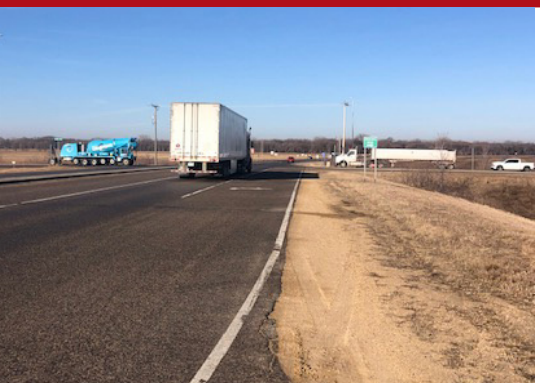
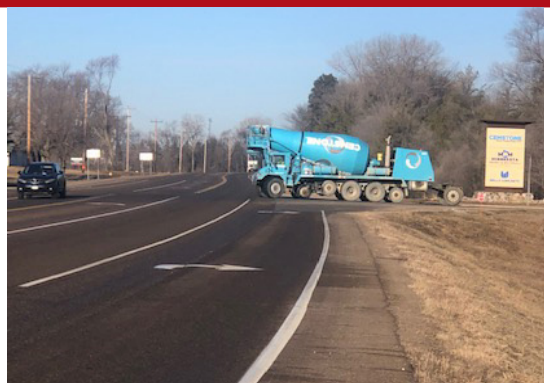
County Road 46 and County Road 46/TH 52 Interchange
Safety and Mobility Improvement Project

2022 Rebuilding American Infrastructure with Sustainability and Equity (**RAISE**) Program


Project Name: County Road 46 and County Road 46/TH 52 Interchange Safety and Mobility Improvement Project

Project Type: Rural Capital Project

Future Eligible Project Cost: $48.6 M

2022 RAISE Funds Requested: $25.0 M

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Supporting Information can be found at: https://www.srfconsulting.com/dakota-county-raise/

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I. PROJECT DESCRIPTION

Dakota County is submitting this 2022 RAISE grant request for $25 million in funding. The requested funds will be used toward County Road 46 and County Road 46/TH 52 Interchange Safety and Mobility Improvement Project (herein referred to as the Project). The County is working in close partnership with the cities of Rosemount and Coates along with Empire Township (partners).

The County Road 46 (CR 46) corridor provides a vital east-west connector across Dakota County classified as a minor arterial and connecting cities in Dakota County including Burnsville, Lakeville, Apple Valley, Rosemount, Coates, and Hastings.

This route also serves as a critical connector to major state highways like TH 52, TH 3, and accessing I-35, TH 77, and TH 61 just beyond the project limits. The lack of other continuous east-west connections south of County Road 46 in Dakota County leads residents and businesses to rely upon County Road 46 for heavy freight movement and connectivity to major north-south routes noted above.

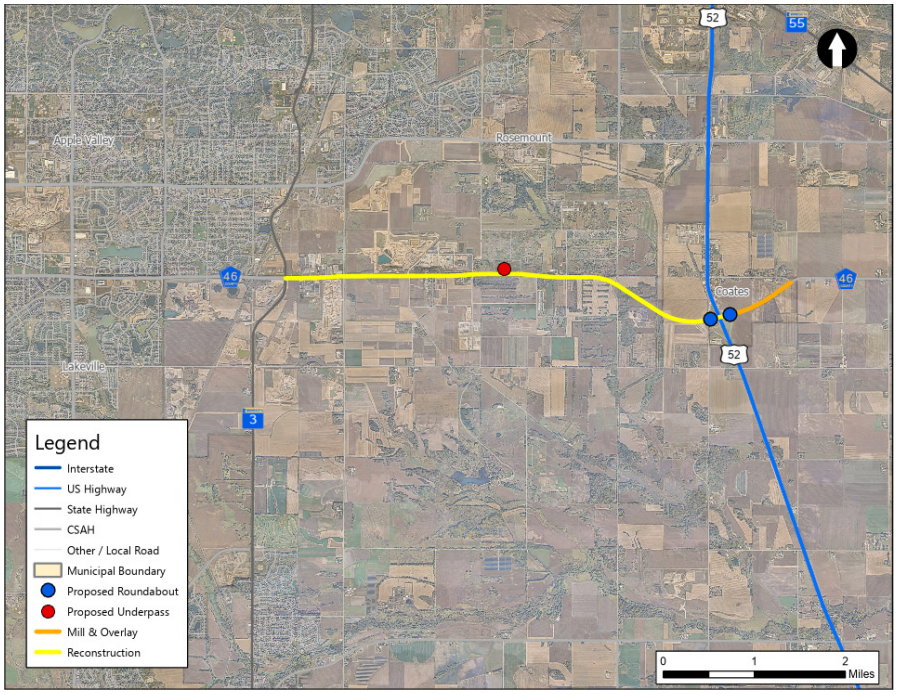

Figure 1 Project Overview

In 2019, the western five miles of the Project had an average annual daily traffic (AADT) ranging from 15,100 vehicles per day (vpd) TH 3 on the west end to 12,000 vpd at the intersection with TH 52. The far eastern one-mile segment transitions from 12,000 vpd to 6,500 vpd from the TH 52 Interchange to the Project limits at CR 48. The 2020 truck traffic, otherwise known as heavy commercial annual daily traffic (HCADT), makes up more than 12 percent of the vehicle types with 1,250 heavy commercial vehicles per day on this route. Today's traffic counts challenge the capacity of the existing two-lane highway especially on the west end of the Project. A No Build condition will cripple mobility with the projected traffic counts far exceeding the 10,000 vehicles per day (vpd) considered the threshold for transitioning from a two-lane facility to a four-lane facility.

Existing pavement conditions are nearing the end of its useful service life and continues to be prematurely consumed by the heavy commercial traffic in the deteriorated pavement condition. A mill and overlay will be required by 2025 as a preservation method in a No Build scenario.

Figure 2 Truck Traffic on County Road 46

The Dakota County partnership has developed a vision for the Project that will improve safety, increase mobility, and promote the safe and efficient movement of goods on this heavily traveled freight corridor. The Project is in an area planned for growth and development with the University of Minnesota's Outreach, Research and Education (UMore) Park's innovative community plan development incorporating nearly 4,700 acres. Along with the University of Minnesota, the communities of Dakota County have planning for development that is equitable and sustainable as a priority in this rapidly growing region just south of the Twin Cities. Details of the proposed improvements are provided below.

Proposed Improvements

The Project will expand 5.1 miles of County Road 46 from TH 3 to TH 52 from two lanes to a four-lane divided section to address safety and mobility needs due to increasing traffic volumes and the disproportionately high amount of heavy commercial vehicle traffic. In addition, the Project will modify the interchange ramp access at TH 52 with roundabouts to eliminate right angle crashes. Beyond the TH 52 Interchange, the Project will include just under a mile of pavement restoration to the east Project limits. A multi-modal trail will be constructed along the north side of County Road 46 and will include a new trail underpass connecting the Vermillion Highlands Greenway. Other detailed improvements include:

- Full reconstruction will restore the structural base as a foundation for the new pavement surface able to accommodate the structural integrity needed for this mixed-use corridor.

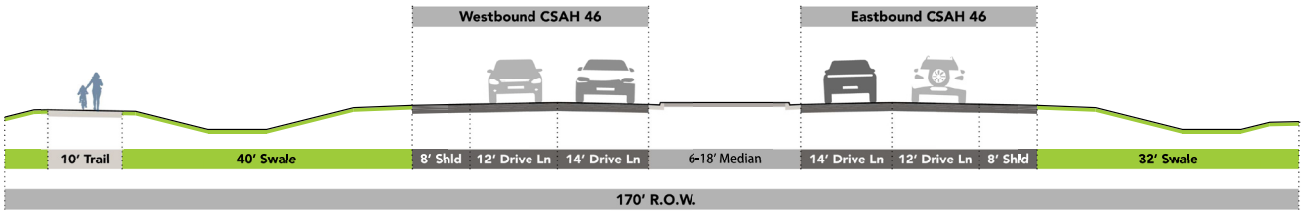

Figure 3 Typical Section

- A 10-foot multi-use trail will also be constructed along the north side of the divided highway connecting to a new grade separated crossing for the Vermillion River Greenway improving multimodal mobility and safety.
- The biggest safety benefits on the corridor will be a result of the construction of multi-lane roundabouts (two and one circulating lanes) at the County Road 46/TH 52 Interchange ramps, reducing the potential for right angle crashes.

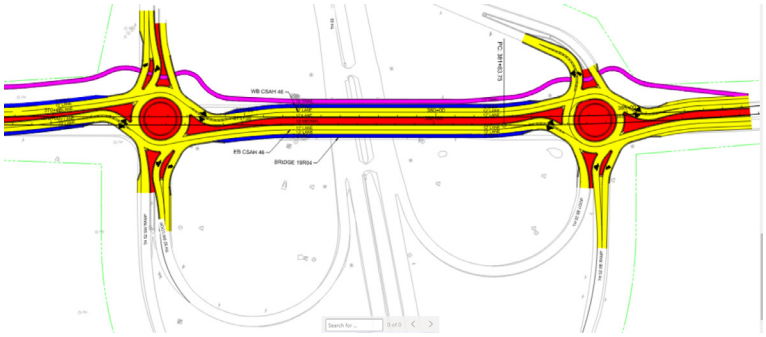

Figure 4 Roundabouts at TH 52 Ramps

- Improved access management throughout the corridor via a raised center median between TH 3 and TH 52 also increases mobility and improves safety by reducing intersection conflict points. In addition, edge line rumble strips will be installed along the entire corridor.

