

Executive Summary

The benefit-cost analysis (BCA) evaluates the impacts of expanding the roadway capacity and implementing safety and operational improvements along Interstate 35 (I-35) in McClain County as part of Oklahoma Department of Transportation’s (ODOT) ***I-35 McClain County Safety & Capacity Improvement Project*** (the Project). The Project will widen a four-lane interstate highway to six lanes by adding one lane in each direction. Furthermore, the Project will install infrastructure to enhance roadway safety, such as lighting, rumble strips, a concrete median, and wider roadway shoulders. The Project is expected to result in improved safety, reduction in roadway congestion, and enhanced mobility along a critical National Highway System corridor. The Project will enhance a 2.3-mile section of I-35 north of Johnson Avenue Bridge, eliminating a key bottleneck between south central Oklahoma and the Oklahoma City metropolitan area. The Project improvements are expected to generate safety benefits, travel time savings, and improved reliability for auto and freight vehicle users.

The Project is currently at approximately 60% design, with preliminary design and environmental review activities underway. Construction is anticipated to begin in 2027 and be completed in 2028 with current traffic patterns through the project area maintained during construction. The analysis period for the Project is 20 years of operations following project completion. The analysis was conducted in compliance with the *Benefit-Cost Analysis Guidelines for Discretionary Grant Programs* published by the U.S. Department of Transportation (USDOT) in December 2025. The methodology of the analysis conforms to USDOT and other federal guidelines regarding benefit-cost analysis and was performed in line with industry standards and best practices.

Executive Summary Matrix

Table ES-1 summarizes the key components of the analysis, describing the baseline status of roadway vehicle travel along I-35 and the expected impacts of the proposed project improvements.

Table ES-1. Executive Project Summary Matrix

Project Parameters	Description
Current Status / Baseline and Problem to be Addressed	Currently, the I-35 corridor in McClain County operates as a four-lane interstate highway experiencing increasing safety risks and declining operational performance due to sustained growth in regional population, employment and freight traffic. The rural segment of I-35 serves as critical north-south interstate connection between Oklahoma City and the Texas state line and is designated as part of the National Highway System, Primary Highway Freight Systems, and Strategic Highway Network (STRAHNET). Traffic volumes and heavy truck activity are expected to exceed the functional free-flow capacity of the existing four-lane configuration, resulting in congestion during peak travel periods, reduced travel time reliability, and elevated crash risk.
Change to Baseline Conditions / Alternatives	Baseline: Traffic conditions continue to worsen along the segment of I-35 as traffic demand continues to grow amidst increasing regional development. Increasing roadway congestion increases vehicle conflicts and the risk of injuries resulting from vehicle collisions. Injuries and fatalities resulting from these vehicle collisions occur at historical rates. The increase in traffic demand on constrained capacity reduces the average travel speed through the travel area, resulting in longer travel times for vehicle users.
	Alternative: The Project widens I-35 by adding one additional lane in each direction within the existing median, expanding the facility from four to six lanes with the installation of a concrete median and other roadway safety features. The additional travel lanes increase the capacity through the corridor, maintaining optimal travel conditions for vehicle users. Roadway improvements include an overlay of the existing pavement, drainage upgrades, installation of a continuous

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Project Parameters	Description
	median barrier wall, rumble strips and lighting, and widening of the roadway shoulders. The acceleration and deceleration lanes at Johson Road are revised from tapered to parallel configurations to reduce conflict points for merging and diverging traffic. These improvements will reduce the frequency of roadway collisions, improve the efficiency of vehicle movements, and provide reliable travel conditions for personal and freight traffic.
Types of Impacts	Auto and Truck Travel Time Savings: The Project will install an additional lane in each direction, improving traffic flow and reduced roadway congestion at peak periods for auto and truck users. The improvements maintain the level of service through the corridor for optimal travel performance.
	Reduction in Injuries and Fatalities from Vehicle Collisions: The Project will provide an additional travel lane in each direction and install additional safety features to the roadway, reducing the incidence of future vehicle collisions in the project area. The widening of the roadway shoulders and installation of new rumble strips will provide refuge for disabled vehicles and reduce vehicle off roading. The construction of a concrete median barrier will prevent head-on collisions, while highway lighting installed into this barrier will reduce collision risk at night.
	Residual Value: The Project improvements are expected to have a useful life of at least 30 years, representing a long-term investment in the Project area. The analysis monetizes the useful life of the capital investment remaining at the end of the 20-year analysis period.

