



D & I RAILROAD

MAIN LINE BRIDGE REPLACEMENT PROJECT

FEDERAL RAILROAD ADMINISTRATION

STC GRANT FY 2020 | MAY 7, 2020

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EXECUTIVE SUMMARY

The D & I Railroad T512.5 Bridge Replacement Project (the Project) will improve railroad **safety, efficiency, capacity, and reliability** on a railroad line that is critical to the success of local economies and the national and global reach and competitiveness of communities in rural eastern South Dakota and northwestern Iowa. Significant freight shipments originate or terminate on this rural railroad line, and consist of aggregates, ethanol, corn oil, cement, chemicals, agricultural products, construction materials, and plastics.

Many of the bridges on this vital railroad line are between 60 years old, up to and exceeding 100

years old. The safety, efficiency, capacity, and reliability of present-day railroad operations on the line are affected by timber bridges in need of repair and nearing the end of useful life.



Figure 1: D & I Ethanol Train at Hawarden, Iowa

The State of South Dakota is an eligible recipient for STC grant funds. The State will serve as the lead applicant for the grant funding and the South Dakota Department of Transportation (SDDOT) will be the agency managing any grant funds received from the Federal Railroad Administration (FRA). The project's Applicants are D & I Railroad (D & I) and supported by the Sioux Valley Rail Authority. These parties are also contributing time and resources towards the development of this STC grant application. Public-private partnerships, such as this one, demonstrate an innovative approach that allows multiple stakeholders to cooperate on and deliver projects more efficiently, cost effectively, and with less federal funding required. The above-named parties are committed to delivering the Project and will contribute toward the Project as detailed in Section 2.0

The primary purpose of the Project is to enhance freight railroad infrastructure to maintain the rural economy of a large geographic area in eastern South Dakota and northwest Iowa. Ancillary benefits generated by the Project are improved railroad operation from the replacement of a legacy bridge structure as well as a reduction in service interruptions and risk of structure failure by providing safer and more reliable railroad infrastructure. This railroad line is vital to the operation and future growth for many rural shippers.

1.0 PROJECT SUMMARY

The Project will address T512.5 bridge, on the Sioux Valley Line, operated by the D & I Railroad; to replace the bridge with a ballast tub design. The existing structure, built in 1942, is a three-span 57' top deck, triple girder, double bridge with timber approaches that serves the mainline and Akron auxiliary track. Annual bridge inspections are showing a degradation in the timber piling and cap components that will require substantial maintenance in 1-3 years. Cost estimates to remove current superstructure and replace piling and cap components for the main line structure *only* are estimated to cost \$290,000 to \$325,000. Bridges on this subdivision are between 60 years old up to and exceeding 100 years old. The

rail line serves a major aggregate producer, L. G. Everist, Inc., two ethanol shippers, a cement terminal, and several transload customers and facilities. Continued degradation or loss of railroad service will be detrimental to these industries. These improvements are needed to solve lingering legacy infrastructure issues, to preserve and enhance capacity, increased safety for the transport of hazardous materials, rail access, multi-modal connectivity, and interchange connections with three Class I railroads (BNSF Railway, Canadian National Railway, and Union Pacific Railroad), and to accommodate future growth in economic and industrial development in the rural Siouxland region.



Figure 2: T512.5 main line and auxiliary track facing west.

Pending the STC grant award process, this work would start late 2021 and likely finish in 2022. Overall, the Project will have an immediate positive impact on this rural area and the industries that rely on this vital link to the national freight rail network and global marketplace.

We believe the most cost-effective proposal is to replace both the mainline bridge and the auxiliary track bridge simultaneously.

1.1 Challenges Addressed by the Project

The Project will improve railroad **safety, efficiency, capacity, and reliability** of the railroad line in rural eastern South Dakota and northwestern Iowa. Most of the carloads originate on the railroad line, and consist of unit volumes of aggregate and ethanol, and carload volumes of chemicals, agricultural products, construction materials, and plastics. *Bridges on this subdivision are between 60 years old up to and exceeding 100 years old, repairs are impending as the bridges are becoming structurally deficient.*



Figure 3: Bridge T512.5 Bent #2 showing checking on the cross cap, rotting pile

Temporary speed restrictions (slow orders) appear more frequently, despite the continued maintenance and capital investment made to the line.

The purpose of the Project is to maintain freight railroad access to this robust, rural economy located in eastern South Dakota and northwestern Iowa. **Reliability** is key to the industries, businesses, and customers utilizing this railroad line. Maintaining the existing railroad line to a state of good repair is paramount to preserving and achieving economic and industrial growth in this rural area. The proposed Project improvements will enhance overall service reliability, safety and operational efficiencies.