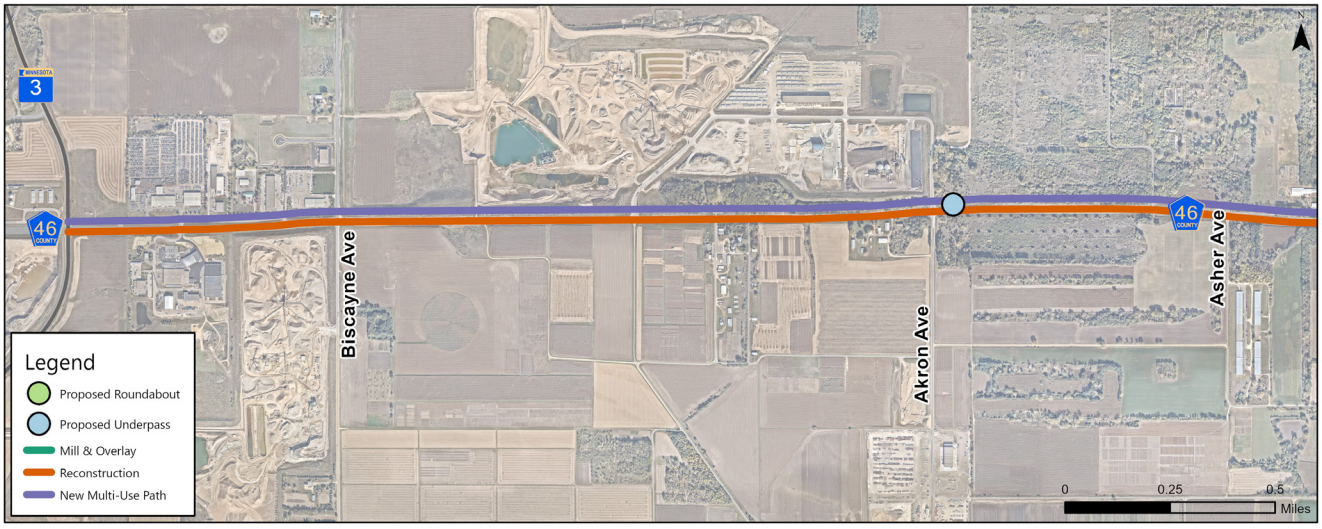

Figure 5 Project Area West

Figure 6 Project Area East

Project History

Reconstructed in 2001, the current alignment was graded and paved as a rural two-lane section. Dakota County, along with project partners, has developed a vision for implementing safety and mobility improvements to this corridor over the last twenty years. In 2010, the Rosemount - Empire - UMORE Area study identified necessary improvements and expansion to accommodate the aggregate industry and sustainably transition to mixed use and residential developments. Short-term and long-term strategies were developed with short-term solutions being implemented including the addition of turn lanes and improved signalization.

As a key east-west connector, County Road 46 has been the subject of several studies and plans:

- Dakota County 2040 Transportation Plan
- Dakota County 2040 Comprehensive Plan
- Dakota County 2030 Transportation Plan
- Dakota County Capital Improvement Plan 2022-2026
- UMORE Area Transportation System Study
- UMORE Study Alternative Areawide Review
- Vermillion Highlands Greenway Masterplan

The Project was introduced to stakeholders and the public in the Fall of 2020. An online comment portal provided and opportunity for feedback on the Project plan.

CR 46 KEY FACTS

- ✓ Functional class of a minor arterial
- ✓ Current traffic counts range from 15,100 vehicles per day to 12,000 vehicles per day in the five miles between TH 3 and TH 52 then transitions to 6,500 vehicles per day in the last one mile on the east end.
- ✓ Capacity deficiencies exist on the west end with traffic counts exceeding 10,000 vehicles per day considered the threshold for a two lane facility.
- ✓ Rich natural resources provides a robust aggregate production industrial base.
- ✓ Heavy freight corridor
- ✓ 4,700 acres of planned development owned by the University of Minnesota

II. PROJECT LOCATION & DEMOGRAPHICS

Project Location

Located south of Saint Paul, Dakota County's northern half is part of the Twin Cities metro whereas the southern half tapers into a rural area of Dakota County. The Project will reconstruct County Road 46 also known as Brandel Drive or 160th Street West, from Trunk Highway 3 (TH 3) (Robert Trail South) to the Trunk Highway (TH 52) 52 Interchange with pavement preservation work from the TH 52 Interchange to CR 48 (160th Street).

Demographics

The Project corridor is located outside the boundaries of the Minneapolis-St. Paul urbanized area, making it a fully rural project. It is not located in any of the areas the federal government has identified as disadvantaged or prioritized for community development (areas of persistent poverty, disadvantaged communities, opportunity zones, etc.). However, its rapid growth and plans for future development make it an economically important area. Table 1 shows a demographic breakdown of the project area in its geographic context.

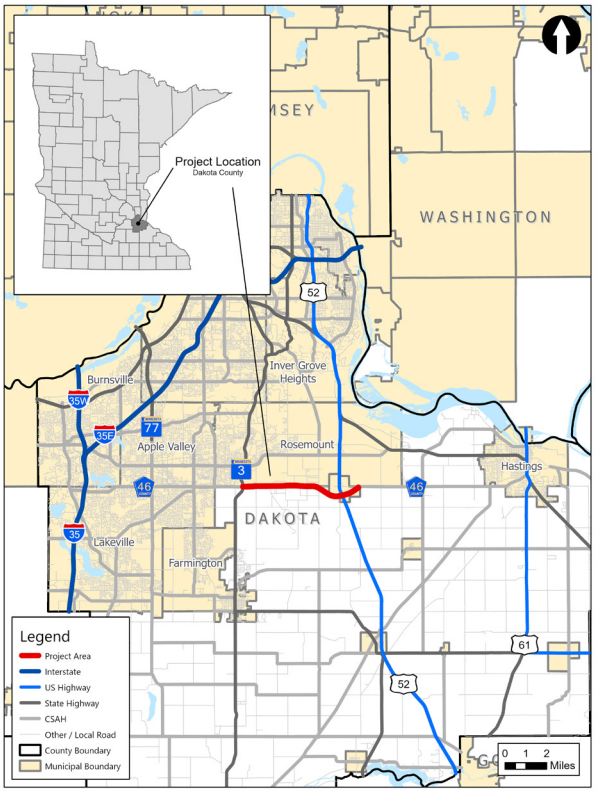

Figure 7 Project Location

Table 1 Project Area Demographics

	Population (2020)	Population Growth 2010-2020	People of Color	65+	Mean travel time to work (min)	Median household income
United States	331,449,281	7%	39.9%	16.5%	26.9	$64,994
Minnesota	5,706,494	8%	20.9%	16.3%	23.8	$73,382
Dakota County	331,449,281	10%	22.9%	14.7%	25.2	$88,468
City of Rosemount	25,650	17%	16.1%	11.%	28.7	$110,573
Census Tracts 610.01 and 610.03	6,957	49%	5%	13.4%	27.2/28.4	$ 120,729

Source: U.S. Census Bureau, 2020 Census and American Community Survey five-year estimates; Minnesota Compass

As Table 1 suggests, this is an area with relatively long commutes and a burgeoning population. These two factors combined make it essential to proactively address capacity and road condition issues.

III. GRANT FUNDS AND USES

Project Budget

Eligible Future Project Cost: $48,600,000

RAISE Grant Request Amount: $25,000,000

This funding request is a critical piece to the total project funding package. Dakota County is committed to the local match for this project (see Dakota County Resolution) relying specifically on the commitment of more than $11 million dollars from the adopted County Transportation Local Option Sales Tax, a local revenue source. Dakota County has submitted other funding applications for the Project for State of Minnesota bonding and other grant sources. Applications are still pending for approval and if successful will be most beneficial to offset local costs and would not alter the Raise Grant amount requested.

Table 2 Project Costs and Funding

	Project Element	Project Funding						Total Cost Estimate
		Federal		Non-Federal				
		RAISE		Dakota County		City of Rosemount		
		Dollars	Project Percentage	Dollars	Project Percentage	Dollars	Project Percentage	
Previously Incurred Expense	Environmental assessment / Prelim Design			$825,687		$71,799		$897,486
	Printing			$362		$32		$394
	ROW Title work			$10,405		$905		$11,310
	Staff Time			$46,000		$4,000		$50,000
	Total Incurred Expenses	**$0**	**0%**	**$882,455**	**92%**	**$76,735**	**8%**	**$959,190**
Future Eligible Cost	Final Design			$1,472,000		$128,000		$1,600,000
	Construction Cost	$25,000,000		$13,800,000		$1,200,000		$40,000,000
	Construction Administration			$2,760,000		$240,000		$3,000,000
	Right-of-Way Acquisition			$3,680,000		$320,000		$4,000,000
	Total Future Costs	**$25,000,000**	**51%**	**$21,712,000**	**45%**	**$1,888,000**	4%	**$48,600,000**
	RAISE Participation Maximum (80/20)							
		RAISE Request	$25,000,000					
		Other Federal	$0					
		Non-Federal	$23,600,000					
	Total Future Eligible Project Costs		$48,600,000					
						Total Project Costs		**$49,559,190**

(A) Miscellaneous cost includes mobilization, temporary pavement & drainage, construction traffic control, landscaping, and non-quantified minor items.