Summary of Benefit-Cost Analysis Results

The benefit-cost analysis evaluates and monetizes the user and social benefits and costs of the Project over a five-year design and construction period and a 20-year operations period. The construction period of the Project is expected to last from 2023 to 2028; it includes preliminary engineering, design, environmental review and construction. The analysis period of the Project is, following the completion of construction, from 2029 to 2048. The analysis period evaluates the user and social benefits of the proposed project improvements in the project area. The benefits and costs evaluated in the analysis are calculated in 2024 constant dollars and their present value is calculated using a 7.0 percent discount rate, per USDOT BCA guidance.¹

Costs

The total capital cost of the Project is estimated at \$41.0 million in year-of-expenditure dollars. The construction costs for the Project represent the estimated previously incurred and future costs for preliminary engineering, design, environmental review and construction of the proposed project improvements based on the known concept parameters and schedule. When deflating from year-of-expenditure dollars, assuming an annual escalation rate of 4.0 percent, the capital costs are calculated to be \$36.9million in undiscounted 2024 dollars. At a 7.0 percent discount rate, the capital costs would be \$29.9 million in 2024 dollars. The capital costs by year are summarized below in Table ES-2.

Table ES-2. Project Cost by Year (in millions of dollars)

Cost Category	2023	2024	2025	2026	2027	2028	Total
Year-of-expenditure dollars							

¹ U.S. Department of Transportation, *Benefit-Cost Analysis Guidance for Discretionary Grant Programs*, December 2025

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Cost Category	2023	2024	2025	2026	2027	2028	Total
Environmental, Design and Engineering	\$0.3	\$0.4	\$0.4	\$0.4	\$0.03	-	\$1.5
Construction	-	-	-	-	\$30.4	\$9.1	\$39.5
Total	\$0.3	\$0.4	\$0.4	\$0.4	\$30.4	\$9.1	\$41.0
Adjusted constant 2024 dollars							
Environmental, Design and Engineering	\$0.3	\$0.4	\$0.4	\$0.3	\$0.03	-	\$1.4
Construction	-	-	-	-	\$27.5	\$7.9	\$35.4
Total	\$0.3	\$0.4	\$0.4	\$0.3	\$27.5	\$7.9	\$36.9

Note: Values of line items may not add up to totals due to rounding.

The roadway segment of I-35 in the Project area require periodic rehabilitation to maintain the condition of the roadway. In the No Build scenario, due to the combination of growing traffic on the roadway and aging infrastructure, the roadway is expected to require rehabilitation every 8 years to maintain operational condition at a cost of \$2.0 million, beginning in 2027. In the Build scenario, due to new overlay of roadway pavement and the distribution of roadway wear by vehicles across additional lanes, rehabilitation of the roadway will be required every 14 years at a cost of \$2.0 million, beginning in 2042. The rehabilitation costs are represented in 2024 dollars. The rehabilitation costs represent the investment necessary to maintain the infrastructure in operational condition, in accordance with ODOT’s asset management practices. Over the 20-year analysis period, the total rehabilitation cost savings for the project improvements are estimated to be \$3.9 million in undiscounted 2024 dollars, or \$2.7 million when discounted at 7.0 percent. Table ES-3 summarizes the monetized value of repair and rehabilitation cost savings.

Table ES-3: Value of Repair and Rehabilitation Cost Savings (in 2024 dollars)

	Monetized Value (undiscounted)	Monetized Value (discounted)
Total Benefits	\$3,912,000	\$2,703,000

Benefits

The Project is expected to improve the facilities for vehicle traffic along the segment of I-35 in the Project area. The expansion of the roadway capacity will provide a more comfortable and safe experience for users, while reducing journey time delay and injuries and fatalities from future crashes. Over the 20-year analysis period, the monetized impacts include the following:

Benefits to Auto and Truck Vehicle Users

Auto and truck traffic along the I-35 segment are expected to experience more efficient traffic movements through the Project area and reduced conflicts on the roadway due to the increase in roadway capacity from the construction of the two additional travel lanes. In addition to the safety features installed in the improved roadway, the efficiency of vehicle movements in the roadway significantly decreases the number of projected injuries and fatalities related to vehicle collisions in the area.

Asset Useful Life and Residual Value

The analysis assumes a useful life of at least 30 years for the proposed improvements, signifying a significant capital investment for the Project area. The residual value measures the remaining value of the capital investment after the first 20 years of straight-line depreciation at the end of the analysis period.

