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MINNESOTA DEPARTMENT OF TRANSPORTATION

Hwy 371/Hwy 210/BNSF Railroad Grade Separation Project

2022 Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program



Project Name: Hwy 371/Hwy 210/BNSF Railroad Grade Separation Project
Project Type: Track 2 – Project Development
Future Eligible Project Costs: \$2.5 million
FFY 2022 CRISI Funds Requested: \$2 million

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Supporting Information can be found at:
<https://www.srfconsulting.com/mndot-crisi-rr/>





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COVER PAGE

Hwy 371/Hwy 210/BNSF Railroad Grade Separation Project	
Applicant	Minnesota Department of Transportation
Federal Funding Requested Under this NOFO	\$2,000,000
Proposed Non-Federal Match	\$500,000 In-Kind: None
Does some or all of the proposed Non-Federal Match for the total project cost consist of preliminary engineering costs associated with a Highway-rail Grade Crossing Improvement Project or a trespassing prevention project incurred before project selection?	Yes. If yes, how much? \$500,000
Other Sources of Federal funding, if applicable	N/A \$0
Total Project Cost	\$2,500,000
Was a Federal Grant Application Previously Submitted for this Project?	No
City(-ies), State(s) Where the Project is Located.	Baxter, MN
Congressional District(s) Where the Project is Located.	MN Congressional District 8
Is this a project eligible under 49 U.S.C. 22907(c) (2) that supports the development of new intercity passenger rail service routes including alignments for existing routes?	No
Is this a Rural Project? What percentage of the project cost is based in a Rural Area?	Yes. 100 percent.
Is this a project eligible under 49 U.S.C. 22907(c) (11) that supports the development and implementation of measures to prevent trespassing and reduce associated injuries and fatalities?	Yes
If YES to the previous question, is this project located in a county with the most pedestrian trespasser casualties as identified in the Federal Railroad Administration's National Strategy to Prevent Trespassing on Railroad Property?	No
Is the application seeking consideration for funding under the Maglev Grants Program?	No
Is the project currently programmed in: State rail plan, State Freight Plan, TIP, STIP, MPO Long Range Transportation Plan, State Long Range Transportation Plan?	State Rail Plan – No State Freight Plan – No STIP/TIP – No State Long Range Transportation Plan - No



The Minnesota Department of Transportation (MnDOT) is submitting this 2022 Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program request for \$2 million in federal funds under Track 2 – Project Development. The requested funds will be used towards conceptual design, environmental documentation, and preliminary engineering of Hwy 371/Hwy 210/BNSF Railroad Grade Separation Project (herein known as the Project) in the city of Baxter, Minnesota. The resulting final design/construction project is referred to as the Construction Project herein.

PROJECT SUMMARY

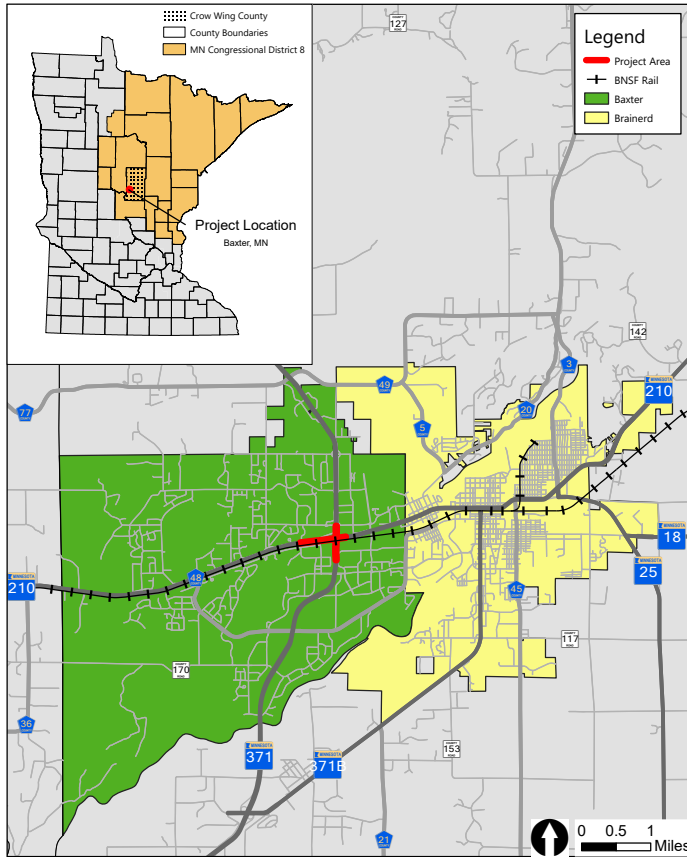


Figure 1 Project Location

The intersection of Highway (Hwy) 371, Hwy 210, and Burlington Northern Santa Fe (BNSF) railroad, at-grade crossing ID 917433S, has significant traffic safety and operational issues. The intersection experiences frequent congestion, crashes, and restricted access due to heavy vehicular traffic (31,500 vehicles per day) and blocked at-grade highway-rail crossing (six daily freight trains). This intersection serves the primary commercial and retail center of Baxter and provides connection to the neighboring city of Brainerd, MN (Figure 1). The Project will conduct preliminary engineering design and associated environmental documentation to propose a grade-separated solution that will improve the flow of freight and people in this rural community. The subsequent Construction Project will allow for the closure of the at-grade crossing and provide safe, unimpeded, rail-separated access between Hwy 371, Hwy 210, and the commercial district, significantly decreasing existing conflicts and risks for the railroad and allowing for planned growth on the BNSF line. The project qualifies for the statutorily required set-aside for rural investment under 49 U.S.C. 22907(g).

PROJECT FUNDING

Total Future Eligible Project Cost – Track 2: \$2.5 million

CRISI Grant Request Amount: \$2 million (80 percent of future eligible project cost)

The total future eligible cost is \$2.5 million which includes conceptual engineering, environmental documentation, and preliminary design engineering for the Project. To date, \$22,000 has been spent by MnDOT, the City of Baxter, and Crow Wing County on a high-level [Intersection Improvement Study](#) to assess viable

options for addressing the key transportation challenges at the Project location. Federal funding of \$2 million in CRISI award will enable sufficient development of this Project to support final design and construction activities by 2025. MnDOT has committed to providing \$500,000 in state funds through State Road Construction funds as the required non-federal match for the Project. A letter of funding commitment from MnDOT can be found [here](#). Table 1 presents the budget for project development activities (track 2) associated with the Project.

Table 1 Project Funding Breakdown

Task #	Task Name / Project Component	Cost	Percentage of Total Cost
1	Detailed Project Work Plan, Budget, and Schedule	\$200,000	8%
2	Conceptual Engineering to define NEPA	\$250,000	10%
3	NEPA	\$500,000	20%
4	Preliminary Engineering	\$1,500,000	60%
5	Project Close-out	\$50,000	2%
Total Project Cost		\$2,500,000	100%
Federal Funds Received from Previous Grant		\$0	0%
Federal Funding under this NOFO Request		\$2,000,000	80%
Non-Federal Funding/Match - Source: MnDOT		\$500,000	20%
Portion of Non-Federal Funding from the Private Sector		\$0	0%
Portion of Total Project Costs Spent in a Rural Area		\$2,500,000	100%
Pending Federal Funding Requests		\$0	0%

In addition, a preliminary planning level cost estimate for the Construction Project was also prepared and can be found [here](#). The construction cost estimate was prepared for the most reasonable alternative recommended by the Intersection Improvement Study, to establish preliminary costs and analyze the benefit-cost ratio. The estimated cost of the Construction Project is approximately \$38 million including design, permitting, right of way, and construction. However, this estimate will be revised based on the results of environmental documentation and a MnDOT approved layout, as noted in the [Statement of Work](#). MnDOT will cover the maintenance costs associated with the overpass and the highway improvements, upon completion of the Construction Project.

