

TIGER FY 2016
Discretionary Grant Application VIII

# 32nd Street Corridor Improvements

April 29, 2016

Submitted by:

City of Joplin, MO

# Table of Contents

**1.0 Executive Summary ..... 1**
**2.0 Project Description ..... 2**
2.1. Project Summary ..... 2
2.2. Detailed Project Description ..... 3
2.2.1. Grade Separation at 32nd Street near Davis Boulevard ..... 3
2.2.2. 32nd Street Widening ..... 5
2.2.3. 32nd and Main Street Right Turn Lane ..... 6
2.2.4. Pavement and Sidewalk Improvements ..... 6
2.3. Project Parties ..... 6
2.3.1. The City of Joplin, MO ..... 7
2.3.2. Missouri Department of Transportation (MoDOT) ..... 7
2.3.3. Joplin Area Transportation Study Organization (JATSO) ..... 7
2.3.4. Kansas City Southern Railway ..... 7
2.4. Grant Funds and Sources and Uses of Project Funds ..... 8
**3.0 Primary Selection Criteria ..... 9**
3.1. Long-Term Outcomes ..... 9
3.1.1. State of Good Repair ..... 9
3.1.2. Economic Competitiveness ..... 11
3.1.3. Quality of Life ..... 13
3.1.4. Sustainability ..... 14
3.1.5. Safety ..... 15
3.2. Job Creation and Economic Stimulus ..... 16
3.3. Secondary Selection Criteria ..... 16
3.3.1. Innovation ..... 16
3.3.2. Partnership ..... 17
**4.0 Results of Benefit-Cost Analysis ..... 17**
State of Good Repair ..... 19
Economic Competitiveness ..... 19
Quality of Life ..... 19
Environmental Sustainability ..... 19

Safety ..... 20
**5.0 Demonstrated Project Readiness ..... 20**
5.1. Technical Feasibility ..... 20
5.2. Financial Feasibility ..... 20
5.3. Project Schedule ..... 21
5.4. Required Approvals ..... 21
5.5. Project Risks and Mitigation Strategies ..... 22
**6.0 Supporting Documents ..... 22**
**7.0 Wage Rate Certification Letter ..... 23**

# List of Tables

Table 1: Funding by Source and Use of Funds ..... 8
Table 2: Summary Results of the Benefit-Cost Analysis, 2015 Dollars ..... 18
Table 3: Discounted Benefits, in millions of 2016 dollars ..... 18

# List of Figures

Figure 1: Location of the 32nd Street Corridor Improvement Project in Joplin, MO ..... 3
Figure 2: Aerial Representation of Existing Traffic Conditions at 32nd Street Rail Crossing ..... 4
Figure 3: Aerial View of 32nd Street Grade Crossing and Proposed Improvements ..... 5
Figure 4: Current View Facing East on 32nd Street ..... 5
Figure 5: Plan for 32nd Street and Main Street/Hearnes Blvd Right-Turn Lane ..... 6
Figure 6: Current View along 32nd Street ..... 10
Figure 7: View of 32nd Street Delay at Main Street ..... 11
Figure 8: Delay at 32nd Street, KCS Rail Crossing, and Davis Blvd ..... 11
Figure 9: Kansas City Southern Railroad Network ..... 12
Figure 10: Project Schedule ..... 21

# 1.0 Executive Summary

The Joplin Region of southeast Kansas, southwest Missouri, and northeast Oklahoma is in the heart of the nation, with a network of highway and rail transportation that gives local companies necessary connections with the world. The east-west and north-south connections, fueled by interstates 44 and 49, provide Joplin's residents and businesses with a wealth of opportunities and help make the city a regional trucking hub.

32nd Street is a major east-west corridor through Joplin and one of the city's main freight corridors. Despite its importance to the residents and businesses in and around Joplin, the portion of the 32nd Street Corridor slated for improvements currently has a Level of Service (LOS) rating of "E". In addition, the east end of this corridor has an at-grade crossing experiencing 24 train crossings a day.

The City of Joplin plans to address the capacity and safety concerns along this critical corridor with the **32nd Street Corridor Improvements** project, which will greatly improve traffic operations, reduce crashes, and generate community and environmental benefits. The 32nd Street Corridor Improvements project will:

- Construct a grade-separated railroad crossing at 32nd Street near Davis Boulevard on the eastern side of Joplin;
- Widen a nearly 2-mile section of the western side 32nd Street;
- Construct a right turn lane at 32nd Street and Main;
- Repave the roadway between the intersections at Main Street and Interstate 44;
- Improve selected sidewalks on 32nd Street from Schifferdecker Avenue to Rangeline Road.

The **32nd Street Corridor Improvements project** will cost $26,480,000, and the City of Joplin is requesting **$11,970,000** in TIGER Discretionary Grant funds to close its funding gap. The project will:

- Reduce travel times and vehicle operating costs for drivers traveling along the 32nd Street corridor;
- Promote additional growth, both commercially and residentially, in areas that are strategic to the City's future;
- Contribute to a robust regional economy heavily dependent on trade and commerce;
- Provide Joplin citizens with uninterrupted travel to medical and emergency facilities;
- Successfully provide a job-creating project in an economically distressed area; and
- Provide safe and efficient facilities for bicyclists and pedestrians.

The results of the benefit-cost analysis clearly show that the 32nd Street Corridor Improvements project will significantly improve transportation in the city and will be net beneficial to the national economy. Over twenty years, the project is estimated to generate benefits in excess of costs (capital as well as operating and maintenance costs) of approximately $6.3 million and a benefit-cost ratio of 1.3, when using a seven percent discount rate.

# 2.0 Project Description

The **32nd Street Corridor Improvements** project is an investment in the corridor's long-term capacity. The project includes widening approximately two (2) miles of the western side of 32nd Street from two (2) lanes to three (3) lanes; grade–separating 32nd Street over the Kansas City Southern (KCS) railroad near Davis Boulevard; providing a northbound right-turn lane at the intersection of 32nd Street and Main Street; and improving sidewalks and repaving along selected portions of the corridor. These improvements are critical in order to address the inadequate capacity and safety concerns of this critical corridor. Benefits associated with this project include the following:

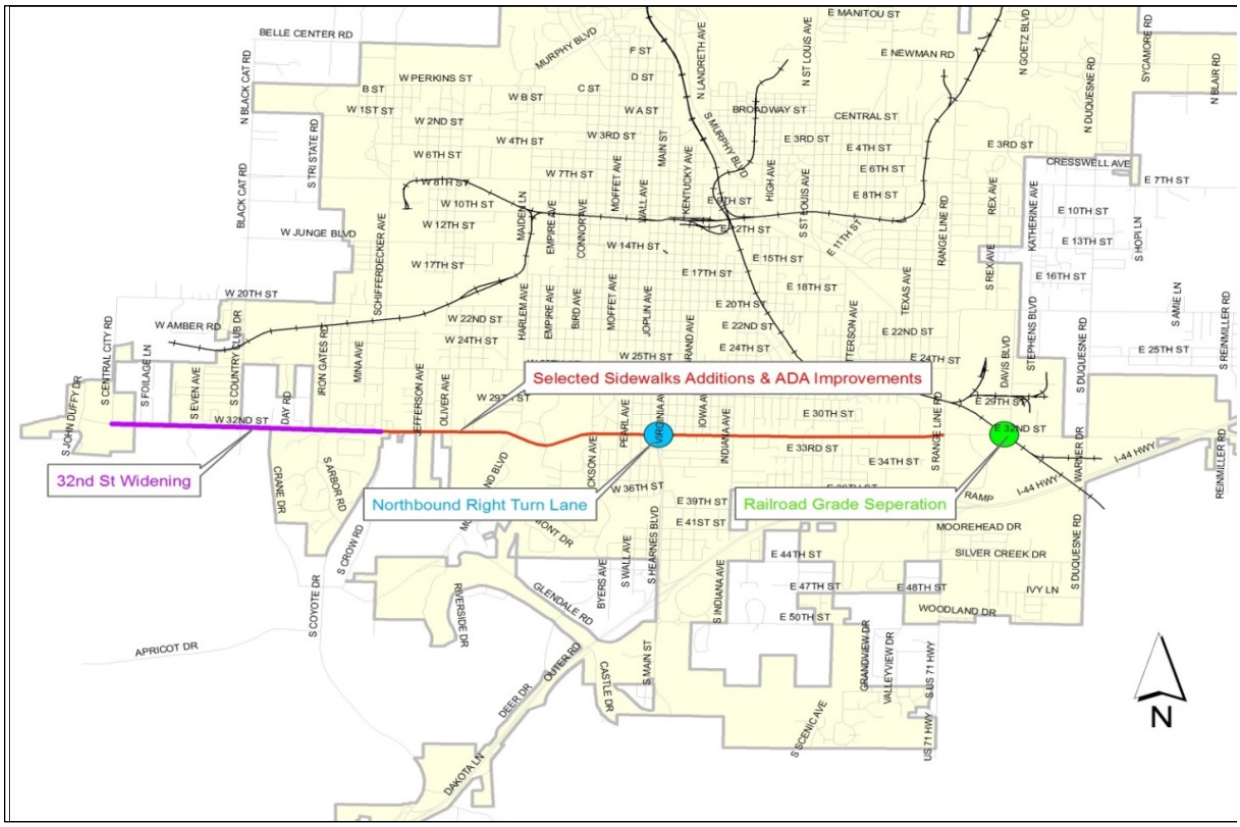
- Reduction in crashes;
- Vehicle operating cost savings and travel time savings for drivers;
- Promotion of additional growth in commercial and residential areas that will help the city of Joplin;
- Contributing to a robust regional economy heavily dependent on trade and commerce;
- Providing Joplin's citizens with uninterrupted travel to medical and emergency facilities;
- Generating jobs in an economically distressed area; and
- Providing safe and efficient facilities for bicyclists and pedestrians.

## 2.1. Project Summary

The Joplin Region of southeast Kansas, southwest Missouri, and northeast Oklahoma is in the heart of the nation, with a network of highway and rail transportation (and access to water transportation) that gives local companies strong connections to both the regional and the national economy. Served by both north-south and east-west interstates, I-49 and I-44 respectively, Joplin is strategically located to be a regional logistics center, and is the base for a significant number of trucking firms. The City of Joplin also acts as a regional employment hub, with its population of over 50,000 people growing to 250,000 during the work day. This daily influx of workers, combined with Joplin's current level of growth, has put a severe strain on the transportation system. The City of Joplin needs additional transportation infrastructure improvements in order to continue to promote a thriving economic atmosphere.

The City's proposed project will improve safety, reduce congestion and decrease travel time on 32nd Street, which is a vital corridor that provides access to major commercial centers, health care facilities and industrial complexes, including the Crossroads Industrial Park, a 1,000 acre site on the east side of the corridor. The corridor provides access to thousands of jobs and plays a key role in Joplin's economy. In addition to existing business and essential services, a new 2000-acre mixed use development is planned on 32nd Street. This development will include a combination of commercial, retail and industrial uses that will put additional strain on an already taxed roadway.

**Figure 1: Location of the 32nd Street Corridor Improvement Project in Joplin, MO**




## 2.2. Detailed Project Description

32nd Street is approximately 9 miles long, traversing the entire City of Joplin. The project's individual components are described in greater detail below.

### 2.2.1. Grade Separation at 32nd Street near Davis Boulevard

A critical component of this project is replacing the current at-grade crossing of the KCS rail line at 32nd Street with a grade-separated crossing. The current at-grade crossing inhibits the movement of vehicular traffic during train crossing events, creating truck and passenger vehicle delays, contributing to driver dissatisfaction, and increasing exposure (and thereby the potential for a crash). A viaduct for 32nd Street will be constructed over the railroad, eliminating the vehicular/rail conflict, increasing safety and improving traffic flow.

With the addition of a viaduct on 32nd Street for the railroad, Davis Boulevard will need to be relocated further east in order to maintain access to the adjacent industrial park and to allow the proposed overpass to provide the needed vertical clearance over the railroad. The new intersection will be designed to optimize traffic flow and to accommodate the types of vehicles that need to access the industrial land uses in the area.

Davis Boulevard intersects 32nd Street a little more than 100 feet east of the KCS crossing of 32nd Street. Vehicles often back up at the Davis Boulevard and 32nd Street intersection, while one vehicle waits to make a left turn lane, and these back-ups can extend back to the railroad tracks, and have led to train-vehicle crashes. Relocating Davis Boulevard will significantly improve safety at this location.