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Benefit-Cost Analysis Results

The total benefits generated from the project improvements within the analysis period are calculated to be \$46.4 million in discounted 2024 dollars. The total capital costs, including for preliminary engineering, design, environmental review and construction, are calculated to be \$29.9 million in discounted 2024 dollars. The difference of the discounted benefits and costs equals a net present value of \$16.6 million in discounted 2024 dollars, resulting in a benefit-cost ratio (BCR) of 1.55. Table ES-4 below summarizes the results of the base analysis for the Project by benefit category.

Table ES-4. Benefit-Cost Analysis Summary Results (in 2024 dollars)

BCA Metric	Monetized Value	
	Undiscounted	Discounted
Total Benefits	\$125,016,000	\$46,425,000
<i>Auto and Truck Travel Time Savings</i>	\$28,830,000	\$8,878,000
<i>Reduction in Injuries and Fatalities</i>	\$80,462,000	\$32,515,000
<i>Residual Value</i>	\$11,812,000	\$2,329,000
<i>Infrastructure Maintenance Cost Savings</i>	\$3,912,000	\$2,703,000
Total Capital Costs	\$36,880,000	\$29,873,000
Net Present Value	\$88,136,000	\$16,552,000
Benefit-Cost Ratio	3.39	1.55
Internal Rate of Return	12.3%	

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1. Introduction

The benefit-cost analysis (BCA) evaluates Oklahoma Department of Transportation’s (ODOT) ***I-35 McClain County Safety & Capacity Improvement Project*** (the Project), details the methodology and assumptions used to calculate benefits and costs, summarizes Project benefits, and details Project costs. The BCA is a requirement of the FY2026 Better Utilizing Investments to Leverage Development (BUILD) discretionary grant program administered by the U.S. Department of Transportation (USDOT).

1.1 Benefit-Cost Analysis Framework

A BCA is an evaluation framework to assess the economic advantages (benefits) and disadvantages (costs) of an investment alternative. Benefits and costs are broadly defined and are quantified in monetary terms to the extent possible. The overall goal of a BCA is to assess whether the expected benefits of a project justify the costs from a national perspective. A BCA framework attempts to capture the net welfare change created by a project. It includes cost savings and increases in welfare (benefits), disbenefits where costs can be identified (e.g., project capital costs), and welfare reductions where some groups are expected to be made worse off because of the proposed Project.

The BCA framework involves defining a Base Case or “No Build” Case, which is compared to the “Build” Case, where the grant request is awarded, and the project is built as proposed. The BCA assesses the incremental difference between the No Build Case and the Build Case, which represents the net change in welfare. BCAs are forward-looking exercises which seek to assess the incremental change in welfare over a project life cycle. The importance of future welfare changes is determined through discounting, which is meant to reflect both the opportunity cost of capital as well as the societal preference for the present.

The analysis was conducted in accordance with the benefit-cost methodology as recommended by the USDOT in the *Benefit-Cost Analysis Guidance for Discretionary Grant Programs* published in December 2025. This methodology includes the following analytical assumptions:

- Defining existing and future conditions under a No Build scenario and Build scenario;
- Estimating benefits and costs during Project construction and operation, including 20 years of operations beyond the Project completion when benefits accrue;
- Using USDOT recommended monetized values for travel time savings, vehicle operating cost savings, pedestrian and bicyclist health benefits and amenities, and emissions, while relying on best practices for monetization of other benefits;
- Presenting dollar values in real 2024 dollars. In instances where cost estimates and benefits valuations are expressed in historical or future dollar years, using an appropriate inflation rate to adjust the values;
- Discounting future benefits and costs with a real discount rate of 7.0 percent.

1.2 Report Contents

The Report illustrates the methodology, assumptions and inputs used in the BCA and an evaluation of its results. Section 2 provides an explanation of the BCA methodology and a description of the project. Section 3 provides an explanation of the project costs. Section 4 provides an outline of the calculation of the benefit categories. Section 5 outlines the summary results of the BCA.

2. Project Overview

2.1 Description

The Interstate 35 (I-35) corridor within McClain County currently operates as a four-lane interstate facility that no longer provides adequate capacity or operational performance for existing and forecasted traffic demand. The segment serves regional travel, commuter traffic, and a substantial volume of heavy trucks, resulting in recurring congestion during peak travel periods and reduced travel time reliability. Within the Project limits, operational constraints are driven primarily by limited through-lane capacity and outdated interchange and ramp configurations. These conditions contribute to traffic bottlenecks, increased vehicle interactions, and elevated crash risk. The existing roadway geometry and infrastructure were not designed to support current traffic volumes or the anticipated growth in passenger and freight travel. The Project will address these deficiencies by a I-35 to six lanes through the addition of one lane in each direction within the existing median, along with targeted operational and safety improvements, including the installation of a concrete median barrier, lighting, rumble strips and wider roadway shoulders. These improvements will increase safety, improve traffic flow, reduce congestion, and increase reliability along this 2.3-mile segment of I-35.

