Merit Criteria

Safety

Safety is the primary purpose of the CSAH 100 Rail Crossing Grade Separation Project (The Project). The Project will eliminate an at-grade highway-rail crossing (USDOT #252305T) on CSAH 100 (Main Street) in the City of Aurora, Minnesota, and replace it with a grade-separated bridge overpass. This improvement directly addresses a documented history of a significant safety risk at this location and aligns with national, state, and county rail safety priorities.

Safety Benefits of the Proposed Project

Completion of the CSAH 100 grade separation will:

- Eliminate the potential for train collisions with vehicles, pedestrians, bicyclists, ATVs and snowmobiles.
- Improve emergency response for EMS, fire and law enforcement by ensuring uninterrupted north–south access across the rail corridor.
- Protect vulnerable road users, including bicyclists, pedestrians, school-aged children, older adults, and recreational trail users. A key component of the Safe Routes to School for the Mesabi East School and the future Mesabi Trail extension.
- Provide dedicated, separated facilities for non-vehicular users through a shared-use path and protected recreational vehicle lane on the bridge deck and an underpass connection for the future Mesabi Trail extension.
- Reduce secondary safety risks associated with long detours, including higher-speed travel on unfamiliar or lower-standard roadways during rail crossing blockages.

Documented Safety Risks and Crash History

The CSAH 100 crossing is among the highest-risk highway–rail crossings in St. Louis County. According to the Federal Railroad Administration (FRA) Highway–Rail Grade Crossing Accident Prediction System, this crossing ranks 45 out of 226 crossings countywide, placing it in the top 20 percent for crash risk, even with the existing active warning devices in place. This elevated risk reflects the combination of train frequency, vehicle volumes, freight traffic, and multimodal use at the crossing.



Current CSAH 100 Crossing

National crash data show that the United States experiences approximately 2,000 highway–rail grade crossing crashes annually, with roughly 10 percent involving a fatality, underscoring the

severity of risk of at-grade rail crossings.[1] The safety concerns are not theoretical. Two railroad-related incidents were reported within a month of each other in 2012. In April 2012, a 64-year-old male bicyclist was fatally struck by a train while crossing at the Main Street (CSAH 100) railroad crossing. At the time of impact, gates and flashing lights were fully activated, underscoring that even modern active warning devices do not eliminate the risk of severe or fatal crashes at at-grade crossings. In May 2012, a high school student traveling to school crossed the tracks 300 yards east of the crossing and was fatally struck by a train[2]. These tragic incidents remain defining events for the community and stress the need for the Project.

Recognizing these challenges, the County developed its first-ever Railroad Crossing Safety Plan in 2024, in partnership with the MnDOT Rail Safety Office. This data-driven plan prioritized safety improvements across 122 at-grade crossings on the county road system in St. Louis County with an objective to prioritize rail crossing closures and grade separations. The safety plan recommended 19 rail crossing closures and 12 rail crossing grade separations in total. The CSAH 100 crossing was ranked #1 among 12 recommended grade separations, underscoring its critical importance for public safety, mobility, and economic connectivity.

Since 2009, the number of grade-crossing crashes and fatalities has hovered at around 2,100 crashes and 250 fatalities per year. However, FRA expects future crashes to grow, in part, because of the anticipated increase in rail and highway traffic.[3] FRA faces an emerging challenge in dealing with expected increases in freight rail traffic, including the rapid increase in freight rail traffic related to energy production. Many of the rail crossings in St. Louis County, including the rail crossing on CSAH 100 in Aurora, primarily serve train traffic that is related to the regional iron mining.

National safety research demonstrates that at-grade highway-rail crossings pose one of the most severe safety risks in the surface transportation system due to the large speed and mass differential between trains and roadway users. When crashes occur, they are far more likely to result in fatal or life-altering injuries. The Federal Highway Administration (FHWA) and FRA identify elimination of at-grade crossings through grade separation or closure as the only countermeasure that removes all train–vehicle conflict points, thereby effectively preventing train-involved crashes at the location.4 In St. Louis County, crashes involving trains at county road rail crossings are approximately 16 times as likely to result in a serious injury or fatality than crashes that occur on the county road system. For the past 10-years, St. Louis County has experienced approximately one traffic fatality at a rail crossing every 5-years at rail crossings on the county road system.

