

City of Broken Arrow

BROKEN ARROW CORRIDORS SAFETY IMPROVEMENT PROJECT



U.S. Congressional District 0K-01



Submitted by:

BROKEN ARROW

Where opportunity lives

2020 BUILD Grant Application

U.S. Department of Transportation, FY2020 Better Utilizing Investments to Leverage Development (BUILD) Application

BUILD Funds Request: \$25 million

Project Name	Broken Arrow Corridors Safety Improvement Project
Applicant	City of Broken Arrow, Oklahoma
Project Partners	Indian Nations Council of Governments (INCOG) Oklahoma Department of Transportation (ODOT)
Contact Information	Travis Small, Transportation Manager City of Broken Arrow 485 North Poplar Ave., Broken Arrow, OK 74012 918-259-2400 ext. 5233 tsmall@brokenarrowok.gov
Project Location	City of Broken Arrow, Broken Arrow County Oklahoma Congressional District 1
Project Type	Urban, Road - New Capacity
Project Description	The City of Broken Arrow, INCOG, and ODOT are partnering to provide a multi-modal connection between north and south Broken Arrow to improve safety and improve the flow of people and goods along the Elm Place and 9th Street Corridors. The Project will reconstruct and widen existing arterial streets to 5-lanes; construct auxiliary turn lanes at various locations; improve or replace curbs and gutters, enclosed storm sewers, and traffic signals; and improve pedestrian pathways by providing ADA compliant continuous sidewalks on one side of the corridor and a multi-use trail system on the other side.
Project Cost	\$47.5 million
BUILD Funds Requested	\$25.0 million
Local Match Source(s) & Amounts	\$10.5 million - City of Broken Arrow 2018 GO Bond \$3.0 million - INCOG's Surface Transportation Program (STP) Funds \$9.0 million - Planned ODOT Funds Total Local Funds: \$22.5 million (47.4%)
Project Schedule / Status	NEPA Categorical Exclusion - Complete June 2022 Construction Starts - July 2022 Project Complete - June 2027
Project Benefits	This Project will: <ul style="list-style-type: none"> - Improve pedestrian and bicyclist safety & health for students and residents - Improve roadway safety for personal vehicles and trucks - Improve access to jobs and economic opportunity by linking rural and urban areas - Improve the air quality in the Tulsa Metropolitan area
Benefit-Cost Analysis Results	Benefit-cost ratio: 2.29 (7% discount rate)
Project Website	http://www.brokenarrowok.gov/government/operations/engineering-construction/2020-build-grant

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May 11, 2020

The Honorable Elaine L. Chao
Office of the Secretary
U.S. Department of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590

RE: U.S. Department of Transportation's 2020 BUILD Funding Application – Letter of Support for the City of Broken Arrow Corridors Safety Improvement Project

Dear Secretary Chao:

On behalf of the City of Broken Arrow, I am writing to offer my strong support for the City of Broken Arrow's application for the 2020 U.S. Department of Transportation (USDOT) Better Utilizing Investment to Leverage Development (BUILD) grant program. The application is for \$25 million to support the Corridors Safety Improvement Project (the Project). The Project includes improvements to two corridors in the City of Broken Arrow including Elm Place between Kenosha Street and Albany Street; and 9th Street between Kenosha Street and Albany Street.

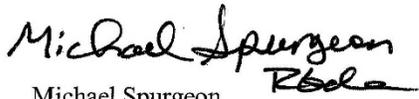
The Project will prevent traffic and pedestrian safety incidents, mitigate congestion along each corridor, and improve access to economic centers through a variety of enhancements along the corridor. The Project will reconstruct and widen existing arterial streets to a minimum of five-lanes for capacity expansion with the addition of auxiliary turn lanes at various locations to mitigate traffic congestion and prevent traffic incidents. The City of Broken Arrow will improve and replace each corridor's curbs and gutters, enclosed storm sewers, and traffic signals as part of the City of Broken Arrow's commitment to safety and system preservation. In addition, the City of Broken Arrow will implement Americans with Disabilities Act (ADA) compliant continuous sidewalks on one side of the corridor and a multi-use trail system on the other side. Finally, greenery will be added for aesthetic enhancements while separating traffic and accessible pedestrian routes to give a sense of safety to pedestrians and cyclists. The Project will improve access to goods, services, and places of employment across and beyond the corridors for bicyclists, pedestrians, and personal and commercial traffic.

Once complete, this project will replace inadequate arterial roadways in one of the region's busiest and fastest growing City, to ensure safety and expanded capacity for years to come. These improvements will provide a multimodal corridor for use by pedestrians, cyclists, commuters, and motorists of both our rural and urban populations. The project will assist in economic development and creation of jobs by providing an improved corridor for the City. The overall project improves the transportation system for the City.

We greatly appreciate the United States Department of Transportation's consideration of the requested investment in this Project as it is a critical corridor for the City of Broken Arrow, and the significance for the Counties surrounding Broken Arrow as well as the region.

In conclusion, the City of Broken Arrow fully supports the 2020 BUILD grant application to fund the Corridors Safety Improvement Project. Thank you for your consideration of the application. Should you have any questions regarding this letter of support, please do not hesitate to contact Ethan Edwards, Director of Engineering & Construction Department, at 918-259-7000 x 5380 if you have any further questions regarding this project.

Sincerely,


Michael Spurgeon
City Manager

cc: Craig Thurmond, Mayor
Kenny Schwab, Assistant City Manager of Operations
Ethan Edwards, Director of Engineering & Construction

1.0 PROJECT DESCRIPTION

The [City of Broken Arrow](#), Oklahoma (OK) is requesting \$25.0 million in Better Utilizing Infrastructure to Leverage Development (BUILD) funding for the \$47.5 million [Broken Arrow Corridors Safety Improvement Project](#) (the Project).

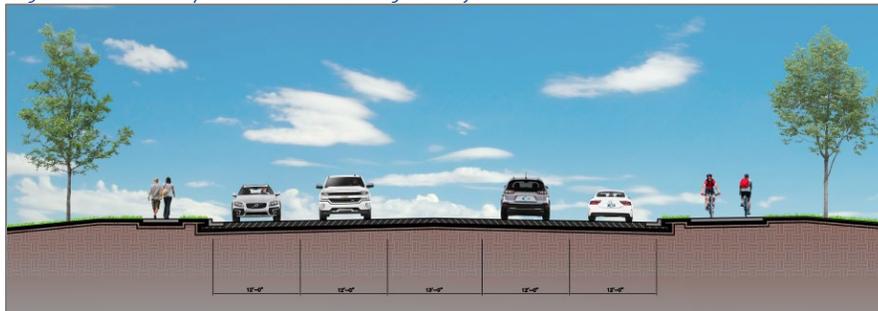
The Project will greatly improve safety for pedestrians and cyclists and improve the flow of people and goods to urban and rural areas along the Elm Place Corridor and the 9th Street Corridor (the Corridors) (9th St. is also known as S 177th Ave. or Lynn Lane), primary and secondary arterials in Broken Arrow. Currently, the Corridors do not provide proper safety for pedestrians and cyclists, and in turn has caused serious and deadly accidents in the area (Figure 1-1). The Corridors are in desperate need of improvements to provide pedestrian safety, mobility, and access within the Corridors.

Figure 1-1. Deadly Bicycle Accident in Broken Arrow News Clip



Further, the improved Corridors will be able to accommodate growing commercial traffic between the City of Coweta, the City of Broken Arrow, and the Port of Catoosa, as well as connect the rural and urban populations to job centers. The Project will generate a multitude of benefits along the corridor, including improved safety to motorists, pedestrians and bicyclists, reduced traffic congestion, improved air quality in the Tulsa Metropolitan Area, enhanced access for urban and rural communities to jobs, and bolstered economic opportunities for existing and future commercial and industrial businesses located along the corridors. Once complete, this Project will improve two primary arterial roadway bridges over one of the region's busiest expressways, to ensure safety and expanded capacity for years to come.

Figure 1-2. Roadway Sectional Rendering of Project



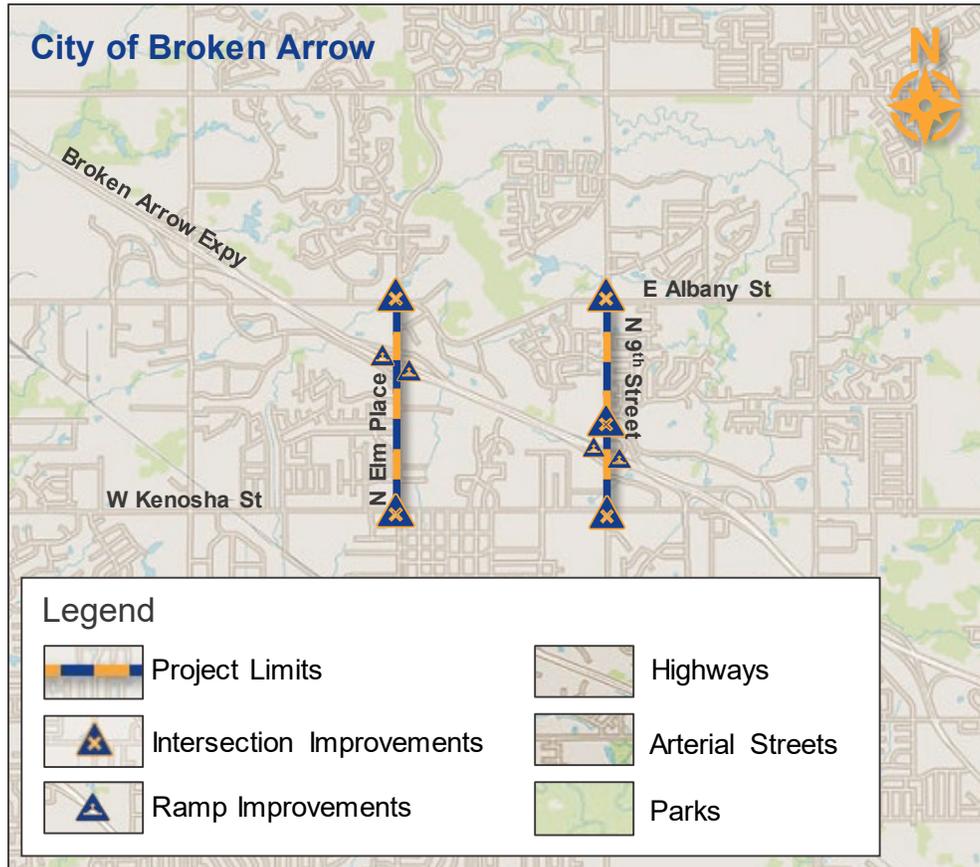
The Project is to reconstruct two unsafe, one-mile primary and secondary arterial roads, to the standard as depicted in Figure 1-2, set of Corridors (Elm Place and 9th Street Corridor) to provide a safer environment for pedestrians, cyclists, and motorists. The full project

map is shown in Figure 1-3 and a more detailed map is show in Figure 2-3. Project Area Map. Both the arterial streets and bridges need several improvements, which include:

- Construct Americans with Disabilities (ADA)-compliant sidewalks and ramps;
- Construct a multi-use trail and greenery;
- Street reconstruction, including street widening to accommodate increased traffic; and
- Improve curb and gutter, enclosed storm sewers, and traffic signals.

The BUILD request of \$25.0 million would be leveraged with \$10.5 million of local funding from the City of Broken Arrow, \$3.0 million in previous allocated federal Surface Transportation Program (STP) funds from INCOG, and \$9.0 million in state funding from the Oklahoma Department of Transportation (ODOT), for a total of 47.4 percent in non-federal match.