2.2 General Assumptions

The BCA requires a number of general assumptions that guide the overall analysis, presented below in Table 1.

Table 1: General Assumptions

Assumption	Value
Base Year Dollars	2024
Capital Cost Adjustment	YOE dollars converted to 2024 dollars using an inflation adjustment factor of 0.978 (USDOT Guidance)
Real Discount Rate	7.0 percent (USDOT BCA guidance and OMB Circular A-94)
Environmental/Design/Construction Start Date	2023
Environmental/Design/Construction End Date	2028
Project Opening	2029
End of Analysis Period	2048
Operations Period	20 years (post-construction)

2.3 “No Build” and “Build” Scenario Comparison

The BCA assesses whether a proposed infrastructure investment is economically viable by comparing the quantified benefits to the expected costs of both the Build and No Build/Base Case. Benefits/disbenefits are estimated through changes in user costs and impacts on the wider community with the project. Net Project impacts are measured by comparing benefits to (a) capital costs and (b) ongoing operational expenditures for both the Build and No Build.

Under the No Build scenario, the existing four-lane configuration of I-35 within the project limits is assumed to remain in place for the duration of the analysis period with routine rehabilitation activities. As future travel demand in the corridor increases, the corridor will experience worsening roadway congestion due to constrained capacity and existing operational deficiencies, resulting in reduced travel time reliability and increased crash risk. Traffic delays in the corridor persist during the peak and off-peak periods and vehicle users incur longer travel times. No changes to the roadway geometry or the safety features are realized,

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resulting in the frequency and severity of roadway collisions occurring at historical rates. Planned rehabilitation of the roadway is completed every 8 years due to the increased wear on the roadway's condition.

Under the Build scenario, the construction of the roadway enhancements and safety improvements along I-35 is completed as planned. The enhancements include an additional travel lane in each direction withing the existing median and associated pavement, drainage, and operational upgrades. These improvements increase the roadway capacity for the projected vehicle demand, ensuring efficient vehicle flows through the corridor and reduced congestion-related travel delays. Lighting, a concrete median barrier and rumble strips are installed along the roadway and the roadway shoulders are widened. Planned rehabilitation of the roadway is postponed to 2042 due to the improved condition of the pavement and is completed every 14 years due to lesser wear on the roadway.

3. Project Costs

The expected costs associated with the Project include the capital expenditures for the preliminary engineering, design, environmental review and construction of the Project and the change in rehabilitation costs for maintaining the operationality of the proposed improvements.

3.1 Project Capital Costs

The total capital cost of the Project is expected to be \$41.0 million in year-of-expenditure dollars. The construction costs for the Project represent the estimated previously incurred and future costs for environmental planning, preliminary engineering, design, and construction of the proposed project improvements based on the known concept parameters and schedule. When deflating from year-of-expenditure dollars, assuming an annual escalation rate of 4.0 percent, the capital costs are calculated to be \$36.9 million in undiscounted 2024 dollars. At a 7.0 percent discount rate, the capital costs would be \$29.9 million in 2024 dollars. Table 2 shows the breakdown of capital expenditures by cost category and year in year-of-expenditure dollars and constant 2024 dollars.

Table 2: Capital Expenditures by Category and Year (in dollars)

Cost Category	2023	2024	2025	2026	2027	2028	Total
Year-of-expenditure dollars							
Environmental, Design and Engineering	\$0.3	\$0.4	\$0.4	\$0.4	\$0.03	-	\$1.5
Construction	-	-	-	-	\$30.4	\$9.1	\$39.5
Total	\$0.3	\$0.4	\$0.4	\$0.4	\$30.4	\$9.1	\$41.0
Adjusted constant 2024 dollars							
Environmental, Design and Engineering	\$0.3	\$0.4	\$0.4	\$0.3	\$0.03	-	\$1.4
Construction	-	-	-	-	\$27.5	\$7.9	\$35.4
Total	\$0.3	\$0.4	\$0.4	\$0.3	\$27.5	\$7.9	\$36.9

Note: Values of line items may not add up to totals due to rounding.