[1] Grade Crossing Toolkit | FRA
[2] Train fatality in Aurora is 2nd in about a month | Minnesota News | news8000.com
[3] https://www.gao.gov/assets/700/695372.pdf
[4] Highway-Rail Crossing Handbook - Third Edition | FHWA

Multimodal Exposure and Emergency Access Risks

CSAH 100 is the only railroad crossing within the City of Aurora and serves a wide range of users, including passenger vehicles, trucks (freight), school buses, pedestrians, bicyclists, snowmobiles, and ATVs. According to the most recent FRA Inventory Report, the crossing carries approximately 5,400 vehicles per day, including an estimated 270 trucks daily, while 12 trains per day travel through the crossing at speeds of up to 35 mph. Average train blockages result in approximately five minutes of delay per train, creating recurring exposure for roadway users. The FRA Inventory Report can be found at: https://inputcentral.com/csah-100-rail-crossing-grade-separation-project-build.

The crossing also presents a critical safety risk for emergency response access. The Aurora Fire Hall is located north of the tracks, while Essentia Health Northern Pines Hospital, a Level IV trauma facility with a staffed emergency department, is located south of the tracks. The East Range Police Department, which is the local police department that provides law enforcement coverage for Aurora, is located in Hoyt Lakes which places the police hall south of the tracks. Train blockages averaging 3-4 minutes routinely push EMS response times beyond the national five-minute standard, to 8-9 minutes. In the event of a derailment or prolonged closure, emergency vehicles face detours ranging from 18.8 miles (mixed-surface roads) to 29.1 miles (all paved routes). These delays push emergency response times beyond nationally recognized standards and place residents, particularly elderly and medically vulnerable populations, at increased risk.

Countywide Safety Prioritization and Proven Countermeasure

The St. Louis County Railroad Crossing Safety Plan (2024), developed in coordination with the MnDOT Rail Safety Office, identifies grade separation as the most effective strategy for reducing severe and fatal highway–rail crashes. Out of 122 at-grade crossings on the county road system in St. Louis County, the CSAH 100 crossing was ranked number one among 12 recommended grade separation projects countywide in the County's Railroad Crossing Safety Plan. National and state safety analyses consistently demonstrate that the safest rail crossing is no crossing at all. While gates and flashing lights reduce some crash risk, they do not eliminate conflicts between trains and roadway users - particularly pedestrians and bicyclists. The proposed grade separation permanently removes these conflict points by physically separating rail and roadway movements.

By eliminating a high-risk at-grade rail crossing with a documented multi-fatality history, the Project directly advances the BUILD program's safety objectives. The project implements a proven, permanent safety countermeasure that addresses a known and documented hazard, protects all roadway users, and ensures reliable access for emergency services in a rural and disadvantaged community. This investment will deliver lasting safety benefits for the City of Aurora, St. Louis County, and the broader eastern Iron Range region.

Environmental Sustainability

Frequency and Costs of Extreme Weather Events

The existing at-grade crossing is prone to prolonged closures caused by severe cold, winter storms, and operational rail impacts, creating safety and mobility risks for the community. The proposed grade separation ensures continuous connectivity during extreme weather events and hardens a critical north–south rural corridor against climate risks while improving long-term system reliability and resilience.

National climate and hazard data demonstrate that extreme weather events are becoming more frequent, more severe, and more costly, placing growing stress on transportation infrastructure, particularly in rural areas with limited redundancy. According to the National Oceanic and Atmospheric Administration (NOAA), the United States experienced 403 billion-dollar weather and climate disasters between 1980 and 2024, with total damages exceeding $2.9 trillion. Notably, the annual average of such events has nearly tripled in the past five years, increasing from an average of 9 events per year (1980–2020) to 23 events per year (2020–2024) after inflation adjustment[5].

The Project is located in northeastern Minnesota, a region that experiences harsh winter conditions including prolonged arctic temperatures and increasingly variable weather patterns. According to the FEMA National Risk Index (NRI) released December 2025, the City of Aurora is in the 99th percentile nationally for cold wave hazard and in the 99th percentile nationally for expected annual loss[6], with extreme cold events posing a risk to rail infrastructure through rail fracture and prolonged crossing closures. Rail is especially susceptible to fractures within highway-rail crossings. Such closures can isolate neighborhoods and disrupt access to emergency services, employment, and essential goods.

The proposed grade separation improves infrastructure resilience by eliminating reliance on at-grade rail operations that are vulnerable to weather-related disruptions. By ensuring continuous north–south roadway connectivity regardless of rail conditions, the project provides redundancy in the transportation network and reduces the community's vulnerability to climate-related disruptions.