Figure 1-3. Project Map



Design & Engineering for the Corridors is scheduled to be complete June 2022 which will include a Categorical Exclusion per the National Environmental Policy Act (NEPA) process. Construction is scheduled to begin in July 2022 and will include right-of-way (ROW) acquisition, utility relocations, bridge ramp construction, roadway construction, and inspections. The construction of the Corridors is scheduled to be complete by June 2027, with the Corridors fully usable to all users in 2027.

The Elm Place and 9th Street Corridors have been a priority for the City of Broken Arrow for several years. The Elm Place Corridor was a submission for the INCOG Surface Transportation Program (STP), while 9th Street has had some initial coordination discussions with ODOT, a preliminary design study is currently on-going, and two intersections included in the 2018 Broken Arrow GO Bond.

The Project complements approximately \$22.5 million of planned state and local investment in roadway and bridge rehabilitation and widening projects. This additional investment by the City of Broken Arrow and proposed investment from ODOT exemplify both the need to revitalize the Corridors for residents, and the dedication and partnership of local groups and public agencies to realize the necessary results.

1.1 PROJECT ELEMENTS

The City of Broken Arrow is the lead implementing agency and will be responsible for the construction of the key project elements, summarized in Table 1-1.

Table 1-1. Project Elements

Project Element	Description	Benefit to Corridors
Sidewalk improvements	Install a 5-foot sidewalk on the west side of roadway close to the right-of-way which will be ADA compliant. Install a 10-foot wide asphalt trail on the east side of roadway close to the right-of-way. A 4-foot minimum grass area will be located between the curb and trail with a 2-foot minimum from the right-of-way line.	Improves pedestrian and cyclist safety, mobility, and access. The addition of greenery such as trees and plants will provide more visually pleasing corridors and safety and separation from traffic.
Roadway improvements and replacements	Improve and/or replace curbs and gutters, enclosed storm sewers, and traffic signals along the two corridors.	Improves pedestrian and cyclist accessibility and safety, reduces traffic crashes, and prevents closures due to floods. Improvements to signal coordination and flow of traffic.
Roadway reconstruction and widening	Construct a five-lane roadway, including two bridge over passes, by adding a center left turn lane for a minimum five-lane, 61' wide, roadway and auxiliary lanes at various locations for turning.	Improves traffic flows and safety, by reducing congestion and traffic crashes. Improves access to goods, services, and places of employment across and beyond the two one-mile corridors for bicyclists, pedestrians, personal and commercial traffic.
Bridge Ramp Improvements	Modify ramps based on the reconfiguration of the two bridges to increase lane capacity of new State Highway (SH) - 51 on and off ramps. Addition of westbound on-ramp on west side of 9 th Street Bridge.	Provides increased capacity and contributes to better flow of traffic alleviating congestion.

1.2 CORRIDOR DESCRIPTION

Elm Place and 9th Street Corridors, both between Albany and Kenosha, are two of the busiest and most critical corridors throughout the City of Broken Arrow. They connect populated residential communities to the north with critical economic and employment locations to the south. The Corridors are located within a mile from essential services such as schools, medical services, and nursing homes; recreational opportunities like the area's largest Bass Pro Shops and Nienhuis Park; and entertainment options like the myriad of restaurants and arts centers in the Rose District.

The Corridors together provide transportation access, mobility options, employment opportunities, and recreational outlets for over 80,000 people in City of Broken Arrow and City of Tulsa. The Corridors themselves run North-South, are four and five-lane arterial roads with Average Annual Daily Traffic (AADT) volumes up to 50,900 at the intersection of Elm and Kenosha, 42,000 at the

intersection of Elm and Albany, 48,700 at the intersection of 9th and Kenosha, and 39,800 at the intersection of 9th and Albany. These arterial roads connect passenger vehicles with the Broken Arrow Expressway (SH-51), Broken Arrow's largest local highway system. The Corridors currently lack continuous sidewalks on either the east or west side, and thus have limited safe pedestrian or cyclist pathways available. As a result, the corridor lacks comparable, significant pedestrian traffic compared to arterial streets to the north and south of similar size and traffic and misses out on providing a key linkage to students, the elderly, and pedestrians seeking entertainment options like movie theaters, restaurants, and parks.

The corridor at 9th Street requires a dedicated right turn lane in the Southbound direction to decrease congestion from the traffic attempting to access Broken Arrow Expressway (SH-51) in the Westbound direction immediately north of the SH-51 overpass. Currently, there is no dedicated left turn lane to access SH-51 in the Eastbound direction at 9th in the Southbound direction. The corridor at Elm Place currently includes dedicated left-turn lanes and ramps onto or off of SH-51 but improvements would help decrease congestion and contribute to lower crash volumes in the area. The Project would expand the four-lane roads into five-lanes with dedicated left-turn lanes as well as expanding the five-lane roads on 9th with auxiliary lanes to prevent further crash incidents from occurring. Beyond the roadway, there are currently no trails and ADA-compliant sidewalks are intermittent for cyclists or pedestrians to utilize. The improvements as part of the Project would make provide significant economic, transportation, and recreational enhancements to the people of Broken Arrow and surrounding communities.

1.3 ADDRESSING TRANSPORTATION CHALLENGES

The Project has been designed to address two challenges facing the regional economy and users of the corridor:

- Unsafe travel conditions for pedestrians, bicyclists, and personal as well as commercial vehicles, due to a lack of sidewalk facilities and unsafe embankments and turning movements; and
- Restriction to the flow of goods, services, and people.

Figure 1-4. Lack of Sidewalk and Crossing on 9th Street



Current conditions pose unsafe travel conditions with no sidewalks nor shoulders throughout parts of the corridors (Figure 1-4 and Figure 1-5). The Project will improve the safety for vehicular traffic by installing an additional lane and auxiliary lanes where applicable to provide travelers with the needed capacity. Additionally, the proposed Project will incorporate sidewalks and a multi-use trail to provide a protected and safe means of transport for pedestrians and cyclists. These improvements will eventually serve as a critical link to the Liberty Parkway Trail system, which in turn provides another major link to the existing 130 miles of Tulsa Area Trails and Bikeways. Collectively, these improvements along with the Tulsa Area Trails and Bikeway system will provide access for Broken Arrow citizens, as well as for regional residents in neighboring communities.

Elm Place and 9th Street are major connections from south Broken Arrow—where a public university campus, Northeastern State University-NSU, a large Boy Scouts of America campus, and various trail connections to the metropolitan region are located—to Interstate 44 in east Tulsa (seven miles north) and further north to the Port of Catoosa (12 miles north). Commercial trucks as well as private vehicles use the Corridors heavily, however, existing conditions restrict the flow of traffic and hinder the flow of goods, services, and people. The Corridors provide a vital link from the Creek Turnpike South Loop (SH-364) in south Broken Arrow north to Interstate 44 and beyond to the Port of Catoosa. The Project improves travel conditions for all travelers and reduces congestion to enable the mobility of goods, services, and people.

Figure 1-5. Lack of Sidewalk on Elm Place



1.4 PROJECT BENEFITS

The City of Broken Arrow has prioritized this Project based on the following benefits it is expected to generate (Table 1-2). These benefits are described in more detail in Section 4.0 Selection Criteria.

Table 1-2. Project Benefits

Merit Criteria	Project Benefits
Safety	The Project will improve safety for vehicular travelers, pedestrians and bicyclists. The center left turn lane and added auxiliary lanes will reduce rear end collisions. The bicycle trail will remove bicyclists from the travel lane and from conflict with motorized vehicles. Installing a continuous sidewalk will remove pedestrians from the travel way.
State of Good Repair	Replacing the roadway and bridge will reduce maintenance costs in the corridors. The new assets will have an extended design life compared to the existing assets. The new bridges will have a design life of 50 years with minimal maintenance. The pavement will have a design life of 20 years with minimal maintenance. The Project will also leverage operations and maintenance (O&M) cost savings to Broken Arrow as a result of the improvements along each corridor.
Economic Competitiveness	The roadway and bridge improvements will improve flow of traffic along both the 9 th Street and Elm Place Corridors as well as SH-51. These critical links will enable the movement of goods and services through the corridors and enhance the corridors ability to attract commercial and retail development. Higher, more efficient average speeds will also result in reduced fuel costs.
Environmental Sustainability	Improved flow of traffic will reduce idling, including the left turn lane, which will reduce greenhouse emissions and localized tail-pipe pollutants.
Quality of Life	The improved pedestrian access and enhanced throughput capacity will enable more efficient movement for vehicle/truck traffic, pedestrians, bicyclists, and emergency vehicles. Improved movement will improve access to healthcare, educational, and recreational facilities.

2.0 PROJECT LOCATION

Project Coordinates:

- Elm Place Corridor: Latitude 36.068569° N, Longitude: -95.797397° W
- 9th Street Corridor: Latitude: 36.068408° N, -95.779567° W

The Project is located within Oklahoma’s First Congressional District in the City of Broken Arrow (Figure 2-1) in Tulsa County. The Project elements are located on two separate corridors.

- The Elm Place Corridor from Kenosha Street north to Albany Street (1 mile) is a critical north-south arterial street just north of Downtown Broken Arrow that connects neighborhoods, employment centers, commercial areas, and regional destinations.
- The 9th Street Corridor - also from Kenosha Street north to Albany Street (1 mile) - is located one mile to the east of the Elm Place corridor and provides many of the same connections as the Elm Place corridor.

The City of Broken Arrow is dedicated to enhancing the Corridors to create a safer traveling experience and link diverse areas and demographics in the region (Figure 2-2). The Project’s full geographic location can be seen in Figure 2-3.

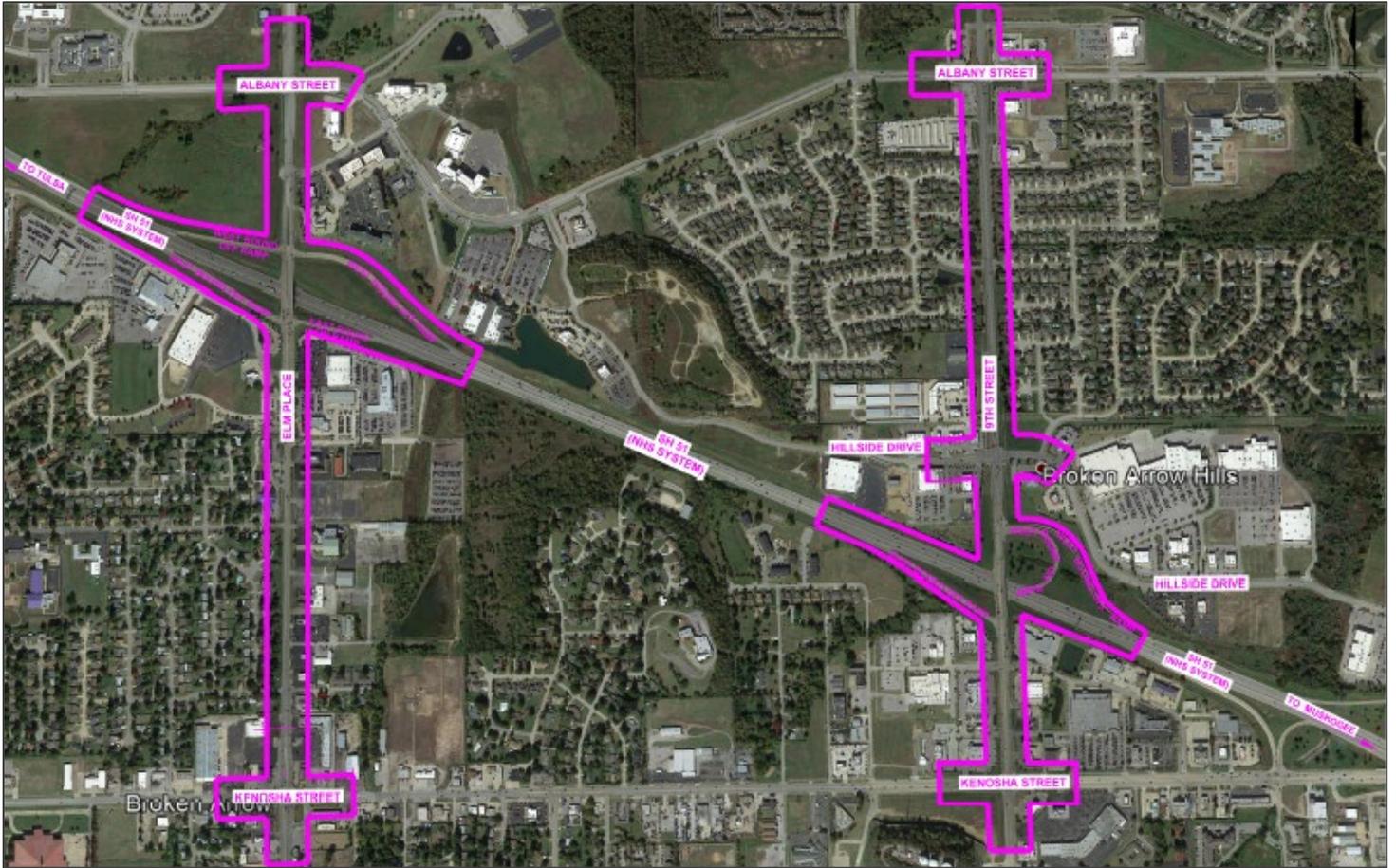
Figure 2-1. Downtown Broken Arrow



Figure 2-2. Regional Map of Broken Arrow (Source: Broken Arrow Economic Development 2018 Grounds for Development)