Non-Federal Funding Sources

The Dakota County Board of Commissioners adopted a resolution to approve the request for RAISE funding and to commit to the local match for the Project. Although the Project is designated Rural, Dakota County and the City of Rosemount are committing to 49 percent of the project cost through a local match. Local funding from Dakota County is dedicated to the Project and leverages a new, non-federal revenue source passed by Dakota County. The Dakota County Transportation Sales and Use Tax (Sales and Use Tax) fund provides investments in regional and multi-modal transportation projects as part of the broader county transportation system. The funds are collected through a quarter-cent sales tax and $20 excise tax on new vehicle sales authorized under Minn. Stat. §297A.993. The Sales and Use Tax was enacted by the Dakota County Board of Commissioners on October 1, 2017. Dakota County designated the use of the Sales and Use Tax for regional multi-modal transportation projects. These types of projects have been defined by the County as those that meet the following criteria:

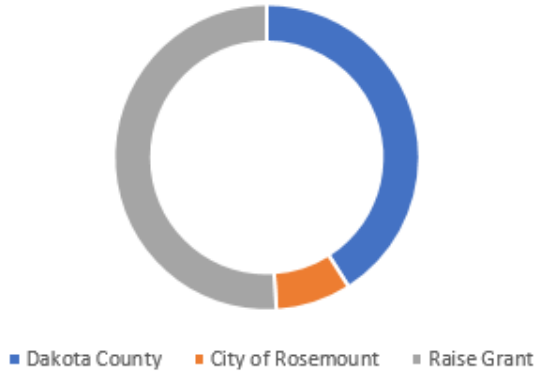

Figure 8 Project Funding Sources

- Regional transitway capital and operating costs
- Regional county highway projects
- Principal Arterials Highways with greater than one-half mile access spacing
- 10-ton highway replacement and modernization, and expansion projects
- 4-lane County Highways on new alignment

This Project is specifically identified to receive these local funds in Dakota County's Transportation Sales and Use Tax plan, which designates eligible projects for the tax revenue generating over $16 million annually.

The City of Rosemount City is also a funding participant with a cost share of 8% as determined by the percentage of the project within the City limits per the Cost Participation Policy that Dakota County has adopted as part of the 2040 Transportation Plan. The RAISE grant is critical for the City of Rosemount to meet their funding obligation.

Dakota County has also submitted a State Bonding request in the amount of $11.5 million but has not been approved at the time of submittal. The RAISE grant amount needed will not change based upon the successful receipt of the Bonding request.

The Need for RAISE Grant Funding

Without Raise grant funding, Dakota County will not be able to expand the two-lane highway to the access controlled four-lane highway. The cost of maintenance without this Project is well over $5,900,000 through 2042.

The project will provide significant safety benefits by reducing right angle crashes at the TH 52 ramp intersections with the construction of roundabouts. If the project cannot be fully funded, the result is continued safety and mobility challenges with projected increasing traffic counts along with the amount heavy commercial truck traffic entering and exiting the corridor. The overall impairment to non-freight and freight mobility could potentially create a higher severity crash risk without controlled access and roundabouts at the interchange ramps of TH 52. Local road authorities have expressed concerns regarding operational challenges on County Road 46 creating traffic sheds to lower classified local roads.

IV. MERIT CRITERIA

Safety

The Project improvements support the goals of Minnesota's Towards Zero Deaths program which emphasizes the safety of all users using the transportation system. The program, adopted in 2012, calls for the elimination of traffic fatalities and serious injuries through the integrated application of education, engineering, enforcement, and emergency medical and trauma services. Rural roadways in Minnesota are overrepresented for fatal and severe injury crashes, with nearly two-thirds of these life-changing crashes occurring in rural areas.

Crash data was obtained for the years of 2012 to 2021 from the Minnesota Crash Mapping Analysis Tool (MnCMAT). Throughout the corridor, just over 5% of the crashes were fatal or serious injury crashes. 25% of the crashes resulted in less severe injuries.

39% of the total crashes occurred at the intersection of TH 52 with County Road 46.

From 2012 to 2021, there were 71 crashes at the TH 52 ramp terminals at the intersection of CR 46 with more than two-thirds of those crashes occurring at the east ramp termini (NB TH 52). However, the one fatal crash during the same period occurred at the west ramp termini (SB TH 52). 27 of the 71 crashes were right angle crashes at the TH 52 ramps. Most of the right-angle crashes represented drivers failing to stop or failing to yield from the stop condition.

The following types of crashes have been reported in the Project area on CR 46 within the past ten years:

10	21	23	129
serious injury or fatal crashes	minor injury crashes	possible injury crashes	property damages only

Congestion and collision problems arise from conflicts between traffic entering and exiting facilities competing for gaps in highway traffic. As noted previously, this segment serves a greater region for east-west connectivity, especially freight movement and overall mobility to access I-35, TH 77, TH 3, TH 52, and TH 61 from Burnsville to Hastings. Along the western segment of project corridor is a high density of industrial aggregate production. With County Road 46 traffic volumes above the capacity of a two-lane roadway, the potential for mobility and safety issues arise. The ability of commercial vehicles entering and exiting the highway will likely become more challenging.

Figure 9 Aggregate Industry Truck Traffic Entering CR 46

By making the access control improvements with the raised median and the roundabouts at the TH 52 ramp termini, significant reductions in crash severity and crash rates are expected assuming the Federal Highway Administration's (FHWA) crash modification factors. The construction of the multi-lane roundabouts at the TH 52 ramp termini will reduce the crash rate occurrence and crash severity. Additionally, the overall crash reduction factor of 34% is expected for the two-lane to four-lane conversion.

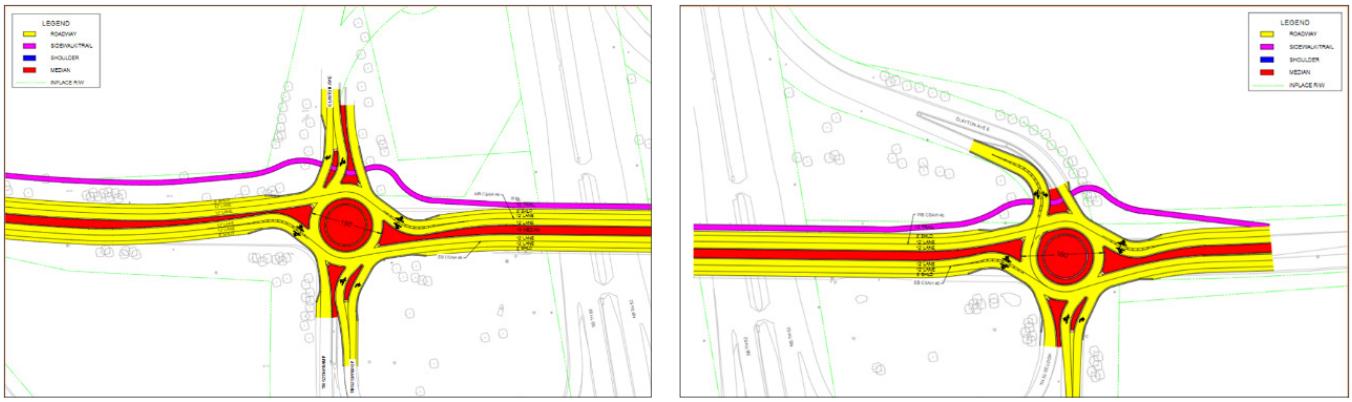

Figure 10 Safety Improvement for East and West Ramps of TH 52 and County Road 46

The annual crash saving from this project were quantified using the methodologies published in the Benefit Cost Analysis Guidance three of the four fatalities in the analysis period were on the mainline with the fourth fatality at the intersection of the south bound ramp at TH 52. The number of life changing crashes for the time consider drives the benefit cost calculations resulting in an overall reduction of 59%.

Table 3 Annual Crash Costs from Benefit Cost Analysis

Area	2040 No-Build Condition	2040 Build Condition
Mainline	$6,141,352	$2,814,644
Roundabouts at TH 52 Ramps	$2,395,874	$693,562
Total	$8,537,226	$3,508,206

The Project will also promote pedestrian and bicycle travel with the multi-modal trail on the northside of the Project. Pedestrians and bicyclists will experience increased safety with an off-road trail and a grade separated crossing connecting to Vermillion Highlands Greenway as outlined in the Vermillion Heights Greenway Master Plan. As part of sidewalk construction, all sidewalks and curbs will also be upgraded to meet ADA requirements.

Supporting the existing industrial base and promoting sustainable housing growth requires the proposed safety improvements. The desired improvements that the Project will achieve are cost effective, sustainable, and equitable for the economic vitality of the region.