Design Elements for Stormwater Management and Infrastructure Hardening

The project area is characterized by low-lying terrain prone to drainage challenges. Specifically, the rail crossing on CSAH 100 is located near the bottom of a topographic "bowl" thus making it susceptible to flooding in a severe flooding event. The proposed bridge installation includes drainage reinforcement and modernization to address localized flooding risks and improve long-term performance under more frequent extreme precipitation events. Design elements will broaden the existing low point and stabilize surrounding grades, improving stormwater

[5] Billion-Dollar Weather and Climate Disasters | National Centers for Environmental Information (NCEI)
[6] FEMA NRI Report: Census Tract 27137013800

conveyance and reducing erosion potential during severe weather events. This design targets a greater than 25-year storm conveyance and will reduce localized ponding.

Where feasible, the project will utilize natural embankments rather than extensive retaining walls, reducing impervious surface area and supporting better infiltration. These design strategies improve resilience while minimizing long-term maintenance needs.

The Project will also remove two existing culverts located under CSAH 100 that serve drainage along the railroad tracks. Removal of these culverts will improve ditch habitat and reduce the inventory of culverts that need to be maintained in St. Louis County. Additionally, these culverts have a history of heaving the pavement section because of the shallow depth fill over the culverts.

Following construction, the project will incorporate native vegetation replanting along embankments and disturbed areas. Native plant species are well adapted to local climate conditions, require less maintenance, and provide multiple environmental benefits, including improved stormwater uptake, slope stabilization, biodiversity support, and carbon sequestration. Deep-rooted native vegetation will enhance embankment integrity while supporting pollinator habitat and local ecosystems.

Nationally validated climate and hazard data from NOAA, FEMA, and USDOT clearly show that extreme weather events are increasing in frequency and severity, placing growing strain on transportation infrastructure. Upon completion, the Project will extend the roadway's useful life, reduce vulnerability to heavy rainfall, severe storms, and flooding, and provide a safe, uninterrupted, and reliable travel route by removing the at-grade crossing. The resulting grade-separated facility will maintain access and operational continuity during severe weather events and other natural hazards, strengthening long-term system reliability in a rural, climate-exposed community.

Quality of Life

Reliable Access to Essential Services and Community Facilities

The railroad corridor currently separates key public facilities, including emergency services, healthcare, schools, and recreational amenities. Blocked crossings frequently prevent or delay police, fire, and ambulance services from reaching emergencies, which can have life-threatening consequences. The grade-separated crossing will ensure uninterrupted access to these destinations, improving response times for emergency vehicles and increasing residents' confidence that they can reach critical services when needed.

For families, seniors, and individuals with disabilities, reliable access to healthcare, groceries, community centers, and schools is a fundamental quality-of-life issue. Eliminating recurring rail-related delays reduces stress, improves personal safety, and supports independent living for residents who may already face mobility or transportation challenges. The nearest grocery store to serve residents of Aurora and Hoyt Lakes is located in the City of Biwabik (approximately 4

miles to the west of Aurora). If this railroad crossing were blocked, residents on the south side of the crossing including the entire City of Hoyt Lakes would experience an additional 14 miles (via gravel roads) or 20 miles (via paved roads) to access the nearest grocery store.

Reduction in Noise Pollution

Eliminating the at-grade railroad crossing on CSAH 100 will also remove the need for routine train horn soundings, which are required under federal regulations whenever trains approach public at-grade crossings. Because this crossing is located near the center of the City of Aurora, horn blasts, typically reaching 96 to 110 decibels at the source, are heard throughout nearby residential areas and contribute to elevated community noise exposure. Hundreds of residents live within a ¼-mile radius of the crossing, placing a substantial portion of the community within the zone most affected by repeated horn events. By replacing the at-grade crossing with a grade-separated structure, the Project eliminates the need for train horns at this location, resulting in a reduction in local noise levels. This improvement will directly enhance residents' quality of life by reducing sleep disruptions and lowering daily noise exposure.

Estimated Annual Delay

1,250

Vehicle Hours / Year

Estimated Delay Cost

$26-$27

Per vehicle, per hour

(fuel, operating cost, and time value)

Estimated Annual Cost

$32,500+

Lower Transportation Costs

The existing at-grade railroad crossing on CSAH 100 results in recurring vehicle delays and idling during train movements. With approximately 5,100 vehicles per day and an average of 12 trains per day, train blockages create substantial cumulative delay and unnecessary fuel consumption. It is estimated that total annual delay currently exceeds 1,250 vehicle-hours per year, all of which would be eliminated with a grade-separated crossing, thus reducing fuel costs for drivers and making transportation more affordable.

FHWA research consistently identifies transportation delay as a direct contributor to household transportation costs through increased fuel consumption, vehicle wear, and lost time. FHWA's Highway Economic Requirements System applies a nationally accepted value of time and delay framework, documenting that delay imposes measurable economic burdens on both households and businesses. National freight and passenger studies estimate delay costs at $26–$27 per vehicle hour[7] when accounting for fuel, operating costs, and time value. Eliminating recurring train-related delays on CSAH 100 reduces unnecessary idling and operating costs for thousands of daily trips, contributing to more affordable transportation.