CRISI FUNDING NEED

If the CRISI funding is not awarded, the Project could be significantly delayed from its existing schedule. Without the proposed project development and subsequent capital improvements, the corridor will continue to experience significant congestion and higher than average crash rates. The crossing exhibits a high probability of highway-rail collision which can lead to fatalities or serious injuries. MnDOT may seek alternative funding sources in the future, but the impacts of inflation have required the agency to reassess its upcoming capital program. It is also possible that the Project would be shelved due to funding constraints. The absence of funding and corresponding schedule delays would adversely impact the underserved and disadvantaged communities in the cities of Baxter and Brainerd.

APPLICANT ELIGIBILITY

The Minnesota Department of Transportation (MnDOT) meets the applicant eligibility criteria outlined under Section C.1.a., a State, of the Notice of Funding Obligation (NOFO). MnDOT is committed to providing 20 percent cost match in non-Federal funds, to fulfill the program requirements.

PROJECT ELIGIBILITY

The Project meets the eligibility criteria outlined under Section C.3.a.v. of the NOFO as a highway-rail grade crossing improvement project. The Project will improve the safety and operation issues at the existing at-grade crossing of Hwy 371, Hwy 210, and the BNSF railroad intersection through construction of a grade separated alternative. The preliminary engineering and environmental documentation funded through this CRISI grant will develop alternatives that could potentially include overpass, associated roadway improvements such as travel lanes, ramp connections, medians or other barriers, railroad crossing signals, gates, and related technologies, highway traffic signalization, highway lighting and crossing approach signage, railroad crossing panels and surfaces, and safety engineering improvements.

DETAILED PROJECT DESCRIPTION

The neighboring cities of Baxter and Brainerd are together known as the Brainerd Lakes Area. Located in Crow Wing County, Brainerd Lakes Area is a vital economic hub and quintessential vacation destination in central Minnesota. Brainerd is also the county seat for Crow Wing County. The at-grade crossing of Highway (Hwy) 371, Hwy 210, and Burlington Northern Santa Fe (BNSF) railroad, located in Baxter, has significant traffic safety and operational issues. This Project will conduct environmental documentation and preliminary design for a grade separated option to address current challenges to the transportation network of the area. The goals of the project are to address **traffic mobility** in the freight corridor, **improve safety** by reducing the high crash rates, **improve core assets and increase sustainability** by investing in vital infrastructure assets, and provide an **improved and equitable multimodal experience** including a new connection for pedestrians and bicyclists.



Figure 2 Congestion along Hwy 371 at the BNSF railroad at-grade crossing (Source: KLJ)

Highway 371 is an important arterial roadway that runs north-south in central and north-central Minnesota for approximately 107 miles. It is a principal arterial, four-lane divided roadway with turn lanes intersecting roadways and has a posted speed limit of 50 miles per hour (mph) through the project area. Further, it is an Interregional Corridor specifically identified by MnDOT as having significant importance in the transportation system for the movement of goods and services throughout the region. Hwy 371 contributes to the commerce of the Brainerd Lakes Area providing efficient mobility for motorists and heavy commercial vehicles. The annual average daily traffic (AADT) volumes (2021) along the project area range from 19,400 vehicles per day (vpd) to 31,500 vpd, with the highest volumes just north of Hwy 371/Hwy 210/BNSF railroad intersection. Hwy 371 carries between 1,000 and 1,600 freight vehicles per day according to 2021 Heavy Commercial Average Annual Daily traffic (HCAADT) counts.

Highway 210 is also an arterial roadway that runs east-west across Minnesota for 228 miles, from west-central to northeast, connecting Fergus Falls, Brainerd, and Duluth. It is a principal arterial, four-lane divided roadway with turn lanes at intersecting roadways and has a posted speed limit of 45 miles per hour (mph) through the project area. Hwy 210 is also a part of the Interregional Corridor because of its significance in the movement of goods and services through the region. The 2021 AADT volumes along the project area range from 15,300 vpd to 27,900 vpd and the 2021 HCAADT counts along the project area range from 680 to 1,000 freight vehicles per day.

BNSF is Minnesota’s largest railroad and owns 1,490 route miles of track in the state. The BNSF rail line running through the project area is a part of the Brainerd subdivision and runs east-west in the cities of Baxter and Brainerd. The Brainerd subdivision connects central Minnesota to the Fargo/Moorhead area and North Dakota to the northwest, and to Duluth to the northeast. The rail line runs from Chub Lake (near Duluth) to Staples in central Minnesota. In Staples, the Brainerd subdivision connects to the Staples subdivision while at Chub Lake it connects to the Lakes subdivision. There is a yard in Staples and a minor yard and shops in Brainerd.

GRADE CROSSING INFORMATION

According to the USDOT [crossing inventory report](#), the crossing ID number for Hwy 371 and BNSF at-grade crossing is 917433S. Hwy 371 is owned and maintained by MnDOT and consists of six lanes of divided traffic at the crossing. The BNSF



Figure 3 BNSF Brainerd Subdivision

Railway Company owns the railroad right-of-way and operates the railroad. The railroad falls under the Twin Cities division, Brainerd subdivision, Chub Lake to Staples line. Currently, there are six freight trains per day (2019) at the crossing, three during the daytime hours and three during the nighttime hours. The maximum timetable speed of the train at the crossing is 49 mph. There is one main non-signalized track with constant warning time (CWT) train detection system. On average the crossing closure time ranges from three minutes to four minutes, with approximately 130 railcars passing through the crossing.

There are both passive traffic control devices and train activated warning devices at the at-grade crossing. The passive traffic control devices consist of four crossbuck assemblies located on the gate arms, two each of the traditional yellow W10-1 and W10-2 advanced warning signs, pavements markings that include stop lines and RR Xing symbols, and medians on all approaches. The train activated warning devices includes four gate arms in a two-quad configuration with medians and 14 pairs of LED flashing lights over either mass mounted or cantilevered structures. There are also two bells to notify drivers and pedestrians that a train is crossing.

TRANSPORTATION CHALLENGES IN THE AREA



The BNSF rail line runs parallel to and approximately 150 foot south of Hwy 210. Hwy 371 crosses both Hwy 210 and the BNSF rail line at the present at-grade crossing # 917433S. This intersection is ranked as the busiest at-grade crossing in northern Minnesota, 14th highest crash cost intersection in the state¹,

and the second highest at-grade crossing for predicted collision in Crow Wing County². The project area experienced a total of 210 crashes between 2019 and 2021, including three fatal and serious injury crashes. The existing transportation challenges in the area include:

- presence of an at-grade signalized crossing between two principal arterial highways with very high traffic volumes, with respect to a rural community, leading to a high probability of vehicle-rail collision,
- significant crash and safety concerns due to proximity to intensive commercial and retail areas, for both freight and vehicles,
- congestion along the corridor due to inadequate traffic operations and queuing, and
- lack of Americans with Disabilities Act (ADA) compliant multimodal infrastructure.

¹ [Crow Wing County Intersection Study](#)

² [Web Accident Prediction Report 2022](#)

3
serious injury or
fatal crashes

11
minor
injury crashes

32
possible
injury crashes

164
property
damages only

Figure 4 Crashes in the Project Corridor (2019-2021)

The intersection experiences frequent congestion, crashes, and restricted access due to heavy vehicular traffic and blocked at-grade highway-rail crossing. In an earlier [study](#) conducted in 2021, it was found that the crash rate at this intersection is over three times the critical crash rate. It is also a barrier for emergency vehicles as the emergency response time considerably increases, creating a real challenge for the city of Baxter when responding to emergencies.

