



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

March 1, 2013 - revised - 27 pages

RE: TIGER Grant 20th Street Transit Upgrades Project

Dear Consultant:

The City of Joplin is requesting the services of a design engineering firm to perform survey, geotechnical, design, and project management work. A sub-consultant may be used to perform some of the duties, but must be listed. This project is for the TIGER Grant 20th Street Transit Pedestrian, and Bicycle Facilities upgrades. It consists of a total of 3000' (1500' each side of road) of concrete walkway 10' wide and a trolley pull out. The project is federally funded, knowledge of LPA and MoDOT regulations are required. If your firm would like to be considered for these services, please respond to Dave Hunt, Transportation Engineer, 602 South Main, Joplin, MO 64801.

This letter should include any information which might help us in the selection process, such as the persons or team you would assign to each project, the backgrounds of those individuals, and other projects your company has recently completed.

DBE firms must be listed in the MRCC DBE Directory located on MoDOT's website at www.modot.gov, in order to be counted as participation towards an established DBE Goal. We encourage DBE firms to submit letters of interest as prime consultants for any project they feel can be managed by their firm.

It is required that your firm's State of Qualification (RSMo. 8.285 through 8.291) and an Affidavit of Compliance with the federal work authorization program along with a copy of your firm's E-Verify Memorandum of Understanding (15 CSR 60-15.020) be submitted with your firm's Letter of Interest.

We request all letters be received by March 20, 2013 at: 602 S. Main Street, 4th Floor, Joplin, MO 64801.

Sincerely,

A handwritten signature in black ink that reads "Jack Schaller". The signature is written in a cursive style.

Jack Schaller, P.E.
Assistant Public Works Director
City of Joplin

Attachment

<i>City/County Joplin-Jasper</i>	
Federal Aid No.:	TDG-3200(718) Project 5
Location:	20 th Street between Range Line and Murphy Boulevard
Proposed Improvement:	10 foot wide multi-use trail on both sides of road and a trolley pull out.
Length:	Approx. 1500 ft of roadway
Approximate Construction Cost:	\$467,000
DBE Goal Determination	0%
Consultant Services Required:	<p>The engineering responsibilities may include but are not limited to: The preparation of Conceptual plans, Preliminary plans, Contract plans, preparing and submitting necessary permits, surveying, geotechnical investigations, hydraulic studies, environmental and historic preservation services, contract documents, assisting with the bidding process for ADA compliant trails and preparation of PS&E and final documents.</p> <p>Construction Phase: Work with the contractor on behalf of the City, assist with preconstruction conference, perform periodic site inspection, prepare change orders, inspect construction materials, check shop drawings submitted by contractor, conduct construction tests and inspection, be present during critical construction operations, work with the the City to do full time inspections and reporting and participate in the final inspection.</p>
Contact:	<p><i>Dave Hunt</i> <i>City of Joplin</i> <i>602 S Main Joplin MO64801</i> <i>4th Floor</i> <i>417-624-0820 x532</i> <i>dhunt@joplinmo.org</i></p>
Deadline:	<i>March 20, 2013</i>

Pursuant to the Brooks Act for Consultant Selection – the following criteria will be the basis for selection. Additional criteria can be added with the approval of Central Office Design

Experience and Technical Competence -	32 Max Points
Capacity and Capability -	36 Max Points
Past Record of Performance -	32 Max Points

Joplin Transportation and Disaster Recovery Initiative

TIGER Grant Application

City of Joplin, Missouri

Project Type:
Multimodal (Freight Rail, Road, Transit, Bicycle and Pedestrian)

TIGERID:
cityofjoplin|4766

Location:
Joplin, Jasper County, Missouri

Area:
Urban

Requested Amount:
\$17,900,000

Applicant:
City of Joplin, Missouri
DUNS 10649846

Primary Contact:
Eric Kellstadt
417.624.0820 Ext. 511
ekellsta@joplinmo.org



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I. Project Description

On May 22, 2011 the City of Joplin was struck by an EF5 tornado devastating approximately thirty percent of the city. Travel corridors in the western portions of the Joplin Metropolitan Area, which provide access to multiple medical complexes and extensive housing developments, were quickly reduced in vehicular capacity thereby cutting off vital modes of transportation throughout the community

even beyond the immediate disaster zone. This required everyone from emergency responders to the general public to find alternative routes, even to access medical facilities. In many cases, the alternative routes were substantial detours taking away precious time to reach medical facilities. Furthermore, the City of Joplin is unique in that its population is around 50,000 people, but during the day the population swells to 250,000 because of its regional employment draw. This growth puts severe strain on the transportation facilities on a daily basis and therefore, it is crucial for the city to upgrade and enhance capacity in order to support the users of Joplin's transportation systems.