Environmental Sustainability

By incorporating roundabouts at the TH 52 ramps, in the year 2040, the Project will reduce the average user cost of delay for heavy commercial vehicles by approximately 15%. Air quality emission benefits associated with this improvement are anticipated to realize a similar reduction. Overall environmental sustainability is improved by reducing congestion. In addition, by providing an additional lane in each direction, there are bypass opportunities for crash and winter operation-related delays.

The Project will also promote pedestrian and bicycle travel with installation of the multi-modal trail on the northside of CR 46 of the Project. Pedestrians and bicyclists will experience increased safety with an off-road trail and a grade separated crossing connecting to Vermillion Heights Greenway. As part of sidewalk construction, all sidewalks and curbs within the Project area will also be upgraded to meet ADA requirements.

Figure 11 Grade Separated Crossing Example From Vermillion Highlands Master Plan

Dakota County intends to expand their current Fast-Charge Electric Vehicle (EV) Charging Station facility along the project corridor to include community use at the County's Empire Shop (2800 160th Street, Rosemount, MN 55068) which currently has one existing EV station. Two additional EV stations are planned to be installed at the Public Works facility located in the Project area. These fast-charge stations (fully charging in approximately 30 minutes) will encourage the use of EV, ensure commuters utilizing County Road 46 have accessible and convenient access to charging stations, and reduce vehicle-related emissions within the project area.

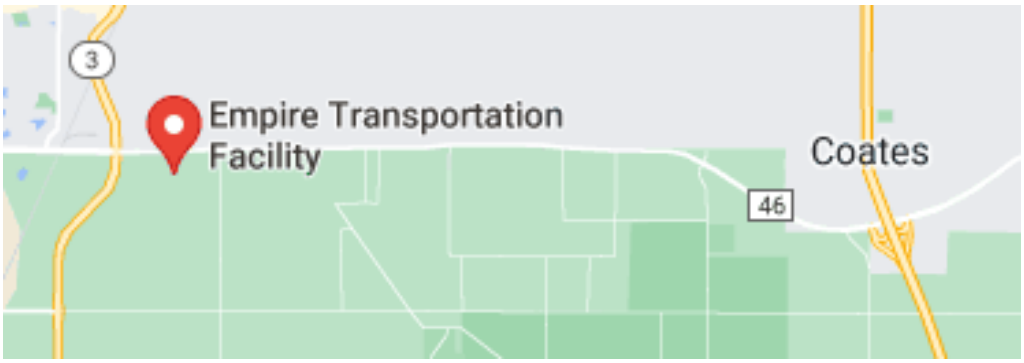

Figure 12 Dakota County's EV Charging Station at the Empire Shop Location

The Project also incorporates best management practices (BMPs) into the stormwater design model. The existing corridor contains minimal stormwater management practices to reduce nutrient loading or runoff volume to downstream water resources. Sediment and nutrients picked up along paved surfaces by runoff are discharged to surrounding wetlands, streams, and lakes. The Project will incorporate new stormwater management practices that reduce nutrient loading and runoff volume. Proposed improvements include grassed medians, sedimentation, filtration, plant uptake, and groundwater recharge methods.

The Project includes several ponds and infiltration basins and may include the potential use of underground storm sewer treatment to minimize right of way costs. The sedimentation ponds and infiltration basins are designed to meet nutrient capture rates exceeding existing conditions. The cumulative treatment capacity required along the corridor will remove nutrients and capture and retain runoff removing total suspended solids and total phosphorus.

The Project promotes environmental benefits to the area by remediating potential contaminants within the area adjacent to County Road 46 where the right of way acquisition occurs. During World War II, the U.S. Army operated a munitions facility on the site that became UMore. The facility used a series of concrete structures, called T-walls, to support the solvent recovery buildings. These structures contained asbestos. The University of Minnesota is working with Dakota County and the U.S. Army Corps of Engineers to evaluate and assess the property for remediation. The University's 2009 cleanup removed surficial asbestos on either side of County Road 46. Dakota County has contracted with environmental and remediation experts for the potential removal of two rows of the T-Walls, with removal and remediation costs included in the project estimate. The continued cleanup of this existing condition as part of the Project will follow all recommended remediation from the environmental agencies as outlined in the Project's environmental analysis and alternatives available upon request from the County's Transportation Department.

Figure 13 T Walls from Old WWII Gunpowder Manufacturing Site within Project Area.

Quality of Life

The Project will directly impact rural communities and their connectivity to urban centers. In this part of Dakota County, there are limited options and long travel distances for those needing to access hospitals and schools. By providing improved roadway capacity to meet future needs of the region, the Project will provide better access to economic opportunity and vital services for relatively isolated populations. Access to schools and the Dakota County Technical College just north of the Project area will become multi-modal, as shown in Figure 14.

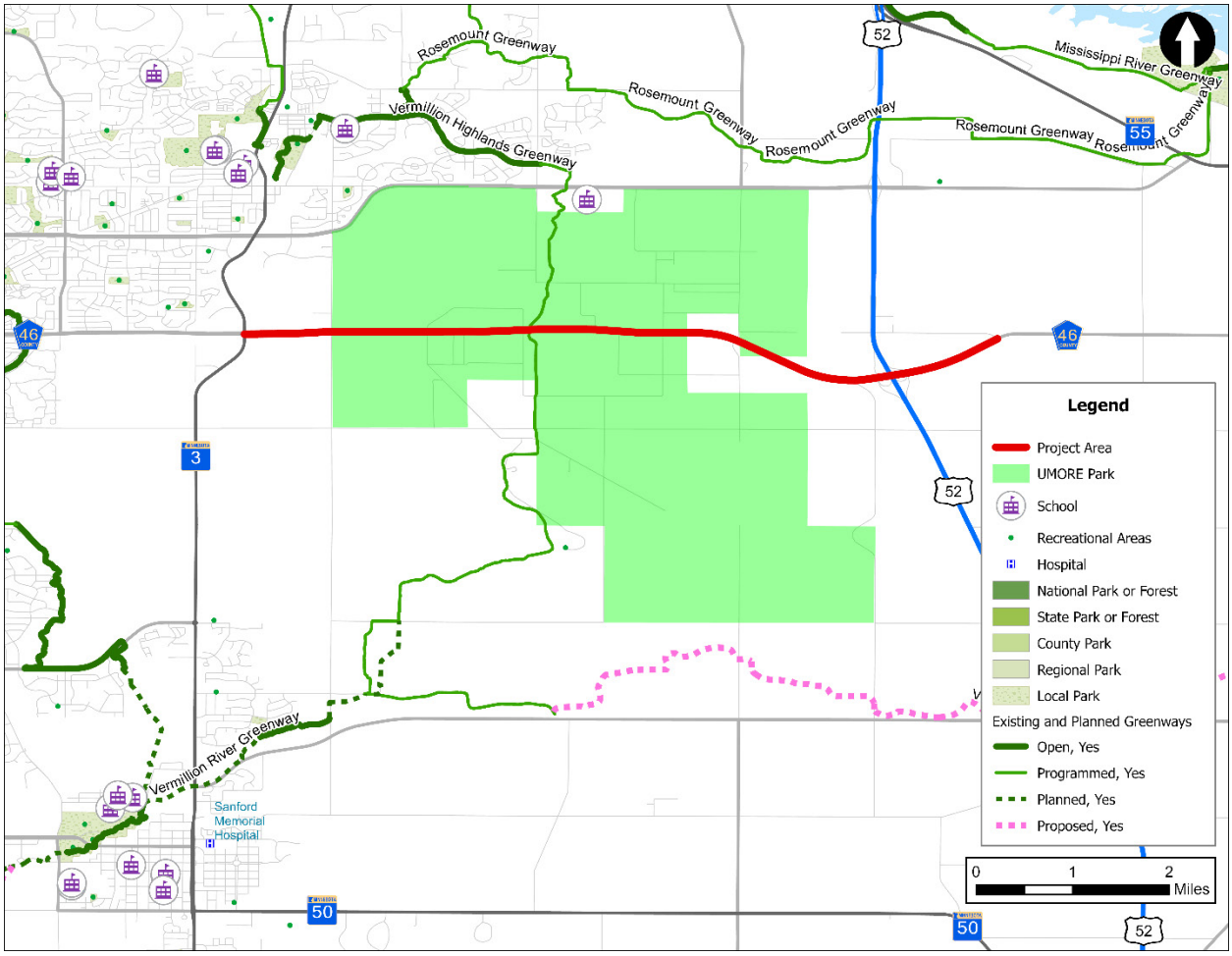

Figure 14 School, Hospital, Park, and Trail Locations Near Project Area

Using the 2019 U.S. Census data, Figure 15 visually illustrates the amount and direction of commuting traffic from the City of Coates on the east end of the Project, which has a population of about 156, of whom 61 commute at least 10 miles to work.