The aging bridge also increases potential derailment exposure, further putting the railroad, its users, and communities at risk. The proposed Project improvements will replace the railroad line's bridge that has been identified as posing great risk, which will allow for **safer** railroad operations due to reductions in potential derailment exposure.

1.2 Performance Measures

As the applicant for and potential recipient of STC funds, SDDOT understands that the USDOT may establish performance measures for the T512.5 Bridge Replacement Project in order to assess progress in achieving strategic goals and objectives. SDDOT also understands that USDOT may require it to periodically report information related to such performance measures. Potential performance measures for the Project would be confirmed through coordination with USDOT after award of STC funds to SDDOT.

2.0 PROJECT FUNDING

2.1 T512.5 Bridge Replacement Project

The Project represents a significant transportation infrastructure investment to provide enhanced service performance and reliability for this rural freight railroad line in the state of South Dakota. The State of South Dakota is committed to delivering the Project, in cooperation with D & I.

Our initial proposal is to replace the mainline bridge and replace the auxiliary track bridge simultaneously. These funding partners will contribute \$259 thousand toward the Project's \$1.295 million construction cost, expended over a one-year period. The \$1.04 million request for STC funds would provide the remaining project funding needed to construct the Project. Committed Project funding sources are presented in the following tables.

Task No.	Task Name/ Project Component	Cost (2020\$)	Percentage of Total Cost
1	Bridge T512.5 – Structure Replacement Mainline and Auxiliary Track	\$1,295,025	100%
	Total Project Cost	\$1,295,025	100%
Federal Funds Received from Previous Grant		\$0	N/A
STC Federal Funding Request		\$1,036,020	80%
Non-Federal Funding/Match		Cash: \$259,005 In-Kind: \$0	20%
Portion of Total Project Costs Spent in a Rural Area		\$1,295,025	100%
Pending Federal Funding Request		\$0	N/A

The funding breakdown consists of an “80/20” funding package for the \$1.295 million project as supported by the following public-private partnership:

- \$1,036,020 STC Grant by the Federal Railroad Administration (FRA)
- \$259,005 from D & I Railroad

An alternate proposal is to replace only the mainline bridge. These funding partners will contribute \$146 thousand toward the Project’s \$730 thousand construction cost, expended over a one-year period. The \$584 thousand request for STC funds would provide the remaining project funding needed to construct the Project. Committed Project funding sources are presented in the following tables.

Task No.	Task Name/ Project Component	Cost (2020\$)	Percentage of Total Cost
1	Bridge T512.5 – Structure Replacement Mainline	\$730,000	100%
	Total Project Cost	\$730,000	100%
Federal Funds Received from Previous Grant		\$0	N/A
STC Federal Funding Request		\$584,000	80%
Non-Federal Funding/Match		<i>Cash: \$146,000 In-Kind: \$0</i>	20%
Portion of Total Project Costs Spent in a Rural Area		\$730,000	100%
Pending Federal Funding Request		\$0	N/A



Figure 4: Bridge T512.5 Bent #3 mainline, reflecting hollow pile, remaining poor caps with one missing, splitting caps

Work to be completed Bridge T512.5	
1	Drive Steel Piling
2	Install Tub and Ballast Deck
3	Incorporate Drainageway Bank Stabilization

3.0 PROJECT ELIGIBILITY

The Project is requesting STC funding for Project Track 3 Final Design/Construction. Per the STC Notice of Funding Opportunity (NOFO), the Project is eligible for STC funding.

The D & I Railroad (D & I) is a short line railroad that is owned by L. G. Everist, Inc. (LGE), and operates approximately 138 route-miles of rail lines in the states of South Dakota and Iowa. From north to south, the D & I operates from:

- Dell Rapids, South Dakota to Sioux Falls, South Dakota (on trackage owned by D & I)
- Sioux Falls, South Dakota to Canton, South Dakota (via operating rights over BNSF Railway trackage)
- Canton, South Dakota to Elk Point, South Dakota (via operating rights on the SVRRA, which leases this track from the State of South Dakota)
- Hawarden, Iowa to Beresford, South Dakota (via operating rights on the SVRRA, which leases this track from the State of South Dakota)
- Elk Point, South Dakota to Sioux City, Iowa (via operating rights over BNSF Railway trackage)

The D & I interchanges unit train and carload rail traffic with three Class I railroads in Sioux City, Iowa (BNSF Railway, Canadian National Railway, and Union Pacific Railroad). This competitive access is critical to the ongoing success of the D & I and its shippers.