3.2 Repair and Rehabilitation Costs

The segment of I-35 in the Project area requires periodic rehabilitation to maintain the condition of the roadway. In the No Build scenario, due the combination of growing traffic on the roadway and aging infrastructure, the roadway is expected to require rehabilitation every 8 years to maintain operational condition at a cost of \$2.0 million, beginning in 2027. In the Build scenario, due to new overlay of roadway pavement and the distribution of roadway wear by vehicles across additional lanes, rehabilitation of the roadway will be required every 14 years at a cost of \$2.0 million, beginning in 2042. The rehabilitation costs are represented in 2024 dollars. The rehabilitation costs represent the investment necessary to maintain the infrastructure in operational condition, in accordance with ODOT's asset management practices.

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Over the 20-year analysis period, the total rehabilitation cost savings for the project improvements are estimated to be \$3.9 million in undiscounted 2024 dollars, or \$2.7 million when discounted at 7.0 percent. Table 3 summarizes the monetized value of rehabilitation cost savings.

Table 3: Value of Repair and Rehabilitation Cost Savings (in 2024 dollars)

	Monetized Value (undiscounted)	Monetized Value (discounted)
Total Benefits	\$3,912,000	\$2,703,000

4. Project Impacts

The Project is expected to result in the following impacts to roadway traffic users in the Project area:

- Travel time savings for auto and truck vehicle users;
- Reduction in injuries and fatalities from roadway collisions; and,
- Residual value

The quantifying of these benefits is based on a projection of future existing and new users related to their use of the proposed Project improvements and the standardized economic value of those improvements, based on the USDOT *Benefit-Cost Analysis Guidance for Discretionary Grant Programs* published in December 2025.

4.1 Vehicle Travel Time Savings

With the proposed expansion of the roadway from four lanes to six lanes, auto and truck traffic in the Project area are expected to experience more efficient traffic conditions during the peak and off-peak periods as compared to the No Build conditions. A Level of Service (LOS) analysis of the roadway in Project area was completed by the ODOT traffic operations team using annual traffic count data and the calculation of the hourly vehicle lane capacity of the roadway with four lanes and with six lanes, in accordance with the *Highway Capacity Manual*. Based on the traffic projection developed by the ODOT traffic operations team, for the segment of I-35 within the project area, the annual average daily trips (AADT) was 57,300 in 2023 and is projected to grow annually at a rate of 2.6 percent. The input data and calculations of the projected traffic demand and the LOS analysis are provided in the “AADT Report” and “Traffic Analysis Segments” tabs in the BCA spreadsheet file. The annual vehicle-trips and vehicle-miles traveled (VMT) for the current year, the Project opening year and the last year in the analysis period are shown below in Table 4; the projected vehicle demand is the same in the No Build scenario and the Build scenario.

Table 4: Baseline and Projected Traffic Data in the Project Area

	2025	2029	2048
All Vehicles			
Annual Vehicle-Trips	21,956,000	24,330,000	39,622,000
Annual VMT	50,499,000	55,959,000	91,131,000
Auto Vehicles			
Annual Vehicle-Trips	16,247,000	18,004,000	29,321,000
Annual VMT	37,369,000	41,409,000	67,437,000
Truck Vehicles			
Annual Vehicle-Trips	5,709,000	6,326,000	10,302,000
Annual VMT	13,130,000	14,549,000	23,694,000

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Using the projected AADT in the project area and the change in vehicle lane capacity in the LOS analysis, the average travel speed of vehicle users traveling through the roadway is estimated by year under the No Build and Build conditions. The traffic analysis calculates the change in vehicle travel time on the roadway segment based on the projected vehicle demand and the change in the vehicle capacity of the roadway. In the analysis, in accordance with the *Highway Capacity Manual*, the segment of I-35 in the Project area is classified as a limited access freeway with 70 MPH free-flow speeds. Under the No Build scenario, the hourly vehicle capacity of the roadway is calculated to be 6,857, while the hourly vehicle capacity of the roadway is calculated to be 10,286 under the Build scenario. Under a level of service (LOS) approach, the average travel speed for vehicles is calculated based on the roadway characteristics and the projected volume/capacity (V/C) ratio. The estimated average travel speed by LOS rating for a limited access freeway based on the V/C ratios is shown below in Table 5.