**Figure 2: Aerial Representation of Existing Traffic Conditions at 32nd Street Rail Crossing**

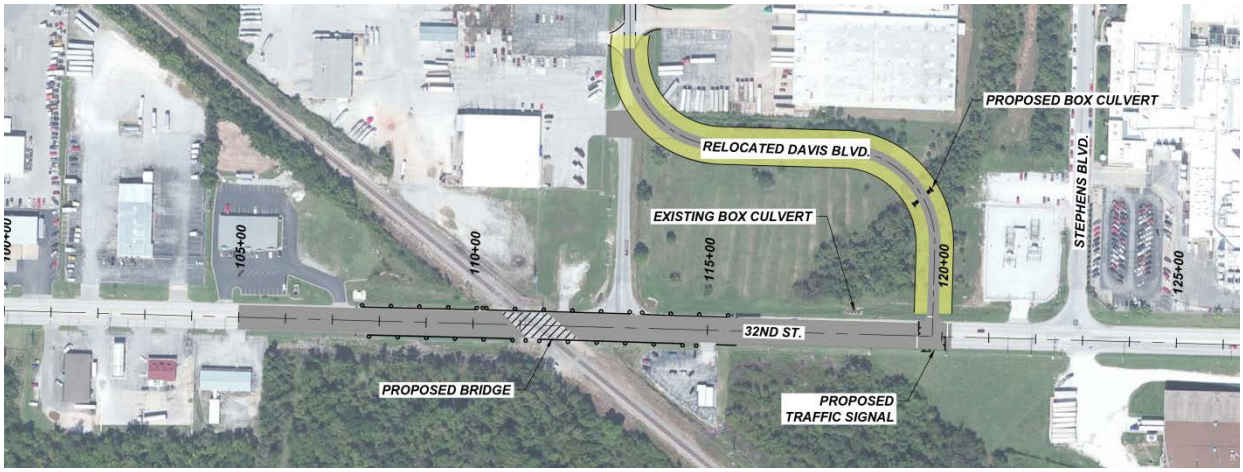



Exhibit 4 - Existing Vehicular Queue
*32nd Street Railroad Crossing*
*at Davis Boulevard*
*(Looking North)*

CJW
CJW Transportation Consultants, L.L.C.
3051 S. National, Suite 4-110 Springfield, MO 65810 Tel: 417.889.3400 Fax: 417.889.3402
www.GoCJW.com

In addition, as a result of elimination of the vehicular delay induced by traffic being required to stop on a considerably busy thoroughfare, Joplin travelers will have the ability to traverse this portion of 32nd Street without unnecessary stops or trip interruptions. Currently, as vehicles stop to turn from 32nd Street to Davis Blvd, traffic backs up onto the rail line. This is a safety concern that will be addressed with the overpass allowing trains to continue moving unimpeded by stopped traffic.

**Figure 3: Aerial View of 32nd Street Grade Crossing and Proposed Improvements**




## 2.2.2. 32nd Street Widening

**Figure 4: Current View Facing East on 32nd Street**

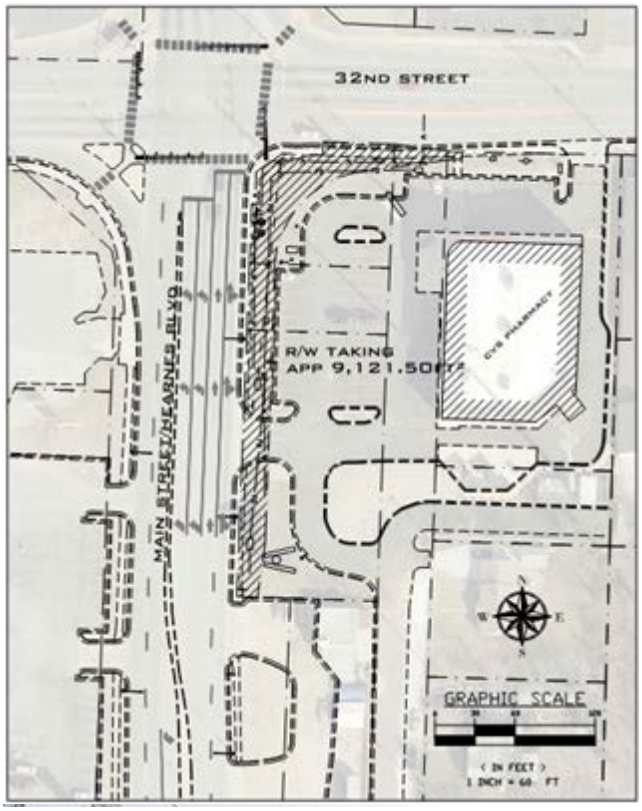


32nd Street is a major east-west corridor through Joplin and is identified in the JATSO 2036 Metropolitan Transportation Plans as one of the city's main freight corridors. The 32nd Street Corridor Improvements project will include replacement of existing pavement and the widening of 32nd Street between Schifferdecker Avenue and Central City Road. This 2-mile stretch of roadway currently has pavement that has outlived its useful life and is in need of full-depth replacement. The City will replace the pavement, widen the roadway from two to three lanes and smooth out the vertical alignment. The improvements will facilitate the safe and efficient flow of traffic with additional capacity and improved geometrics.

Additionally, right-of-way will be purchased to facilitate future expansion to 4 or 5 lanes as demand increases.

### 2.2.3. 32nd and Main Street Right Turn Lane

**Figure 5: Plan for 32nd Street and Main Street/Hearnes Blvd Right-Turn Lane**




A northbound right-turn lane will be constructed at the intersection of Main Street/Hearnes Blvd and 32nd Street. The right-turn lane was originally planned as part of a previous construction project but was ultimately delayed because of funding constraints. The dedicated turn lane will reduce congestion, especially during peak hours.

### 2.2.4. Pavement and Sidewalk Improvements

Sidewalk and accessibility improvements will be constructed on portions of 32nd Street between Schifferdecker Avenue and Rangeline Road, the segment that experiences the highest volume of pedestrians. The improvements will include construction of new sidewalks along sections of 32nd Street in the vicinity of Freeman Hospital West, a major regional medical center. Other improvements will include upgrading existing pedestrian facilities to bring them into compliance with current ADA guidelines. MoDOT has committed to resurfacing the roadway and make select ADA improvements to sidewalks on portions of 32nd Street.

## 2.3. Project Parties

Another strength of the project is the dedicated coordination amongst three key public agencies in the region: The City of Joplin, the Missouri Department of Transportation (MoDOT), and the Joplin Area Transportation Study Organization (the region's MPO). The proposed project also has significant support from local stakeholders. Please refer to the "Partnership" section of the application and Appendix A for more than 20 letters of support for the proposed project.

Joplin's funding partners for the grade separation portion of the project are MoDOT and KCS. MoDOT brings considerable experience in the delivery of quality projects using innovative ideas and methods. As a funding partner for this project, MoDOT has been involved from the start, including assembling conceptual drawings and meeting with property owners. MoDOT will continue to lend knowledge and expertise to the overall success of the project. KCS is also a

funding partner and is fully supportive of the project, as it is in line with their future plans to increase the number of trains on this corridor and eventually add a second track.

JATSO, Newton County and Jasper County have all been heavily involved in the development of these projects. JATSO has assured the City of Joplin that each project is a priority and will be included in its Transportation Improvement Program. JATSO has also approved the use of a portion of Joplin's STP funds to contribute to the construction of the right-turn lane at the intersection of 32nd Street and Main Street/Hearnes Blvd. Joplin is located on the border of Newton and Jasper Counties. This border also bisects 32nd Street with the City of Joplin, Newton County and Jasper County each owning portions of 32nd Street within the portion to be widened. The project has been developed with the full cooperation and support of each agency and will be a welcome improvement.