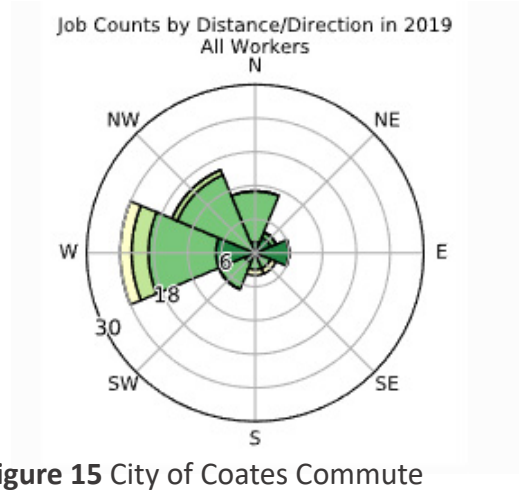

Figure 15 City of Coates Commute Distance/Direction

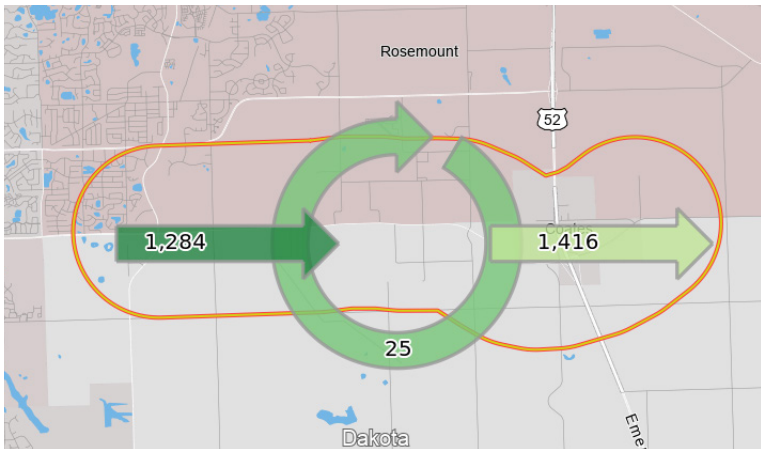

Figure 16 Commute Inflow and Outflow – One-Mile Radius of Project

More than 1,200 workers commute into the Project area for work, while another 1,416 live in the Project area and leave for their work commutes (Figure 16).

Not only will commuter trips be improved, the Project will also promote pedestrian and bicycle travel improvements with the installation of a 10-foot wide multi-modal trail on the northside of the Project. Pedestrians and bicyclists will experience increased safety with an off-road trail that will connect with a new grade separated crossing to the planned Vermillion Highlands Greenway.

This greenway will travel 13 miles through Rosemount and Empire Township. Today, the landscape is largely undeveloped with a rich cultural history. The area will experience extensive development over the next 20 -30 years, especially in eastern Rosemount and UMore Park. The greenway project allows for future development patterns to be organized around and shaped by the greenway's natural, cultural and recreational amenities. As shown in Figure 14, the new trail along the north side of County Road 46 creates future access to the Vermillion Highlands Greenway future build and will link via the Greenway, two of the most significant natural areas in Dakota County: Lebanon Hills Regional Park to the over 3,000 acre natural area encompassing the Vermillion River Aquatic Management Area (AMA) and modified Wildlife Management Area (mWMA), Whitetail Woods Regional Park and the Vermillion River. Like all Dakota County Greenways, the Vermillion Highlands Greenway is envisioned to provide multiple benefits to water quality, habitat, recreation, and nonmotorized transportation.

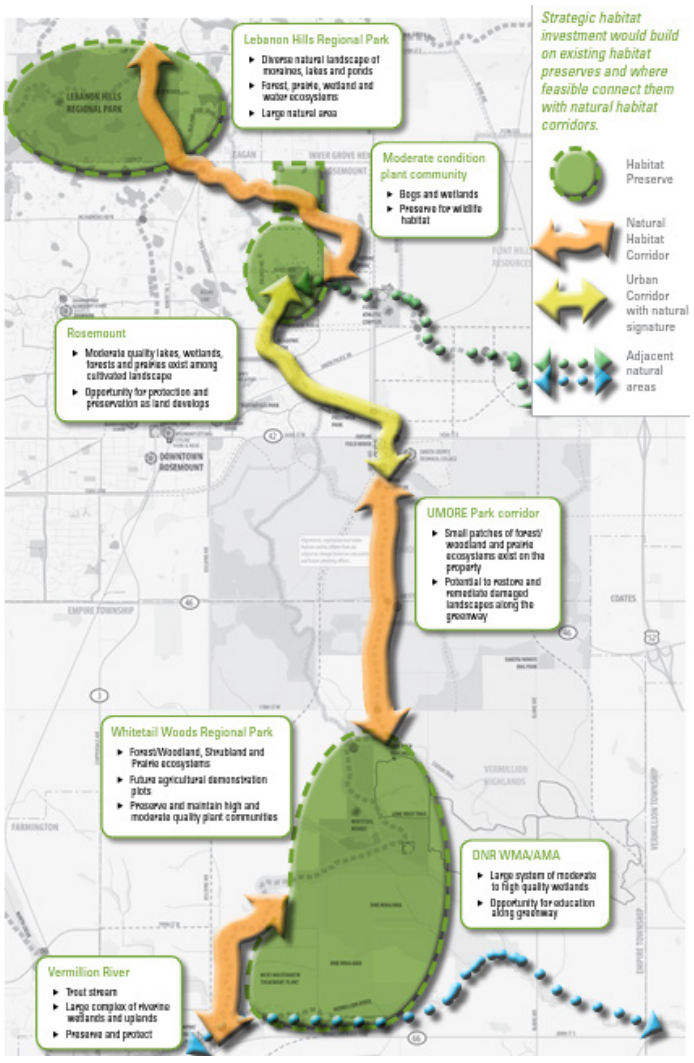

Figure 17 Trail Connections as Illustrated in the Vermillion Highlands Greenway Master Plan.

The Project also benefits people with disabilities by improving accessibility along the corridor. The Project will integrate Americans with Disabilities Act (ADA) compliant pedestrian ramps and crossings at the intersections. These improvements will ensure safe and accessible pedestrian crossings for residents of all abilities. With the introduction of the raised median, pedestrians can utilize the median as safe harbor and better determing gaps in vehicular traffic for making safe crossings.

Mobility and Community Connectivity

Improving Traffic Flow

Traffic volumes are at a capacity deficiency within the Project area. A capacity deficiency exists when actual traffic exceeds thevehicular capacity of the highway. The volume to capacity ratio is an indicator of the congestion of a roadway. A volume to capacity ratio between 0.90 to 1.00 is considered approaching capacity, and a ratio above 1.00 is over capacity. See Table 4. below.

Table 4 Dakota County Transportation Plan Highway Capacity Criteria

Roadway Design	1/2 ROW Needs	ADT (Average Daily Traffic) Capacity	90% of Capacity	110% of Capacity
2-Lane Urban	50'	0 to 10,000	9,000	11,000
2-Lane Rural	55'	0 to 10,000	9,000	11,000
3-Lane	60'	10,000 to 18,000	16,200	19,800
4-Lane Divided	75'	18,000 to 35,000	31,500	38,500
6-Lane +	100'	35,000 and over	31,500	38,500

The capacity for the 2-lane segment is 10,000 vehicles per day (vpd). The average daily traffic (ADT) volume for the majority of the corridor ranges from 15,100 vpd to 12,000 vpd, in 2019. The 2040 traffic projections estimate 21,000 vpd, which gives the Project area a volume to capacity ratio of 1.86. Hence, County Road 46 is now over capacity and will continue to be over capacity by the year 2040 if no improvements are made to capacity. Dakota County's policy is to consider expansion improvements, including the addition of through-lanes, as a highway approaches the Near Capacity threshold of 90 percent of traffic volume capacity. The goals of preservation, management and replacement are considered a higher priority to ensure existing infrastructure is maintained and managed to maximize safety, function, capacity, and life of the facility before expansion is considered. Dakota County's evaluation of CR 46 as part of the 2040 Transportaion Plan supports that this segment must be upgraded to a 4-lane divided design to improve safety and mobility. The Project will improve travel speed on County Road 46 as vehicles utilizing this major east-west connector as the safer, more direct route through Dakota County.

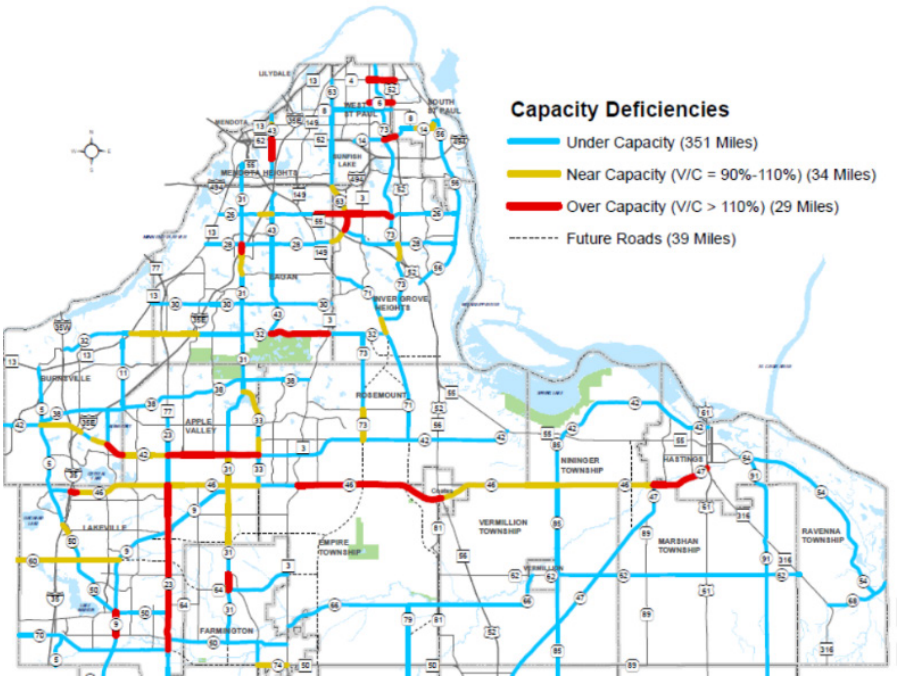

Figure 18 Map Indicating County Road 46 is Over Capacity (source 2040 Transportation Plan)

Freight mobility is also impacted by the existing geometrics of the roadway. Congestion and collision problems arise from conflicts between traffic entering and exiting facilities competing for gaps in highway traffic.