Table 5: Level of Service Ratings For Limited Access Freeway with 70 MPH Free-Flow Speed

LOS Criteria Rating	Four-Lane Roadway		Six-Lane Roadway	
	Range of V/C Ratio	Avg. Speed (MPH)	Range of V/C Ratio	Avg. Speed (MPH)
A	< 0.32	70	< 0.30	70
B	0.32 – 0.51	70	0.30 – 0.49	70
C	0.51 – 0.75	68.5	0.49 – 0.72	68.5
D	0.75 - 0.92	63	0.72 - 0.88	63
E	0.92 – 1.00	60	0.90 – 1.00	58
F	> 1.00	55	> 1.00	52

The analysis calculates the V/C ratio of the interchange under the No Build conditions and the Build conditions based on the projected vehicle-trips over the 24-hour day and the lane capacity of the interchange, which calculates the average travel speed of vehicles. The daily aggregate vehicle travel time for the No Build scenario and the Build scenario is calculated by dividing the length of the interchange segment by the average travel speed; the difference represents the aggregate travel time savings. The calculated V/C ratio and average travel speed for the current year, the project opening year and the last year in the analysis period are shown below in Table 6.

Table 6: Calculated V/C Ratio and Average Travel Speed in Project Area by Year

	2025		2029		2048	
	V/C	MPH	V/C	MPH	V/C	MPH
No Build Scenario	0.47	70	0.52	69	0.84	63
Build Scenario	0.47	70	0.35	70	0.56	69

Using the projected vehicle-trips and the calculated average travel speed through the project area, the analysis calculates the vehicle-hours traveled for auto and truck traffic under the No Build and Build conditions. In the BCA model spreadsheet file, the calculations of the traffic impacts are provided in the “SegmentTraffic Inputs” tab. Passenger-hours traveled are calculated using an average occupancy of 1 person for truck vehicles and an average occupancy of 1.52 persons for auto vehicles, in accordance with the USDOT BCA guidance documents. The calculated vehicle-hours traveled for auto and truck users for the project opening year and the last year in the analysis period are shown below in Table 7.

Table 7: Projected Annual Vehicle-Hours Traveled in Project Area

	No Build		Build	
	2029	2048	2029	2048
Vehicle-Hours Traveled (Auto)	605,000	1,070,000	592,000	984,000
Vehicle-Hours Traveled (Trucks)	212,000	376,000	208,000	346,000
Vehicle-Hours Traveled (Total)	817,000	1,447,000	799,000	1,330,000

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Over the 20-year analysis period, the total value of auto and truck travel time savings is calculated to be \$28.8 million in undiscounted 2024 dollars. Assuming a base year of 2024 and real discount rate of 7.0 percent, the net present value of vehicle travel time savings is calculated to be \$8.9 million in discounted 2024 dollars. Table 8 summarizes the monetized value of auto and truck user travel time savings.

Table 8: Value of Auto and Truck Travel Time Savings (in 2024 dollars)

	Monetized Value (undiscounted)	Monetized Value (discounted)
Travel Time Savings for Auto Users	\$20,675,000	\$6,367,000
Travel Time Savings for Truck Users	\$8,155,000	\$2,511,000
Total Benefits	\$28,830,000	\$8,878,000

4.2 Reduction in Vehicle Crashes

The Project will reduce the high number of projected vehicle collisions in the Project area through the construction of two additional lanes, a concrete median barrier, rumble strips, lighting, and wider roadway shoulders. These interventions will reduce vehicle conflicts related to roadway congestion, vehicle off roading, head-on crashes, and crashes from dark roadway conditions. An ODOT report of crash data for the project segment of I-35 from 2017 to 2022 is provided in the “Crash Data ODOT” tab in the BCA model spreadsheet file. The report includes a detailed breakdown of crashes recorded between 2017 and 2022 by their location within the project area, the date of occurrence, the number of affected persons, and their injury severity. To supplement the detailed information in the detailed crash data, four additional recorded fatalities from roadway collisions between 2017 and 2022 were identified in the Interactive Crash Maps published by the Oklahoma Highway Safety Office. The additional crash information is provided in the “Crash Data OHSO” tab in the BCA model spreadsheet file. ² As the original ODOT crash report only included one of these fatal crashes, the 3 additional crashes were added to the dataset to give a full accounting of the crash history in the project area. The number of crashes by collision severity included in the safety analysis are shown below in Table 10.

