

# North Dakota Department of Transportation

## I-29 Cross-Median Crash Elimination Project

### Project Description

FY 2023/24 Multimodal Project Discretionary Grant (MPDG) Program

<b>Project Name</b>	<b>I-29 Cross-Median Crash Elimination Project</b>
<b>Project Type</b>	<b>INFRA/Rural Project</b>
<b>Future Eligible Project Costs</b>	<b>\$ 22.50 million</b>
<b>FY 2023/24 MPDG Funds Requested</b>	<b>\$ 11.25 million</b>

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Supporting Information can be found at: <https://www.srfconsulting.com/nddot-i-29-mpdg/>

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## Project Description

The North Dakota Department of Transportation (NDDOT) Interstate 29 (I-29) Cross-Median Crash Elimination Project (Project) will install 67.3-miles of High-Tension Median Cable Guardrails (HTMCG) on I-29 from north of Cass County Highway 20 to two-miles north of Grand Forks Highway 6. The Project will enhance safety and reliability of I-29 between two of North Dakota's four Metropolitan Statistical Areas, from Fargo-Moorhead to Grand Forks-East Grand Forks. HTMCG and other median barrier systems are [proven safety countermeasures](#). Nationwide data shows that HTMCG reduces head-on cross median crashes on divided highways by 97 percent resulting in subsequent reduction of fatalities of this type of high-speed crash. Of the \$22.5 million estimated Project cost, NDDOT is requesting \$11.25 million (50 percent) of MPDG (INFRA/Rural) funds, with State matching funds of \$11.25 million (50 percent).

### Current

### Transportation Challenges

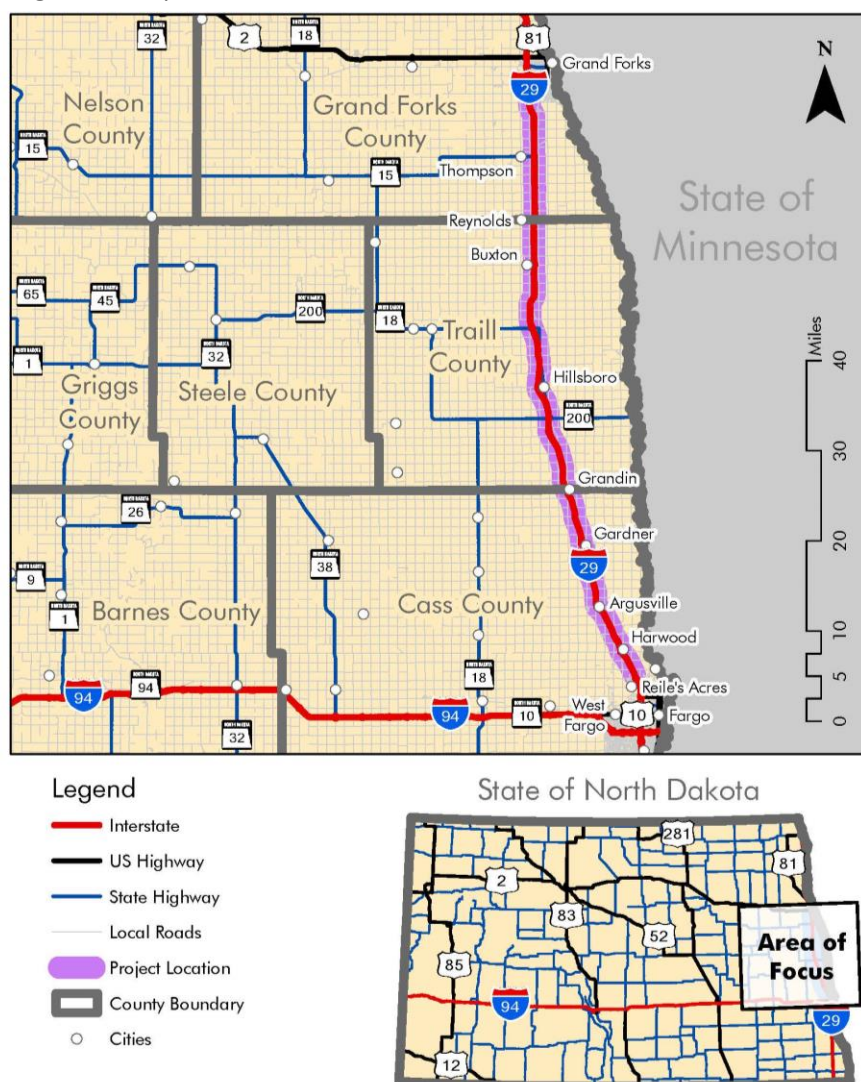
#### Challenge 1 – Safety

There have been 611 crashes along I-29 in the Project area between [2018 and now \(through June, 2023\)](#). Twenty-six of those crashes resulted in life-changing injuries or fatalities. In some locations along I-29 in the Project area, there are steep median inslopes or ditch slopes which increase the risk for dangerous rollover collisions and the severity of run-off-road crashes.