Reducing delay and idling not only improves travel efficiency but also directly lowers household transportation costs, which may approach or exceed 30 percent of household income[8] when

[7] The Economic Costs of Freight Transportation - FHWA Freight Management and Operations
[8] https://www.bts.gov/data-spotlight/household-cost-transportation-it-affordable

reliability is poor and detours are unavoidable. Research confirms that improving reliability and reducing delay is one of the most effective strategies for lowering transportation cost burdens without requiring changes in travel behavior.

Enhance the Beauty and Experience of the CSAH 100 Corridor

CSAH 100 is a part of the Superior National Forest Scenic Byway. This scenic byway connects the City of Aurora to the City of Silver Bay on the north shore of Lake Superior. The Project has a unique opportunity to enhance the experience and visibility of this scenic byway. The Project will construct a bridge overpass that uses a context sensitive and visually appealing façade. Given there is a generous amount of land space immediately adjacent to the proposed bridge overpass, there is an opportunity for a wayside area that includes attractive features such as kiosks, monuments and other architecture that draws attention to the region's history and significance. Additionally, this wayside offers an opportunity for a park-and-ride function to gain access onto the Mesabi Trail extension that will connect the cities of Aurora to Hoyt Lakes, Biwabik and the Giants Ridge recreation area.

The Project will deliver meaningful, lasting quality-of-life improvements by reducing daily travel delays, lowering transportation costs, and ensuring safe, reliable access to essential services and recreation throughout the community. By eliminating a major physical and operational barrier, the project transforms CSAH 100 into a corridor that reduces travel cost burdens, ensures access to essential services, and improves multimodal usability for residents of Aurora and the surrounding region.

Mobility and Community Connectivity

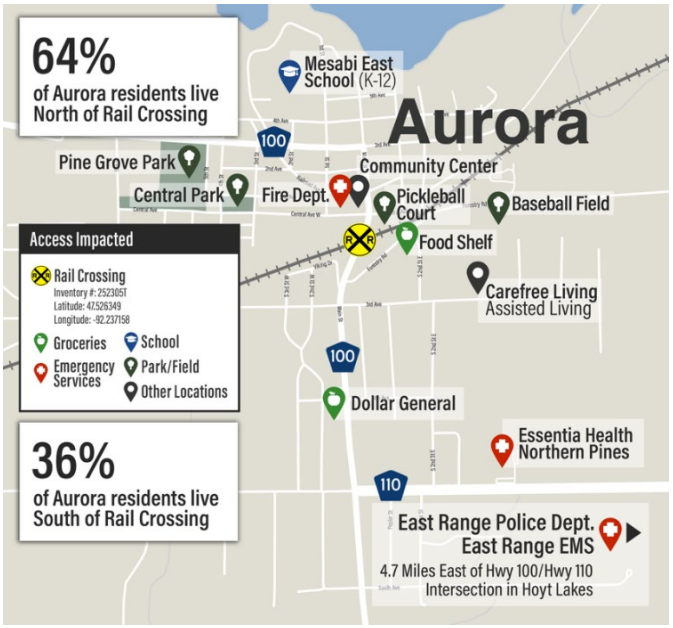
Improved Corridor Mobility and Network Reliability

CSAH 100 is the primary north–south route through Aurora and the main connection between residential neighborhoods, downtown services, schools, healthcare facilities, and regional employment centers. CSAH 100 is also the primary route for the City of Hoyt Lakes, a city with a population of approximately 2,000 people. The at-grade railroad crossing regularly interrupts this connection, forcing residents to wait for passing trains or take lengthy detours that can add significant time and stress to routine trips. These disruptions affect daily commutes, school transportation, access to medical appointments, emergency access and basic errands, reducing the reliability of the local transportation system. Besides the delays incurred by daily train operations, the existing at-grade railroad crossing also presents a risk of temporary closure of CSAH 100 due to unforeseen events such as train derailment or failure of the railroad track rail. A closure resulting from these types of events is likely to exceed two weeks to over a month.