The T512.5 Bridge Replacement Project is a capital project that will:

- Improve short line railroad infrastructure and operations
- Improve track conditions on a railroad line, helping to alleviate rail service interruptions and lift permanent speed restrictions
- Increase public safety in a residential setting

3.1 Expected Users and Beneficiaries of the Project

Expected users and beneficiaries of the Project include:

- **Public** – The bridge upgrade will improve the health of the corridor and will decrease the potential likelihood of track-caused derailments – a livability benefit for the public. In addition, the project will help lift several speed restrictions resulting in faster and more efficient train operations and less overall train occupancy times at highway-rail grade crossings.
- **Industries** – Shippers and receivers of raw materials and goods entrust their businesses to the reliability of this supply chain component. Being able to ship and receive bulk materials by rail is

also advantageous as it reduces input costs for the producer, as well as overall price for the end user. D & I shippers on the railroad line and their commodities include:

- **L. G. Everist**, aggregates used in construction
 - **BX Civil & Construction**, magnesium chloride for roadway dust control and de-icing
 - **Poet Bio-Refining**, ethanol and dried distiller's grains (DDG)
 - **Siouxland Energy Cooperative**, ethanol
 - **Poet Nutrition**, corn oil
 - **GCC Dacotah Cement**, raw cement
 - **Prinsco**, plastic pellets for the manufacture of agricultural drain tiles
 - **Valero**, corn oil
 - **Purina Animal Nutrition**, DDG
 - **Innovative Resource Management**, Methyl Ester Fatty Acids
- **D & I Railroad** – Railroad operator

4.0 PROJECT LOCATION

The Project is located fully within rural Iowa, and within the following congressional district:

- Iowa – US District 4

The nearest Urban Area is the City of Sioux City, IA which is nearly 25 miles away from the Project Area (Akron, IA).

The Project's location (geospatial data) is in proximity to:

- Latitude and Longitude – 42° 49.372' N 96° 33.869' W

5.0 PROJECT ADHERENCE TO STATE RAIL PLAN GOALS

- 1) **Economic Support, Growth, and Development.** The Project will promote continued safe and reliable rail service for the shippers on the Sioux Valley Line, and will provide additional operational flexibility that will increase track capacity and create transportation efficiencies, all while increasing the ability to accommodate the shipments of new customers on the line. At present, nearly 90 percent of all existing D & I rail traffic originating or terminating on the rail line traverses the Project Limits, meaning most future traffic will benefit from this Project's proposed improvements.

Over the past 10 years, freight shipments on the D & I have averaged between 17,000 and 20,000 carloads annually. New shippers to the railroad line show great potential for more growth in the transloading business, with products arriving from a four-state area, encompassing South Dakota, Minnesota, Iowa, and Nebraska. After the completion of the Project, D & I will be able to continue to

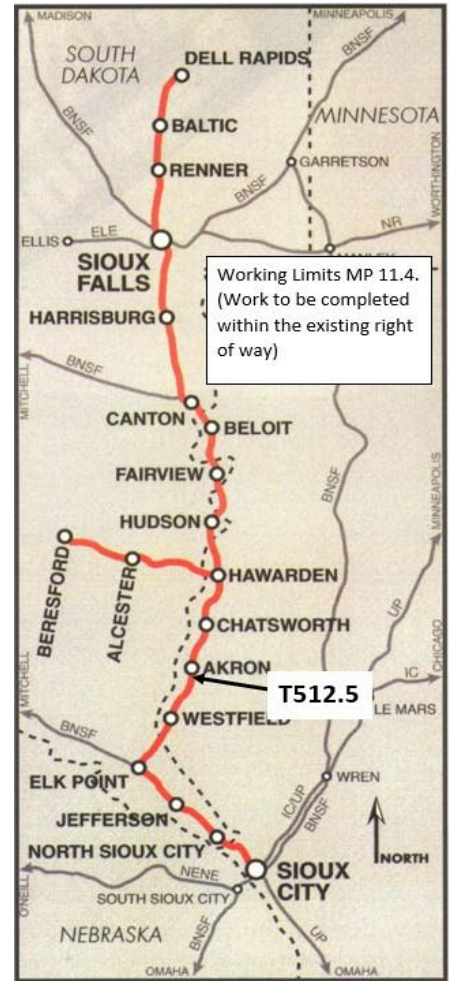


Figure 5: Map of the location of the work to be completed

attract more business opportunities for further economic and industrial growth and development within the region.

- 2) **Ensuring Enhanced Competitive Access and Maximum Connectivity for Critical Industries.** Often overlooked, short line railroads fill a critical role within the U.S. freight network as they provide bulk freight service transportation for the “first or last mile” connections between farmers, manufacturers, and the end consumer. Industries along the D & I rail line rely on D & I to transport bulk quantities of rock, sand, agricultural products, construction materials, and ethanol by rail to customers outside of the eastern South Dakota and northwestern Iowa region. These commodities have significance to the regional, national, and global economies. The D & I connects to and interchanges with three Class I railroads in Sioux City (BNSF Railway, Canadian National Railway, and Union Pacific Railroad), and thus provides local businesses and industries with broad competitive access to the national freight railroad system, global marketplace, and the opportunity to grow their market share.