#### Challenge 2 – Seasonal Driving Conditions

North Dakota's climate and resultant powerful weather events cause [hazardous travel conditions](#) on I-29. For example, during the winter of 2022-2023, I-29 between

Figure 1. Project Location



South Dakota and the Canadian border was [closed 10 times](#) due to life-threatening traveling conditions. Aside from severe winter weather, precipitation events in the form of snow, sleet, or freezing rain are common in the Project area. Over [70 separate winter precipitation events](#) occurred within the Project area during the winter of 2022-2023 from November, 2022 to April, 2023. High-wind conditions, blowing snow, and icy conditions increase the risk of cross-median crashes for vehicles and semi-trucks traveling along I-29.

### Challenge 3 – Mobility and Reliability

Mobility and reliability of I-29 are negatively impacted by all types of crashes. However, serious injury and fatal crashes impact mobility and reliability more significantly. Serious injury and fatal crashes can significantly back up traffic causing extensive delays or temporary closure of I-29 to allow emergency response, conduct investigations, remove wreckage and/or debris, and mitigate hazards (as applicable). According to national data and observation from the North Dakota Highway Patrol (NDHP), the time it takes to address a serious injury or fatal crash on the Interstate System and [resultant duration of delay](#) is approximately [30 minutes on average](#). NDHP and emergency responders often partially close (one-lane or shoulder closures) or completely close I-29 while crash incidents are addressed and investigated.

Figure 2. Semi, SUV, and Truck Crash Prevented from Crossing Median by HTMCG in Fargo (Valley News Live)



### Challenge 4 – Freight Reliability

I-29 is part of the National Multimodal Freight Network, National Highway Freight Network, and National Highway System. Truck traffic on I-29 in the Project area makes up as much as 32 percent of Average Daily

Traffic (ADT), considered a high percentage by NDDOT. I-29 is a vital freight corridor for the state, the region, and internationally for example, the corridor is a major truck route connecting Canada with local commodity generators within the U.S. Midwest region. The Project area is located approximately 75 miles south of Pembina, ND which as of 2022 is the 12<sup>th</sup> busiest U.S.-Canada border crossing by overall vehicle count and [6<sup>th</sup> busiest port of entry](#) by truck counts.

## Proposed Improvements

The Project will install 67.3 miles of HTMCG in the median of I-29 from Fargo to Grand Forks. HTMCG is a longitudinal barrier which will separate opposing traffic. The guardrail is made of four steel cables strung with tension onto support posts. If a vehicle hits or crashes into the cable median barrier, the posts break and the cables flex, which absorbs most of the kinetic energy associated with a crash (see Figure 2).

## Increased Safety

I-29 in the Project area has a posted speed limit of 75 miles per hour (MPH). Given the fast speeds of vehicles, when crashes occur along the Project corridor, travelers are at a greater risk of injury or death. HTMCG and other barriers are [proven safety countermeasures](#), known to reduce head-on, cross-median crashes on divided highways like I-29. After installation in the Project area, a cross-median crash reduction of 97 percent is expected, including a reduction of fatalities of this type of high-speed crash.

The Project also includes ancillary work to support installation of HTMCG. Flattening of median inslopes or ditch slopes where applicable, improves safety and [reduces the severity](#) of crashes into the median ditch. NDDOT is also coordinating with the North Dakota Highway Patrol (NDHP) to decommission median crossovers, as applicable.

## Reduce Risk of Winter-Weather Driving

The Project will make approximately 67.3-miles of I-29 more resilient to crash-related delays, closures, and/or detours often associated with cross-median incidents. Potentially hazardous driving conditions can occur along the Project corridor during the winter season. In North Dakota, winter-related precipitation can occur during seven months out of the year. HTMCG will reduce the heightened risk of cross-median crashes associated with winter weather driving for vehicles and semi-trucks traveling along I-29 in the Project area.

## Improve Mobility and Reliability

Over twenty years, the Project will eliminate [approximately 31 serious injury and fatal crashes](#) from the Project area. The Project will save an [additional 30,382 vehicle hours traveled \(VHT\)](#) resulting from delay associated with crash response under a no build scenario. With elimination of cross-median crashes on I-29 in the Project area, resultant serious injury and fatal crashes will be reduced, and mobility and reliability will be improved.