In order to remedy the travel difficulties that were brought to light during the emergency situation that followed the tornado, the city realized the growing importance of constructing several infrastructure projects. The City proposes to improve capacity to vital corridors that provide access to medical facilities and alternative routes through the community. Additionally, the City of Joplin recognizes the importance and encourages the usage of transit and seeks to include transit stops at various locations along these corridors.

To help build community support for rebuilding efforts in Joplin, the Citizens Advisory Recovery Team (CART) has been established to provide the area citizens with a forum where ideas can be brought to the table, consensus formed and ideas and/or projects can be taken to City Council or other appropriate organizations for consideration.

Through City and community planning and goal-making, several projects have been identified to help Joplin's transportation systems recover and promote economic activity in areas of devastation. The City of Joplin will construct surface transportation projects to improve capacity and safety; enhance multi-modal transportation; and spur economic development in an area that was ravaged by the



May 29, 2011 - Photo by Joe Raedle/Getty Images North America

President Obama delivered “America’s promise” to the community that although “the cameras may leave,” the residents of the community should not fear because “we will be with you every step of the way until Joplin is restored and this community is back on its feet.”

May 29, 2011

tornado. These projects include three roadway capacity improvements; two highway-railroad grade separations; and bicycle and transit enhancements. The improvements are described in the following paragraphs and illustrated on the “Project Locations” figure.

I. Maiden Lane Capacity improvements - 7th Street to 30th Street.

This project consists of resurfacing a two mile stretch of roadway on Maiden Lane from 7th to 9th Streets and resurfacing and widening the street from a four-lane to a five-lane facility between 9th and 30th Streets. Approximately 90 percent of right-of-way has been acquired for this project. Complete street elements such as bike lanes, sidewalks and transit stops are incorporated into the design. Maiden Lane currently operates as a north/south arterial road with approximately 16,000 AADT. Improvements to this roadway are imperative in order to support economic growth in Joplin’s devastated tornado zone. Maiden Lane is an important north-south corridor on the west end of the tornado zone.

2. 26th Street Capacity improvements - Schifferdecker Avenue to Maiden Lane.

This project consists of resurfacing and widening a one-mile stretch of 26th Street from a two-lane to a three-lane facility between Schifferdecker Avenue and Maiden Lane. Twenty-sixth (26th) Street is a major east/west corridor within the city providing connectivity to major shopping areas and residential areas. Complete street elements such as bike lanes, sidewalks and transit stops are incorporated into the design. Currently the AADT on 26th Street is 3,000. Twenty-Sixth (26th) Street provides a vital connection between the main north-south arterials on the west side of the tornado zone.



26th Street and Schifferdecker Avenue

3. Schifferdecker Avenue Capacity improvements - 7th Street to 32nd Street.

This project consists of resurfacing and widening a two-mile segment of Schifferdecker Avenue from a three-lane to a five-lane facility between 7th and 32nd Street. As a major north/south arterial, the AADT on Schifferdecker Avenue is approximately 10,000 vehicles per day. Additionally, bike lanes, sidewalks and transit stops are incorporated into the design utilizing complete street techniques. Drivers experience delay along this corridor when slowing or stopping for turning vehicles. The additional through lane will reduce delays and provide additional capacity for this route on the west side of the tornado zone.

4. 20th Street Transit, Pedestrian and Bicycle facilities - Range Line Road (Business 71) to Murphy Boulevard.