While Hwy 371 provides significant utility for the movement of vehicular traffic, goods, and services it is also a barrier for bike/pedestrian crossings. The areas around the project corridor are zoned for commercial and industrial land use. Traffic volumes significantly increase during the cabin months of summertime while also increasing the recreational movement of bicyclists/pedestrians through the area. The combination of high vehicular speeds and high traffic volumes make pedestrian/bicyclist crossings of Hwy 371 challenging.

PROJECT NEEDS



Very high traffic volumes on both highways (busiest intersection in northern Minnesota)



Ranks as the 14th highest crash cost intersection in Minnesota



Number of crashes is over three times the critical crash rate



Active at-grade railroad crossing



Complex mix of local and interregional traffic



Serves the primary retail hub for the Baxter/Brainerd region

COMPONENTS OF THE PROJECT/CONSTRUCTION PROJECT

The Project will evaluate transportation challenges in the area and develop project design to sufficiently support subsequent final design and construction. The components of this Project (project development under track 2) include:

- conceptual design,
- environmental documentation, and
- preliminary engineering.

The Project will complete the environmental process and preliminary engineering initiated with the Crow Wing County's [Intersection Improvement Feasibility Study](#) which evaluated alternatives for eliminating the at-grade crossing. Funding will be used to finance preliminary NEPA work, such as scoping issues related to Section 4(f), Section 6(f), environmental justice, threatened and endangered species, critical habitat, cultural resources, and parks and recreation facilities, etc., as applicable. Funding will also allow MnDOT to conduct preliminary engineering studies and environmental field studies to screen critical impacts within the project area. The Project will evaluate how alternative concepts may impact adjacent crossings and right-of-way needs,

helping to refine project scope and cost estimates for the NEPA process. This work is necessary to complete a thorough environmental documentation within required scheduling parameters and ultimately advance to construction.

The deliverables at the completion of the Project will include conceptual design documents, public engagement reports, Categorical Exclusion or Finding of No Significant Impact (FONSI) report, survey reports, MnDOT approved layout, completed preliminary engineering drawings, specifications, modeling report, construction cost estimate, financial planning documentation, implementation schedule, benefit estimates, and final performance report.

The components of the Construction Project will potentially include:

- Grade-separation at Hwy 371 with overpass over Hwy 210 and adjacent BNSF rail line,
- Partial reconstruction of Hwy 371, Hwy 210, and local road connections to account for profile changes,
- Access ramps to Hwy 371 from eastbound and westbound Hwy 210,
- New traffic signals, lighting, and Intelligent Transportation System (ITS) along the corridor,
- Construction of a new grade-separated pedestrian trail connecting the southwest quadrant to the northeast quadrant, and
- Closure of existing Hwy 371/BNSF at-grade crossing.

EXPECTED OUTCOMES/PROJECT BENEFITS

Initial planning efforts have determined that grade separation of Hwy 371, Hwy 210, and the BNSF rail line will result in increased public safety, unimpeded access for emergency response, improved flow of freight trains and vehicles, safe new bike and pedestrian access to the commercial center and reduced environmental impacts from vehicle idling and wait times.

In June 2022, Crow Wing County with the support of MnDOT and the City of Baxter, completed a planning-level [Intersection Improvement study](#) of the Project corridor to understand the key issues associated with the Hwy 371/Hwy 210/BNSF railroad intersection and develop preliminary understanding of feasible options to address the needs. The study analyzed potential improvement concepts including at-grade intersection and grade-separated alternatives. The concepts were guided by a range of principles including variable cost options, practical implementation of closures or restrictions, accounting for multimodal accommodations for pedestrians and bicyclists, improved traffic operations, and practicality and viability of proposed solutions.

Two of the proposed concepts were recommended for further consideration and a planning level benefit cost analysis was conducted based on MnDOT Planning and Programming guidance. The preliminary analysis indicates that both proposed build concepts had benefit cost ratio greater than 1.0 as the benefits due to vehicle miles traveled (VMT), vehicle hours traveled (VHT), and crash reduction were estimated to be higher than the costs associated with the proposed concepts.

“ I was sitting at the intersection by Kohl’s, and this was in the winter, in the middle of the week ... and cars were backed up to Home Depot, trying to get onto 371, and that’s the middle of the week. You know, we hear, ‘Oh, it’s going to be horrendous,’ and that affects our city.

– Darrel Olson, Baxter Mayor

Table 2 Expected Benefits

Benefit Categories	Benefit (2020 dollars)
Travel Time	\$9,983,000
Vehicle Operating Costs	\$1,106,000
Safety	\$20,273,000
Air Quality	\$164,000
Maintenance	(\$166,000)
Remaining Capital Value	\$1,120,000
Total	\$32,480,000

It should be noted that for the purpose of this application, the Federal Railroad Administration (FRA) and US Department of Transportation (USDOT) requires a comprehensive benefit cost analysis (BCA) of the underlying project, i.e., Construction Project, for projects eligible under Track 2 – Project Development. As a result, the BCA was revised to align with the FRA and USDOT’s guidelines. The BCA was conducted for one of the two recommended concepts of the Intersection Improvement study. Since the

approved concept will be dictated by the conceptual design, public engagement, and environmental documentation performed as a part of this Project, the current BCA is a comprehensive yet planning-level analysis of comparing monetized project benefits and costs.

The expected benefit categories and estimated cost benefits/savings are listed in Table 2 and are further discussed under Evaluation Criteria. The preliminary analysis and support of all stakeholders establish that the elimination of the at-grade highway-rail crossing is highly needed, effective, and technically feasible.

EXPECTED USERS AND BENEFICIARIES

The expected users and beneficiaries of this Project and the Construction Project, upon its completion, will be:

- rural communities of Baxter (population 8,612) and Brainerd (population 14,395) including the underserved communities across the three disadvantaged census tracts within five miles of the project area,
- commuters and vacationers traveling through this significant interregional corridor,
- freight intensive businesses using central Minnesota’s vital, multimodal, roadways and railways that support key industries of manufacturing, retail trade, agriculture, and construction, and
- BNSF railroads to support efficient and safe movement of freight between Minnesota and its bordering states.

Construction of this transportation project directly impacts freight mobility, employment, and trade related private investment opportunities in rural America.

PROPOSED PERFORMANCE MEASURES

As documented in [Attachment 5 – Performance Measures](#), the Project is expected to sufficiently advance environmental documentation and preliminary design for the Hwy 371/Hwy 210/BNSF grade separation project. The expected outcome of this Project is to support final design engineering and construction activities related to the Construction Project. The following performance measures are proposed to assess benefits of the proposed Project:

Table 3 Performance measurement of Track 2 – Project Development Activities

Measure	Timeline	Primary Strategic Goal	Description
Environmental Documentation	December 2024	Climate Sustainability	The completion of either Categorical Exclusion or Environmental Assessment and issuance of FONSI
Approved Layout	June 2024	Safety	Approval of MnDOT staff approved Layout
30% Design Plans	December 2024	Safety	Completion of preliminary engineering to 30% design

Additionally, to measure the achievement of program goals and objectives, share lessons learned, improve program outcomes, and foster adoption of promising practices, the following measure will be reported upon completion of the Construction Project:

Table 4 Performance measurement of Construction Project (upon completion)

Measure	Timeline	Primary Goal	Secondary Goal	Description
Rail Track/Road Grade Separation	TBD	Economic Competitiveness	Safety	The number of annual vehicle crossings that are eliminated from an at-grade crossing as the result of the new Grade Separation.
Gross Ton	TBD	Economic Competitiveness	State of Good Repair	The increase in annual gross tonnage of freight shipped in the project area.
Travel Time	TBD	Economic Competitiveness	Quality of Life	Point to Point travel time along Hwy 371 through the area.