### 2.3.1. The City of Joplin, MO

The City of Joplin, MO is the project sponsor. The City will manage the project and provide roadway maintenance and local funding match for the project. The city is located in the southwestern corner of the State of Missouri, near the borders of Kansas and Oklahoma. It is the largest city in Jasper County with a population of over 50,000.

### 2.3.2. Missouri Department of Transportation (MoDOT)

The Missouri Department of Transportation works with the public, transportation partners, state and federal legislators, and other agencies to oversee nearly 34,000 miles of roadway within the State of Missouri. MoDOT is a funding partner on this project and is a key stakeholder in support of its completion.

### 2.3.3. Joplin Area Transportation Study Organization (JATSO)

The Joplin Area Transportation Study Organization is a federally designated Metropolitan Planning Organization (MPO). JATSO conducts a continuing, cooperative and comprehensive regional transportation planning and project programming process for the Joplin metropolitan area. This area covers both Jasper and Newton Counties. JATSO is responsible for maintaining and monitoring all transportation projects that receive state and federal funding, as well as all regionally significant projects that are locally funded.

### 2.3.4. Kansas City Southern Railway

The Kansas City Southern Railway is the railroad network operator for the railway that is proposed for grade-separation, and is also a funding partner on this project. KCS offers a premiere rail route between the industrial heartlands of the US and Mexico. With 6,000 miles of track across the US and Mexico, KCS is the only Class I Railway owning track in both countries.

## 2.4. Grant Funds and Sources and Uses of Project Funds

The total cost for the **32nd Street Corridor Improvements** project is $26,480,000, and the City of Joplin is requesting **$11,970,000** in TIGER Discretionary Grant funds. The City of Joplin has identified state, local, MPO, and private funds that, together with TIGER Discretionary Grant funds, would allow the city to complete the 32nd Street Corridor Improvements project. The City of Joplin has multiple funding mechanisms to leverage to provide the 41.5% match. Foremost among these is the Capital Improvement Sales Tax, a temporary tax of 3/8th percent approved by the voters in the City of Joplin to pay for capital investments. The **32nd Street Corridor Improvements** project is one of the 14 projects recommended by Capital Improvement Sales Tax Renewal Committee and presented to the public in 2014 when the Capital Improvement Sales Tax was up for renewal. The city will also be able to draw from its general fund or the Transportation Sales Tax, if necessary. The Transportation Sales Tax is a ½-cent sales tax that does not sunset.

The Missouri Department of Transportation has allocated $100,000 for the project generally, as well as $1.593 million specifically for paving 32nd street from Main Street to I-49, and $1.395 million specifically for sidewalk improvements along the corridor. JATSO is contributing approximately $150,000 towards the northbound right-turn lane at the intersection of 32nd Street and Main Street/Hearnes Blvd, and KCS is contributing approximately $275,000 for the 32nd Street rail-grade separation. The proposed funding is summarized by source in Table 1.

**Table 1: Funding by Source and Use of Funds**

| Funding Partner | Funding Amount ($M) | Funding Percent | Item | Funds Allocated |
|---|---|---|---|---|
| **MoDOT** | $3.09 | 11.7% | West 32nd Street Widening | $13.00 |
| **Joplin Area Transportation Study Organization (STP funds)** | $0.15 | 0.6% | Main Street Northbound Right Turn Lane | $0.50 |
| **Kansas City Southern Railway** | $0.28 | 1.0% | 32nd Street Sidewalk and ADA Improvements and overlay pavement treatment | $3.48 |
| **TIGER request** | $11.97 | 45.2% | 32nd Street Rail-Grade Separation | $9.50 |
| **TOTAL** | **$26.48** | **100%** | **TOTAL** | **$26.48** |

The breakdown of the $26.48 million project cost can be found in Table 1. Widening 32nd Street will make up the majority of the cost at $13 million; the grade separation at 32nd Street and Davis Blvd will make up the second highest portion at $9.5 million. $3.48 million will be allocated to the pavement overlay, improving sidewalks, and meeting ADA guidelines with an additional $0.5 million dedicated to the turn lane along Main Street. The vast majority of these costs are for construction.

While the components of the **32nd Street Corridor Improvements** project work together to improve the corridor as a whole, they can be phased and constructed separately. Some portions of the funding package are tied to specific components: the KCS contribution is for the rail-grade separation; $2.98 million of MoDOT funds are tied to repaving and sidewalk improvements; the JATSO funds are for the Northbound Right Turn Lane; and at least a portion of the City of Joplin funds must go towards the West 32nd Street Widening.

# 3.0 Primary Selection Criteria

## 3.1. Long-Term Outcomes

The 32nd Street Corridor Improvements project will generate multiple long-term benefits for Joplin's residents and businesses, including:

- Reducing travel times and increasing vehicle operating savings for drivers traveling along the 32nd Street corridor;
- Promoting additional growth, both commercially and residentially, in areas that are strategic to Joplin's future;
- Contributing to a robust regional economy heavily dependent on trade and commerce;
- Providing local citizens with uninterrupted travel to medical and emergency facilities;
- Successfully creating jobs in an economically distressed area; and
- Providing safe and efficient facilities for bicyclists and pedestrians.

The benefits of this project, organized by TIGER Primary Criteria, are discussed in greater detail below.

### 3.1.1. State of Good Repair

The 32nd Street Corridor Improvements project contributes to the state of good repair of Joplin's roadway network by upgrading and repairing the pavement on one of the city's main thoroughfares, adding sidewalks for pedestrians, and adding a new crossing over the KCS rail lines. Theses improvements will extend the usable life of the 32nd Street corridor, reduce maintenance costs, and improve the corridor's level of service.

**Figure 6: Current View along 32nd Street**



Currently, the LOS rating on the West 32nd Street Corridor slated for improvements is currently an "E" and the JATSO *Long Range Transportation Plan* notes that traffic volumes are expected to approach capacity on segments of this corridor by 2036. In addition, the undulating road along the western half of the project, with its pavement in poor condition, limits safe travel speed even without congestion. The 32nd Street Corridor Improvements project will help bring the corridor's LOS rating to an "A".

Currently, approximately 24 trains per day travel through Joplin, and that figure is expected to nearly double over the next twenty years. To facilitate local vehicle travel (and improve safety) at this busy rail location, the 32nd Street Corridor Improvements project will replace the current at-grade railroad crossing at 32nd Street near Davis Boulevard with a structure for vehicles over the rail lines that will be designed for a 100-year service life. The proposed structure will have a minimum 23-foot vertical railroad clearance, which is adequate for double stack trains. The grade separation will also adequately accommodate roadway capacity.