## Improve Reliability of Freight

The Project's installation of HTMCG will benefit the economy of the region and beyond by increasing the safety and resiliency of I-29 as part of the [Primary Highway Freight System](#). I-29 is a critical freight corridor for both the region and the nation. The Project stretches between two of North Dakota's four Metropolitan Statistical Areas (MSAs) in North Dakota, Fargo (2020 MSA pop. 250,206), and Grand Forks (2020 MSA pop. 104,209). Located just one hour and 15 minutes apart (about

Figure 3. Cross-Median Crash Statistics (FHWA)

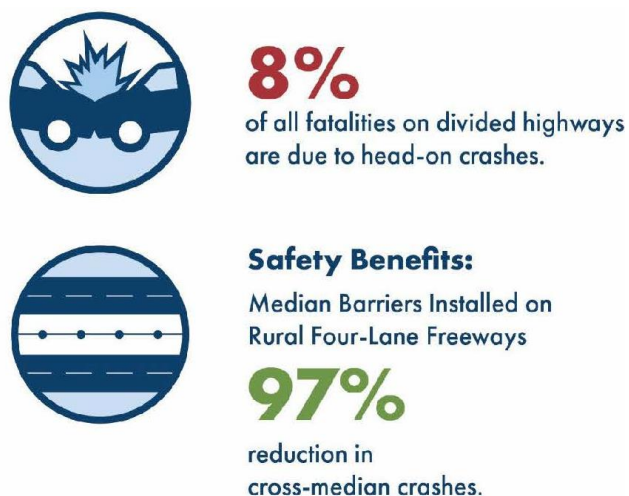


Table 1. GDP of Project Region

GDP (2020)	\$ in millions
North Dakota	54,422.90
Fargo MSA	15,912.70
Grand Forks MSA	5,739.30
Traill County	478.00
% of State GDP	41%

80 miles), the Fargo and Grand Forks MSAs make up approximately [40 percent](#) of the State's total Gross Domestic Product (GDP). Additionally, 75-miles north of the Project's northern termini, on I-29, is a major United States-Canada port of entry near Pembina, North Dakota and Emerson, Manitoba. Installation of 67.3-miles of HTMCG will accommodate growth trends in both Fargo and Grand Forks economies and provide a more resilient regional and national freight network.

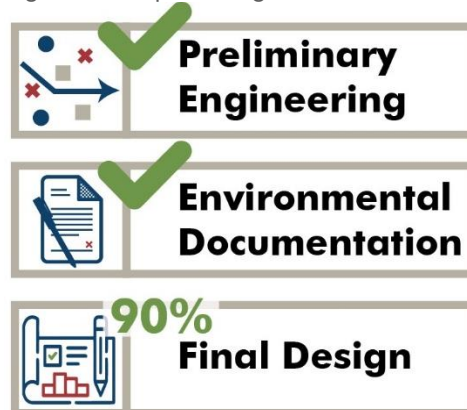
## Detailed Statement of Work/Design Status

The I-29 Cross-Median Crash Elimination Project will be constructed in one phase beginning in the 2025 construction season, depending on MPDG award. I-29 will remain open during construction, maintaining traffic, and emergency vehicle access.

The Project provides for the installation of 67.3-miles of HTMCG in the median of I-29 and includes flattening of median inslopes or ditch slopes and decommissioning of median crossovers in applicable locations.

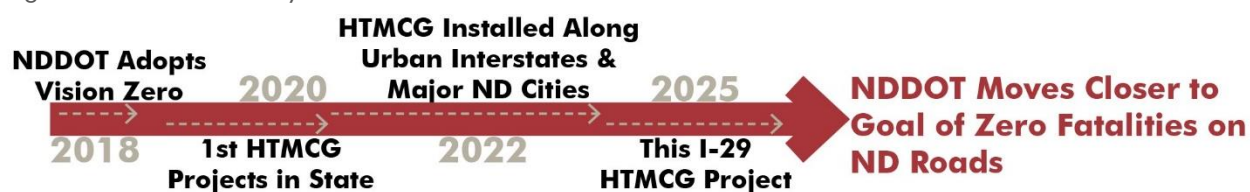
The 2023/24 MPDG award will fill the funding gap and allow the Project to be ready for construction in 2025, no later than 18 months after the date of obligation of funds for the Project. [Preliminary engineering](#) and environmental documentation ([Categorical Exclusion by Definition](#)) are complete. Final design is 90 percent complete, with final plans expected in the fourth quarter (Q4) of 2023.