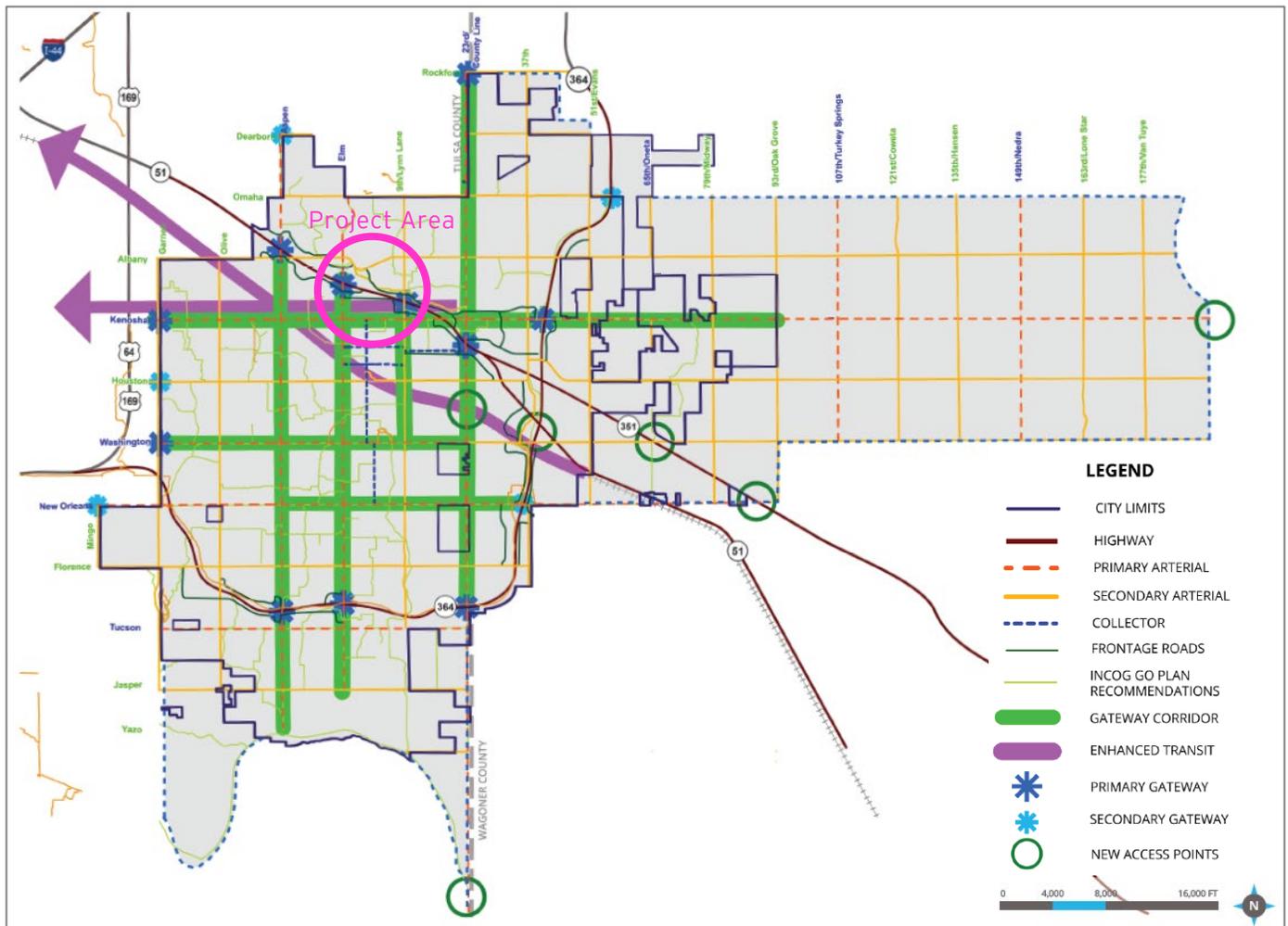
Figure 2-3. Project Area Map



2.1 CONNECTIONS TO EXISTING TRANSPORTATION INFRASTRUCTURE

Elm Place and 9th Street are considered a primary and secondary arterial, respectively, in Broken Arrow. Figure 2-4 illustrates the Broken Arrow transportation connections relative to the Project Area (circled). The Corridors are considered gateway corridors with two primary gateways located on the Corridors. Further, there is enhanced transit located through the Project Area via the Metropolitan Tulsa Transit Authority (MTTA) Route 508 that runs along Elm Place immediately south of the Project's corridor.

Figure 2-4. Broken Arrow Transportation Plan Map



2.2 KEY TRAVELER DEMOGRAPHICS

The City of Broken Arrow is dedicated to enhancing each corridor in order to create a safer passenger, pedestrian, and cyclist traveling experience, and also linking residents and visitors to the surrounding areas through an efficient and healthy way. Table 2-1 summarizes the Corridors and City demographic information, highlighting how the Corridors population is underserved in comparison to the overall population of the City of Broken Arrow. Additionally, the demographics highlight how car-dependent the project corridor population is—with nearly all households owning a

car and only one public transit route option adjacent to the Elm Place corridor—further emphasizing the need to improve the infrastructure.

Table 2-1. Traveler Profile

	Project Corridor (within 1-mile of Project)	City of Broken Arrow
Population	40,019	110,123
Total Employed	29,710	54,910
Total Unemployed	462	2,110
Median Household Income	\$64,183	\$70,476
Per Capita Income	\$31,725	\$32,557
% of Population in Poverty	4.5%	8.2%
% Zero-Car Households	2.8%	2.9%

Source: American Community Survey 2012-2016 (2018 Estimates); American Community Survey 2013-2017

Further, the following list includes key demographic and population facts from the 2012-2016 American Community Survey of the City of Broken Arrow:

- 9.2% of Broken Arrow’s population identifies as two or more races, which is well above the national average of 2%;
- The average travel time to work for residents is 20.6 minutes and only 10.9% of the population have a commute less than ten minutes;
- Broken Arrow’s total population with disabilities is 7.7 percent; and
- 3.2% of Broken Arrow households are considered Limited English Proficient (LEP)

The Project fulfills a much-needed connection for pedestrians and cyclists, while also improving the safe and efficient movement of passenger vehicles and goods along two key corridors, and adjacent to the Broken Arrow Expressway (SH-51). The Project area is one of the most populated areas in all of Broken Arrow yet has unsafe and inadequate infrastructure to support the people, businesses, and essential services throughout the area. As depicted in the circle on the Broken Arrow Pedestrian Foot Traffic heat map below, the Project’s corridors have less foot traffic than similar corridors to the north and south. This lack of traffic represents a missed opportunity for the City of Broken Arrow. The corridors link key localities like the Broken Arrow High School, the Rose District, key retail areas, and multiple lower and middle schools to wealthier residential areas to the north of SH-51, and less wealthy neighborhoods to the south of SH-51. Giving Broken Arrow residents an accessible way to traverse their city and children a safe way to walk to and from school helps link disparate neighborhoods and build a more cohesive geography and culture as a city.

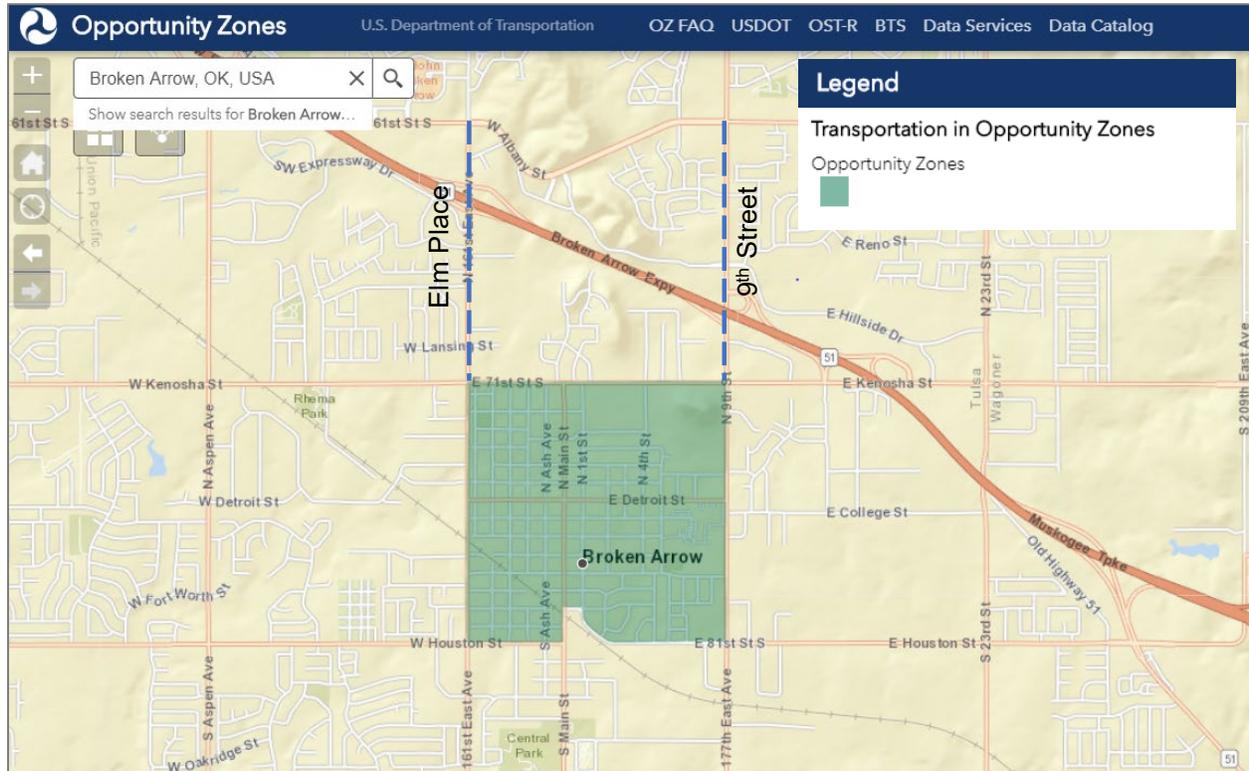
2.3 OPPORTUNITY ZONE

The State of Oklahoma recognizes the importance of the City of Broken Arrow to the greater State and regional economy. The State has designated a portion of the project area as a qualified Opportunity Zone (Figure 2-5). The Opportunity Zone program is a nationwide initiative administered by the U.S. Treasury created under the 2017 Tax Cuts and Jobs Act. The program provides federal tax incentives for investment in distressed communities over the next 10 years. Areas designated as Opportunity Zones will be able to reap the benefits of capital gains to help redevelop underserved communities. The Rose District, where the opportunity zone is located, includes a number of small businesses such as Broken Arrow Daylight Donuts, Main Street Tavern; points of interest like Broken Arrow’s museum, First United Methodist Church, and library; essential

services like Broken Arrow's Nursing Home, Broken Arrow's Chamber of Commerce, and Rhoades Elementary School; and residential areas.