The analysis calculates the reduction in crashes involving roadway vehicles related to the proposed project improvements in the project area by applying the appropriate crash modification factor (CMF) to the historical average crashes in the project area. Given the characteristics of the multiple improvements in the I-35 segment, a number of CMF were considered, see Table 9 for a summary of these. The construction of a concrete median barrier has the potential to decrease severe crashes from head-on collisions, however it could also increase other crash types. The uncertainty of how the concrete median barrier would affect the number of non-severe crashes in the project area and existence of a cable barrier currently in the median led the concrete barrier to be omitted from the crash analysis. The Project includes the installation of new center median lighting, which is significant as all stated fatal crashes between 2017 and 2022 occurred in dark, nighttime conditions. The provision of highway lighting has a 28 percent reduction in nighttime crashes attributed to it (CMF ID: 192). However, it is not determinable what the level of illumination will be with the proposed improvement and what level of illumination the CMF was based on, so the impact of the project lighting was omitted to support a robust safety analysis.

Table 9: Crash Modification Factors Reviewed in Safety Analysis (CMF Clearinghouse)

CMF ID	CMF	CRF (%)	Rating	Crash Type	Crash Severity	Area Type
Provide Highway Lighting						
192	0.72	28%	***	Nighttime	A, B, C	All
Increase from 4 to 6 lanes						
7924	0.85	15%	*****	All	All	Urban

² Oklahoma Highway Safety Office, *Interactive Crash Maps*, Accessed February 2026, [OHSO Interactive Crash Maps](#)

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CMF ID	CMF	CRF (%)	Rating	Crash Type	Crash Severity	Area Type
7932	0.696	30.4%	*****	All	K, A, B, C	Urban
7928	0.802	19.8%	*****	All	All	Urban
Widen shoulder						
6659	0.607	39.3%	****	Run off road	All	Rural
Install shoulder rumble strips						
3442	0.84	16%	*****	Run off road	All	Rural
Install shoulder rumble strips and widen shoulder						
6665	0.608	39.2%	****	All	All	Rural

The following CMFs were selected for the safety analysis:

- Increase from 4 lanes to 6 lanes (CMF ID: 7928) – 19.8 percent reduction in all crash types.
- Install shoulder rumble strips and widen shoulder (CMF ID: 6665) – 39.2 percent reduction in all crash types.

The Project increases the roadway from four to six lanes, reducing the risk of vehicle collisions due to improved traffic flows and reduced roadway congestion. There are a range of viable estimates for the expected crash reduction from this, ranging from 15 percent (CMF ID: 7924) to 30.4 percent (CMF ID: 7932), however the 19.8 percent reduction described above was selected due to its applicability to all crash types and severities. The Project will widen the inside shoulder from 8 to 10 feet, providing a safe refuge for disabled or malfunctioning vehicles, and allows drivers to regain control following lane departure. The Project installs new rumble strips on the shoulder, which reduces crash risk through alerting drivers when their vehicle has left the travel lane. The estimated reduction in crashes from both interventions could be analyzed separately, with viable estimates being 39.3 percent (CMF ID: 6659) for shoulder widening and 16 percent (CMF ID: 3442) for shoulder rumble strips. However, as these interventions mitigate largely the same crash cause, they are not independent. Therefore, the above combined reduction estimate of 39.2 percent was selected to avoid overestimating the combined effect of the interventions.

The two selected CMFs must be combined to estimate the overall estimated reduction in vehicle crashes from the project. While these interventions have different impacts on roadway dynamics, they have potential to overlap in the crash types and severities they address. To avoid overestimating their combined efficacy, the dominant common residuals calculation method was used, as advised by CMF Clearinghouse³ and the Federal Highway Administration⁴. The detail of this calculation is displayed in the tab labeled “Safety Inputs” in the BCA model spreadsheet file. The combined crash reduction factor for all crash types in the project area is calculated to be a 35.4 percent reduction; it is considered to be a robust estimate of crash reduction due to the above discussed considerations. The number of estimated annual avoided crashes by collision severity are shown below in Table 10. The estimated reduction in crashes was monetized based on standard values for property damage, injuries and fatalities, in accordance with the USDOT BCA guidance documents.