Twentieth (20th) Street is a main east/west corridor through the City of Joplin. There is currently a gap in pedestrian and bicycle connectivity along a one-third mile segment between Range Line Road and Murphy Boulevard. Because of the vision for growth along the 20th Street Corridor in the tornado zone, it is imperative that pedestrian and transit connectivity is available. Upgraded pedestrian and bicycle facilities will connect commercial, residential and green space. Transit amenities are also included in this project.

5. 20th Street Grade Separation at the Kansas City Southern Railway

DOT Crossing Number 33057L is a highway-rail grade crossing with track that is maintained by Kansas City Southern Railway on the Heavener Subdivision of the Midwest Division. Approximately 15 trains per day travel over this highway-rail grade crossing with speeds up to 50 mph according to data obtained from the Federal Railroad Administration (FRA)¹. The crossing is currently controlled by two gates and several mast-mounted and cantilevered flashing lights.



It is projected that the number of trains passing through this intersection will increase to 29 per day in 20 years. Furthermore, according to development plans for this area that was destroyed during the Joplin Tornado, 20th Street is also designated as a major commercial and transportation corridor. The current AADT at this crossing is approximately 18,000 vehicles. Over the next ten years, the AADT is expected to grow by 2% per year which translates to 22,000 AADT in ten years.

In order to reduce delay and enhance safety for train operators and highway users, separating the crossing grade is necessary. It is not determined if this will be achieved by constructing a rail bridge over the highway or constructing a highway bridge over the railroad. Minimal right-of-way will need to be acquired and the design will incorporate pedestrian and bicycle amenities.

6. 15th Street Grade Separation at the Kansas City Southern Railway

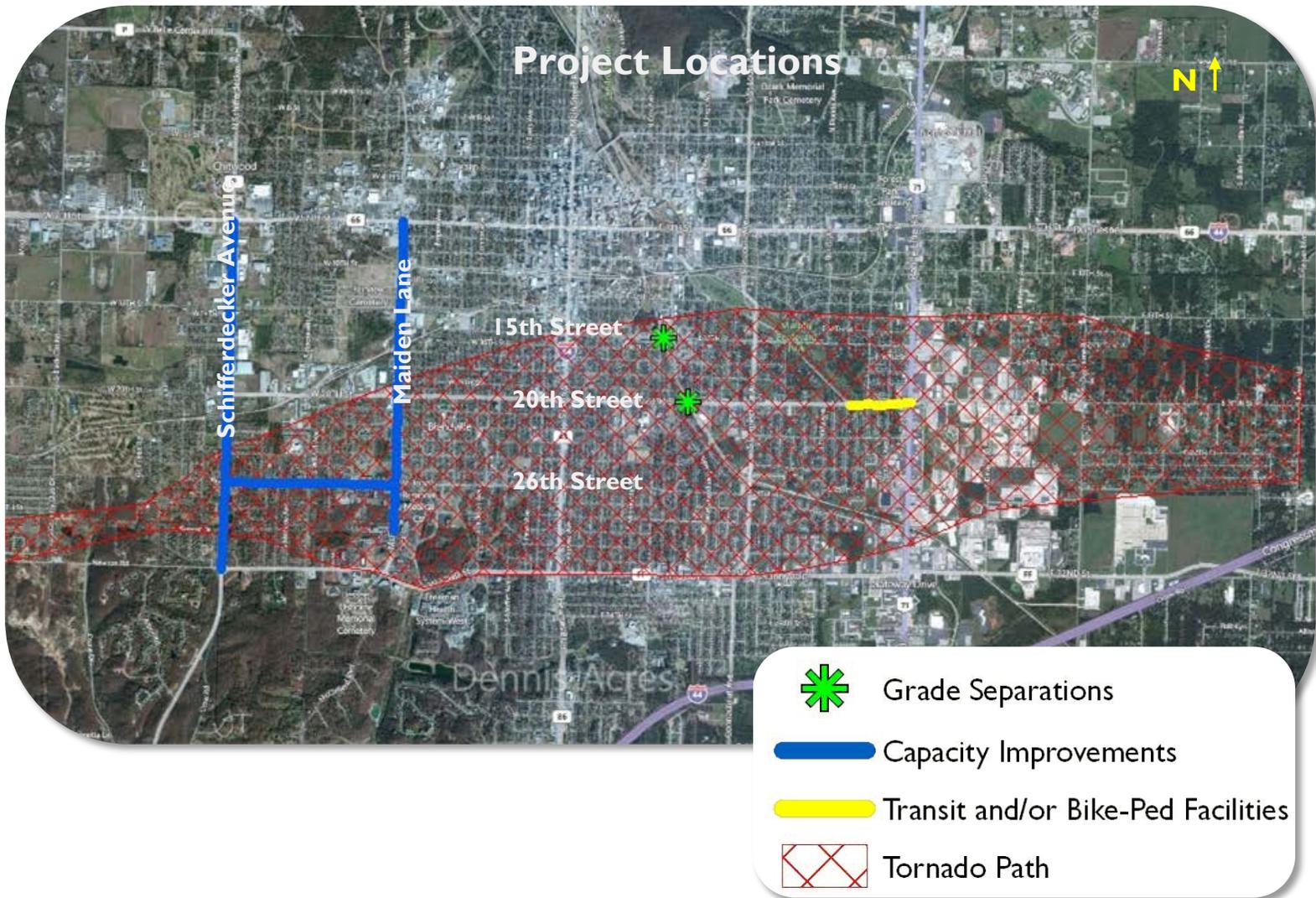
DOT Crossing Number 33055X is highway-rail grade crossing with track that is maintained by Kansas City Southern Railway on the Heavener Subdivision of the Midwest Division. The basic characteristics of this crossing are similar to those on the 20th Street Crossing. Approximately 15 trains travel over this