The Project will improve accessible means of transportation to reach these areas and points of interest in an established zone identified for future growth.

Figure 2-5. Opportunity Zone in Broken Arrow



3.0 GRANT FUNDS, SOURCES AND USES OF PROJECT FUNDS

The City of Broken Arrow is requesting \$25.0 million of the Project's total costs from BUILD funding to leverage local and state funding sources from the City of Broken Arrow and ODOT. The Project's funding plan is presented in Table 3-2.

3.1 CAPITAL SOURCES OF FUNDS

The total Project cost is \$47.5 million in 2020 dollars. Table 3-1 summarizes the project funding sources, the funding source description, and whether the funding is committed or planned.

Table 3-1. Project Funding Sources and Description

Project Funding Source	Funding Amount	Funding Source Description	Committed or Planned
Federal Funds			
BUILD Program	\$25.0 M	Federal discretionary funds	Planned
Non-Federal Funds			
<i>State Funds</i>			
ODOT	\$9.0 M	State match from ODOT	Planned
<i>Local Funds</i>			
City of Broken Arrow	\$10.5 M	2018 General Obligation (GO) bond revenue fund	Committed
INCOG	\$3.0 M	Surface Transportation Plan (STP) funds	Committed

[Appendix B](#) contains the letters of financing commitment from the City of Broken Arrow and INCOG. The City of Broken Arrow's local 2018 General Obligation (GO) bond revenue and INCOG's Surface Transportation Plan (STP) funds have already been secured as part of a local tax measure and regional apportionment, respectively. Together with INCOG, Broken Arrow plans to have secured ODOT's funding once the BUILD grant has been awarded. Once the BUILD grant has been awarded, Broken Arrow plans on ODOT updating their 8-year construction plan and 4-year STIP to include the Project because ODOT updates each once a new budget is passed.

Table 3-2 summarizes the project capital budget by funding sources.

Table 3-2. Project Capital Budget Summary by Source (2020\$, Millions)

Funding Source		Total Funding Amount	Percent of Total
Federal Funds	BUILD Grant Funds	\$25.0	53.6%
	Total Federal Funds	\$25.0	
Non-federal Funds	<i>ODOT Funds (Planned)</i>	\$9.0	47.4%
	INCOG STP	\$3.0	
	City of Broken Arrow (2018 GO Bond)	\$10.5	
	Total Non-Federal Funds	\$22.5	
Total Project Cost		\$47.5	

Table 3-3 and Table 3-4 summarize the corridor specific, for Elm Place and 9th Street, capital budget by funding source.

Table 3-3. Elm Place Budget Summary by Source (2020\$, Millions)

Elm Place Corridor	Funding Source	Total Funding Amount	Percent of Total
Federal Funds	BUILD Grant Funds	\$8.60	39.1%
	Total Federal Funds	\$8.60	
Non-federal Funds	ODOT Funds (Planned)	\$4.00	60.9%
	INCOG STP	\$3.00	
	City of Broken Arrow (2018 GO Bond)	\$6.40	
	Total Non-Federal Funds	\$13.40	
Total Project Funding		\$22.00	

Table 3-4. 9th Street Budget Summary by Source (2020\$, Millions)

9th Street Corridor	Funding Source	Total Funding Amount	Percent of Total
Federal Funds	BUILD Grant Funds	\$16.40	64.3%
	Total Federal Funds	\$16.40	
Non-federal Funds	ODOT (Planned)	\$5.00	35.7%
	INCOG STP	\$0.00	
	City of Broken Arrow (Local Match)	\$4.10	
	Total Non-Federal Funds	\$9.10	
Total Project Funding		\$25.50	

3.2 CAPITAL USES OF FUNDS

The total cost of the Project is \$47.5 million in 2020 dollars. Table 3-5 summarizes the project costs by project element and year. As describe above, the federal and non-federal funds will cover the total Project cost.

Table 3-5. Project Capital Budget Summary by Use (2020\$ Millions in Federal Fiscal Year)

Project Element	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Elm Place Corridor								
Design	\$0.50	\$0.77						\$1.27
Right-of-way			\$0.44	\$0.45				\$0.89
Utility Relocations				\$0.50	\$0.50			\$1.00
Bridge & Ramps						\$8.95		\$8.95
Roadway							\$8.43	\$8.43
Inspections						\$0.74	\$0.72	\$1.46
<i>Total Elm Place Corridor</i>	\$0.50	\$0.77	\$0.44	\$0.95	\$0.50	\$9.69	\$9.15	\$22.00
9th Street Corridor								
Design	\$0.53	\$0.90						\$1.43
Right-of-way			\$0.83	\$0.84				\$1.67
Utility Relocations				\$0.60	\$0.70			\$1.30
Bridge & Ramps						\$10.50		\$10.50
Roadway							\$8.96	\$8.96
Inspections						\$0.84	\$0.80	\$1.64
<i>Total 9th Street Corridor</i>	\$0.53	\$0.90	\$0.83	\$1.44	\$0.70	\$11.34	\$9.76	\$25.50
Total Project Cost	\$1.03	\$1.67	\$1.27	\$2.39	\$1.20	\$21.03	\$18.91	\$47.50

3.3 SUMMARY OF OPERATING SOURCES AND USES

After the Project construction is complete, the annual operations and maintenance (O&M) costs of the Project are estimated to be \$16,000 annually (2020\$). The O&M costs include the costs for the City of Broken Arrow to maintain the concrete, sidewalks, multi-use trail, ADA-compliant ramps, and the overall condition of the bridge ramps and roadways. The City of Broken Arrow will absorb these costs within its annual maintenance budget. The BCA analysis ([Appendix A](#)) and corresponding narrative reflects the ongoing O&M costs.

4.0 SELECTION CRITERIA

In accordance with the United States Department of Transportation's (USDOT) BUILD Notice of Funding Opportunity (NOFO), a description of the Project's quantitative and qualitative benefits are described below.

4.1 PRIMARY SELECTION CRITERIA

The Project addresses the BUILD program's primary selection criteria in the following sections.

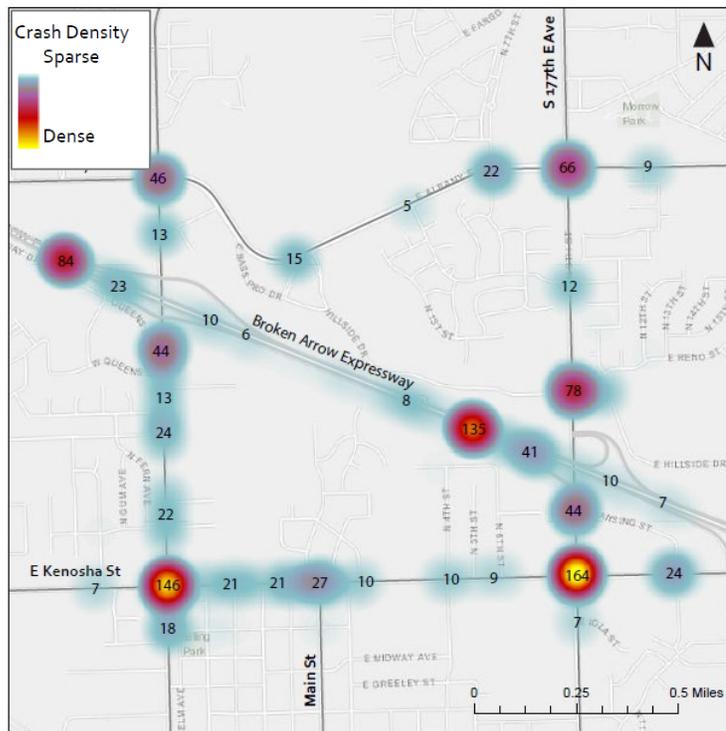
4.1.1 Safety

The existing road and overpasses have reached and exceeded its useful life, and currently presents unsafe conditions for travelers. The City of Broken Arrow is committed to providing a safe and secure environment for all residents and passengers. The Project will improve overall safety for vehicular travelers, pedestrians, and bicyclists through its multitude of improvements along each corridor. The center left turn lanes and added auxiliary lanes will reduce rear end collisions and improve traffic flow that otherwise may contribute to sideswipe collisions. The bicycle trail will remove bicyclists from the travel lane and from conflict with motorized vehicles. Installing a sidewalk will remove pedestrians from the travel way.

Figure 4-1 depicts a heat map of all crashes in the area along and near each corridor. The high crash volumes at each on and off-ramp location onto the Broken Arrow Expressway (SH-51), as well as the intersections of Elm Place and 9th Street with Albany St. and Kenosha St - most notably the accidents along Kenosha St. - are depicted with density and sparsity indicators. According to the Broken Arrow Comprehensive Plan, the existing average traffic volume along this corridor of Elm Place is 23,861 vehicles per day, with peak volumes up to 50,900 vehicles per day. From January 1, 2013 to December 31, 2018, there were 303 separate traffic incidents. Of these 303 incidents, 6 resulted in critical injuries and 2 were resulted in fatalities. The existing average traffic volume along this corridor of 9th Street is 22,618 vehicles per day, with peak volumes up to 48,700. From January 1, 2013 to December 31, 2018, there were 372 different traffic incidents. Of these 372 traffic incidents, 7 resulted in critical injuries.

As a result of the traffic improvements and pedestrian and cyclist enhancements, the Project is anticipated to prevent 2,700 crashes from project open in 2027 until 2046 resulting in \$60.2 million benefits in 2018 dollars at a 7 percent discount. The Project will prevent 52 incapacitating injuries and eight fatalities from occurring. These benefits represent Broken Arrow's capacity to prevent property damage, critical injuries, and fatalities from occurring to motor vehicle passengers, cyclists, and pedestrians along each corridor.

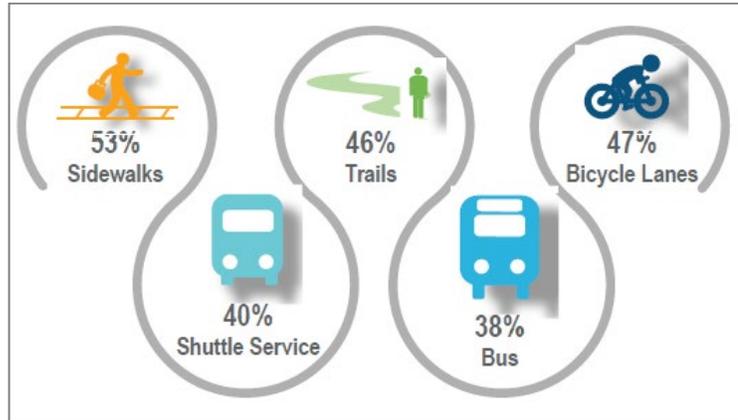
Figure 4-1. Automobile Crash Density along the BUILD Corridor (2013-2017)



4.1.1.1 Bicycle and Pedestrian Safety

A major component of this Project is a multi-use trail lined with trees and shrubbery along one side of each corridor and an ADA-compliant sidewalk along the other. As it stands, in some areas of the Corridors pedestrians must walk and cyclists must ride within the roadway of the primary arterial and secondary arterial. The Project would implement critical safety measures for Broken Arrow residents to mitigate these dangers, and all those that take advantage of non-motorized travel.