Table 10: Injuries and Fatalities History for Vehicle Crashes in Project Area (2017 to 2022)

Crash Severity	Number of Crashes	Annual Average	Annual Avoided Crashes
PDO	61	10.2	3.6
Injured	18	3.0	1.1
Fatal	4	0.7	0.2

³ CMF Clearinghouse, *Estimating the Combined Effect of Multiple Countermeasures*, Accessed February 2026, [CMF Clearinghouse](#)

⁴ Federal Highway Administration, *Safety Data and Analysis: Applying a Method to Analyze Multiple CMFs*, December 2019, [Safety Data and Analysis: Applying a Method to Analyze Multiple CMFs](#)

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Crash Severity	Number of Crashes	Annual Average	Annual Avoided Crashes
Total	83	13.8	4.9

Over the 20-year analysis period, the total value of avoided crashes involving roadway vehicles is calculated to be \$80.5 million in undiscounted 2024 dollars. Assuming a base year of 2025 and real discount rate of 7.0 percent, the net present value of avoided crashes involving roadway vehicles is calculated to be \$32.5 million in discounted 2024 dollars. Table 11 summarizes the monetized value of avoided injuries from crashes involving roadway vehicles.

Table 11: Value of Avoided Injuries and Fatalities Involving Roadway Vehicles (in 2024 dollars)

	Monetized Value (undiscounted)	Monetized Value (discounted)
Avoided Property Damage Only (PDO) Crashes	\$698,000	\$282,000
Avoided Crashes Resulting in Injury	\$7,269,000	\$2,937,000
Avoided Crashes Resulting in Fatalities	\$72,496,000	\$29,296,000
Total Benefits	\$80,462,000	\$32,515,000

4.3 Residual Value

The residual value is calculated by determining the percentage of useful life remaining beyond the analysis period and multiplying that percentage by the construction cost for that component. With a 20-year analysis period and an estimated 30-year design life for the improvements in the project area, the residual value is 33% of the initial cost using the straight-line depreciation method. The remaining capital value is viewed as a cost offset or “negative cost” and is applied to the last year of analysis period as a benefit. The residual value of \$11.8 million is discounted back to \$2.3 million in discounted 2024 dollars.

Table 12: Residual Value (in 2024 dollars)

	Monetized Value (undiscounted)	Monetized Value (discounted)
Residual Value	\$11,812,000	\$2,329,000

5. Benefit-Cost Analysis Results

5.1 Evaluation Measures

The BCA converts potential gains (benefits) and losses (costs) with the Project into monetary units and compares them. The following common benefit-cost evaluation measures are included in this BCA:

- **Net Present Value (NPV):** NPV compares the net benefits (benefits minus costs) after being discounted to present values using the real discount rate assumption. The NPV provides a perspective on the overall dollar magnitude of cash flows over time in today’s dollar terms.
- **Benefit Cost Ratio (BCR):** The evaluation also estimates the benefit-cost ratio; the present value of incremental benefits is divided by the present value of incremental costs to yield the benefit-cost ratio. The BCR expresses the relation of discounted benefits to discounted costs as a measure of the extent to which a project’s benefits either exceed or fall short of the costs.
- **Internal Rate of Return (IRR):** The IRR is the discount rate which makes the NPV from the Project equal to zero. In other words, it is the discount rate at which the Project breaks even. Generally, the greater the IRR, the more desirable the Project.

5.2 Benefit-Cost Analysis Results

The summary of the benefit-cost analysis is outlined in the table below. The results are in constant 2024 dollars discounted at 7.0 percent, as prescribed by the USDOT BCA Guidance documents. All benefits and costs are calculated in constant 2024 dollars over an evaluation period extending 20 years after the end of construction. The total benefits generated from the project improvements within the analysis period are calculated to be \$46.4 million in discounted 2024 dollars. The total capital costs, including for preliminary engineering, design, environmental review and construction, are calculated to be \$29.9 million in discounted 2024 dollars. The difference of the discounted benefits and costs equals a net present value of \$16.6 million in discounted 2024 dollars, resulting in a benefit-cost ratio (BCR) of 1.55. The internal rate of return for the project is 12.3 percent.

Table 13: Summary of Benefit-Cost Analysis (in 2024 dollars)

BCA Metric	Monetized Value	
	Undiscounted	Discounted
Total Benefits	\$125,016,000	\$46,425,000
<i>Auto and Truck Travel Time Savings</i>	\$28,830,000	\$8,878,000
<i>Reduction in Injuries and Fatalities</i>	\$80,462,000	\$32,515,000
<i>Residual Value</i>	\$11,812,000	\$2,329,000
<i>Infrastructure Maintenance Cost Savings</i>	\$3,912,000	\$2,703,000
Total Capital Costs	\$36,880,000	\$29,873,000
Net Present Value	\$88,136,000	\$16,552,000
Benefit-Cost Ratio	3.39	1.55
Internal Rate of Return	12.3%	