¹ www.fra.dot.gov

highway-rail grade crossing each day with typical speeds up to 50 mph according to data obtained from the FRA. The crossing is currently controlled by two gates and several mast-mounted and cantilevered flashing lights.

It is projected that the number of trains passing through this intersection will increase to 29 per day. The current AADT at this crossing is approximately 8,000 vehicles. Over the next ten years, it is expected to grow by 2% per year which translates to 9,600 AADT in ten years.

The surrounding land uses at this crossing are primarily commercial, so reducing delay and enhancing the safety of highway users is necessary. The most effective solution would be constructing a grade separation. It is not determined if this will be achieved by constructing a rail bridge over the highway or constructing a highway bridge over the railroad. Minimal right-of-way will need to be acquired and the design will incorporate pedestrian and bicycle amenities.



The benefit of these projects to the Joplin community is multifold. By including complete street elements and transit facilities along these identified corridors, Joplin travelers will have a variety of choices for accessible travel, while improved and alternate routes will provide a means of intra-community connectivity during a potential future disaster or incident. Additionally, these improvements will generate jobs not only for construction of these facilities but also from the resulting development of various land uses along these corridors.

By leveraging approximately \$5.4 million of the City’s Capital Improvement Program (CIP) funds, Joplin will be able to match over \$17 million in TIGER Discretionary Funds. The city’s share is twenty-four percent of the total costs. The CIP and the City’s Long-Range Transportation Plan have identified all of these projects for construction. In so doing, the City is prepared to make the twenty-four percent match by using the CIP already dedicated to these transportation projects.

II. Project Parties

The grant recipient is the City of Joplin. While the City is the lead agency seeking TIGER Grant funding, the Missouri Department of Transportation has provided support for *The Joplin Transportation and Disaster Recovery Initiative* and its approval for TIGER Grant funding.

Table I: Project Parties

City of Joplin Eric Kellstadt, Planning and Community Development Specialist 602 S. Main Joplin, Missouri 64801 (417) 624-0820 ext. 511 ekellsta@joplinmo.org	Missouri Department of Transportation Eric Curtit Central Office 105 W. Capitol Avenue Jefferson City, MO 65102 (573) 751-6775 eric.curtit@modot.mo.gov
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III. Grant Funds and Sources/Uses of Project Funds

The total amount of funds required to construct the six projects is \$23,500,000. A breakdown of the costs is shown in Table 2. The City of Joplin has two funding mechanisms that the city will leverage to provide the 24% match. The Transportation Sales Tax is a 1/2 cent sales tax that does not sunset. This provides funding for most of the city’s overlay projects and it supplements the Capital Improvement Sales Tax projects. The Capital Improvement Sales Tax is a 3/8 cent tax that sunsets in 2014.