DIRECT PARTNERSHIP WITH SMALL BUSINESSES

MnDOT has proactively developed a strong portfolio of several Equity and Inclusion Programs such as Disadvantage Business Enterprise (DBE), Targeted Group Business (TGB), Equal Employment Opportunity (EEO) Program, among others. MnDOT encourages and awards private business contracts to minority- or women-owned businesses. MnDOT has awarded more than \$173 million in prime contracts and goods purchases with under-utilized businesses in the past 5 years to mitigate its contracting disparity, increasing from \$19 million in FY16 to over \$38 million in FY20. In accordance with the goals of **MnDOT’s Equity and Inclusion programs**, MnDOT will issue small contracts well-suited for under-utilized businesses; simplify contracting processes and documents and incorporate equity into reporting systems; track all contracts to identify progress and gaps in terms of equity; train and incentivize offices to identify work well-suited for under-utilized businesses; train small businesses on MnDOT requirements and specifications; and collaborate with tribal and local partners to connect under-utilized businesses to opportunities in the wider marketplace.

This Project will result in the elimination of the grade crossing through grade separation of Hwy 371, Hwy 210, and BNSF rail line and would provide **the first grade-separated railroad crossing in Baxter**. The grade separation is expected to improve travel time for both commuters and BNSF operations, eliminate accidents at the crossing, reduce idling emissions, and provide accommodation for expected future demand for rail and vehicular traffic.

PROJECT LOCATION

The Project, located in Minnesota’s Eighth congressional district, will conduct project development activities to eliminate the current at-grade crossing of Hwy 371, Hwy 210, and BNSF railroad, in the city of Baxter, MN as shown in Figure 5. The railroad milepost is 0120.792. The geospatial location of the Project is approximately 46.351334°, -94.244278°.

According to the Crow Wing County [Economic Development Report](#), the County has a lower median household income than the state of Minnesota, and a higher percentage of households with incomes below \$50,000. Overall, Crow Wing County has the 33rd highest median household income of the 87 counties in Minnesota. The County suffered a negative natural increase, i.e., more deaths than births from 2020 to 2021, but also experienced net in-migration, i.e., more people moved in than moved out. In addition to domestic in-migration, Crow Wing County welcomed net international in-migration, gaining new Minnesotans from foreign countries. Baxter has a population of 8,612 residents and Brainerd has a population of 14,395 as per the 2020 American Community Survey (ACS) estimates.

The Project is located within a rural area, and therefore, is designated as a rural project. The Project sits across two census tracts 9513.01 and 9513.02. Within a five-mile buffer around the project area, three census tracks (9510, 9511, and 9512) are designated as [Justice 40 Disadvantaged communities](#) under either legacy pollution (proximity to Superfund sites, low income, and higher education non-enrollment) or workforce development (low median income and high school degree non-attainment) categories. Census tracts 9511 and 9512 are the only two Areas of Persistent Poverty (APP) in Crow Wing County and are also designated as a Qualified Opportunity Zone. The Project is not located in Historically Disadvantaged Communities (HDC), Empowerment Zones, Promise Zones, or Choice Neighborhoods.

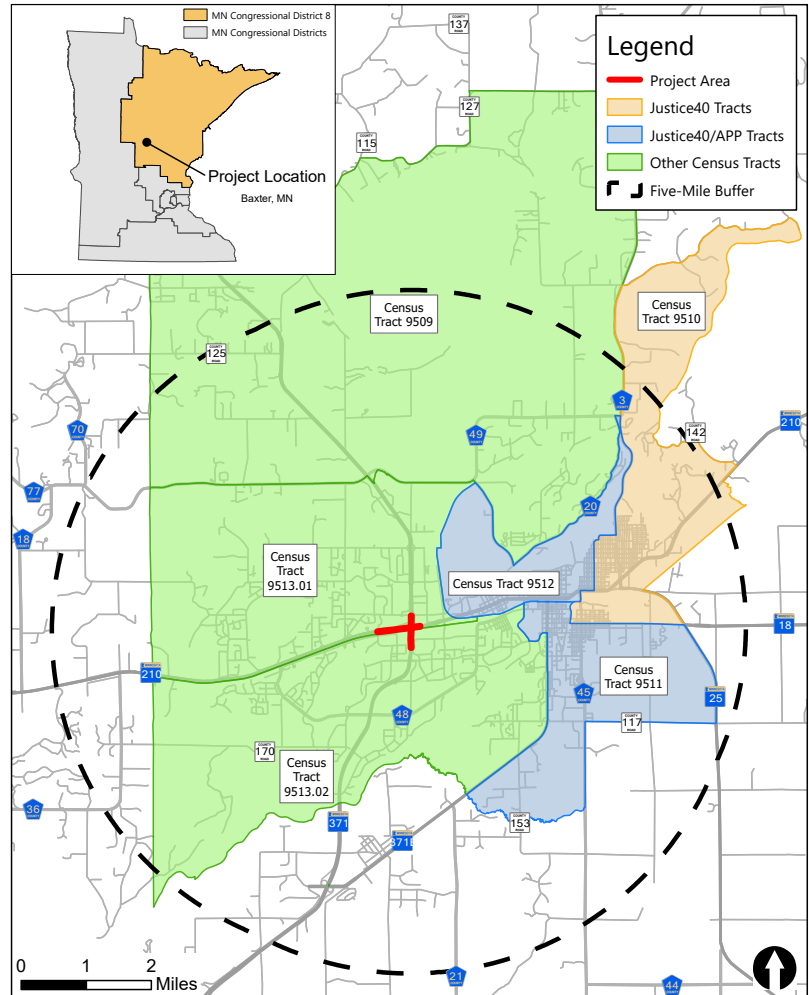


Figure 5 Project Location in Regional Context

EVALUATION & SELECTION CRITERIA

EVALUATION CRITERIA

PROJECT BENEFITS

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 attached and available to view at the grant application website: <https://www.srfconsulting.com/mndot-crisi-rr/>

NO BUILD ALTERNATIVE

The No Build Alternative assumed that no major rehabilitation work would be undertaken on any of the highways and the railroad associated with the project. The remainder of the transportation network assumed no changes relative to its existing layout.

BUILD ALTERNATIVE

The Build Alternative included the activities noted in the project description section of the application. Maintenance costs associated with the Construction Project were expected to be incurred over the benefit cost analysis period. Similar to the No Build, no other improvements were considered for the Build Alternative in the analysis.

BCA METHODOLOGY

The following methodology and assumptions were used for the benefit-cost analysis:

Main Components – The main components analyzed included:

- Travel time/delay
- Vehicle operating costs
- Crashes by severity
- Environmental and air quality impacts
- Initial capital costs: Capital costs were expected to be incurred in years 2026 through 2027
- 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.
- Operating and maintenance costs

PROJECT COSTS

Year 2020 project costs of the overall Project are expected to be about \$32.7 million. The current 2020 project costs discounted at a rate of seven percent is approximately \$21.1 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 5, with detailed documentation presented in the technical memorandum and workbook.

Table 5 Total Project Results

	Initial Capital Cost (2020 Dollars)	Project Benefits (2020 Dollars)	Benefit-Cost Ratio (7% Discount Rate)	Net Present Value (2020 Dollars)
No Build vs. Build	\$21.1 million	\$ 32.5 million	1.5	\$ 11.4 million

The monetized benefits and costs of the Construction Project are summarized below in alignment with USDOT's strategic goals.