National research shows that travel-time reliability, not just average delay, is a key indicator of quality of life for roadway users. The Strategic Highway Research Program 2 (SHRP2) found that unpredictable disruptions, such as nonrecurring congestion events, impose disproportionately high costs on travelers because they force users to budget extra time and

reduce confidence in the transportation system. Nonrecurring disruptions—including weather impacts, incidents, and blocked crossings—account for approximately 60 percent of total travel delay nationwide.[9]

By eliminating the at-grade crossing, the Project removes a known reliability bottleneck and enables continuous traffic flow regardless of train movements. This improvement enhances mobility for personal travel, commercial traffic, and public service vehicles, particularly in a rural area where limited route redundancy amplifies the impacts of delay. While the Project will certainly provide reliability for CSAH 100, the removal of the railroad crossing surface will decrease the risk of a rail fracture or derailment for the rail line thus improving reliability for the CN Railroad.



Removal of Physical Barriers

Transportation infrastructure can function as a physical and functional barrier when it restricts movement between neighborhoods, essential services, and community destinations. The existing at-grade railroad crossing currently divides Aurora into north and south segments. Train movements routinely delay or prevent travel between residential areas, downtown services, schools, healthcare facilities, and recreational destinations, reducing the reliability of everyday mobility.

This barrier has measurable impacts on daily community travel. The CSAH 100 crossing is used regularly by residents and school buses. Although the school is located north of the railroad tracks, approximately one-third of Aurora's population resides south of the tracks. When the crossing is blocked, families and students either have to wait or take lengthy detours, disrupting school schedules, increasing travel time, and raising transportation costs. These impacts are magnified during winter conditions, when alternative routes may be less reliable.

The Project directly addresses this barrier by eliminating the at-grade conflict and restoring continuous north-south connectivity. By removing the railroad as a physical and operational barrier, the Project ensures reliable access to employment, education, healthcare, and community facilities regardless of train activity, time of day, or weather conditions. This reliable connection

[9] An Initial Assessment of Freight Bottlenecks on Highways - Executive Summary - FHWA

is particularly critical in a small rural community, where the disruption of a single corridor can otherwise isolate significant portions of the community.

Improved Access for Emergency Services and Time-Sensitive Travel

Reliable mobility is essential for time-sensitive trips, including emergency response, medical transport and law enforcement response. The crossing also divides critical emergency services within the community. Aurora's fire hall is located north of the railroad tracks, while the hospital and staffed emergency room are located south of the tracks. Train blockages averaging three to four minutes routinely push EMS response times beyond the national 5-minute standard, extending total response times to approximately 8-9 minutes. These delays can increase risk during time-sensitive, life-threatening emergencies. In the event of a derailment or prolonged rail closure, detours range from 18.8 to 29.1 miles, with longer detours required for trucks and emergency vehicles that must travel paved routes due to roadway weight limits. The grade-separated crossing eliminates this single point of failure and restores uninterrupted emergency access regardless of rail activity.

The Project ensures uninterrupted access for emergency services and public safety vehicles. This improvement increases network redundancy and resilience, allowing emergency responders to maintain consistent response routes without reliance on lengthy detours or temporary rail coordination. National transportation resilience research consistently identifies elimination of single-point failures as a key strategy for improving system reliability and community connectivity.

Multimodal Connectivity and Active Transportation

The Project enhances multimodal connectivity by incorporating a 10-foot shared-use path for pedestrians and bicyclists, and a 14-foot protected recreational lane for snowmobile and ATV users. The bridge will also include a box culvert structure on the south approach as an underpass to accommodate pedestrians and cyclists and function as the alignment for the future extension of the Mesabi Trail. Research shows that physical separation and predictable crossings improve comfort, safety, and usability for non-motorized travelers, increasing the use of active transportation as a daily travel option.

The St. Louis & Lake Counties Regional Railroad Authority will be constructing an extension of the Mesabi Trail from Aurora to Hoyt Lakes in 2026/2027. This trail will be routed through downtown Aurora by way of the existing rail crossing on CSAH 100. The new Mesabi Trail extension increases the priority of this project to grade separate the trail from the tracks. St. Louis County has committed to complete the reconstruction of CSAH 100 from 3rd Ave South to CSAH 110 in the near future (currently programmed for 2030). The CSAH 100 Rail Crossing Separation Project will provide the last piece to the completion of a regionally significant and meaningful transportation improvement.

The existing at-grade crossing currently serves as the only viable crossing for ATVs and snowmobiles within the City of Aurora. Users currently cross the railroad right-of-way at

non-designated locations, creating safety risks associated with unauthorized at-grade crossings for both users and railroad operations. Canadian National (CN) Railroad has formally expressed concerns regarding continued at-grade crossings by ATVs and snowmobiles. The nearest opportunities for ATVs and snowmobiles to cross this particular rail line is 4.7 miles to the west at CSAH 4 (Vermilion Trail) and 6.2 miles to the east at CR 665 (Kensington Dr). The proposed grade separation provides a designated, grade-separated facility that ensures these recreational and utility vehicles can cross safely without conflicts with rail operations.