Project	Cost
Maiden Lane	\$4.0 million
Schifferdecker	\$2.0 million
26th Street	\$2.0 million
20th Street At-Grade Train Crossing	\$7.0 million
15th Street At-Grade Train Crossing	\$8.0 million
20th Street Transit Upgrades	\$0.5 million
Total:	\$23.5 million

TIGER Funds Requested	\$17,900,000
City of Joplin Local Match	\$5,400,000
MoDOT Local Match	\$200,000
Total Project Cost	\$23,500,000
Sources & Uses of Project Funds	A combination of TIGER (\$17.9 million) and City of Joplin Transportation Tax Funds (\$5.4 million) funds and MoDOT (\$200,000) will be used for construction of new highway-railroad grade crossings, enhanced roadway capacity, new transit amenities, and new ADA-compliant sidewalks to accommodate bicycles and pedestrians.
Percentage of Project Costs Paid With TIGER Funds	76%
Percentage Shares of All Parties Providing Funds	24% match commitment from the City of Joplin Transportation and Capital Improvements Sales Tax and the Missouri Department of Transportation.

IV. Selection Criteria

A. Long-term Outcomes

i. State of Good Repair

By focusing investment on critical existing transportation assets in need of repair, the Joplin Transportation and Disaster Recovery Initiative directly addresses TIGER’s state of good repair objective. Without the improvement and repair of the six transportation facilities outlined in this application, the City of Joplin will:

- be unable to contribute to a robust regional economy heavily dependent on trade and commerce;
- struggle to provide its citizens with safe and uninterrupted travel lanes to medical and emergency facilities ; and
- be unsuccessful in providing a much needed jobs creation project in an economically distressed area.

The Maiden Lane, 26th Street and Schifferdecker Avenue Capacity improvements will enhance economic growth in Joplin by ensuring that goods and people can move throughout the city with decreased delay and greater safety. This is especially important in the tornado zone as rebuilding occurs.

Project is appropriately Capitalized; Optimizes Long-term Cost Structure

The City of Joplin will provide roadway maintenance as part of its annual maintenance program. The KCS will provide continuous maintenance and operation of all rail-related elements on the grade separation projects.

ii. Economic Competitiveness

By focusing investment on the transportation projects outlined in this application, the TIGER discretionary funds enhance the economic competitiveness in the Joplin Metropolitan Area. Without these funds, the City of Joplin will:

- be unable to rebuild its regional economy to the levels it experienced before the May 2011 disaster; and
- be unsuccessful in providing a much needed jobs creation project in an economically distressed area.

Improve Long-term Efficiency in Movement of Goods

Enhanced capacity on the three road widening and resurfacing projects will reduce delay and promote the movement of goods through these commercially important corridors. Additionally, the grade separation projects will also reduce vehicle idling and wait time at the crossings which will enhance goods movement through the city.

Allow for net new investments especially in EDAs

After the tornado, the City’s economic base was heavily impacted. Joplin was already located within an Economically Distressed Area and its situation worsened with its businesses and public services destroyed or severely impacted. But the City’s resolve to rebuild its community in a way that retains and grows its economic competitiveness is profound.

This resolve is based on rebuilding the community’s previous economy, while creating a new economy. The projects outlined in this TIGER application will provide improved transportation services and mobility that serve revitalization initiatives. The project elements will incorporate facilities sufficient to accommodate pedestrians, transit and goods movement capabilities.



26th Street and Maiden Lane (Damaged St. John’s Hospital)

Other methods of demonstrating economic competitiveness

By employing strategies to improve mobility to rail and road capacity, job opportunities will increase as businesses locate in these areas. Reduced transportation costs will reduce the cost of doing business. The multi-modal connectivity will retain and attract people to these revitalized commercial corridors in Joplin.

Joplin suffered great loss after the tornado. Not only loss of life and property but the business community suffered greatly. Several large retail stores including a Home Depot and Wal-Mart were completely destroyed, leaving hundreds of employees without jobs. The St. John's Medical Center was destroyed and closed after the initial recovery was completed. Nearly 2,200 employees are temporarily out of work or relocated until the new facility is built.