Figure 4. Project Design Status



## Project History

Figure 5. HTMCG History in the State of North Dakota



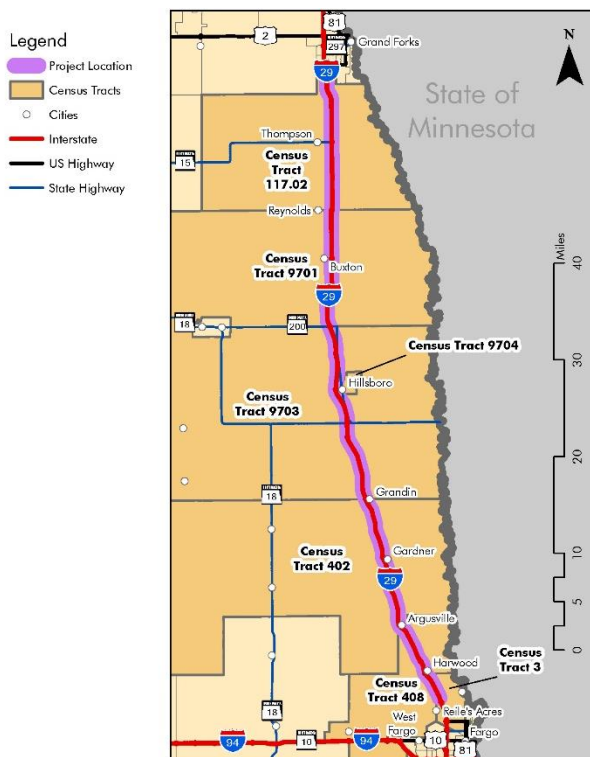
NDDOT launched [Vision Zero](#) in 2018, with the goal of reaching zero fatalities on North Dakota roads. HTMCG is one of the numerous strategies NDDOT is implementing to reach the agency's goal. Starting in urban population centers, similar HTMCG projects have already been installed by NDDOT in cooperation with the Federal Highway Administration (FHWA). Several sections of the North Dakota Interstate System, mainly in the areas of larger cities such as Fargo, Bismarck and Grand Fork have been constructed. HTMCG and other traffic safety countermeasures are having an impact across the State. Since the launch of Vision Zero, vehicle fatalities across the state have steadily decreased. North Dakota ended 2020 and 2021 with a total of 100 and 101 motor vehicle crash fatalities, respectively. These totals are the lowest fatality numbers the [State has seen in about 15-years](#) (see Successes on Pg. 2).

With most of the urban Interstate System recently protected by HTMCG and other median barriers, NDDOT is focusing on other critical segments for HTMCG installation. The Project will provide a continuous HTMCG connection between existing median barriers on I-29 in Fargo and Grand Forks. Cass, Traill, and Grand Forks Counties, in which the Project is located, comprise approximately 34 percent of North Dakota's entire population. The Project will complete a critical safety improvement on I-29 in North Dakota.

NDDOT has delivered success in advancing traffic safety and reducing traffic related fatalities across the State. The Project is a critical infrastructure investment for NDDOT to continue advancing the goals, objectives, and policy direction of Vision Zero and traffic safety in North Dakota.

## Project Location

As shown in Figure 6, the Project will connect the Metropolitan Statistical Areas of Fargo and Grand Forks. Installation of HTMCG will be along I-29 from north of Cass County Highway 20 (RP 69.847) to two-miles north of Grand Forks Highway 6 (RP 137.140). The Project is in Cass, Traill, and Grand Forks Counties in North Dakota. Extending 67.3 miles on the eastern edge of the State, the Project is on I-29 between the communities of Fargo, Harwood, Argusville, Gardner, Grandin, Hillsboro, and Grand Forks.



The Project area is entirely rural except the southernmost 0.86-miles is within the Fargo Urbanized Area boundary (2020 pop. 216,214). The entire Project is located within Cass County Census Tracts 3, 408, and 402; Traill County Census Tracts 9703, 9704, and 9701; and Grand Forks County Census Tract 117.02 with a geospatial location from 46.940425°, 96.85395° (southern termini) and 47.875081°, 97.087392° (northern termini). Census Tract 3 in Cass County is an [Area of Persistent Poverty \(APP\)](#).

## Supporting Documents

Links to supporting documents are included throughout this narrative. All supporting documents and MPDG grant application materials are available to view at the following webpage:

<https://www.srfconsulting.com/nddot-i-29-mpdg/>