The proposed design provides continuous, grade-separated shared-use pathway for pedestrians and bicyclists, reducing conflicts with vehicles and trains while improving access to regional trail networks. This new bridge overpass is expected to function as a key Safe Routes to School infrastructure improvement and supports mobility for residents without access to a private vehicle and enhances regional connectivity for recreation and tourism, which are important economic drivers in eastern Iron Range communities.

Regional Corridor Connectivity and Freight Mobility

CSAH 100 functions as a key regional freight and service corridor, supporting industrial, logging, and future mining activity in the region. The current roadway reduces reliability for freight movements and increases operating costs due to delay and detouring. The Project improves freight mobility by ensuring uninterrupted corridor access, consistent with FHWA findings that reliability is a primary factor of freight efficiency in rural networks.

The CSAH 100 Rail Crossing Grade Separation Project meaningfully advances mobility and community connectivity by eliminating a critical transportation barrier, improving corridor reliability, and restoring uninterrupted access across the rail corridor. The Project strengthens north–south connectivity, enhances multimodal access, improves emergency and freight mobility, and reduces corridor disruption in a rural community with limited alternatives. These improvements align with nationally recognized transportation best practices and directly support the BUILD program's mobility and community connectivity objectives.

Economic Competitiveness and Opportunity

Promoting/Reshoring Industries of National Interest: Critical Minerals

The Project directly supports industries of national strategic importance, including the development and domestic processing of critical minerals essential to U.S. manufacturing, energy deployment, defense readiness, and technological competitiveness. As federal policy increasingly prioritizes the reshoring of mineral extraction and processing to strengthen supply-chain resilience, northeastern Minnesota's mineral resources play a critical role in meeting national demand. The U.S. Geological Survey's 2025 Critical Minerals List[10] now explicitly includes copper and nickel, reflecting their heightened importance to national

[10] Federal Register :: Final 2025 List of Critical Minerals

economic and security objectives. The U.S. Department of Energy[11] also highlights nickel and high-purity copper among materials essential to EV batteries, grid assets, and electrification technologies—and emphasizes the need to onshore/reshore mining, processing, and midstream refining to reduce exposure to foreign supply disruptions.



The Project is the primary freight corridor providing direct access to the NewRange Copper Nickel Mine, one of the most significant critical-minerals projects, with the NorthMet Project added to the FAST-41 Transparency Projects list[12]. NewRange is expected to produce copper, nickel, cobalt, platinum-group metals, and other strategically important materials used in electric vehicle batteries, grid-scale storage technologies, advanced electronics, and national defense applications. Reliable access to and from the mine will be essential for facility workforce, freight carriers, equipment haulers, and mining-related service providers for safe and efficient operations.

Improve Freight Mobility and Reduce Delays

Nationwide research confirms that at-grade highway–rail crossings are a major source of nonrecurring delay, which FHWA identifies as a primary cause of reduced travel-time reliability and diminished economic productivity. Nonrecurring delays, including train blockages, incidents, and weather disruptions, accounts for approximately 60% of all travel delay nationwide, imposing indirect costs on businesses, supply chains, and workers as they face unpredictable trip times. FHWA specifically identifies bottlenecks and travel interruptions at rail crossings as major contributors to reliability loss, which in turn affects business operations and user satisfaction. Eliminating these interruptions through grade separation removes this bottleneck permanently and enables continuous traffic flow, improving travel-time reliability for both local and regional freight and travelers.[13]

St. Louis County's 2019 Comprehensive Land Use Plan directly supports the Project through its Transportation Goal TR-5, which calls for maintaining a safe, connected freight system that facilitates shipping and economic development. The project advances Objective TR-5.2, which promotes development and use of the County's freight system—including a road network capable of accommodating heavy truck traffic as well as supporting rail and port operations. By eliminating a high-risk at-grade rail crossing and improving the reliability and load-carrying capability of a key north–south corridor, the project strengthens freight mobility, reduces non-recurring delay for commercial carriers, and ensures dependable access for industrial, mining, and logistics operations that are central to the region's economy.

[11] Critical Minerals and Materials | Department of Energy
[12] https://www.permits.performance.gov/projects/transparency-projects?page=1
[13] An Initial Assessment of Freight Bottlenecks on Highways - Executive Summary - FHWA

Project Labor Agreements for Cost-effectiveness and Open Competition

St. Louis County has a Project Labor Agreement (PLA) policy for all roadway construction projects, including those projects that are federally funded. St. Louis County annually requests approval to use PLAs on federal projects from the Minnesota FHWA office. This ensures contractors use local skilled labor.