Figure 4-2. Top Five Most Desired Important Transportation Modes



In 2018, the City of Broken Arrow conducted a public survey and asked what transportation modes should be available more in the future. Figure 4-2 summarizes the responses from the survey and shows that sidewalks are the most desired transportation mode. As seen in Figure 4-3, and previous images, there are several stretches along the corridor that do not have sidewalks nor cross walks to support pedestrian and non-motorized travel. The City of Broken Arrow has either finished or is currently working to construct a trail system which would carry pedestrians and cyclists all the way from the Creek Turnpike South Loop (SH-364) to a point on Kenosha Street located between the Elm Place and 9th Street Corridors. Adding trails on both sides of project corridors as proposed would provide trail connections over SH-51 tying south Broken Arrow to north Broken Arrow and providing access to amenities and opportunities to all citizens in Broken Arrow.

Figure 4-3. Lack of Access to Sidewalk on 9th Street



In Broken Arrow's Next Comprehensive Plan ([Appendix D](#)), Broken Arrow includes pedestrian-friendly infrastructure as a priority investment, with areas like the Rose District and Creek Turnpike Trail seeing significant investment and preservation efforts to safely support walkable and bikeable pathways of transportation. Specific policy recommendations from The Tulsa Regional Bicycle and

Pedestrian Master Plan (GO Plan) ([Appendix D](#)) includes the importance of developing and retrofitting residential and commercial areas to be amenable to bike paths (Chapter 6: Broken Arrow Community Plan). The GO Plan also outlines the importance of closing sidewalk gaps on arterial streets, and specifically mentions Kenosha Street, a connecting street along both Project corridors. Aligning Broken Arrow bicycle and pedestrian safety priorities with national safety measures is critical to ensure that residents and visitors alike can move safely and swiftly throughout the city.

4.1.1.2 Priority Location

The Corridors for this Project are direct routes used by hospitals, assisted living homes, and customers of high-volume retail locations within the Stone Wood Hills area along Elm Street and Broken Arrow Shops along 9th Street. The Broken Arrow Expressway (SH-51) experiences roughly 90,000 passengers per day along this section of its highway and is Broken Arrow’s busiest highway. The major arterial streets in the project area all have the highest Average Annual Daily Traffic (AADT) rates throughout Broken Arrow, and their access points with the Broken Arrow Expressway (SH-51) are shown as Primary Gateways in Broken Arrow’s Next Comprehensive Plan ([Appendix D](#)). Broken Arrow’s General Obligation Bond program ([Appendix C](#)) also lays out the lane expansion on both Elm and 9th Street as Planned Arterial Network Improvements because of their critical AADT rates. The AADT for the Corridors is listed in Table 4-1.

Table 4-1. Average Annual Daily Traffic (AADT)

Arterial Street Intersections	AADT
Elm/161 st St + Kenosha/71 st	13,700 - 50,900
Elm/161 st St + Albany/61 st	13,700 - 42,000
9 th /Lynne Lane + Kenosha/71 st	5,000 - 48,700
9 th /Lynne Lane + Albany/61 st	5,000 - 39,800

The Project would allow vehicles to safely execute turns along critical arterial lanes as well as onto and off of SH-51, securing the safety of passenger vehicles along Broken Arrow’s busiest highway. Broken Arrow would facilitate the safe and reliable passage for those that require transport to and from these critical points of interest.

4.1.2 State of Good Repair

The Corridor improvements and rehabilitation will repair existing assets that are aged, inadequate, beyond their anticipated life expectancy. The existing road surfaces have numerous deteriorated areas caused by high volume traffic on an undersized facility, causing additional premature failure of the facility. The improvements would also leverage significant cost savings to the City of Broken Arrow over the No-Build scenario.

The City of Broken Arrow takes a proactive position to ensure a long-term state of good repair and appropriately plans for increases in traffic volume on freeways like the Broken Arrow Expressway SH-51, especially as Broken Arrow’s population grows and strains existing transportation infrastructure. This BUILD project is consistent with Broken Arrow’s efforts to improve the condition of existing transportation, maintain assets in a state of good repair to minimize future costs, and improve overall resilience. The improvements to the Project area’s roads will improve existing assets that are aged and inadequate. The existing road surface has numerous deteriorated areas caused by the high volume of traffic on an undersized facility, causing additional premature failure of the facility. Additionally, traffic volumes are anticipated to increase in the future, putting a higher strain on the city’s limited resources and already-aging infrastructure. Further, the sidewalks are in desperate need of repair due to overuse and flooding damage (Figure 4-4).

Figure 4-4. Damage to Sidewalk on Elm Place



The Project will also leverage benefits of over \$300,000 in reduced agency operations and maintenance (O&M) costs for ensuring the corridors remain in a state of good repair. In the No-Build scenario, the Project would retain more costly annual O&M costs of \$61,000 whereas the Project reduces that cost to \$16,000 annually. The Project will save long-term costs to Broken Arrow taxpayers by making short-term system preservation improvements. The Project will also yield over \$1.8 million in residual value due to the accrued value of the new infrastructure's improved lifecycle value. The residual value represents a prudent investment and forward-thinking decision on the part of Broken Arrow to ensure that taxpayers' money is well-spent.

Overall, the Project will address the poor condition of the assets along each corridor as each exist, which pose a threat to transportation network efficiency, safety, and the mobility of goods, people and services throughout the corridor and future growth in the region. Broken Arrow has sufficiently considered the needed operations and maintenance as well as rehabilitation and replacement costs required to maintain the new corridors' enhancements into the future.

4.1.3 Economic Competitiveness

The Corridors provide a vital link from the Broken Arrow Expressway (SH-51) north to Interstate 44 and beyond to Port of Catoosa. Further, the Project Corridors are directly adjacent to areas of major economic activity, including large retail shops, employment centers, and real estate development zones.

The Project improvements will facilitate access to the following locations:

- The Tulsa Port of Catoosa connectivity to the rural areas of the region (Figure 4-5)
- The I-44 corridor, which connects Tulsa, Oklahoma City, and Lawton—three of Oklahoma's largest urban centers
- Several shopping areas including Stonewood Hills, the Shops at Broken Arrow, FedEx distribution facility, Alfa Laval, Paccar Winch, Arrowhead Pre-Cast and Hillside Crossings

Stonewood Hills is located adjacent to the Broken Arrow Expressway (SH-51) and Elm, features the area's largest Bass Pro Shops, a series of developing land tracts, and one of the area's largest conference centers and hotel complexes. Additional hotels are anticipated to open in future years, as Stonewood Hills is projected to grow in economic activity as real estate in the area continues to develop. The Shops at Broken Arrow along the eastern edge of the project corridor feature retail outlets like Target, Marshalls, Rue21, Olive Garden, PetSmart, Famous Footwear, Maurices, AT&T, GNC, Slim Chickens, Cherry Berry, Applebee's, Panda Express, Beautiful Nails, Dick's Sporting Goods, Sprint, Verizon, Five Guys, and Cinemark.

Figure 4-5. Port of Catoosa (12 miles north of Project)



According to local population projections for 2023, there will be an estimated 216,663 people within a 15-minute driving range of Stonewood Hills and the Shops at Broken Arrow. Between Stonewood

Hills and the Shops at Broken Arrow lies Hillside Crossings, which contains a Sprouts Farmers Market, Starbucks and a series of other retail locations, and is located in close proximity to Broken Arrow High School’s football stadium belonging to Oklahoma’s largest high school. Both the Shops at Broken Arrow and Hillside Crossings are within walking distance of Broken Arrow High School. To the south of the project site is the Rose District, an upscale living, arts, and entertainment district that has seen more than \$60 million in private investment in the area attract over 40 new businesses. The Project promises an important connection to Broken Arrow’s primary areas of major economic activity. The safe and efficient connection provided to drivers and passengers, and a new pathway unlocked to pedestrians and cyclists, will ensure that these areas can continue to grow in the future.

The Project also provides key connectivity to major employment centers throughout Broken Arrow. Figure 4-6 depicts the job densities within a one-mile radius of the Project’s corridors.

The Project provides mobility benefits to centers of employment that maintain almost 10,000 jobs per square mile (American Communities Survey, 2017). As of 2017, 27.4% of the working population one mile from the project site are ages 29 or younger, while 50.7% are ages 30-54, and the remaining 21.9% are 55 or older. Roughly 27% of the area’s population earns \$1,250 per month or less, while 34.7% earns between \$1,251 to \$3,333, and 38.3% of the population earns more than \$3,333 per month. A breakdown of the work area’s industry presence as of 2017 can be found below. Ensuring the safe, efficient, and varied methods of connection to these key employment centers is a central component of the Project.

Figure 4-6. Counts and Density of All Jobs in Work Selection Area in 2017

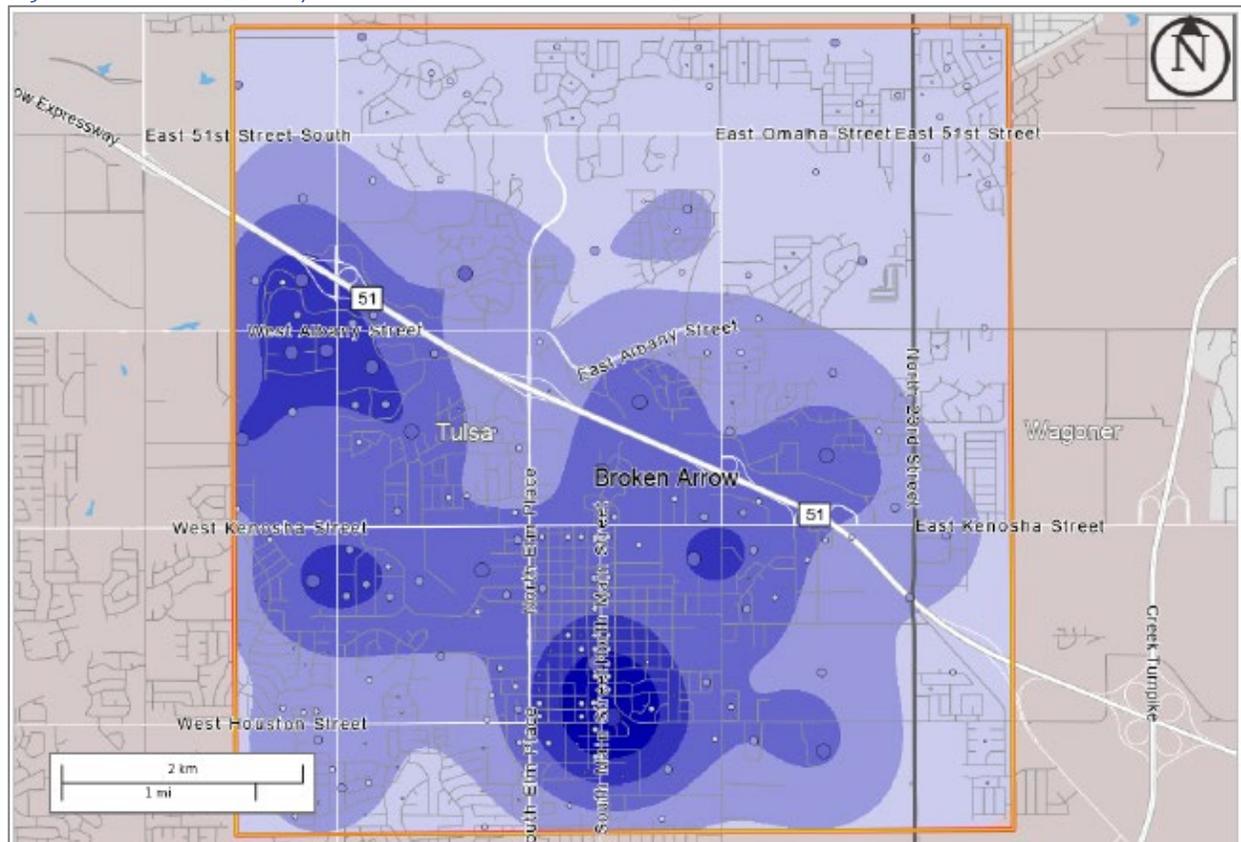


Table 4-2. Project Area Industry Employment Statistics

Industry	Count	Share
Agriculture, Forestry, Fishing and Hunting	0	0.0%
Mining, Quarrying, and Oil and Gas Extraction	302	1.3%
Utilities	53	0.2%
Construction	1,512	6.5%
Manufacturing	3,041	13.0%
Wholesale Trade	922	3.9%
Retail Trade	3,462	14.8%
Transportation and Warehousing	241	1.0%
Information	296	1.3%
Finance and Insurance	386	1.7%
Real Estate and Rental and Leasing	155	0.7%
Professional, Scientific, and Technical Services	775	3.3%
Management of Companies and Enterprises	97	0.4%
Administration & Support, Waste Management and Remediation	979	4.2%
Educational Services	3,150	13.5%
Health Care and Social Assistance	2,782	11.9%
Arts, Entertainment, and Recreation	554	2.4%
Accommodation and Food Services	3,448	14.8%
Other Services (excluding Public Administration)	884	3.8%
Public Administration	334	1.4%