Ensuring the stability of its existing employment base and enhancing it with new, quality job opportunities is one of Joplin's rebuilding goals. Joplin strives to expand the availability of its workforce. Promoting and supporting opportunities to develop major projects to accelerate rebuilding in key areas is imperative in order for the city to grow economically. The city has designated key commercial corridors to allow for consistent business development in areas other than Range Line Road and 32nd Street; two of its major retail corridors. Both 20th Street and 26th Street have been targeted as major development and commercial corridors. The TIGER funds will help the city achieve the growth they strive for in these key areas.²

iii. Livability

Joplin's drive to rebuild its city following the wake of the tornado by improving its transportation system and facilities directly addresses livability. With the TIGER funding, Joplin 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.

Enhance User Mobility Through Creation of More Options

These projects will enhance mobility options by adding and expanding sidewalks and bike lanes and accommodating proposed transit enhancements. The new designs of these projects will accommodate all modes of transportation including freight rail, truck, bus transit, 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.

Improve Existing Transportation Choices by Enhancing Connectivity

One of the major goals of the Citizens Advisory Recovery Team is to focus on creating an enhanced and connected transportation system as Joplin rebuilds. Beyond the impact of the project improvements, the projects will directly improve other modes of travel. The highway projects will coordinate with the transit system and create connections between commercial, residential, institutional and green space.

Enhance Access to Education - The projects will increase access to education assets in the region. The High School that was destroyed by the tornado is located less than a quarter mile from the 20th

² Citizens Advisory Recovery Team

Street highway-railroad grade crossing. The school will be rebuilt at the same general location and will serve high school youth from around the region. The grade separation project on 20th Street will reduce travel times and improve the safety of students, parents and teachers traveling to the school.

Decrease Transportation Costs - The reduced delay of traffic on Schifferdecker Avenue, Maiden Lane and 26th Street will also increase the desirability of these corridors as places for growing business. Increased pedestrian amenities will also enable residents to walk or bike along those corridors. This will help reduce transportation costs for Joplin residents.

The highway-railroad grade separations will decrease transportation costs for auto users who will no longer experience delay and idling at the crossings.

Result of a Planning Process Coordinating Transportation and Land Use Planning

These projects have been outlined in the Joplin Area Transportation Study Organization's (JATSO) long term transportation plan. JATSO is the Joplin area's Metropolitan Planning Organization.

The Citizens Advisory Recovery Team was formed to define a vision for a stronger Joplin community. 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 leaders in the community. 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 1500 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 other than Range Line Road and 32nd Street where the bulk of commercial development is located. This designation

would include the following corridors, two of which are part of the projects:

- 20th Street : Duquesne Road to Schifferdecker (Grade Separation)
- 26th Street: Main Street to Maiden Lane (Capacity Improvements)



"Beautification of Neighborhoods is not Community Development, it's Economic Development."

– Citizens Advisory Recovery Team October 13-14, 2011 Design Charrette

The grade separation project on 20th Street would enhance this key corridor within city by eliminating delay at the highway-railroad crossing thus, providing uninterrupted travel for passenger and commercial vehicles. The capacity improvements along 26th Street are imperative for increasing user efficiency and safety throughout this designated vital commercial corridor.

iv. Sustainability

The six projects outlined in the Joplin Transportation and Disaster Recovery Initiative directly address sustainability by:

- reducing emissions at highway-railroad crossings where idling will be eliminated;
- improving efficiency and reducing travel time through key commercial corridors ; and
- promoting mode shift from driving to transit in the central core of the city.

Improve energy efficiency, reduces dependence upon oil, and reduces greenhouse gas emissions

Idling at the highway-railroad grade crossings will be eliminated with the grade separation projects at 15th and 20th Streets. The elimination of idling vehicles will in turn reduce fuel consumption and greenhouse gas emissions. The capacity improvements provide more efficient travel which also reduces fuel consumption and greenhouse gas emissions. Finally, all six of the projects incorporate complete street elements which encourage use of alternative travel modes: walking, biking and transit.