Enhancing Regional Tourism and Outdoor Recreation

The Eastern Iron Range economy is strongly supported by tourism and outdoor recreation. Aurora sits at the nexus of a growing network of snowmobile, ATV, and multi-use trails that connect riders to destinations throughout northeastern Minnesota, including Lake Superior and the North Shore. These user groups contribute significantly to local lodging, retail, guiding, and service industries.

The existing at-grade crossing currently serves as the only viable crossing for ATVs and snowmobiles within the City of Aurora. Users currently cross the railroad right-of-way at non-designated locations, creating safety risks associated with unauthorized at-grade crossings for both users and railroad operations. CN Railroad has expressed concerns regarding these unauthorized crossings.

The project is also located along the Superior National Forest Scenic Byway, linking Aurora to Silver Bay and the North Shore of Lake Superior - one of Minnesota's premier scenic routes. Reliable access along this corridor supports tourism, hospitality, and retail sectors throughout the region. Nearby, Giants Ridge Golf and Ski Resort, a premier recreational and entertainment destination for Northern Minnesota, draws year-round visitors whose travel depends on a predictable and safe travel experience.

Once completed, the Project will advance nationally significant industrial freight and critical-minerals development while supporting the region's tourism economy. It will improve workforce access, employer reliability, and freight mobility across a rural area, enhancing economic connectivity throughout Aurora, Hoyt Lakes, and the Eastern Iron Range.

State of Good Repair

Restore and modernize existing core infrastructure assets

The CSAH 100 corridor no longer meets the functional, multimodal, or structural needs of a modern transportation system. The roadway was constructed in 1958–1959 and has undergone only limited resurfacing efforts, leaving foundational elements, such as pavement structure, curb-and-gutter, and storm sewer systems, well beyond their intended service life. The corridor lacks adequate accommodations for pedestrians, bicyclists, ATVs, and snowmobiles, despite serving as a critical recreational and community-access route. The current drainage system no longer conforms to current conveyance or resilience standards, contributing to localized ponding, reduced driver visibility, and accelerated pavement deterioration, especially during the severe freeze–thaw conditions typical of northeastern Minnesota.

In addition, the corridor's original geometry and pavement structure were designed for the lower traffic volumes and axle loads of the 1960s and do not reflect current regional freight demands, including heavy-haul service to industrial employers, maintenance fleets, emergency services, and prospective critical-minerals developments. Without full reconstruction and grade separation, the corridor will continue to deteriorate at an accelerated rate, increasing long-term maintenance costs and elevating the risk of unplanned, high-cost failures.

Reduce Construction and Maintenance Burdens

The existing at-grade crossing imposes recurring operational stresses on the roadway system. Frequent train blockages cause vehicles to idle, queue, and repeatedly accelerate and decelerate near the crossing; movements that significantly worsen pavement deterioration and introduce freeze–thaw damage around joints and patches. These conditions increase the County's maintenance burden and reduce the effective service life of resurfacing treatments.

Construction of the project will provide a new, resilient structure, modernized drainage system, and eliminate the stop-and-go operations at the rail line and reduce reactive maintenance needs, extend pavement life, and lower the total cost of ownership. Over the facility lifecycle, separated-grade design lowers maintenance costs, improves long-term pavement performance, and aligns the corridor with national best practices for cost-effective asset management.

Address current or projected transportation system vulnerabilities

FHWA's guidance emphasizes the importance of identifying system vulnerabilities and prioritizing interventions at chokepoints such as highway–rail interfaces—locations where disruptions can produce safety, economic, and operational impacts. Consistent with this approach, St. Louis County completed a Railroad Crossing Safety Plan in 2024. The plan evaluated 122 at-grade crossings across the county system to prioritize closures and grade separations. The study recommended 19 crossing closures and 12 grade separations, identifying the CSAH 100 crossing as the #1 priority due to its critical importance for public safety, network reliability, and regional mobility.

This local prioritization is reinforced by national trends. Since 2009, the United States has experienced approximately 2,100 grade-crossing crashes and 250 fatalities annually, and the FRA anticipates future increases due to rising freight-rail and highway traffic volumes, including growth tied to energy production and heavy industry. These conditions heighten the vulnerability of at-grade crossings and underscore the need for permanent, resilient design solutions. By converting the CSAH 100 crossing to a grade-separated facility, the Project directly addresses a high-risk vulnerability in the regional network, ensuring continuous, safe, and reliable mobility under current conditions and projected future demands.