- **Safety** – The elimination of the at-grade crossing and construction of an overpass is estimated to reduce five fatalities, reduce 685 non-fatal accidents, and reduce delay to emergency responders over the 20-year period post construction. This will potentially save \$20.3 million in safety related events.
- **Equitable Economic Strength and Improving Core Assets** – The reduction of idling within the project area has been the measurement used for economic strength for the Construction Project. As estimated 11.5 million gallons of fuel is projected to be saved in the 20-year period post construction, for a monetized savings of \$1.1 million in vehicle operating costs.
- **Equity and Barriers to Opportunity** – Travel Time Value Saved has been the unit of measure for Quality-of-Life benefits of the Construction Project. It is estimated that the reduced delay of a total of 1.4 million hours equates to a monetized savings of approximately \$10 million upon completion of the Construction Project.
- **Climate Change and Sustainability** – The reduction of vehicle idling has been monetized into estimated savings of pollutants generated by the idling of the vehicles in the project area. It is estimated based upon the reduction of idling, over 3,587 tons of CO₂ will be saved over the analysis period post construction for a total estimated monetized value of \$164,000.
- **Transformation** – The grade separation of the highways and the BNSF railroad has the potential to increase capacity of rail freight and the number of trains on this line.
- **Costs** – The discounted Operation and Maintenance costs associated with the Construction Project were found to be \$166,000

TECHNICAL MERIT

APPROPRIATENESS OF EXPECTED OUTCOMES

The Project is seeking CRISI funds under Track 2 for costs associated with developing environmental documentation and preliminary engineering. To achieve the expected outcomes, a [statement of work](#) has been prepared based on FRA and MnDOT guidance. This document outlines major tasks and subtasks that will be performed to provide required design, documentation, and approvals to support the final design and construction of the Construction Project.

PROJECT READINESS UNDER TRACK 2

As established in the Detailed Project Description section, MnDOT and all partners strongly support this Project, as noted by the [letters of support](#). Crow Wing County completed a high-level Intersection Improvement Study in June 2022, to evaluate practical, efficient, and viable solutions for this important high-way-rail crossing. The results of the study paved the path for this Project which, once funded, will support the subsequent Construction Project. The environmental documentation and preliminary engineering are scheduled to be completed between 2024 and 2025. The construction is estimated to begin in 2026 and be completed by 2027.

KEY PROJECT TEAM

The Project will be led by MnDOT District 3's Assistant District Engineer for Program Delivery and Traffic, James Hallgren. James is a licensed professional engineer (P.E.) in the state of Minnesota and has experience of delivering numerous small, mid, and large-scale successful projects over the past 30 years. As the project sponsor for the Hwy 371/Hwy 210/BNSF Railroad Grade Separation Project, James will utilize his knowledge, experience and influence to work with, and support, the project manager and the project team to make the project successful. He will be responsible for securing resources, setting priorities and timely resolution of issues that cannot be resolved by the project manager and team. Some of James' projects of similar size and scope include:

- **Highway 371 North** was a \$50M two to four lane expansion from Nisswa, MN to Jenkins, MN that he was assigned after the previous project manager's departure. He led the project through the Supplemental Final Environmental Impact Statement and Re-evaluation, municipal consent, securing funding, and selection of the Design-Build team. He remained as a point of contact into the construction phase of the project.
- **I-94 Albertville to St. Michael (\$70M)** and **I-94 Clearwater to Monticello (\$104M)** were four to six lane expansion projects. In his role as the project sponsor, he was responsible for supporting the project manager, ensuring necessary resources were secured (project funding, consultants, etc.) and resolving conflicts with local stakeholders.
- **Highway 169 Redefine** was a \$120M freeway conversion project that replaced five signalized intersections with grade separated interchanges in Elk River, MN. He was the project manager during the early project development stage and became the project sponsor during the later stages.

The Project Manager will be MnDOT District 3's Project Development Engineer, Darren Nelson. Darren is a licensed professional engineer (P.E.) in the state of Minnesota and has experience of delivering several similar successful projects over 20 years. As the lead Project Manager for the Hwy371/Hwy 210/BNSF Railroad Grade Separation Project, Darren will utilize his knowledge and experience in Project Management, Environmental Documentation, Geometric Highway Design, Roadway Materials Design, and Construction Staging and Sequencing to lead the project development team through the Preliminary Engineering phase. Darren recently served in the same role as the lead Project Manager for the **Highway 169 Redefine project in Elk River**. Darren led the project through the Environmental Documentation, Public Engagement, Geometric Layout, Municipal Consent, Construction Manager/General Contractor procurement, Final Design, Municipal and Utility Agreement, and Construction letting processes. The project was delivered on time and came in under budget and is currently being constructed.

In addition, MnDOT will also hire qualified consultants, compliant with Equity and Inclusion Programs such as Disadvantage Business Enterprise (DBE), Targeted Group Business (TGB), Equal Employment Opportunity (EEO) Program, among others, to perform public engagement, detailed design studies to identify needs and purpose, address potential social, economic and environmental impacts, evaluate and define a full range of alternatives, conduct the environmental process, and develop preliminary design.

LEGAL, FINANCIAL, AND TECHNICAL CAPACITY

Minnesota Department of Transportation is the principal agency to develop, implement, administer, consolidate and coordinate state transportation policies, plans and programs, in Minnesota, for aeronautics, highways, motor carriers, ports, public transit and railroads (Minnesota Statute Chapter 174). MnDOT has a team of dedicated staff members to complete the necessary legal, financial, and technical components of various projects. MnDOT owns and will maintain all facilities within its right of way. The ownership and maintenance of the BNSF rail line will be the responsibility of the BNSF railroads.

INNOVATIVE TECHNOLOGY, PROJECT DELIVERY, AND FINANCING

The Project will explore innovative technology components such as dynamic messaging/signaling or potential to add electric vehicle infrastructure in form of charging station, as the Project design progresses.

MnDOT provides construction management services in-kind at times to projects that intersect their roadways. This helps MnDOT to streamline construction management and reduce project costs through innovative project delivery.

In accordance with the goals of **MnDOT's Equity and Inclusion programs**, MnDOT will issue small contracts well-suited for under-utilized businesses; simplify contracting processes and documents and incorporate equity into reporting systems; track all contracts to identify progress and gaps in terms of equity; train and incentivize offices to identify work well-suited for under-utilized businesses; train small businesses on MnDOT requirements and specifications; and collaborate with tribal and local partners to connect under-utilized businesses to opportunities in the wider marketplace.

MnDOT recognizes that transportation investments directly and indirectly foster economic growth through the provisioning of construction jobs, enabling goods to be transported through a commerce friendly network of corridors and providing mobility to citizens; MnDOT is committed to investing in our roads, bridges, and rail networks that contribute to a growing economy and will continue supporting commerce.

CONSISTENCY WITH PLANNING GUIDANCE

All tasks and subtasks performed as part of the Project will be based on MnDOT Planning and Programming guidance. The Project will also align with Minnesota Comprehensive Statewide Freight and Passenger Rail Plan developed under Minnesota Statute Minnesota Session Law 2008, Section 174.03 subdivision 1b.

SELECTION CRITERIA

SAFETY

At-grade crossings alone are a concern due to the risks of collisions with vehicles, bicyclists, and pedestrians.

The preliminary safety analysis performed as part of the Intersection Improvement Study identified crash trends at five intersections along the project corridor using six years of crash data (2019-2021) from MnDOT’s Minnesota Crash Mapping Analysis Tool (MnCMAT). It was found that three of the five intersections have above critical crash rates and all five are above average for similar intersections across Minnesota (Table 6). Exceeding the calculated critical crash rates indicate a sustained crash problem.

