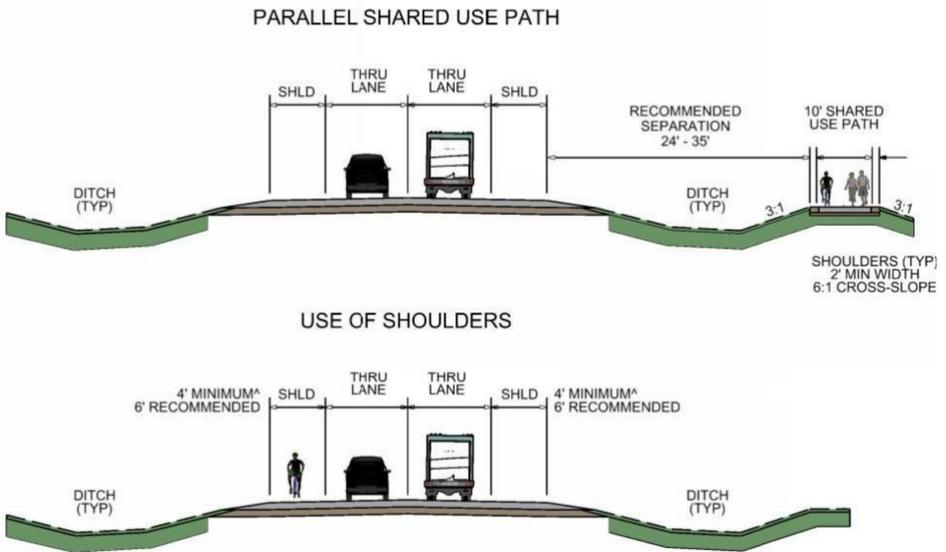
Pedestrian & Bicycle Routes

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The Davison County Master Transportation Plan reviews existing and planned bicycle connections around the City of Mitchell and continuity with County roadways. Commonly traveled bicycle routes were identified through public participation. The recommended improvements in the plan seek to balance the needs of both recreational and non-recreational facility users .

The plan also outlines design standards and guidance for implementing two types of pedestrian and bicycle facilities throughout the County: **Shared Use Paths** and **Shoulder Bikeways**. Pedestrian and bicycle improvements along frequently traveled routes should be considered in conjunction with roadway improvements along identified segments.

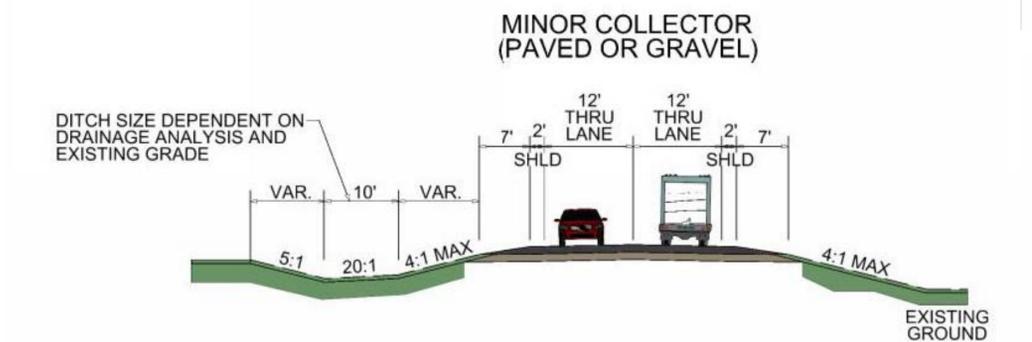
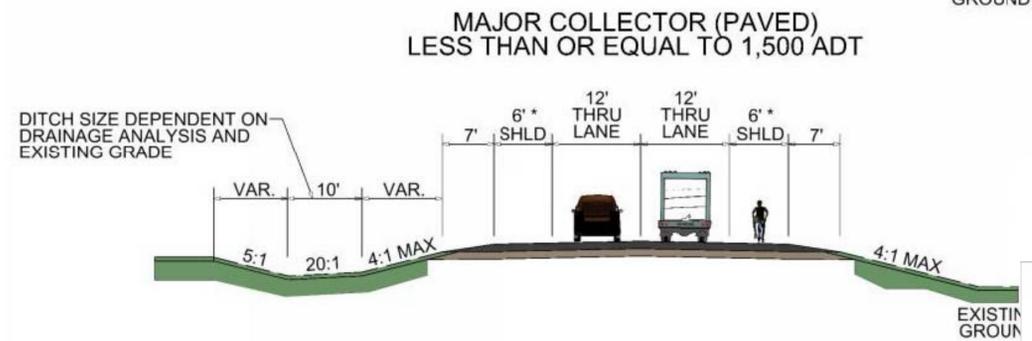
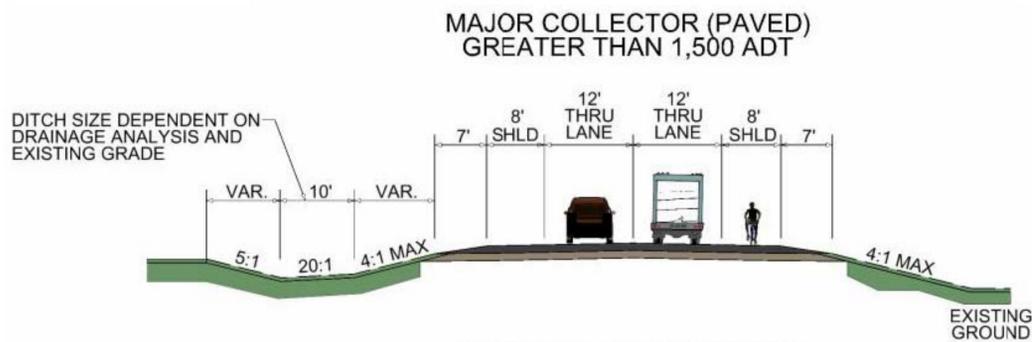
← Frequently traveled bicycle routes connect the City of Mitchell to surrounding towns within Davison County and adjacent counties. The Davison County Master Transportation Plan prioritizes pedestrian and bicycle improvements along these routes.



Legend

- Frequently Traveled Routes (Green line with bicycle icon)
- City of Mitchell Bike Facilities (Existing & Planned) (Red dashed line)
- Interstate (Thick blue line)
- State Highways (Blue line)
- County Roads (Red line)
- Township Roads (Thin black line)
- Rail Lines (Black line with cross-ticks)
- Rivers & Streams (Blue wavy line)
- Cities (Yellow shaded area)
- Study Area (Davison County) (Orange outline)

Typical Roadway Sections



The Davison County Master Transportation Plan provides typical cross-sections for the four categories of roadways identified in the Major Road Plan. Typical cross-sections provide guidance for the development of new or reconstructed roadways to meet the needs of the community.

Typical cross-sections are shown for [Major Collector](#), [Minor Collector](#), [Local County or Township](#), and [Urban](#) roadways.

The Davison County Master Transportation Plan also provides typical cross-sections for shared use paths parallel to roadways and as stand alone routes. Cross-sections with shoulder space for non-motorized modes of transportation are also shown.