The City of Joplin and MoDOT will provide roadway maintenance as part of their annual maintenance programs for the roadway elements of this project. KCS will provide continuous maintenance and operation of all rail-related elements of the grade-separation project.

Widening the western portion of 32nd Street and repaving segments of the roadway will improve the usable life of the corridor while maintaining capacity to facilitate its critical role in the City's transportation network. While significant, these savings have not been estimated.

In addition, the project will lead to reduced vehicle operating costs for vehicles traveling through the corridor. The benefit-cost analysis prepared for this project calculates a savings in vehicle operating costs of **$1.4 million** over 20 years, (using a 7 percent discount rate; see technical appendix on benefit-cost analysis located on the application website for a more thorough discussion of how this estimate was calculated).[1] The project will generate an additional set of vehicle operating cost savings (due to idling time reduction at the rail-grade crossing) of **$0.6 million** (discounted at 7 percent) at the end of a twenty-year period of operation.

[1] The benefit-cost analysis presents results at both a 7 percent discount rate and 3 percent discount rate. The 7-percent discount rate is discussed here.

### 3.1.2. Economic Competitiveness

Joplin is a regional transportation hub for trade, business and industrial development. As one of the few cities of its size to have both east-west and north-south interstates, Joplin has become a trucking hub and home to many trucking companies. The city experiences high levels of traffic volumes during the day due to commuters and trade between Kansas City, Tulsa, Springfield and Fayetteville (among others). With its unique position along Interstates 44 and 49, Joplin has had to accommodate higher demand for community improvements than might be expected for a town of similar size located outside of common trade routes.

The TIGER funds towards the 32nd Street Corridor Improvements will help travelers to save on travel time and vehicle operating costs; increase the efficiency and reliability of freight shipments; help spur additional productivity of new and existing land development along the corridor; and encourage job growth in the region. The area along 32nd Street is home to many industrial and commercial businesses that would thrive based upon reductions in vehicle delay.

**Figure 7: View of 32nd Street Delay at Main Street**



After the 2011 tornado that devastated the area, the City's economic base was heavily impacted. Joplin was already located within an Economically Distressed Area (EDA) and its situation worsened with its businesses and public services destroyed or severely impacted.

**Figure 8: Delay at 32nd Street, KCS Rail Crossing, and Davis Blvd**



The struggle to improve the economic conditions in an EDA requires not only improving the existing market, but also maintaining existing conditions necessary for commerce. These conditions include adequate transportation infrastructure and improved mobility for residents and businesses. The 32nd Street Improvement project will upgrade heavily used infrastructure that is operating near capacity. The improvements will lead to faster travel times and fewer crashes, which in turn lead to lower costs of doing business.

The grade-separation project on 32nd Street will enhance this key corridor within the city by eliminating delay at the railroad crossing thus providing uninterrupted travel for passenger and commercial vehicles. The improvements will increase efficiency and safety throughout this designated vital commercial corridor. Additionally, the grade-separation project will also reduce vehicle idling and wait time at the crossings, which will enhance goods movement through the city.

**Figure 9: Kansas City Southern Railroad Network**




The U.S. DOT estimates that the demand for rail freight transportation will increase 88% by 2035. The grade-separated crossing to be constructed as part of this project is part of a primary KCS freight rail corridor from Kansas City to Shreveport and New Orleans (Figure 9). Improving safety at the 32nd and Davis Street crossing will not only resolve issues along 32nd Street, but improve railroad's ability to meet future growth in demand safely and efficiently.

Ensuring the stability of its existing employment base and enhancing it with new, quality job opportunities is one of Joplin's rebuilding goals. Promoting and supporting opportunities to develop major projects to accelerate rebuilding in key areas is imperative in order for the city to grow economically. 32nd Street has been designated a major retail corridor with consistent business development. Land uses surrounding the area are expected to begin developing as soon as additional roadway improvements are made.

A large portion of motorist costs is attributable to delays that result from sitting in traffic or coming to numerous stops during any given vehicle trip. Adding capacity directly impacts this value, as shortened delay and fewer stops are the result of less congestion along the roadway. In addition, the railroad grade separation will decrease transportation costs for automobile travelers who will no longer experience delay and idling at the crossings.

The benefit-cost analysis prepared for this project estimates that during its first twenty years of operation, the project will lead to more efficient passenger vehicle travel along west 32nd Street, generating approximately **$12.5 million** in travel time savings discounted at 7 percent. In addition, the project will generate travel time savings with the separation of the rail-grade crossing of approximately **$7.2 million** discounted at 7 percent. Additional travel-time savings may be generated by the addition of the northbound right-turn lane on Hearne Blvd at 32nd Street, but they have not been quantified at this time.



### 3.1.3. Quality of Life

Quality of Life is critical to a community's well-being, yet it is often hard to define or quantify. With the TIGER funding, the **32nd Street Corridor Improvements** project will be able to improve the City's transportation choices and enhance connectivity to vital areas of the community including commercial corridors, schools, medical services and green space.

The quality of life for nearby residents will be improved due to reductions in noise levels as there will be no need for train whistles at the 32nd Street and Davis Boulevard crossing, and as a reduction in congestion and vehicle idling time at both the crossing and along the 32nd Street corridor leads to lower emissions. Both of these benefits will be directly felt by the nearby residential communities.

The project will also improve access to area hospitals and health facilities. Freeman Health System is a 460-bed, 3-hospital system with one of its hospitals located on 32nd Street near the center of the project area. Landmark Hospital of Joplin is located on the western portion of 32nd Street. 32nd Street also provides a crucial access point to a new hospital facility, Mercy Hospital, located just south of Interstate 44 and east of Main Street. These facilities are also located less than four miles from the 32nd Street railroad crossing.

The corridor improvements will improve hospital access for emergency vehicles, as well as for patients traveling in private vehicles. The increased capacity will greatly improve access to the new hospital in the event of unexpected congestion. The grade-separation project will reduce travel times and improve the safety of traffic attempting to access the hospitals from the east and will no longer prohibit traffic from moving through the intersection for the duration of rail crossings during times of emergency.

Mobility is important for public and private interests in any city. As capacity is reached on any given roadway, the ability to move freely is hindered. Poor mobility reduces the attractiveness of a community for both businesses and residents. As with many traffic capacity improvement projects, the proposed project will not only facilitate safe and efficient vehicular movement of goods, but will also create a noticeably positive impact on commutes for local drivers. 32nd Street is located near residential clusters; thus, easing local freight bottlenecks will improve the ability for these citizens to navigate effectively to work, home and to school.