Table 6 Crash Data Analysis

Study Intersections		Crash Severity						Intersection Crash Rate Data			
Intersection	Entering ADT	Fatal	A	B	C	Property	Total	Crash Rate	Critical Rate	Critical Index	MnDOT Average
TH 210 at TH 371	47,050	1	0	7	18	86	112	2.17	0.72	3.01	0.47
TH 219 at Elder Dr	18,750	0	0	0	5	30	35	1.70	0.38	4.48	0.14
TH 210 at Golf Rd	30,750	0	0	0	1	8	9	0.27	0.32	0.84	0.14
TH 210 at Cypress Dr	30,150	1	1	4	1	10	17	0.51	0.79	0.65	0.47
TH 371 at Excelsior Rd	34,400	0	0	0	7	30	37	0.98	0.76	1.28	0.47
Total		2	1	11	32	164	210				
		1%	0%	5%	15%	78%	100%				

Critical Rate Exceeded
 Critical Index > 1
 Average Rate Exceeded
 Critical Index > 0.85

Further, it was found that 83 percent of the crashes are rear-end crashes stemming from congestion bottlenecks at the intersections. In addition to this, the project area poses safety issues with a total of 210 crashes, as noted in the three-year dataset. The improvements due to highway-rail grade separation will resolve the existing safety issues in the project area by closing the at-grade crossing, reducing congestion, reducing weaving conflicts, adding auxiliary lanes, and ramp connections. The Hwy 371/Hwy 210/BNSF Railroad Grade Separation Project is expected to reduce overall crashes by 42 percent and severe crashes by 50 percent (Table 7). The implementation of these strategic improvements will greatly reduce the crash rate occurrence and crash severity along the project corridor.

Table 7 Thirty-Year (2028-2057) Intersection Crash Summary

	No Build	Build	Reduction	Percent Reduction
Total Crashes	1642	953	690	42%
Injury Crashes	335	194	141	
Fatal Crashes	11	6	5	
Crash Cost (\$ millions*)	\$192.5	\$111.7	\$80.8	

* Crash costs are in undiscounted dollars

In Minnesota since 2012, there have been **1,848** incidents involving people injured on a railroad and **93** of them were fatal.

Out of the 27 at-grade highway-rail crossings in Crow Wing County, the at-grade crossing of Hwy 371/BNSF rail line ranks as the [second highest](#) in terms of predicted collision parameter. The accident prediction value is the probability that a collision between a train and a highway vehicle will occur at the crossing in a year. This crossing experiences the highest AADT counts for highway vehicles using the crossing (21,900 vpd) as well as the highest number of total trains per day (six per day).

In July 2021, one fatality occurred approximately one mile east of the project area, as reported by FRA's [Trespassing and Suicide Dashboard](#). Over the past ten years, there have been 11 railroad accidents in Crow Wing County, of which three were fatal³. MnDOT, BNSF, and all partners believe that every incident is preventable. The only safe place to cross railroad tracks is at a designated crossing and a grade separated crossing eliminates the risks associated with vehicle-rail collision. This Project will provide for a safe transportation system necessary to move goods and people, consistent with the USDOT's strategic goal to reduce transportation-related fatalities and serious injuries across the transportation system.

EQUITABLE ECONOMIC STRENGTH AND IMPROVING CORE ASSETS

Minnesota railroads rank first in the nation in the movement of iron ore and third and fourth, respectively, in the origination of farm and food products.

ECONOMIC IMPACTS & FREIGHT MOVEMENT

BNSF is Minnesota's largest railroad and owns 1,490 route miles of track and has 2,096 employees⁴. It moves more than 2.1 million carloads of the state's freight annually, originating 379,662 carloads in 2019 and terminating 247,079 carloads. BNSF is one of the nation's largest grain-hauling railroads, moving more than 115,000 carloads of Minnesota corn, wheat, soybeans, and other agricultural products annually. Other outbound shipments include taconite, food products, timber, and paper. BNSF brings in coal for Minnesota's power plants as well as a variety of consumer products, packaged goods, paper products, clothes, appliances, and automobiles. From 2018 through 2020, BNSF invested about \$290 million in Minnesota to improve the railroad for safe and reliable operation. Systemwide in 2021, BNSF expects to spend approximately \$3 billion on maintenance, expansion projects, Positive Train Control, new locomotives, freight cars and other equipment that will benefit the state and shippers. It also provides access to its rail networks and freight cars to other Class II and Class III railroad operators in MN leading to a strong rail freight transportation system across and beyond the state.

³ <https://www.brainerddispatch.com/news/victim-in-train-incident-is-66-year-old-brainerd-man-police-say>

⁴ <https://www.mnrailroads.com/assets/MRRA%202021-22.pdf>

Tamarack Nickel Project

Talon Metals Corporation was recently [awarded](#) \$114 million by President Biden’s Bipartisan Infrastructure Law through US Department of Energy, to expand domestic manufacturing of batteries for electric vehicles (EVs) and the electrical grid, and for materials and components currently imported from other countries. The [Tamarack Nickel Project](#) is joint venture with Rio Tinto Group to sustainably source nickel-copper-cobalt ore from underground mines in Tamarack, MN, to be fully operational by 2026. The Tamarack Nickel mine is strategically located in the heartland of U.S. manufacturing in central Minnesota and contains deposits of high-grade nickel, a key metal necessary to scale lithium-ion battery production. The only existing nickel mine in the US, in Michigan, is slated for closure in 2025. In addition, Talon Metals and Rio Tinto, have signed a six-year contract with Tesla to supply 75,000 metric tons (165 million lbs) of nickel and certain by-products, including cobalt and iron. However, there are [concerns](#) from the local community and tribal government around processing and tailings of the ore near tribal land in central MN. In response to these concerns, Talon Metals plans to transport the ore to an ore processing and tailings management facility located at an existing industrial brownfields site in Mercer County, ND, significantly reducing land disturbance near the tribal lands. The US Department of Energy grant (estimated to be 27 percent of total project cost) will go towards project construction and execution costs for the Processing Facility in ND.

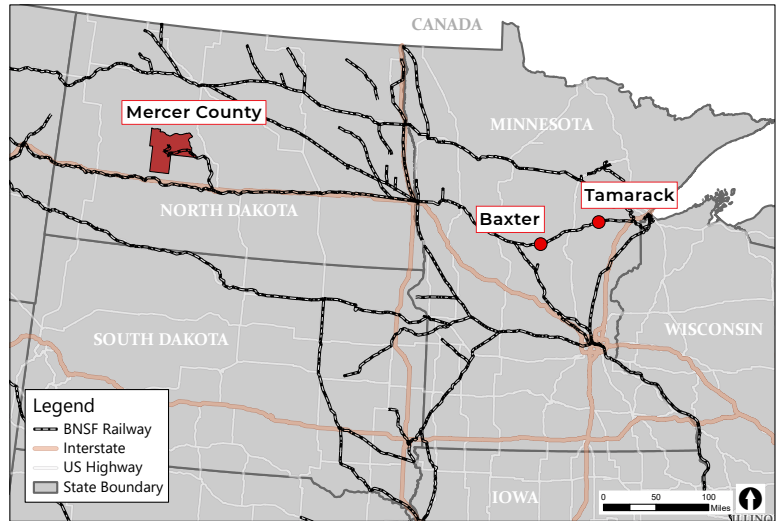
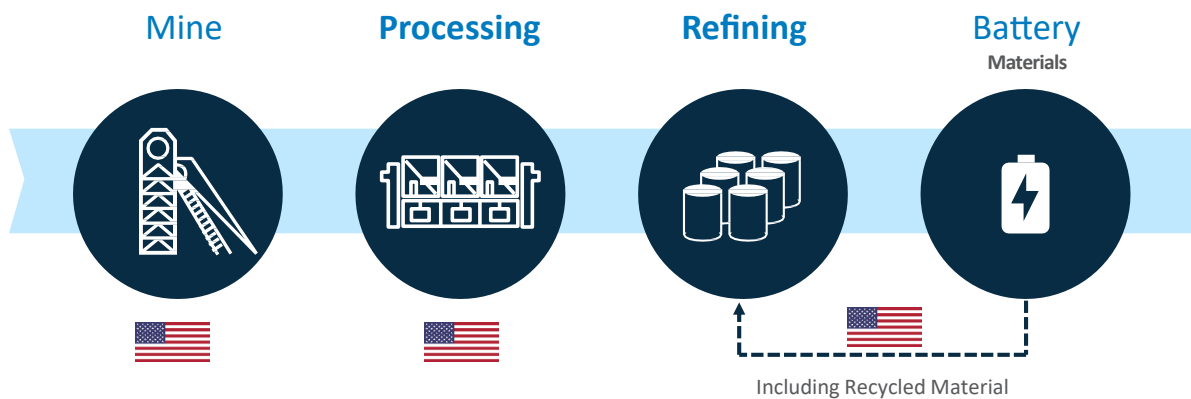