Trucks attempting to enter the roadway face inadequate turning radii and often experience extended wait times to begin the turn. Trucks within the intersections are hindered to move safely and are often in conflict with other turning vehicles. The 4-lane to 2-lane merge in the project corridor also creates a mobility bottleneck condition for the movement of freight.

The improvement to a four-lane divided roadway design not only provides additional through lane capacity but key access control. Building additional lanes for high volume traffic without restricting access spacing results in a costly highway system that does not yield capacity benefits. By constructing the raised median as part of the divided four-lane roadway design, Dakota County's access management approach will minimize the potential safety issues while maximizing system efficiencies.

Economic Competitiveness and Opportunity

Improved Freight Mobility

The Project directly benefits the freight community. Increasing capacity of the roadway from two to four lanes with wider shoulders and turn lanes will give freight haulers increased free flow speeds, less congestion, increased travel time reliability, eliminate merge bottlenecks, and improved safety. The Project improvements will increase shipping reliability and reduce costs for freight generators located adjacent to County Road 46 that utilize the Project corridor.

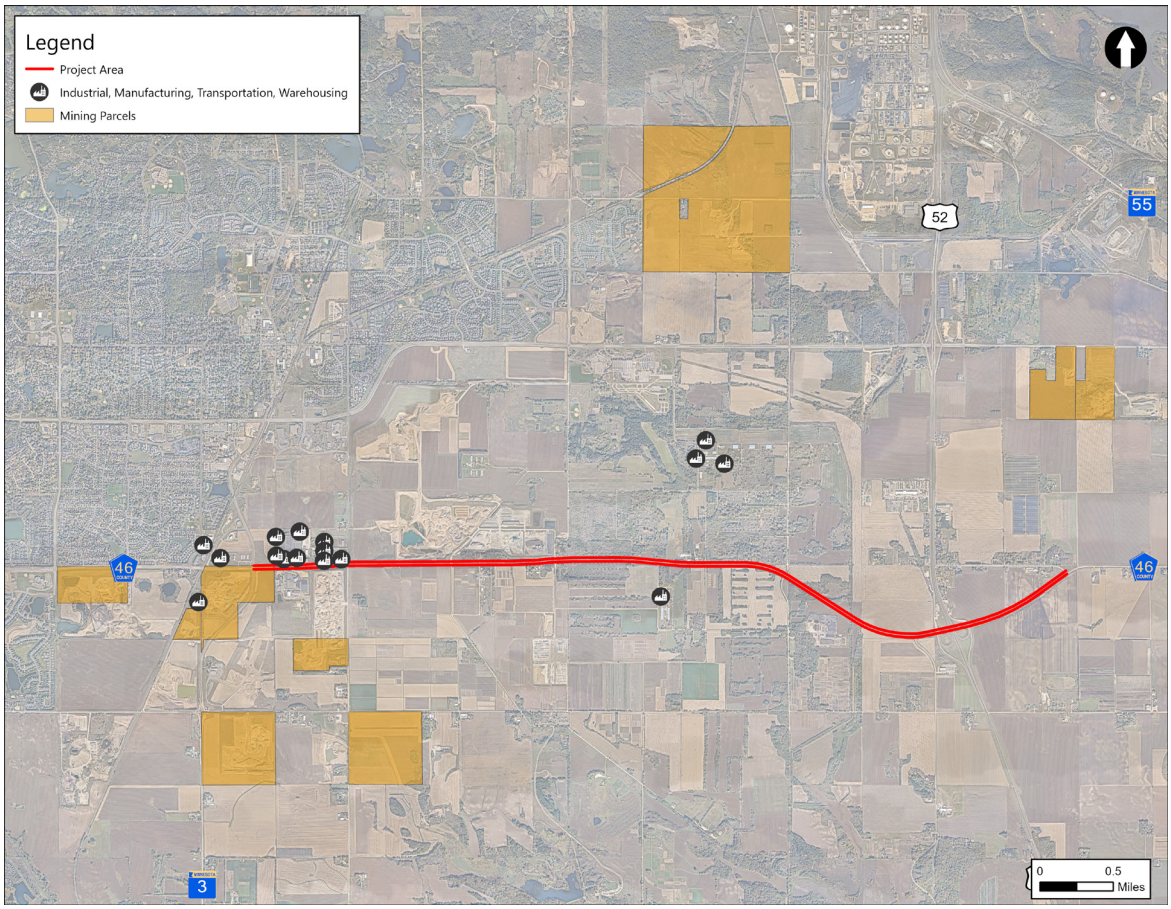

Figure 19 Aggregate Producers and Industries along CR 46

In addition to the industrial base along the corridor, the heat map below from the Metropolitan Council Regional Truck Highway Corridor Study indicates the largest cluster of highly valued freight natural resources in the Metropolitan Council's planning area is located just north of the Project.

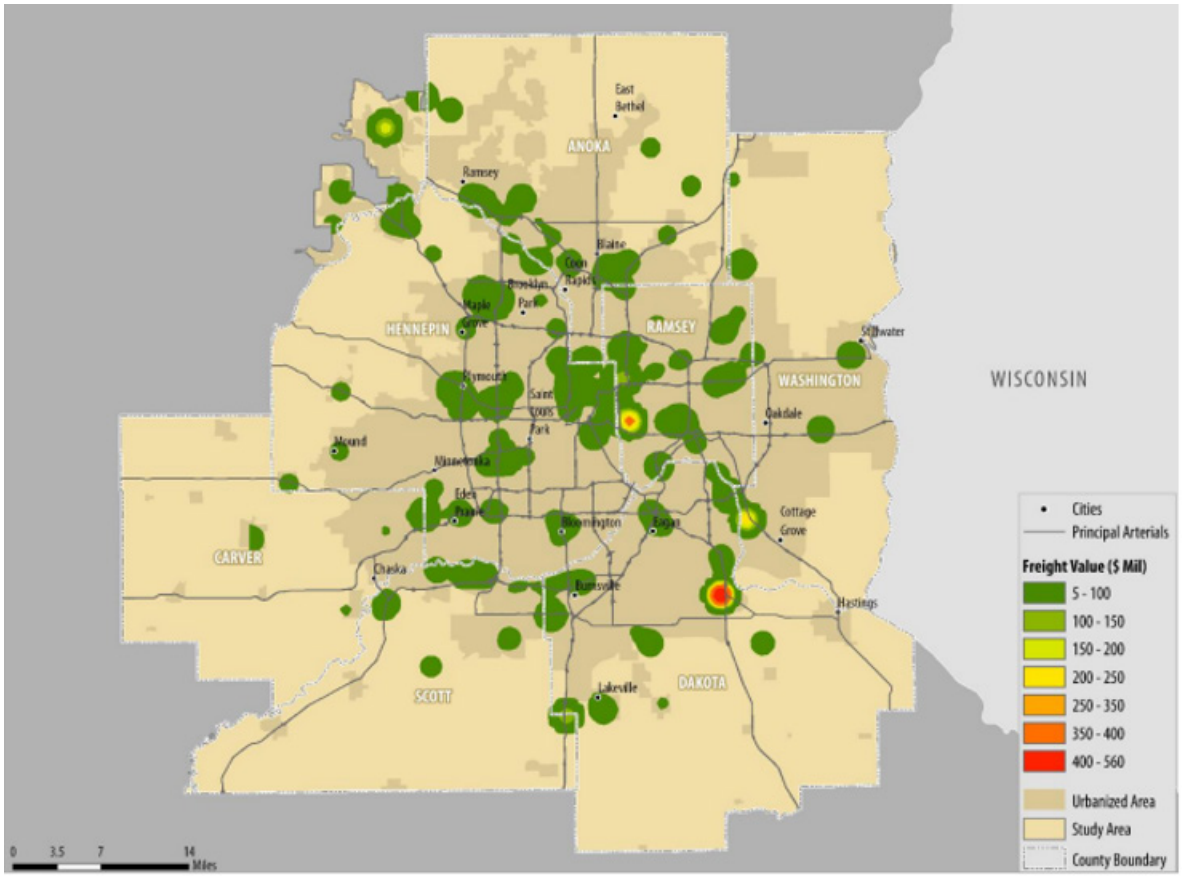

Figure 20 Clusters of Natural Resource Sectors from the Metropolitan Council Regional Truck Highway Corridor Study

This segment of County Road 46 traverses through the University of Minnesota's Outreach, Research and Education (UMore) Park (approximately 4,700 acres).