This project will accommodate multiple modes of transportation including freight rail, trucks, vehicles, pedestrians and bicycles. All new pedestrian routes will incorporate ADA-compliant sidewalks and pedestrians will experience enhanced connectivity to shopping, residential areas and green space. The added sidewalks with make travel easier for pedestrians along 32nd Street, especially for those with disabilities.



### 3.1.4. Sustainability

Widening West 32nd Street and eliminating the at-grade rail crossing will reduce congestion on local roads. In addition, idling at the railroad grade crossing will be eliminated with the grade separation. This, in turn, will lead to improved air quality by decreasing the emissions from vehicles traveling within the area. Decreased congestion, and more efficient vehicle routing, resulting from the project will reduce total emissions output by over 10,000 tons of atmospheric carbon dioxide over the analysis period (calculated using TIGER guidelines). The project is estimated to reduce $0.33 million in emission costs at a 7-percent discount rate over 20 years for the West 32nd Street section and $0.09 million for the elimination of the at-grade rail crossing.

These improvements will also provide more efficient travel, further reducing fuel consumption, although the amount of this reduction has not been estimated. Finally, this project incorporates design elements that encourage use of alternative travel modes such as: walking and biking.

The project will also be constructed using methods that reduce resource consumption and result in fewer emissions, as well as making the projects more sustainable for the community and the region. For the 32nd Street Corridor Improvements City, the City of Joplin plans to:

- Incorporate Recyclable Construction;
- Use Natural Stormwater Treatment Methods.

### 3.1.5. Safety

The projects discussed in this document directly address TIGER's safety objective. The grade-separated crossing and the roadway widening will lead to significant decrease in crashes on 32nd Street.

The improvements along the corridor will be designed to integrate with the local existing and planned transportation network and also to provide needed capacity as described throughout this document. Improving the roadway conditions will improve the safety of vehicular, bicycle and pedestrian travelers.

This project will improve safety along 32nd Street by removing the railroad grade crossings, relocating Davis Boulevard to a safer location further from the railroad, removing a conflict point between freight rail and vehicular traffic, and upgrading transit, bicycle and pedestrian facilities.

Approximately 24 trains per day travel across 32nd Street. The ADT on 32nd Street is 14,800. The number of trains is expected to double in the next 20 years; therefore there is an increased likelihood that more crashes could potentially occur. The grade separations would eliminate railroad crossing crashes at this location.

32nd Street is a major east-west corridor through Joplin. The grade separation of the railroad crossing will eliminate conflicts of trains with both vehicles and pedestrians, thus providing a safer roadway for multiple modes of travel.

Most of the crashes at the intersection of 32nd Street and Davis Boulevard occurred due to vision obstructions, improper turns or failure to yield. This implies that the intersection is not operating at an acceptable level of safety. It is also relevant to note that most of the crashes occurred during the day. Upgrading this roadway will reduce crash occurrence eliminating the need for vehicles to stop on 32nd Street, by providing additional physical separation between Davis Boulevard and the railroad crossing, and by potentially signalizing the relocated intersection. The new traffic signal would be installed with pedestrian push buttons, sidewalks, and curb ramps to enhance personal mobility and safety.

Approximately 4,500 pedestrians are killed annually in traffic crashes with motor vehicles in the United States. Among these, 8% are specifically due to pedestrians "walking along the roadway".[2] Constructing new walkways for pedestrians that are segregated from the driving lanes could prevent up to 88 percent of those "walking along the roadway".[3] Providing these pathways along such heavily utilized corridors will help reduce pedestrian-vehicle related

[2] United States Department of Transportation, Federal Highway Administration, http://safety.fhwa.dot.gov/ped_biKe/tools_solve/walKways_trifold/,
[3] FHWA, *An Analysis of Factors Contributing to "Walking Along Roadway" Crashes: Research Study and Guidelines for Sidewalks and Walkways*. Report No. FHWA-RD-01-101, FHWA, Washington D.C., 2001.

crashes and protect those who choose to use alternate transportation. A safe, reliable and easy-to-access path will encourage even more pedestrians and bicyclists to use it.

Capacity improvements are a known safety catalyst. With less congestion and more room on roadways, traffic incidents are less likely.

The improved access to local hospitals can also be considered a safety benefit (as well as a Quality of Life Benefit). In addition to leading to a reduction in crashes, the **32nd Street Corridor Improvements** project will lead to decreases in overall average travel time to several local hospitals. Emergency service providers and citizens will not be impeded by trains while trying to get to and from the hospitals, schools and residences on either side of the tracks, and travel along other segments of 32nd Street will be safer and more efficient after the project is implemented.

## 3.2. Job Creation and Economic Stimulus

A Council of Economic Advisors study found that $76,923 of government spending generates one job-year. Using that value applied to the $26,480,000 project cost results in more than 344 job-years created by funding allocated to this project.

In addition to jobs directly created by the project, indirect jobs will also be generated in the service, manufacturing and professional sectors. Some of these jobs may be created by attracting these businesses to the area.

Joplin has been rebuilding rapidly following the 2011 tornado. Because of several large retailers, the new hospital and schools being rebuilt, a new record has been set for annual construction dollars being poured into the city. The TIGER funding is imperative in continuing this trend and allowing Joplin to sustain its growth pattern.

## 3.3. Secondary Selection Criteria

### 3.3.1. Innovation

The City of Joplin is committed to incorporating sustainable innovations in the design and construction of this project. The types of sustainable measures Joplin is considering for the project include:

- Implementing natural storm water treatment methods and sustainable landscaping;
- Recyclable construction materials.

It is a goal to incorporate bio-swales, rain gardens, and other natural storm water treatment techniques into the project drainage plans. These "Best Management Practices" reduce the load on the local storm water sewer system. They also control erosion from the site and reduce the amount of pollution reaching the region's waterways. The sustainable landscaping techniques

will be an amenity for residents and travelers while reducing the project's impact on the regional water system. Porous pavement is being considered for use on sidewalks and bike lanes. Porous pavement helps to assist with storm water management.

The construction project will take advantage of advances in sustainable road building to the extent possible. Asphalt millings will be recycled and made into other asphalt mixes. Excavated materials will be used for fill and base wherever possible.

### 3.3.2. Partnership

The Citizens Advisory Recovery Team (CART) was formed to define a vision for a stronger Joplin community. It was established by the cities of Joplin and Duquesne, the Joplin Area Chamber of Commerce, business leaders and other community stakeholders with assistance from FEMA's Long- Term Community Recovery program. CART is a steering committee comprised of citizens and local community leaders. As a team, they provide structure and leadership to support the recovery planning process; gather input from community members; and make recommendations on recovery issues to decision-making boards and committees.