Figure 6 Freight Route for Tamarack Nickel Project

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Source: Talon Metals Corporation

Once the ore extraction is fully operation by 2026, Talon Metals will potentially use the existing BNSF rail line through the project area to transport unprocessed nickel ore to Mercer County, ND. This could lead to a potential increase in the annual gross tonnage of freight shipped through the project area. The grade separation of the existing at-grade crossing at Hwy 371 and BNSF rail line, will support the capacity expansion of the rail network by providing safe, reliable, unimpeded, vehicular traffic-separated access.

MULTIMODAL TRANSPORTATION NETWORK IN CENTRAL MINNESOTA



8,912
Roadway Miles



427
Bridges



367
Railway Miles



2
Cargo Airports



1,009
Pipeline Miles

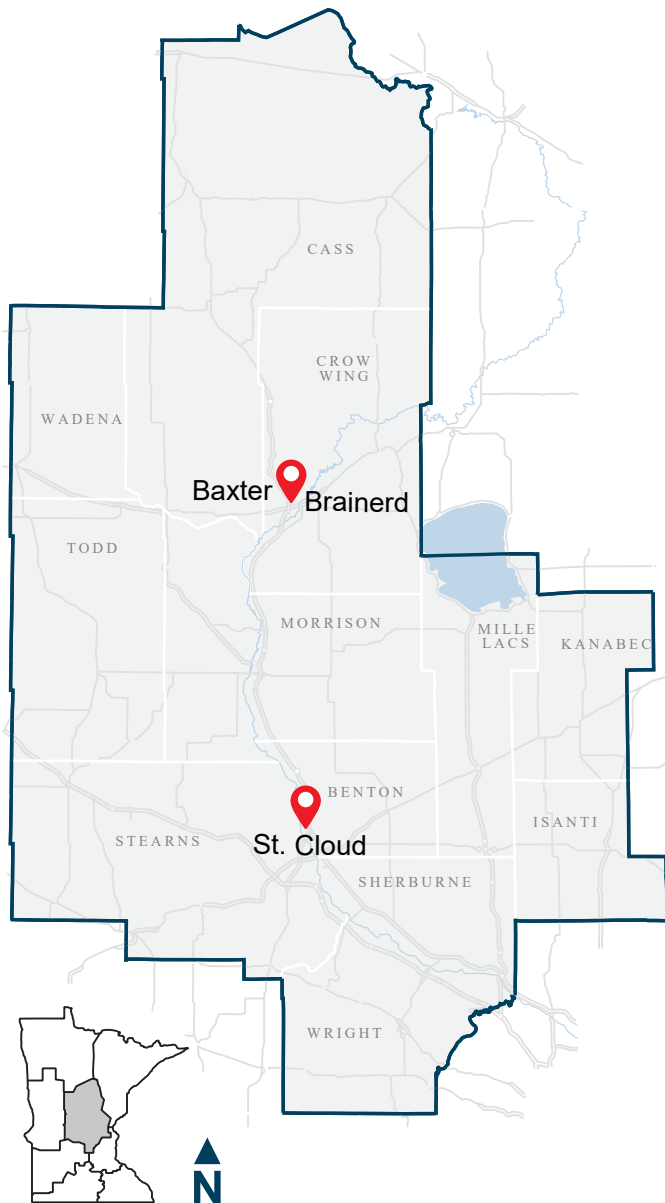


Figure 7 Central MN Multimodal Transportation Network

According to the MnDOT [District 3 Freight Plan](#), freight-dependent industries created 25 percent of central Minnesota’s Gross Domestic Product (GDP) in 2015. Much of the economic activity in central MN is centered around two areas: the St. Cloud metropolitan region, one of the fastest growing metro regions in Minnesota; and the Brainerd Lakes area, which is home to a significant tourist industry (Figure 7).

All the different multimodal freight options (highway, rail, pipeline, and air cargo) are utilized in transporting freight across the region. However, most freight in Minnesota (~ 58 percent by tonnage and ~ 67 percent by value) moves by truck. Therefore, inter-regional corridors such as Hwy 371 and Hwy 210 are keepers of safe and efficient movement of freight and critical in ensuring travel time reliability for supply chain operations. Hwy 371 and Hwy 210 carry up to 1,600 and 1,000 freight vehicles per day, respectively, as recorded by the 2021 HCAADT counts.

Of the 3,067 highway-rail at-grade crossings in Minnesota, 315 (nearly ten percent) are present in central Minnesota. Of these 213 are active crossings that have infrastructure to warn motorists that a train is approaching such as lights and gates. The remaining 102 crossings are passive crossings and rely solely on signage, typically crossbucks.

The Hwy 371/Hwy 210/BNSF Railroad Grade Separation Project will promote the efficiency and resilience of supply chains by increasing freight rail capacity, reducing congestion, alleviating bottlenecks, and increasing multimodal connections in the region.

EQUITY AND BARRIERS TO OPPORTUNITY

One of the goals of the Project is to improve walkability and bikeability in Baxter/Brainerd through project planning.

SMALL BUSINESSES PARTNERSHIP

As discussed in the Direct Partnership with Small Businesses section above, MnDOT has proactively worked with Disadvantage Business Enterprise (DBE), Targeted Group Business (TGB), and minority- or women-owned businesses to award private business contracts and train small businesses on MnDOT requirements and specifications to connect under-utilized businesses to opportunities in the wider marketplace. The goals of MnDOT's Equity and Inclusion programs will be met through contracting small businesses for the Project.

EXPANSION OF TRANSPORTATION OPTIONS FOR UNDERSERVED COMMUNITIES

The Project will conduct an equity impact analysis to evaluate improvements required to expand multimodal options for underserved communities in Baxter/Brainerd. The analysis would map underserved populations, residences and destinations for low-income populations, communities of color, immigrant populations, children, the elderly, people with disabilities, among others. The results of the analysis will be used to identify multimodal improvements needed in the project area.

[Figure 8](#) shows the Priority Areas for Walking Study (PAWS) score in Baxter/Brainerd. PAWS is a mapping tool, developed as part of MnDOT's Statewide Pedestrian System Plan, to identify priority areas to invest in creating or improving the pedestrian/bicyclist infrastructure. This analysis shows scores for half-mile hexagons based on equity, safety, health, infrastructure, and land use factors, across Minnesota.