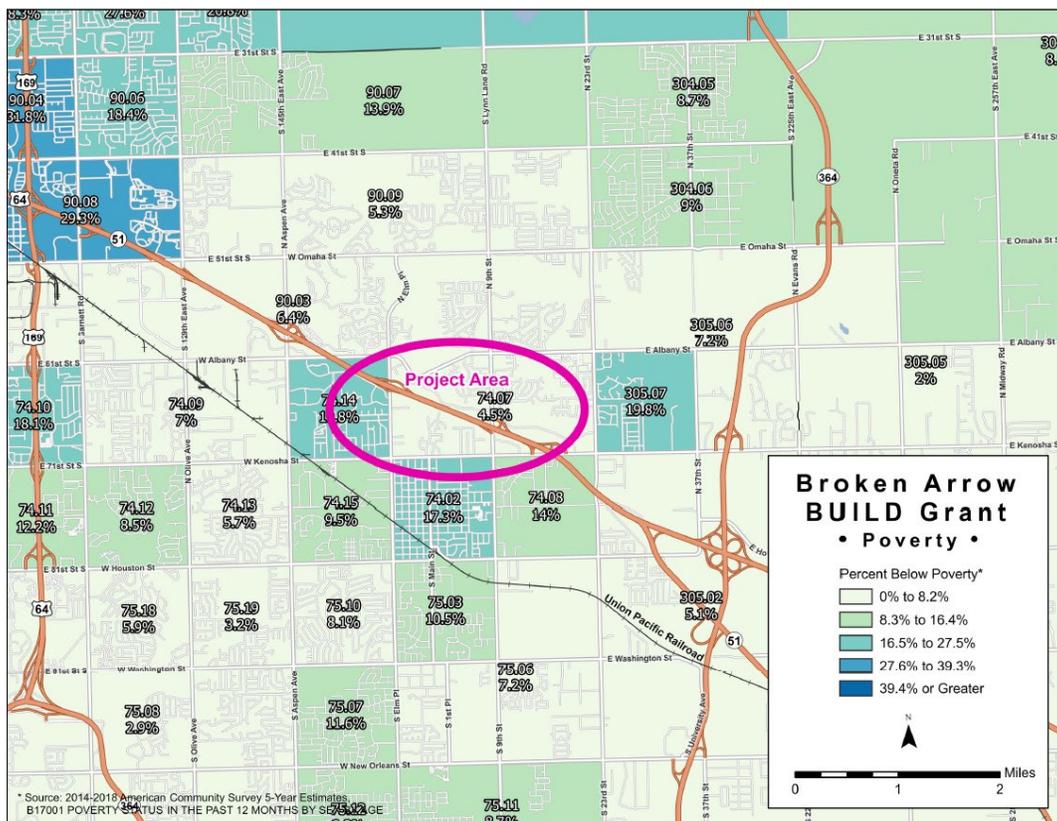
The Project area's employment profile is diverse, and no single sector dominates the labor force in the area over another, as shown in Table 4-2. Project Area Industry Employment Statistics. Nearly 36% of the Project area's employees work jobs that revolve around centers of commercial activity that create economic opportunity for both these employees and those that visit these centers such as movie theaters, restaurants, and art galleries. Almost half of the population in the Project Area qualified as working in essential services under Governor Stitt's order for workers to stay home amidst the COVID-19 pandemic response in Oklahoma. Those working in sectors such as food, healthcare, law enforcement, critical manufacturing, transportation and logistics, financial services, and public utilities were deemed essential workers. The Project would support the critical movement of a high portion of these workers as they commute and travel to their jobs that the rest of Oklahoma and the country need in times of hardship. Without the Project's improvements, transportation for these essential services workers would be unsafe, unreliable, and inefficient.

The Project's synchronized signals will increase average speeds along each corridor and eliminate bottlenecks in the freight supply chain while reducing barriers separating workers from employment centers resulting in \$5.2 million in travel time savings in 2018 dollars. These time savings were derived from reduced Persons Hours Traveled times during peak and off-peak hours associated with improved throughput from the new turn and auxiliary lanes as well as the synchronized signals that will prevent further unnecessary traffic delays. Furthermore, the Project will reduce the barriers separating workers from employment centers resulting in vehicle operating cost savings and reduced fuel consumption of \$0.6 million. These operating costs and fuel savings stem from improved fuel efficiency due to more efficient travel times along each corridor. When considering the criticality of these workers' presence in the workplace, the Project's financial savings become all the more important to the economic security of Broken Arrow.

This Project hopes to provide key connections to targeted populations throughout Broken Arrow. The Project area itself has a low 65+ population and a low population of those living in poverty, but a high population of minorities compared to the surrounding area. Additionally, the Rose District, directly south of each Project corridor, has high populations of those living in poverty, as shown in Figure 4-7. Located within the Rose District is Broken Arrow's nursing home. The Project would provide key connectivity and safety to those in Broken Arrow that need it the most.

The Project corridor supports thousands of people in nearby areas that are either in poverty or below the median income for the city of Broken Arrow. The Project will provide safe, reliable

Figure 4-7. Project Area Poverty Map



connections for those living in poverty or below the median income line via both the improved traffic flow as well as the multi-use trail and sidewalk along each major arterial street.

4.1.4 Environmental Sustainability

The wider street will improve the flow of traffic within the corridor, which will reduce idling times, and reduce vehicle hours traveled for trucks and automobile drivers. Given the high traffic volumes along each of these corridors, the added arterial lanes will improve congestion in the area. These congestion mitigation efforts will lower overall harmful vehicle emissions into the atmosphere given the lowered time that vehicles are spending on the road. Improved and more efficient traffic flows will reduce the amount of fuel consumed by drivers. This will have localized and wider environmental benefits.

The Project improvements will also help to reduce Tulsa County's localized ozone concentration. Tulsa County is currently in attainment for ground level ozone but is at risk of non-attainment.

Reducing congestion and subsequently reducing greenhouse gas emissions and localized air pollution will help the region to meet the expected ozone levels and improve air quality for residents.

The introduction of the multi-use trail and sidewalk will encourage more non-automotive travel throughout the residential and commercial areas along both corridors. Cycling and walking lower fuel consumption and harmful emissions from automobiles by lowering the quantity of automotive trips. Building cycling and pedestrian infrastructure while planting trees and shrubbery along the trail will only enhance current environmental conservation efforts being conducted by Broken Arrow. Broken Arrow's investments into bike and pedestrian infrastructure will positively impact the city's environmental conservation and sustainability efforts.

4.1.5 Quality of Life

While the Project provides critical safety measures for those in the corridor and supports the free movement of people and goods in critical areas, it also makes significant upgrades to Broken Arrow residents' and visitors' quality of life through both multi-use transportation and beautification upgrades along Elm and 9th. The multi-use trail and sidewalk will enhance the experience of residents and visitors alike, giving both the opportunity to take advantage of active transportation methods that contribute to significant public health benefits. The American Community Survey recently noted that nearby Tulsa has the highest bicycle commute mode share at 0.3%. The Tulsa Regional Bicycle and Pedestrian Plan identifies infrastructure investments supporting bicycling are viewed extremely favorably by the general public in Tulsa-Broken Arrow. This Project would support this regional plan by implementing multi-use pathways touted by bicycle planning experts and supported by nearby residents. Furthermore, beyond making the multi-use path safer by providing natural separation from the road, the shrubbery and trees lining the path will make for a more aesthetically pleasing ride for cyclists, pedestrians, and drivers alike.

The Corridors improvements will support increasingly efficient, safe, and reliable connections to nearby essential services and places of business. Along Elm, the trail and sidewalk will provide non-automotive access to locations like Broken Arrow Nursing Home, Northside Christian Church, Legacy Christian Academy, Dale's Learning Academy, Lord's Little Army Preschool, Luxury Inn Suites, Canterbury Inn and Suites, Holiday Inn Express, La Quinta Inn and Suites, TownePlace Suites by Marriott, Hilton Garden Inn, Stoney Creek Hotel and Conference Center, AVB Bank, and a multitude of restaurants and eateries. These transportation improvements will also provide easy and reliable access to recreational locations like Tulsa-Broken Arrow's largest Bass Pro Shop, Planet Fitness, and Broken Arrow Roller Sports that promote healthy living through outdoor recreation and fitness. Along 9th, the Project will provide non-automotive access to locations like Sprouts Farmers Market, Best Western Kenosha Inn, The United Pentecostals of Broken Arrow, Good Shepherd Veterinary Hospital, CVS, MidFirst Bank, Bank of Oklahoma, Arvest Bank, and a multitude of restaurants and eateries. Transportation improvements will also provide more efficient access to the retail properties at Broken Arrow Hills like Target, PetSmart, Dick's Sporting Goods, Michaels, Marshall's, and Dollar Tree.

A primary advantage of an improved and wider street and overpass facility is the ability to provide reliable and continuous connectivity to goods, services,

Figure 4-8. Broken Arrow Schools Kirkland Sports Complex



and essential facilities for travelers. The Corridors provide connections to a wide array of services for local residents, including two school facilities for the Broken Arrow school district (Figure 4-8), the Northeastern State University Broken Arrow campus, an urgent care clinic, a Walmart store, several companies, and recreational facilities including a recently finished Boy Scouts facility.

The Project will improve access and quality of life in the corridor for vehicular travelers, pedestrians, and cyclists alike. The Project will widen the road and overpass, allowing vehicular travelers easier and safer access to these destinations. Particularly, widening the roadway will allow for better access to the Broken Arrow Public School. The addition of the sidewalk and trail will allow the pedestrian and bicyclist to access the area without having to share the facility with motor vehicles. Further, the new trail will connect pedestrians and cyclists to existing trails in the Tulsa region, facilitating enhanced access to other areas of the community. Constructing ADA-compliant sidewalks and ramps will provide a safer, separate from roadway traffic to elderly, disabled and disadvantaged population.