Joplin citizens have adopted a post-disaster vision for rebuilding the cities of Joplin and Duquesne. Jane Cage, CART Chairwoman, said "The input we received from over 1,500 citizens is the basis for our work. The mission statement is a direct reflection of what we heard." The development of this community-wide vision and goals marks a major milestone in the community's recovery activities.

Part of this vision includes designating key commercial corridors to allow for consistent business development in areas where the bulk of commercial development is located. This designation is primarily describing 32nd Street and Range Line Road. It will be important for Joplin to continue improving roadways like 32nd Street to support sustainable growth. While working with the cities of Joplin and Duquesne, the Joplin Area Chamber of Commerce, business leaders and other community stakeholders with assistance from FEMA's Long-Term Community Recovery program, CART is providing structure and leadership to support the recovery planning process.

# 4.0 Results of Benefit-Cost Analysis

A Benefit-Cost Analysis (BCA) framework was used to quantify, in monetary terms, as many of the costs and benefits of the project as possible using a life-cycle approach. The benefits presented in Figure 11 were quantified using standard benefit estimation techniques and a 7 percent discount rate over a 24-year period of analysis (4 years of construction and 20 years of benefits from operation).

**Table 2: Summary Results of the Benefit-Cost Analysis, 2015 Dollars**

| Project Evaluation Metric | 7% Discount Rate | 3% Discount Rate |
|---|---|---|
| Total Discounted Benefits | $29,844,519 | $50,529,222 |
| Total Discounted Costs | $23,542,870 | $26,735,107 |
| Net Present Value | $6,301,649 | $23,794,115 |
| Benefit / Cost Ratio | 1.27 | 1.89 |
| Internal Rate of Return (%) | 9.6% | |
| Payback Period (years) | 9 Years | |

The project generates $29.8 million in discounted benefits, compared to $23.5 million in discounted costs (both discounted at a 7 percent rate). The net present value of benefits is therefore $6.3 million with a benefit-cost ratio of 1.3. As a result, the project is worthy of receiving Federal funds.

**Table 3: Discounted Benefits, in millions of 2016 dollars**

| Long Term Outcomes | Benefit Categories | Discounted Value 2016 Dollars | Share of Total Benefits |
|---|---|---|---|
| State of Good Repair | Vehicle Operating Cost Savings vehicles on West 32nd street from Schifferdecker Ave to Central City | $1,433,785 | 4.8% |
| | Idling Time Operating Cost Savings from the wait time at the rail-grade crossing | $567,294 | 1.9% |
| Economic Competitiveness | Travel time savings for passengers on west 32nd Street from Schifferdecker Ave to Central City | $12,515,085 | 41.9% |
| | Travel time savings due to a reduction in wait time at the rail-grade crossing | $7,234,580 | 24.2% |
| Sustainability | Reduction in Emissions and CO2 from vehicles on West 32nd street from Schifferdecker Ave to Central City | $327,088 | 1.1% |
| | Idling Time Emissions and CO2 Cost Savings from the wait time at the rail-grade crossing | $93,059 | 0.3% |

| Long Term Outcomes | Benefit Categories | Discounted Value 2016 Dollars | Share of Total Benefits |
|---|---|---|---|
| Safety | Reduction in crashes along West 32nd street from Schifferdecker Ave to Central City | $4,052,064 | 13.6% |
| | Reduction in crashes due to the removal of the at grade rail crossing | $3,621,564 | 12.1% |

A brief description of the benefits generated by the project is available in the Primary Selection Criteria section of this application. A more technical discussion and the methodology used in the estimation of these benefits is provided in the BCA technical appendix available on the application website.

### State of Good Repair

The benefit-cost analysis calculates a savings in vehicle operating costs along the West 32nd Street corridor of $1.4 million over 20 years (using a 7 percent discount rate; see technical appendix on benefit-cost analysis on the application website for greater discussion of how this estimate was calculated).[4] There is an additional set of vehicle operating costs savings due to idling time reduction at the rail-grade crossing of $0.6 million (discounted at 7 percent) at the end of a twenty-year period of operation.

### Economic Competitiveness

During its first twenty years of operation, the project will lead to more efficient passenger vehicle travel along west 32nd Street, generating approximately $12.5 million in travel time savings discounted at 7 percent. In addition, the project will generate travel time savings with the separation of the rail-grade crossing of approximately $7.2 million discounted at 7 percent. Additional travel-time savings may be generated by the addition of the northbound right-turn lane on Main Street/Hearnes Blvd at 32nd Street but they have not been quantified at this time.

### Quality of Life

There were no quality of life benefits quantified in this analysis.

### Environmental Sustainability

The widening of West 32nd Street and elimination of the at-grade rail crossing will reduce congestion on local roads. This, in turn, will lead to improved air quality by decreasing emissions from vehicles traveling within the area. Decreased congestion and more efficient vehicle routing resulting from the project will reduce total emissions output by over 10,000 tons of atmospheric carbon dioxide over the analysis period (calculated using TIGER

[4] The benefit-cost analysis presents results at both a 7 percent discount rate and 3 percent discount rate. The 7-percent discount rate is discussed here.

guidelines). The project is estimated to reduce $0.33 million in emission costs at a 7-percent discount rate over 20 years for the West 32nd Street section and $0.09 million for the elimination of the at grade rail crossing.

### Safety

The improvements to West 32nd Street will reduce the number of crashes through improved visibility and safer driving conditions along this stretch of road. The safety benefits over the 20-year period of analysis would see the reduction in the number of crashes by over 147 accidents. This crash reduction will generate $4.1 million in accident savings discounted at a 7-percent rate. The removal of the at-grade rail crossing will also generate $3.6 million, discounted at a 7-percent rate, in benefits due to the reduction in crashes. This includes the prevention of about one fatality over the 20-year study period and about three other major injuries and five property-damage-only accidents.

# 5.0 Demonstrated Project Readiness

## 5.1. Technical Feasibility

The projects are technically feasible and constructible. No significant construction challenges are associated with the project. Utility relocations are anticipated to require a portion of the overall budget. Due to the unique location of power lines at 32nd Street and Davis Boulevard, thoughtful design will be needed in order to properly construct a grade-separation. Utility disposition will be coordinated with the appropriate utility owners and conflicts resolved prior to the award of the contract.

## 5.2. Financial Feasibility

The City of Joplin, the managing agency in this project, operates in a sound financial state despite a tough economy in recent years. The City has maintained a stable credit rating and is prepared to take on the financial commitments ascribed to it in this application. Financial statements from the City of Joplin are in compliance with requirements applicable to federal programs and internal control and are audited on an annual basis by an independent auditor.