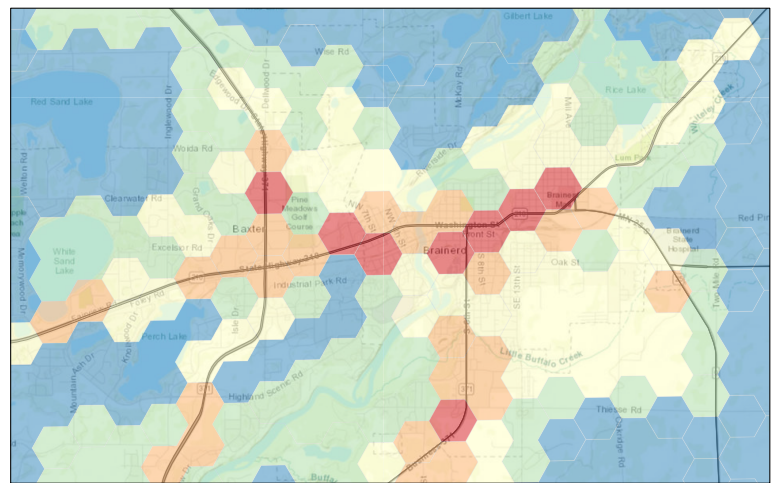


Figure 8 Baxter/Brainerd PAWS score

MITIGATION OF SAFETY RISKS

At-grade highway-rail crossings alone are a concern to safety due to the risks of collisions with vehicles, bicyclists, and pedestrians. In addition, the congestion and idling due to blocked crossings are detrimental to quality of life of nearby communities. The elimination of the at-grade crossing will have significant safety and quality-of-life benefits, including to the underserved populations near the project area. The BCA projects safety benefits of \$20.3 million and quality-of-life benefits of approximately \$10 million, over 20 years upon completion of the Construction Project.

EQUITY-FOCUSED COMMUNITY OUTREACH AND PUBLIC ENGAGEMENT

The Project will conduct public engagement to effectively engage underserved community members, conduct targeted outreach, record community inputs, establish appropriate community expectations, and to provide clear and consistent communication with the identified stakeholders. MnDOT's policies support the engagement of a broad range of stakeholders through various aspects of design, development, and funding. This Project's public engagement and community outreach activities will be based on equity-focused outcomes to assess potential adverse effects of the proposed project do not fall disproportionately on low-income or minority populations. This is crucially important as there are three census tracts (9510, 9511, and 9512) designated as Justice 40 Disadvantaged communities, Areas of Persistent Poverty, and/or Qualified Opportunity Zones, within a five-mile buffer around the project area. The outreach format could potentially include project website, community presentations, targeted focus groups, in-person/hybrid/virtual events, pop up events, surveys, direct mailing/emailing, social media, newspaper, and television ads etc.

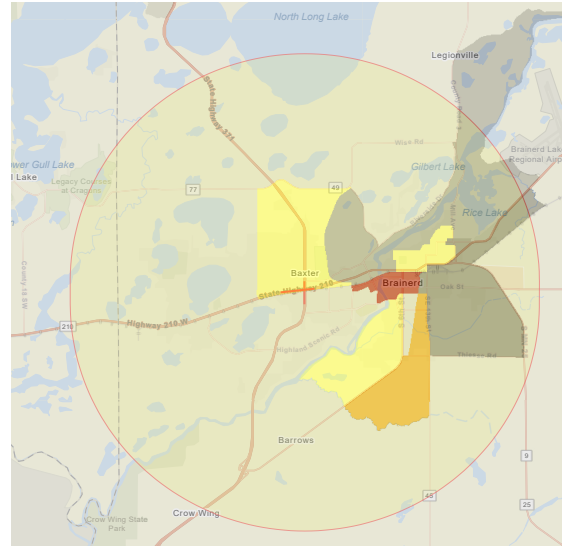


Figure 9 Low Income Population near Project Area (EJScreen)

CLIMATE CHANGE AND SUSTAINABILITY

The Project will incorporate climate change and sustainability-based methodology in both project planning and project delivery components.

CLIMATE ACTION & EQUITABLE DEVELOPMENT PLANS

In 2007, the State of Minnesota passed the bi-partisan Next Generation Energy Act (NGEA) that established goals for the state to reduce greenhouse gas (GHG) emissions by 15 percent below 2005 levels by 2015, 30 percent by 2025, and 80 percent by 2050 compared to a 2005 baseline. MnDOT was the first state agency to apply the [Next Generation Energy Act GHG reduction goals](#) to all agency operations. However, further work is needed towards achieving the goals of reducing greenhouse gas (GHG) emissions from the transportation sector 30 percent by 2025. The agency did exceed its goals of reducing facility related GHG emissions by 39 percent, reducing water use by 27 percent, and converting all highway lighting to light-emitting diode (LED) by 97 percent, in 2020, as outlined in MnDOT's [Sustainability and Public Health Report](#).

In 2017, MnDOT partnered with the University of Minnesota Center for Transportation Studies, to [advance transportation equity](#) by assessing structural inequities built into society and the transportation barriers that affect underserved communities. This Project will directly support the goals of advancing transportation equity by

- incorporating inclusive and culturally sensitive community engagement and adopting the feedback into decision-making processes,
- providing quality and affordable multimodal infrastructure for safe movement of vulnerable users,
- creating and expanding connections between employment centers and underserved communities,

- creating a collective vision with mutually beneficial outcomes, potentially following successful collaborative practices that are part of the [Minnesota Toward Zero Deaths](#) program, and
- contracting to businesses owned/operated by underrepresented populations to support wealth-building among underrepresented communities.

The Project will conduct a comprehensive environmental documentation process in compliance with Minnesota and Federal Laws as well as Executive Order (E.O.) 14008, *Tackling the Climate Crisis at Home and Abroad*.

The project reduces emissions, promotes energy efficiency, and increases resiliency. The BCA calculates air quality cost savings of \$164,000, upon completion of the Construction Project.

TRANSFORMATION

The Project supports expansion and improvement of the nation’s rail network.

The grade separation of the Hwy 371 and BNSF railroad crossing has the potential to increase capacity of rail freight and the number of BNSF trains on this line. The capacity expansion of the rail network would accommodate the potential increase in annual gross tonnage of freight shipped through the project area for the upcoming [Tamarack Nickel Project](#). The transportation of sustainably sourced nickel-copper-cobalt ore from underground mines in Tamarack, MN to an ore processing and tailings management facility located at an existing industrial brownfields site in Mercer County, ND, significantly reduces land disturbance near tribal lands in central MN.

The Project will also support the reduction in risk of shutting down rail operations for significant period of time by removing the at-grade crossing and associated crash conflicts. This will build resiliency in the transportation network and will improve the supply chain across and beyond Minnesota. The Project also ensures infrastructure assets are improved and maintained to a state of good repair, in the coming years.

PROJECT IMPLEMENTATION & MANAGEMENT

The Minnesota Department of Transportation is the applicant and primary point of contact of this CRISI application. MnDOT has been a proactive leader and advocate for this Project for several years. MnDOT has extensive experience with procuring and developing transportation and bridge improvement projects. With over 14,000 miles of trunk highway (including interstates) and nearly 1,500 bridges under their ownership, MnDOT is experienced and committed to the maintenance and expansion of the roadway system. Within the last ten years, MnDOT and its partners have procured eleven federal grants used to increase efficiency and safety on the MnDOT system.

Primary Contact

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PLANNING READINESS FOR TRACK 2

The Project is on schedule to initiate project development activities by January 2024. Upon grant agreement, MnDOT will issue Request for Proposal (RFP) for conceptual design, environmental documentation, public engagement, and preliminary design sequentially. All tasks and subtasks performed as part of the Project will be based on MnDOT Planning and Programming guidance.

DOT STRATEGIC GOALS

In accordance with Minnesota's climate action and equitable development plans, project planning will be focused on accounting climate change and sustainability impacts, as well as improving equity and reducing barriers to opportunity. Project planning will also advance good-paying, quality jobs and inclusive hiring policies as per MnDOT's Equity and Inclusion Programs. The Project aligns with and advances USDOT's strategic goals.

SUPPORTING DOCUMENTS

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

<https://www.srfconsulting.com/mndot-crisi-rr/>