The University of Minnesota has assembled conceptual land use plans for the UMore Park area that would include residential, industrial, and commercial uses that could support approximately 30,000 people in the future. For this community to be sustainable and economically viable, it is critical that people can move through the community safely and efficiently.

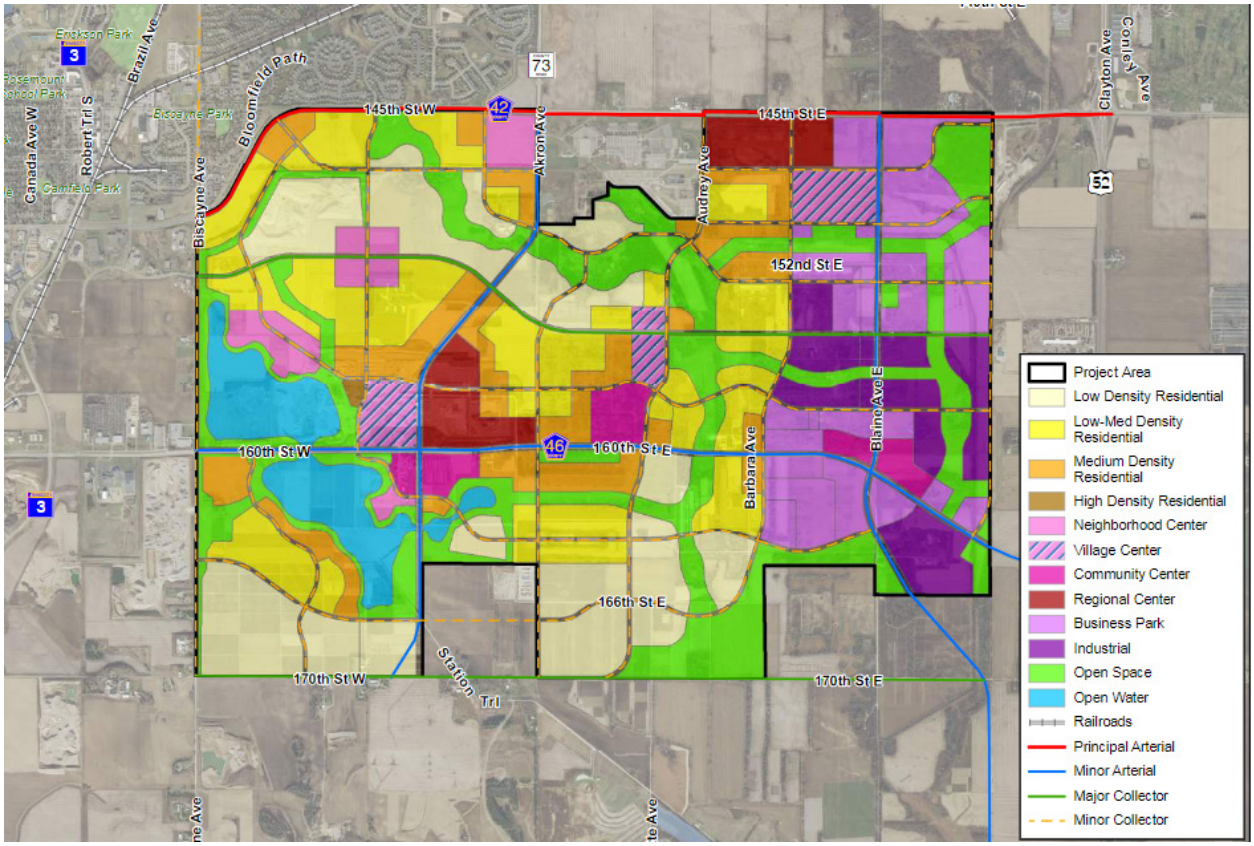

Figure 21 University of Minnesota's UMore Sustainable Development Plan

The development plan contains residential, commercial, industrial, mixed-use, and park/open spaces uses organized around a neighborhood, village, community, or regional center. Long-term, the plan accommodates a transit connection between the three higher-density center areas and points north of the UMore site. An extensive planned system of greenways and open space meanders through the site accommodating active and passive recreational uses, preservation of natural features, and establishing corridors for wildlife movement. On the west side of the site, development will surround a new lake that will be an amenity resulting from gravel mining operations. The gravel mining area was the subject of an Environmental Impact Statement. The Record of Decision for the UMore Park Sand and Gravel Resources Project EIS was published in November of 2010. County Road 46 bisects the site in an east/west direction forming the boundary between the City of Rosemount and Empire Township. Residential uses are planned in four different density classifications ranging from low density (1 – 3.5 units/acre) to high density (12 – 24 units per acre). Neighborhood, village, community, and regional centers contain varying mixes of residential and non-residential uses. Employment land uses, which are generally concentrated in the eastern portion of the site, include office/business park and light industrial uses. The University of Minnesota plan accommodates a future population of approximately 35,000 people and about 18,000 jobs.

State of Good Repair

The Project will address future traffic needs and will relieve the stresses of all the traffic on a single lane in each direction with a four-lane configuration. As a regional east-west freight and mobility corridor across Dakota County, maintenance of a reliable facility to support the movement of people and goods is prioritized by Dakota County's practices and guidance documents. The Project is consistent with the goals and policies established in the Dakota County 2040 Transportation Plan. Dakota County has extensive experience with managing roadway improvement projects. The County has identified the anticipated investments to effectively operate and maintain the Project corridor once it is constructed and has dedicated funding available to ensure that the roadway is properly maintained at an estimated cost of $82,000 for patching and crack sealing through 2042. In the No Build scenario, a mill and overlay will be required by 2025 with an estimated cost of $2 million, followed by a full-depth reclamation preservation project in 2036 with an estimated cost of $3.5 million. Neither the mill and overlay or the reclamation project will address capacity and safety concerns adequately.

Operation and Maintenance Funding

The Project will result in a net decrease in maintenance costs over the project life due to the existing state of pavement requiring more intense maintenance and rehabilitation. The Project is expected to produce nearly $6 million in maintenance cost savings over the project life.

Table 5 presents key operations and maintenance activities that would be performed on Project roadways per Dakota County's Transportation Plan goals. Detailed analysis of the operation and maintenance activity cost estimates is available in Section VII: Benefit-Cost Analysis.

Table 5 Project Maintenance Cost

Maintenance Costs - No Build

Year	Maintenance Type	Cost/year
2022	Patching	$17,847.00
2023	Patching	$18,560.88
2024	Patching	$19,274.76
2025	2" Mill & Overlay	$2,000,000.00
2026		$0.00
2027	Crack seal	$21,416.40
2028	Patching	$22,130.28
2029	Patching	$23,084.16
2030	Patching	$23,798.04
2031	Crack Seal	$28,711.92
2032	Patching	$29,185.80
2033	Patching	$29,659.68
2034	Patching	$30,133.56
2035	Patching	$30,607.44
2036	Full Depth Reclamation	$3,500,000.00
2037		
2038	Crack Seal	$19,429.08
2039	Patching	$19,902.96
2040	Patching	$20,376.84
2041	Crack sealing/patching	$33,450.72
2042	Crack sealing/patching	$33,924.60
Total		**$5,921,494.12**

Maintenance Costs - Build

Year	Maintenance Type	Cost/year
2022	Patching	$17,847.00
2023	Patching	$18,560.88
2024	Under construction	
2025	Under construction	
2026	Under construction	
2027	Construction complete	
2028		
2029		
2030	Patching	$1,564.20
2031	Crack Seal	$1,611.60
2032	Patching	$1,659.00
2033	Patching	$5,119.20
2034	Patching	$5,261.40
2035	Patching	$5,403.60
2036	Crack Seal	$5,545.80
2037	Patching	$7,560.00
2038	Patching	$7,749.00
2039	Patching	$9,338.00
2040	Patching	$9,527.00
2041	Crack Seal	$9,716.00
2042	Patching	$12,065.00
Total		**$118,527.68**

Dakota County is committed to implementing timely investments in capital and preventative maintenance treatments to extend the service life of assets while reducing lifecycle costs. Ongoing operation and maintenance (O&M) costs on the county highway system are funded by taxes and fees from two main revenue sources: State gas tax (motor fuel excise tax) and Local Levy.

Partnership and Collaboration

Dakota County is partnering with the cities of Rosemount and Coates and Empire Township to make improvements to County Road 46 that serves the area.

The City of Rosemount and Dakota County have an established agreement for preliminary engineering for this project. Dakota County's cost participation policy governs fair and equitable cost sharing through negotiated agreements. As stated in their letter of support, the City of Rosemount is committed to the project and to continuing their financial support through negotiated agreements.

The University of Minnesota's UMore Park is located along a portion of the corridor and has been a strong collaborator with Dakota County, the cities of Rosemount and Coates and Empire Township regarding safety and capacity of the corridor for sustainable development as well as evaluating environmental conditions of the UMORE properties.

The Project benefits from the ongoing involvement of businesses and residents along the corridor, along with the Vermillion River watershed, and MnDOT who are also supporters of the Project.