The project will be financed through a combination of the TIGER funding award of $11,970,000 MoDOT funds, KCS funds and monies from the City of Joplin and the Transportation Sales Tax. The City of Joplin has the ability to match and manage grant funds; cover cost overruns and operating deficits; and maintain and operate federally funded construction projects.

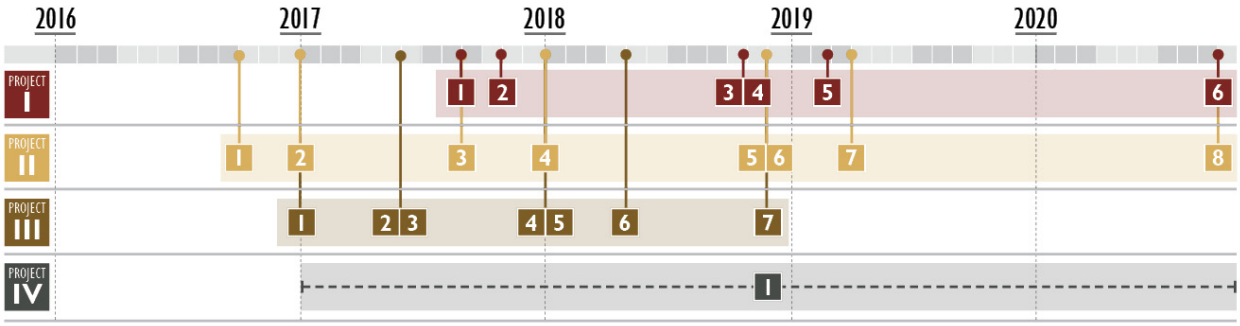
It is the intent of the City of Joplin that the monies awarded be used with the best possible combination of project elements. Thus, if less than the requested value of this TIGER Grant were to be awarded, those funds would be utilized towards the completion of these elements.

## 5.3. Project Schedule

The phases involved in this project include: public involvement, NEPA documentation, preliminary design, final design and construction. The City of Joplin has already engaged local residents and businesses in the planning for the project.

A graphical representation of the project schedule is illustrated in Figure 8.

**Figure 10: Project Schedule**




**PROJECT I**
WEST 32nd STREET WIDENING
(Schifferdecker to Central City Rd)

1. Completion of NEPA, Conceptual, and Preliminary Plans
2. Completion of Right-of-Way Plans
3. Completion of Right-of-Way Acquisition
4. Completion Of Final Plans
5. Award of Contract
6. Construction Completed

SEPTEMBER 2017—OCTOBER 2020

**PROJECT II**
32nd STREET VIADUCT

1. Advertise for Request for Qualifications for Consultant
2. Consultant agreements for award
3. Completion of NEPA, Conceptual, and Preliminary Plans
4. Completion of Right-of-Way Plans
5. Completion of Right-of-Way Acquisition
6. Completion Of Final Plans
7. Award of Contract
8. Construction Completed

FALL 2016—OCTOBER 2020

**PROJECT III**
32nd STREET & MAIN STREET
(Northbound right-turn lane)

1. Consultant agreements for award
2. Completion of NEPA, Conceptual, and Preliminary Plans
3. Completion of Right-of-Way Plans
4. Completion of Right-of-Way Acquisition
5. Completion Of Final Plans
6. Award of Contract
7. Construction Completed

JANUARY 2017—DECEMBER 2018

**PROJECT IV**
SIDEWALK AND PAVEMENT IMPROVEMENTS

1. Ongoing from 2017—2020 Completion 2020

2017—2020

## 5.4. Required Approvals

No legislative approvals are required. Letters of Support for the projects are included as an appendix to this application.

The 32nd Street grade-separation and corridor-widening projects have been outlined in the Joplin Area Transportation Study Organization's (JATSO) Long Range Transportation Plan. These projects have also been identified and studied in the Joplin Capital Improvement Sales Tax Program (CIST) and the Joplin Capital Improvements Plan. The project will be included in the local TIP. The project is targeted as "commercial corridors" through the City's

Comprehensive Planning Efforts. The Citizens Advisory Recovery Team (CART) is also part of the local planning process as it works to rebuild Joplin over the next several years.

An initial environmental screening was conducted; it was found that there would be a minor impact to a floodplain with a small stream crossing due to the grade-separation. A Categorical Exclusion is anticipated for the project.

## 5.5. Project Risks and Mitigation Strategies

The project's primary risks to the schedule and budget relate to finalizing right-of-way acquisition. To reduce the risk of last-minute difficulties securing needed right-of-way, the City of Joplin has already begun conversations with local property owners, and local businesses, emphasizing in discussions the importance of acquiring right-of-way quickly and at a fair price in order for the project, which they all support, to be completed.

Representatives from the City of Joplin have met with property owners three times regarding the railroad overpass to allow them to present their options for consideration. The City expects to get some of the land and easements donated, as the City has modified some of the conceptual ideas to match neighboring property owners' specific situations. Regarding the remaining projects that are the subject of this grant request, all property owners have been contacted multiple times. The widening improvements are under design and the City has held two public meetings allowing citizens to provide input on the conceptual plans. The additional turn lane at 32nd and Main in Joplin will only impact a single business. The location was recently redeveloped with the future turn lane in mind.

Schedule delays are always a concern with large construction projects. Learning from its experience with its first TIGER grant, the City of Joplin has set a very deliberate schedule for completing the design, acquiring the land and constructing this project. On the earlier grant, the City was aggressive in its scheduling, which resulted in delays and expensive change orders. While the amount of the grant remained the same, the City had to pay those extra costs. The City of Joplin will therefore bid this project in a manner designed to ensure competitive bids. The City confidently guarantees that this project can be completed as scheduled or earlier.

# 6.0 Supporting Documents

Supporting documents for **the 32nd Street Corridor Improvements TIGER** request are located at: ***http://www.joplinmo.org/index.aspx?NID=935***. These documents include:

- Benefit Cost Analysis Supplementary Documentation
- Letters of support
- Federal Wage Rate Certification Letter

# 7.0 Wage Rate Certification Letter

CITY OF JOPLIN MISSOURI

Public Works Department
602 S. Main Street
Joplin, MO 64801
(417) 624-0820 ext. 530
(417) 625-4738 (Fax)

TY 2016 TIGER Discretionary Grant Application
32nd Street Corridor Project

FEDERAL WAGE RATE CERTIFICATION

If awarded a TIGER grant for the 32nd Street Improvements, The City of Joplin agrees to comply with the requirements of Subchapter IV of Chapter 31 of Title 40, United States Code (Federal Wage Rate Requirements), as required by the FY 2016 Appropriations Act) for this project.

This certification is made pursuant to the TIGER FY 2016 Discretionary Grant requirements.

Nicholas A. Heatherly, P.E., CFM
Director of Public Works
April 27, 2016