Local industries are also leading the source of inquiries for new business on all South Dakota railroad lines, and continually look to expand their operations, leading to economic growth within this rural area. With strong growth and new business opportunities present along the D & I rail line there is an overwhelming need to maintain freight railroad access to this rural area in order to preserve existing businesses and industries, and their ability to attract new business. The Project will help to maintain the reliability of existing freight rail service and to improve future rail service on the line.

- 3) **Maintaining State Railroad Assets in Good Repair.** The D & I Railroad has a long history of maintaining this rail line to an acceptable standard. Since the D & I began operating in 1981, they have worked diligently with ongoing public-private partnerships to invest in numerous capital projects involving bridge replacements, new rail, and track and tie maintenance, ensuring that this railroad line continues to provide reliable, safe, and fully accessible service to the states and region. Shippers, their employees, their customers, and surrounding communities all rely on this vital rural railroad connection. The capital improvement proposed in the Project will greatly reduce the risk for rail traffic interruption and any negative impacts this could potentially have on existing rural-area businesses (and their ability to attract new business) on the railroad line.
- 4) **Reducing Highway Impacts.** Previous capital improvements to the Sioux Valley Line have allowed for the upgrades to accommodate 286,000 lb. heavy-axle load rail cars on the railroad line, further reducing impact to local roads and the highway system. This improvement has allowed existing shippers to ship more weight per carload, thus avoiding extra shipment of smaller carloads or diverting excess shipments from freight rail to trucks during peak times. Further investment in the Sioux Valley Line will continue to encourage local, regional, and state-wide growth opportunities and reduce the impact on state highways and local roads.

In addition, the local rail service that many short line railroads offer, like D & I, have helped to attract local truck-haul service for end point or origin points of shipments (or for transload from truck to rail or vice versa). Logistics companies are looking for new avenues to shorten truck hauls in order to maximize driver productivity.

- 5) **Improving Railroad Safety, Security, and Resiliency.** Improving railroad safety, security, and resiliency is one of the key goals identified in the South Dakota State Rail Plan (2014). The Project will provide much needed infrastructure improvement, will aid in lowering potential derailment exposure and be an incremental project in replacing aging bridges on the line. This capital improvement project will help to improve the overall safety and reliability of this railroad line and sustain the continued operation of the D & I. For D & I, the capital improvement project will reduce the overall potential risk to train operations.

6.0 PLANNING READINESS

For Tracks 3 (FD/Construction) Projects:

The Project’s component is supported in the South Dakota State Rail Plan (2014). Table 1 summarizes the planning document coverage.

Table 1: State Planning Documents Identifying the Importance of the Project

Planning Document	Sponsor	Relevant Pages	Web Location
South Dakota State Rail Plan (2014)	SDDOT	41, 42, 43, 184	Link

This Project demonstrates the State of South Dakota’s intent and commitment to finding long-term improvements that:

- Support economic growth and development
- Ensure connectivity for critical industries
- Maintain state-owned railroad assets in a state of good repair
- Reduce highway impacts
- Improve railroad safety, security, and resiliency

The D & I Railroad will assist the SDDOT with preparation of the STC application. This document may serve as a template for the application.

7.0 BENEFIT ANALYSIS

Replacing the bridges on both the mainline and the auxiliary track will provide many benefits to railroad operations, rail shippers, and the public.

- Repair of the current structure is estimated between \$290 thousand and \$325 thousand
- Repair would reuse materials that are nearing the end of life span
- New bridge design is a 75 to 100-year structure at an E80 rating with no repeat maintenance required
- Replacing both mainline and siding structure presents an over all lower cost per ft
- Replacing both mainline and siding structure prepares the siding infrastructure for future economic growth and development

- Bridge replacement reduces ongoing maintenance activities that result in service outages, slow orders and maintenance windows
- Increases public safety due to its location in the city of Akron, IA
- Ballast tub design allows track structure to “float”, reducing track and bridge connection related maintenance
- Improves hydraulic conditions

8.0 ENVIRONMENTAL READINESS

The National Environmental Policy Act (NEPA) requires consideration of environmental impacts for federal actions. The level of analysis and documentation required to comply with NEPA depends on the scope of the project. This Project is categorically excluded under the categories of Maintenance of Existing Track (bridge improvement) [64 Federal Register 28548(4)(c)].

9.0 SUMMARY OF NON-QUALITATIVE BENEFITS

- ***A more reliable railroad system helps control supply chain cost variability, which is beneficial to the shippers.*** Local businesses also thrive when the shippers on the railroad line are productive and profitable.
- Maintaining the freight railroad system in southeast South Dakota and northwest Iowa is crucial to the economies of the counties and rural communities along the railroad line.
- Shippers and employees of surrounding businesses that support these local shippers rely on a reliable local rail system to transport products via the D & I Railroad.