Finally, the British Medical Journal published results from a study on the health benefits and risks with biking in an urban environment compared to traveling by car.¹ Using Barcelona, Spain as a case study and a sample size of 181,982, compared with car users the estimated annual change in mortality of the Barcelona residents using biking was 0.03 deaths from road traffic incidents and 0.13 deaths from air pollution. As a result of physical activity, 12.46 deaths were avoided, contributing to a benefit to risk ratio of 77 to 1. The annual number of deaths avoided was 12.28. As a result of trips by biking, annual carbon dioxide emissions were reduced by an estimated 9,062,344 kg. These findings reinforce the necessity of projects that make significant investments in active transportation like cycling, hiking, and walking. The Project will contribute to these positive environmental benefits by supporting a robust biking network in Tulsa and Jenks as their populations increase.

The Project itself anticipates almost \$300,000 in health benefits associated with pedestrians and cyclists taking trips by non-automotive modes of travel. The Victoria Transport Policy Institute (VTPI) attributes positive financial benefits associated with miles traveled by bicycle or by foot. These values were then multiplied by the expected miles traveled along each corridor's sidewalk and trail to determine total health benefits from the Project's enhancements. The Project gives Broken Arrow's population a chance to take advantage of the personal health benefits of cycling and walking, but also allows the city to save on other costs because of added pedestrian and cyclist trips. The trails and sidewalks will yield mobility benefits of almost \$100,000 associated with fewer automotive trips along each corridor and added bicyclist and pedestrian VMT. Positive monetary values associated with walking and cycling rather than VMT through vehicles are attributed to the expected foot and bicycle traffic along each corridor to determine total mobility benefits for the corridor.

¹ "The health risks and benefits of cycling in urban environments compared with car use: health impact assessment study," David Rojas-Rueda, Audrey de Nazelle, Marko Tainio, Mark J. Nieuwenhuisen, 2011.

4.2 SECONDARY SELECTION CRITERIA

The Project addresses the BUILD program’s secondary selection criteria in the following sections.

4.2.1 Innovative Project Delivery

The Project development and implementation processes will feature innovative elements, including NEPA delegation authority, project development partnerships, possible construction of a single point urban interchange (SPUI) (Figure 4-9) or a diverging diamond interchange (DDI) (Figure 4-10) (higher resolution images are included in [Appendix D](#)), and robust project implementation partnerships to expedite the project delivery timeline. For NEPA compliance, Broken Arrow has delegated all responsibility for this project element to ODOT. ODOT, as a state agency with resources and experience in leading and managing the NEPA compliance process, provides valuable expertise to ensure that the project is on schedule and on budget. Incorporation of a DDI or SPUI for reconfiguration of the 9th Street bridge over SH-51 represents an innovative way to address traffic congestion and decrease traffic conflicts which will decrease collisions within the corridor.

Figure 4-9. SPUI For 9th St Over SH-51

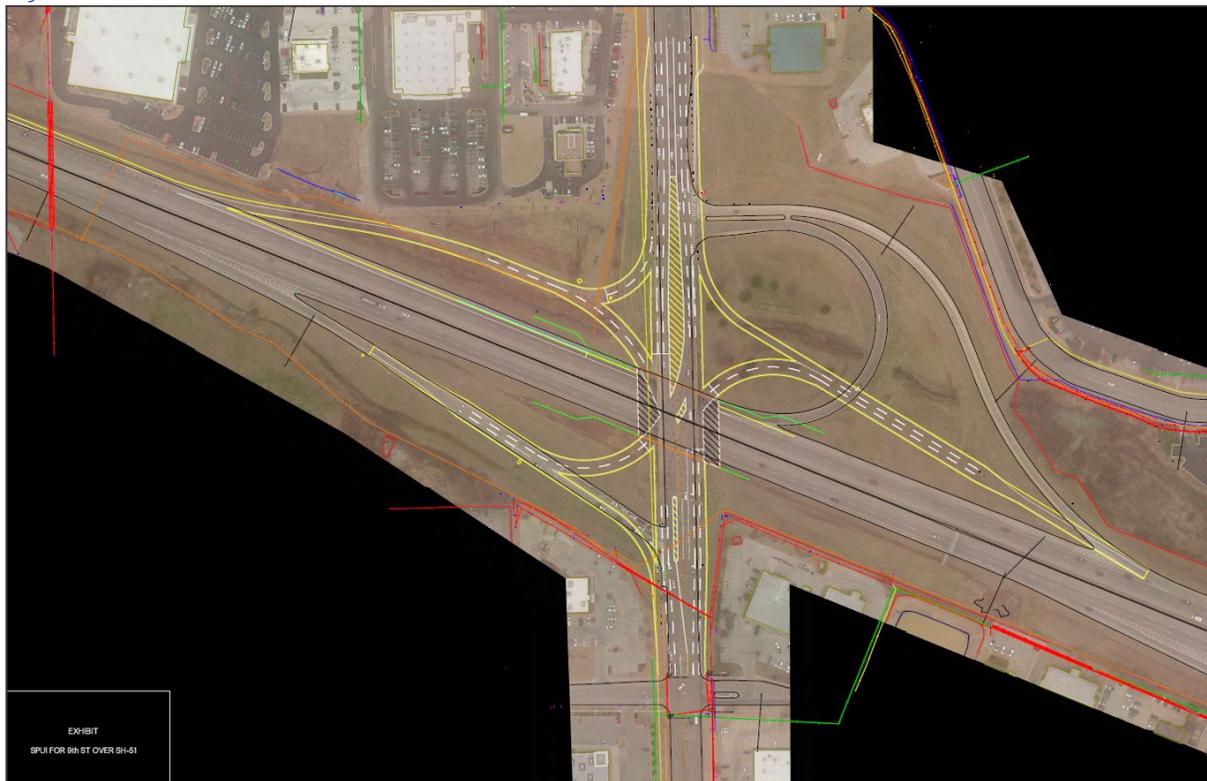
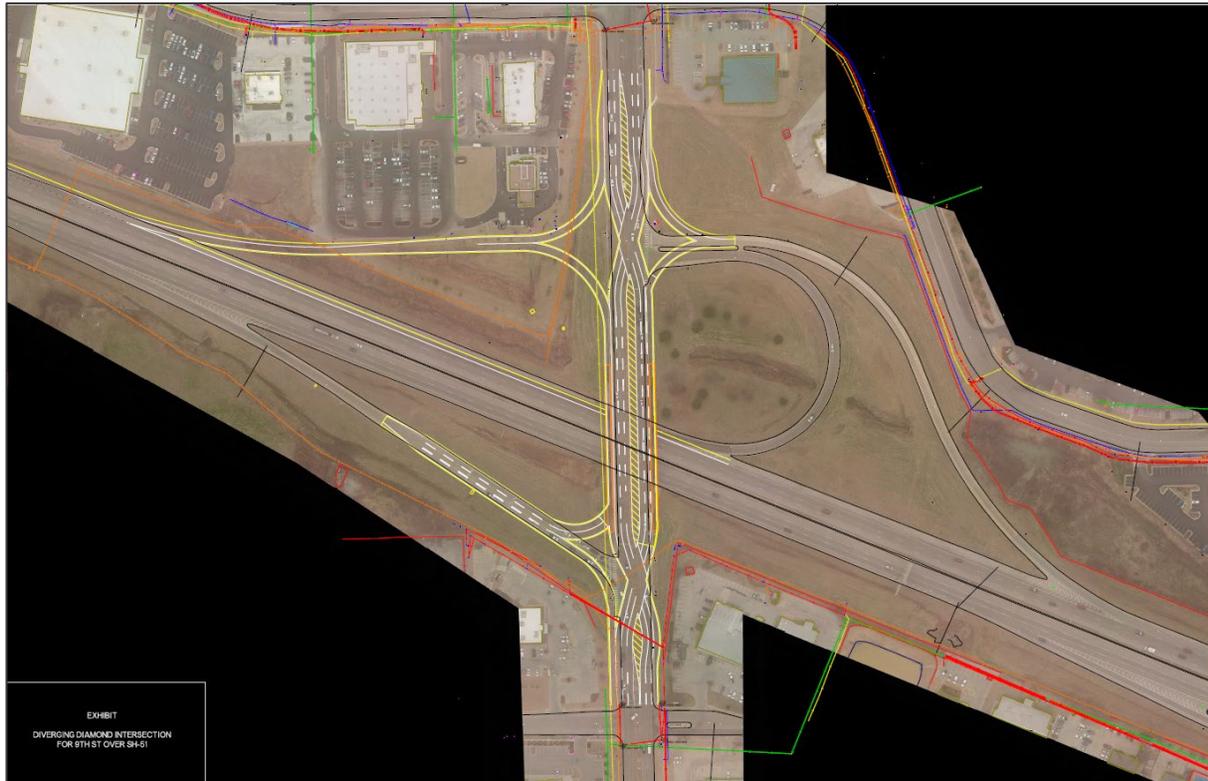


Figure 4-10. DDI For 9th Street Over SH-51



4.2.2 Partnership

The BUILD Project demonstrates strong collaboration from local, regional, and national partners. ODOT will be leading the project as the fiduciary agent for urbanized funds allocated by INCOG, the MPO. The City of Broken Arrow utilizes the ODOT procurement for all consulting, engineering, and construction by an agreement in compliance with 23 Code of Federal Regulations (CFR). Additionally, the Project will have support from key collaborative and invested partners, including ODOT and INCOG. [Appendix B](#) includes letters of support from INCOG, ODOT, and various other local entities.

The following summarizes planning and funding initiatives that demonstrate the strong state and local support for the project:

Build Our Future Initiative: On August 28, 2018, Broken Arrow voters approved the largest municipal bond package in the history of the City. The complete package, "Build Our Future BA GO Bond" ([Appendix C](#)), totaled approximately \$210 million over six propositions. Proposition 1: Transportation includes a multitude of capital improvement projects, including Elm Place Corridor and 9th Street Corridor.

Broken Arrow Comprehensive Plan: The City of Broken Arrow has recognized the importance of economic growth along State Highway 51 (the Broken Arrow Expressway) for years. The "section line" arterial streets (Elm Place and 9th Street) have also been included in Comprehensive Plan updates. The Tulsa County Major Street and Highway Plan has been incorporated into the Comprehensive Plan. The Plan includes commercial and transitional nodes at most of the arterial street intersections and sets guidelines for development on arterial streets.

Broken Arrow Public Schools: The Broken Arrow Public Schools carefully plan their new schools, as well as expansions of existing schools and support facilities, to take advantage of transportation routes such as Elm Place and 9th Street. The Corridors also serve as a major access route for Broken Arrow Public School buses.

Oklahoma Department of Transportation (ODOT): ODOT is the agency of the government of Oklahoma responsible for the construction and maintenance of the state's transportation infrastructure. ODOT partners with all jurisdictions that use federal money to fund projects, as the State's NEPA delegation authority. ODOT plans to add funding priority to the Project through their 8-Year Plan programs improvements to State Highways such as SH-51 upon notification of BUILD award.

Indian Nations Council of Governments (INCOG): INCOG is a voluntary association of local and tribal governments in Tulsa metropolitan area in Northeast Oklahoma. INCOG provides planning and coordination services to assist in creating solutions to local and regional challenges in such areas as comprehensive planning, transportation, community and economic development, environmental quality and energy programs, public safety, and services for older adults. INCOG serves Creek, Osage, Rogers, Tulsa, and Wagoner counties, more than 50 cities and towns located in those counties, and the Cherokee, Muscogee (Creek), and Osage Nations.

Northeastern State University (NSU): Northeastern State University - Broken Arrow campus has a master plan that is being implemented. This project would enhance their plans to grow their Broken Arrow Campus located three miles south and one-and-a-half miles east.

The multitude of project partners and broader letters of support demonstrates the need for this project and that the project has the needed momentum to succeed.

The funding commitments toward this multi-stakeholder project and roles of each of the partners are outlined in Table 4-3.