The Project brings a critical regional corridor back into a true state of good repair by replacing infrastructure that has not undergone full reconstruction in more than six decades, modernizing structural and stormwater assets, and addresses a transportation system vulnerability with an at-grade crossing. The improvements provide a durable, resilient, and cost-effective asset that meets

present and future mobility demands, consistent with USDOT's highest State of Good Repair merit-rating criteria.

Partnership and Collaboration

Public and Stakeholder Engagement

The Project is the result of extensive, multi-agency, multi-jurisdictional, comprehensive, multi-phase public engagement process guided project development, as documented in the Public Engagement Summary. Engagement spanned three phases (March–November 2024) and included:

Public Engagement Tactics

- In-person public open houses through all phases
- Focus group meetings with agencies, business owners, community organizations, and corridor users
- Virtual interactive maps and surveys, generating more than 336 public responses
- Project website, flyers, social media outreach, and ADA-accessible virtual meeting options
- In-person and live virtual attendance options for public meetings
- Coordination with elected officials and community groups

Key Stakeholders consistently engaged in the project include

- City of Aurora
- East Range Police Department
- Mesabi East School District
- Arrowhead Regional Development Commission (ARDC)
- Superior National Forest
- Scenic Byway coalition
- Ranger ATV & Snowmobile Club
- CN Railroad

Stakeholder feedback focused on safety, pedestrian and school access, freight movements, business access, drainage concerns, and multimodal connectivity. These perspectives directly informed evaluation of alternatives, refinement of design concepts, and the City Council's recommended corridor layout adopted on October 3, 2024.

Railroad Coordination and Safety Collaboration

St. Louis County has coordinated closely with CN Railroad, a key project partner, throughout planning and concept development. CN participated as a stakeholder in the corridor study engagement process and provided feedback related to rail operations, safety, and the pressing need to eliminate unauthorized ATV and snowmobile crossings. CN continues to support design elements that will improve safety for both rail and roadway users and reduce operational conflicts.

Integration With Regional Economic and Transportation Partners

The Project is supported by organizations tied to tourism, recreation, emergency response, and freight mobility. Engagement with the Superior National Forest Scenic Byway coalition, Ranger ATV and Snowmobile Club, local industry, and tourism partners ensured the design aligns with regional mobility needs, economic development priorities, and multimodal access requirements. Direct engagement with representatives of the NewRange Copper Nickel Mine was conducted to better understand projected travel demand associated with the mine's future operations.

Additionally, coordination with the Mesabi East School District ensured Safe Routes to School alignment, while local businesses and the East Range Police Department provided input on operations, access, and emergency response needs.

Innovation

Innovated Project Delivery with Accelerated Bridge Construction

As final design progresses, the County will evaluate the feasibility of incorporating Accelerated Bridge Construction (ABC) methods to minimize impacts to the active rail corridor and reduce construction-related disruptions for the community. Potential ABC strategies include the use of prefabricated bridge beams, precast deck panels, and modular superstructure elements that can be fabricated off-site and installed rapidly once rail windows and roadway closures are coordinated. The County will also assess slide-in bridge construction techniques, in which the complete bridge module, including beams and deck, is assembled adjacent to its final location and then positioned into place during a single, tightly controlled outage period. These approaches can significantly shorten the duration of on-site work near the railroad, improve construction safety, and reduce the overall exposure of rail operations, roadway users, and contractors to extended work zones. As design advances, the County will work closely with CN Railroad to determine the most effective combination of ABC techniques to maintain rail service continuity while ensuring high-quality, durable construction of the new grade-separated crossing.

Innovative Technology for Construction Inspection and Asset Management

The Project will use aerial drones equipped with LiDAR (Light Detection and Ranging) during construction to support embankment monitoring, grading verification, and materials quantity assessment. This technology enables:

- Higher-accuracy measurement of embankments, slopes, and roadway grades
- Real-time comparison between design models and constructed conditions
- Reduced inspection time, minimizing the need for slow, labor-intensive manual field surveys
- Improved cost and quantity verification, reducing risk of error and increasing confidence in pay quantities
- Enhanced safety for inspectors, who avoid entering constrained or hazardous areas

Additionally, the LiDAR-enabled drone surveys support a robust asset-management approach by creating precise digital terrain models, validating compaction and grading performance, and archiving construction conditions for future maintenance planning. This aligns with industry best practices for using geospatial data to improve lifecycle performance, support maintenance planning, and reduce long-term rehabilitation costs.

St. Louis County already owns multiple drones used for construction inspection and bridge safety inspection, and the County employs staff who are FAA-certified remote pilots. The use of agency-owned equipment and in-house certified pilots ensures that drone-based inspection can be fully integrated into construction oversight, producing high-resolution data at minimal cost.