Innovation

In the late 1990's, the County began expanding fiber and conduit assets in public right of way with their "Dig Once" approach. The County has dramatically reduced the cost of high-capacity telecommunication connections to schools, public facilities, utilities, and others. The County is now exploring how to use these assets to spur economic development and increase investment in last mile services to businesses and households. An outreach campaign is currently underway to engage both residents and businesses in their current broadband service and needs to provide high speed service to all.

County Road 46 currently has two high-speed fiber cables installed on the corridor for servicing institutions and traffic devices. Dakota County has been working with our staff in Information Technologies (IT) to enable and enhance the County's fiber optic network and the County's IT and ethernet infrastructure to support and operate the traffic signal and ITS traffic management technology systems planned.

As noted previously, Dakota County also intends to expand Fast-Charge Electric Vehicle (EV) Charging Stations along the project corridor for community use at the County's Empire Shop (2800 160th Street, Rosemount, MN 55068) These fast-charge stations (fully charging in approximately 30 minutes) will encourage the use of EV, ensure commuters utilizing County Road 46 have accessible and convenient access to charging stations, and reduce vehicle-related emissions within the project area.

V. PROJECT READINESS

Environmental Risk

Development of the Environmental Assessment and preliminary design for this Project is in progress. Wetland delineation is completed. The Phase I Environmental Site Assessment is completed. The documentation establishing Purpose and Need is completed.

The Project will benefit from existing MnDOT programmatic agreements and agency liaisons to maximize the efficiency of environmental review and permitting processes. MnDOT has executed a programmatic agreement with FHWA and the State Historic Preservation Office (SHPO) to streamline the Section 106 review process. Additionally, MnDOT has established an agency liaison with the US Army Corps of Engineers (USACE) to directly manage the Section 404 permitting process for state and county highway projects.

The preparation of the Environmental Assessment Worksheet (EAW) is underway. The EAW will be submitted for MnDOT and Federal Highway Administration (FHWA) review in July of 2023. The EAW will be sent out for a one-month public comment period. A Non-Programmatic Categorical Exclusion (NON-PCE) will also be prepared concurrently with a separate approval process by both MnDOT and FHWA. For stormwater management, the drainage overview plan will go through the Vermillion Watershed District, University of Minnesota and the

Dakota County Soil and Water Conservation District (who will include Empire Township and the City of Rosemount and the City of Coates on their advisory team). Review and approval are expected to begin in August of 2023, before being drafted into a National Pollutant Discharge Elimination System (NPDES) permit application in November of 2023.

Technical Feasibility

Dakota County has extensive experience delivering large scale projects completed through the NEPA process. The selected alternative will be ready to be advanced to final design in early 2023 and will meet the Minnesota Department of Transportation's standards for State Aid Highways including the roadway design, ADA improvements, and roundabout design. Preliminary design layouts and typical sections can be found on the Project website and are nearing completion for transition to final design. This demonstrates the Project can be designed effectively to meet the needs of the corridor and surrounding communities.

Project Schedule

The project schedule indicates that grant funds can be obligated by November 2024 in advance of the RAISE funding obligation date requirement of September 30, 2026. Construction would begin with tree clearing during the winter of 2024-2025 and terminate with a completion date of August 31, 2027. All property and right of way acquisition will be completed in accordance with 49 CFR Part 24 and other applicable regulations. The County has experienced right of way acquisition staff that have been actively involved during the project development process. An estimated 10-month timeframe has been estimated for completion of right of way acquisition and with construction to begin in April of 2025, there is adequate time if needed to complete without delaying the project.

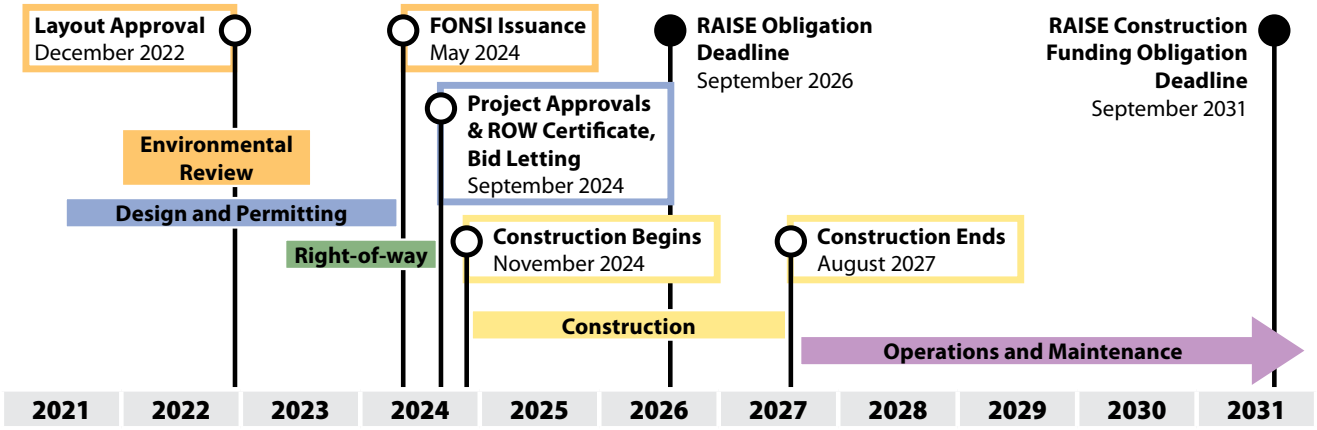

Figure 22 Project Schedule

Required Approvals

State and Local Approvals

There is support for the project by cost participating local agencies (Dakota County and the City of Rosemount). The City of Rosemount support is shown in its letter of support for the project. The Project is listed in the Dakota County Capital Improvement Plan (2022-2026). This project is specifically identified to receive Dakota County local sales tax funds in the County's adopted 2040 Transportation Plan.

Risk Assessment and Mitigation Strategies

Identification of right-of-way requirements has been initiated, and conservative cost estimates are included in the Project budget. The estimate includes significant contingency for acquisition cost to ensure right-of-way is secured. Public outreach to residents, emergency services, and businesses is planned for October of 2022. There will also be a public comment period for the environmental assessment to address potential environmental concerns.

The environmental assessment provided by Braun Intertec provides remediation plans for given conditions with the potential removal of the T walls. The Project contains contingency plans and funding for the anticipated worst-case scenario. The evaluation can be provided upon request.

VI. BENEFIT COST ANALYSIS

The objective of a benefit-cost analysis (BCA) is to bring all the direct effects of a transportation investment into a common measure (dollars), and to account for the fact that benefits accrue over an extended period while costs are incurred primarily in the initial years. The primary elements that can be monetized are travel time, changes in vehicle operating costs, vehicle crashes, environmental impacts, remaining capital value, and maintenance costs. The results of the BCA are briefly summarized below. A detailed technical memorandum of the analysis is available to view at the grant application website: https://www.srfconsulting.com/dakota-county-raise/

No Build Alternative

The No Build Alternative included leaving County Road 46 and the Trunk Highway 52 Interchange in its current configuration with the existing geometrics and operational conditions. Regional roadway improvements that are currently programmed were included as part of the regional transportation network.

Build Alternative

The proposed project replaces 5.1 miles of the existing two-lane undivided section with a four-lane divided roadway transitioning the remaining length to the existing two-lane geometry with a pavement preservation project. Safety improvements included roundabouts at the ramps at the interchange at TH 52. In addition, several spot mobility and safety improvements including edge line rumble strips were also assumed throughout the corridor. The comprehensive list of improvements that were considered in the BCA is summarized below:

BCA Methodology

The primary cost and benefit components analyzed in the BCA included:

- Travel time/delay (vehicle hours traveled -VHT)
- Operating costs (vehicle miles traveled-VMT)
- Environmental and air quality impacts
- Crashes by severity
- Initial capital costs
- Remaining Capital Value: The remaining capital value (value of improvement beyond the analysis period) was considered a benefit and was added to other user benefits
- Maintenance and rehabilitation costs

Other analysis considerations included:

This analysis assumed that construction would take place from 2025 to 2027. Therefore, year 2028 was assumed to be the first full year that benefits will be accrued from the project.

The analysis used the Dakota County Multi-Modal Travel Demand Model Update to compare the No Build and Build Alternatives. This TDM was developed in 2020 and has a forecast planning horizon year of 2040.

Project Costs

Year 2022 project cost for the RAISE Grant components of the overall project is expected to be about $49.6 million.

BCA Results

The benefit-cost analysis provides an indication of the economic desirability of a scenario, but results must be weighed by decision-makers along with the assessment of other effects and impacts. Projects are considered cost-effective if the benefit-cost ratio is at least 1.0. The larger the ratio number, the greater the benefits per unit cost. Results of the benefit-cost analysis are shown in Table 6. See the Project website for the complete benefit-cost analysis workbook.

Table 6 Total Project Results

	Initial Capital Cost (2020 Dollars)	Project Benefits (2020 Dollars)	Benefit-Cost Ratio (7% Discount Rate)	Net Present Value (2020Dollars)
No Build vs. Build	$32.7 million	$46.9 million	1.44	$14.2 million

VII. SUPPORTING DOCUMENTATION

Links to supporting documents are included throughout this narrative. All supporting documents and the RAISE grant application narrative are available to view at the following webpage: https://www.srfconsulting.com/dakota-county-raise/