Table 4-3. Partnership Support and Funding Commitments

Entity	Form of Support
City of Broken Arrow	<ul style="list-style-type: none"> — Local Match Funding of \$10.5 million through the City's 2008-2011 bond revenues — Project implementation, planning and management, and grant recipient
ODOT	<ul style="list-style-type: none"> — Local Match Funding of \$9.0 million for ramp reconstruction and lane widening construction — Support with the NEPA process
INCOG	<ul style="list-style-type: none"> — Local Match Funding of \$3.0 million in STP funding — Amending the Transportation Improvement Program for 2020-2023 — Assist with mapping, analysis, STP funding, and agreements

5.0 ENVIRONMENTAL RISK

The Project is reasonably expected to begin construction in a timely manner as described in the following sections. The City of Broken Arrow is experienced in delivering projects, as summarized:

Experience delivering federally funded projects: Federally funded projects delivered by the City of Broken Arrow include several STP projects and Transportation Alternatives Projects (TAP). Each of the projects were, or are currently being, successfully executed by ODOT to the standards and satisfaction of the City of Broken Arrow. The provision to partner with ODOT through agreements to implement these projects has been beneficial and seamless to the partners.

Additional Leveraged Projects: The City of Broken Arrow has passed several bond issues recently to finance streets and public facilities near the project area. The \$47 million plus being funded over the next several years will add to the improvements of the Corridors and be a stimulus for the development of the area. This needed financing and funding has supported improvements near the project location and demonstrates the City of Broken Arrow commitment to improving Elm Place and 9th Street Corridor.

5.1 PROJECT SCHEDULE

The Project is ready for quick implementation with Design & Engineering beginning immediately following the potential BUILD Grant Award in January 2021. The pre-construction phase will be complete in June 2022 and construction will begin in July 2022. All elements of the Project will be complete in June 2027. Figure 5-1 illustrates the Project schedule.

Figure 5-1. Project Schedule

Project Element	Start	Complete	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Elm Place Corridor									
Pre-Construction									
BUILD Grant Award	December 2020		■						
Design & Engineering	January 2021	June 2022	■	■	■	■			
NEPA Categorical Exclusion	January 2021	June 2022	■	■	■	■			
Construction									
Right-of-way (ROW) Acquisition	July 2022	June 2024			■	■	■	■	■
Utility Relocations	July 2023	June 2025				■	■	■	■
Bridge Ramps Construction	July 2025	June 2026						■	■
Roadway Construction	July 2026	June 2027						■	■
Inspections	July 2025	June 2027						■	■
<i>Construction Complete</i>	June 2027								■
9th Street Corridor									
Pre-Construction									
BUILD Grant Award	December 2020		■						
Design & Engineering	January 2021	June 2022	■	■	■	■			
NEPA Categorical Exclusion	January 2021	June 2022	■	■	■	■			
Construction									
Right-of-way (ROW) Acquisition	July 2022	June 2024			■	■	■	■	■
Utility Relocations	July 2023	June 2025				■	■	■	■
Bridge Ramps Construction	July 2025	June 2026						■	■
Roadway Construction	July 2026	June 2027						■	■
Inspections	July 2025	June 2027						■	■
<i>Construction Complete</i>	June 2027								■

5.2 REQUIRED APPROVALS

5.2.1 Environmental Permit and Reviews

The NEPA process will consist of a Categorical Exclusion (CE) for this Project. The City Broken Arrow will obtain the CE for minor impacts throughout the Project Corridors. The Project will have very little environmental impact throughout each corridor. The areas themselves are already maintained, and include no endangered species, no archaeological issues due to preexisting construction on each corridor, no issues with underground storage tanks, and no major drainage issues. There is the possibility that SH-51 blue lines are affected, but this should not affect the CE approval process.

5.2.2 State and Local Approvals and Planning

As part of the public engagement process for the Project, Broken Arrow will hold public meetings about the Project during all stages of the Project schedule. Public meetings are critical to garner community support for the Project's several benefits. The Project will also have to undergo storm water management review processes from the Oklahoma Department of Environmental Quality to ensure that any flood and storm mitigation efforts are acceptable for the project.

5.2.3 Federal Transportation Requirements Affecting State and Local Planning

INCOG, the designated Metropolitan Planning Organization for the Tulsa Transportation Management Area (TTMA), identifies the project as a traffic flow improvement within the regional Congestion Management Process (CMP) and recognizes the need within the Regional Transportation Plan (RTP), 2045 Connected Plan. INCOG will formally amend the FFY 2020-2023 Transportation Improvement Program (TIP) upon grant award along with the currently programmed \$3.0 million in Federal Surface Transportation Project within the Corridor.

5.3 ASSESSMENT OF PROJECT RISKS AND MITIGATION STRATEGIES

Broken Arrow has gained tremendous experience in the implementation of complex capital projects. The City understands the risks associated with such investments and considers them in the development of project schedules and budgets, such as those presented earlier. The Project schedule carries significant float which ensures that all statutory BUILD program deadlines will be met. Table 5-1 lists the top three risks associated with the Project and the mitigation plan for each.

Table 5-1. Risks and Mitigation Strategies

Project Risk Item	Risk	Mitigation Plan
Utility Relocation	The Oklahoma Natural Gas, as well as other utilities, relocation process takes a large amount of time and could cause delays in construction	Provided advanced notice to Oklahoma Natural Gas and gas line relocation is near completion. Other utility relocations are on schedule to be complete by June 2025
Cost Overrun	With any project, cost overruns are a potential, especially if the project is delayed	City of Broken Arrow commits to paying for the cost overruns through local funds
NEPA	Time delays	The City of Broken Arrow has experience finding ways to compress NEPA schedules at the tail end of the NEPA process

6.0 BENEFIT COST ANALYSIS

An economic benefit-cost analysis (BCA) was conducted for the Project using a model that follows USDOT's 2019 Benefit-Cost Analysis Guidance for Discretionary Grant Programs. The analysis found that the Project has a net present value (NPV) of \$38.6 million (in 2018 dollars in 2019, discounted at 7%), resulting in a discounted benefit cost ratio of 2.29. As such, the Project is expected to generate economic benefits that outweigh its costs. Table 6-1 shows the overall results of the BCA for the Project. The BCA Technical Memorandum can be found in [Appendix A](#).

Table 6-1. Summary Table of Project Benefits (Millions of 2018 dollars)

Type of Benefit	Undiscounted	Discounted (7%)
Costs	\$47.5	\$29.8
Benefits		
Accident Cost Reduction	\$182.6	\$60.2
Reduced Agency O&M Costs	\$0.9	\$0.3
Residual Value	11.7	\$1.8
Travel Time Savings	\$17.2	\$5.2
Fuel Cost Savings	\$1.9	\$0.6
Health and Mobility	\$1.5	\$0.4
Total Evaluated Benefits	\$259.2	\$68.4
Net Present Value	\$211.7	\$38.6
Benefit-Cost Ratio (BCR)	5.48	2.29
Internal Rate of Return (IRR)	20%	N/A

6.1.1 Costs

The costs reflected in this BCA are the capital costs of \$47.5 million associated with constructing the Project as well as annual O&M costs of \$16,000. The No-Build scenario would not have any associated capital costs but would have annual O&M costs of \$61,000. The capital costs of construction amount to \$42.2 million (2018 dollars); construction will occur between FFY2024 and FFY2027. The capital construction costs include the cost to construct the roadway (\$17.4 million 2018 dollars) and the cost to construct the bridge and ramps (\$19.45 million 2017 dollars) in addition to a 15 percent contingency and a 10 percent management and inspection cost.

6.1.2 Benefits

The key benefits of Project include the following: travel time savings, safety benefits, reduced agency O&M costs, residual value of the construction, fuel savings, personal health, and mobility and sustainability benefits.

6.1.2.1 Travel Time Savings

Time savings benefits apply primarily to automobile and truck travel. Time savings benefits are two-fold for this Project; travelers during off-peak hours will realize time savings as a result of increased average speeds, and travelers during peak hour travel will realize additional savings as a result of the increased capacity of the roadway. Increased capacity is a result of widening the roadway. The analysis concluded that the time savings benefits for this Project would be \$5.2 million (2018 dollars, discounted at seven percent).

6.1.2.2 Safety

Safety benefits of this Project are expected as a result of widening the roadway and adding dedicated center left-turn lanes and other auxiliary turn lanes. A study from the Texas Transportation Institute at Texas A&M, "Comparisons of Crashes on Rural Two-Lane and Four-Lane Highways in Texas" supported a 20 percent crash reduction as a result of the roadway widening (for an undivided roadway). As a result, the Project anticipates \$60.2 million (2018 dollars, discounted at seven percent) in safety benefits due to accident reductions, which amounts to approximately 135 fewer accidents per year, including 52 fewer incapacitating injuries and 8 fewer fatalities throughout the project's lifecycle.

6.1.2.3 Reduced Agency Operations and Maintenance (O&M) Costs

If the Project does not take place, the City of Broken Arrow will need to conduct additional, more costly maintenance at \$61,000 annually to the roadway due to the lower throughput and higher accident rates. However, if the Project takes place according to the proposed schedule, the cost of operations and maintenance goes down to \$16,000 annually. Per USDOT guidance, the analysis period ends in FY 2046, the last year before the roadway exceeds its useful life. As a result of the foregone overlay costs, the Project would generate \$0.3 million (2018 dollars, discounted at seven percent) in reduced O&M costs. Note that there is no notable difference between R&R costs in the Build and No-Build scenarios.

6.1.2.4 Residual Value of the Bridges, Ramps and Roadway

The design life of the roadway and bridge ramps will be 20 years and 50 years, respectively. Per USDOT instruction, the Project analysis period is equal to the construction period (five years) plus the useful life of the roadway (20 years), for a total Project analysis period of 25 years (FY 2022 - FY 2046). At the end of the Project analysis period, the bridge and ramps will only be roughly halfway through their design life, therefore the agency realizes the additional benefit of the residual value of the bridge ramps. The original value of the bridge and ramps will be \$19.5 million (2018 dollars), amounting to \$1.8 million (2018 dollars, discounted at seven percent) in residual value benefits through the end of the analysis period.

6.1.2.5 Fuel Savings

Fuel savings of this Project are expected as a result of the new roadway which will be wider, allowing users to safely travel at uncongested speeds. Vehicle miles traveled in the corridor are not expected to change between the Build and No-Build scenarios, for the forecast year, even though there is an anticipated increase from the present day. As such, the project is expected to generate fuel savings benefits for drivers, as the slight increase in average speeds will be more fuel efficient than current speeds under the No-Build scenario. The fuel cost savings associated with the Project would be \$0.6 million (2018 dollars, discounted at 7 percent), because of more efficient average travel speeds in the corridor.

6.1.2.6 Health and Mobility

The Project's sidewalks and multi-use trails are anticipated to increase the VMT for both cyclists and pedestrians in the area, by removing trips currently made via automotive vehicle and adding cycling and walking trips. Cycling and walking have positive health benefits for the population of Broken Arrow as well as mobility and sustainability benefits to the surrounding environment. The health benefits of the Project amount to \$0.3 million (2018 dollars, discounted at 7 percent) because of added users on the sidewalks and trails. The sustainability and mobility benefits amount to \$0.1 million (2018 dollars, discounted at 7 percent) because of positive atmospheric effects from added cyclist and pedestrian VMT.

7.0 APPENDICES

All appendices are hosted on the Project website:

<http://www.brokenarrowok.gov/government/operations/engineering-construction/2020-build-grant>

- Appendix A:
 - Benefit-Cost Analysis Technical Memo
 - Benefit-Cost Analysis spreadsheet model
- Appendix B:
 - Part 1: Letters of Support
 - Part 2: Letter of Financial Commitment
- Appendix C: Supporting Financial Documentation
- Appendix D: Related Technical and Planning Documents