Maintain, project or enhance the environment

There are a variety of methods that could provide benefits for reducing energy consumption and emissions over the long-term, as well as making the projects more sustainable for the community and the region:

- Incorporating Tornado Disaster Rubble and Recyclable Construction
- Implementing Natural Stormwater Treatment Methods
- Utilizing Low Emission Fuels during Construction

Each of these project sustainability benefits are discussed in more detail within the Innovation Section of the application.

v. Safety

The Joplin Transportation and Disaster Recovery Initiative directly addresses TIGER's safety objective. Without the improvement and repair of the six transportation facilities outlined in this application, the City of Joplin will struggle to provide its citizens with safe and uninterrupted travel lanes to medical and emergency facilities.

The project improves the safety of the transportation facilities and system by removing the highway-railroad grade crossings, expanding congested roadways, upgrading signing, signals, transit and bicycle and pedestrian facilities.

The upgrade of Schifferdecker Avenue, Maiden Lane and 26th Street will increase capacity and improve safety. Based on AADT, the existing roadways are operating at unacceptable levels of service. Existing Schifferdecker Avenue is a three-lane roadway with 10,000 AADT. Maiden Lane is currently a four-lane roadway with 16,000 AADT and 26th Street is a two-lane roadway with 3,000 AADT.

A 3-year review of the accidents on these routes indicates there were 117 total accidents with 28% of those accidents resulting in an injury. This compares to a citywide injury accident rate of 20%. Along the corridors of the three widening projects, most of the accidents occurred at intersections indicating the need for turn bays and signal upgrades. Upgrading these roadways from 2 and 4 lanes to 3 and 5 lane roadways including center turn lanes will reduce accident occurrence at the intersections. Crosswalks, signals with pedestrian push buttons, sidewalks and improved transit stops will enhance personal mobility and safety.

Location of Accidents	Injury/Fatality	Property Damage Only	Total:
City of Joplin³	920	3718	4638
Maiden Lane ⁴	23	45	68
Schifferdecker ⁵	5	28	33
26th Street ⁶	5	11	16
20th Street Transit Upgrades ⁷	3	23	26
20th Street At-Grade Train Crossing ⁸	10*	4	10
15th Street At-Grade Train Crossing ⁹	1	3	4

*Includes one fatality.

Fifteenth (15th) and 20th Streets are major East/West corridors through Joplin. The grade separation of the highway-railroad grade crossings will prevent conflicts with vehicles, trains or pedestrians thus providing a safer roadway for all modes of travel. The emergency service providers and the 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. Approximately 15 trains per day travel across these highway-rail crossings. The Average Daily Traffic (ADT) on 20th Street is 18,000 and the ADT on 15th Street is 8,000. A review of Federal Railroad Administration accident information revealed there have been 14 total accidents on the 15th and 20th Street highway-railroad crossings. One accident resulted in a fatality. The number of trains is expected to increase to 29 per day in the next 20 years; therefore there is an increased likelihood that more accidents could potentially occur. The grade separations would eliminate highway-railroad crossing accidents at these two locations.

B. Job Creation & Economic Stimulus

Construction Jobs

³ Missouri Department of Transportation

⁴ Ibid.

⁵ Ibid.

⁶ Ibid.

⁷ Ibid.

⁸ This information was based on crash records obtained from FRA.

⁹ Ibid.

As outlined in the August 12, 2011 Federal Register/Vol. 76, No. 156, government spending at a level of \$92,000 creates one job-year. Using this value applied to the \$23,500,000 requested in this application, results in more than 255 job-years created by funding allocated to this project.¹⁰

Post-Construction Jobs

In addition to jobs directly created by the projects, 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 devastated by the tornado.

Joplin has been rebuilding rapidly following the tornado. Because of several large retailers, a hospital and schools being rebuilt, the city has set a new record 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.

C. 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 these Transportation and Disaster Recovery Initiative projects are:

Implementing Natural Storm Water Treatment Methods and Sustainable Landscaping

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.

Incorporating Porous Pavement

Porous pavement will be considered for use on sidewalks and bike lanes. Porous pavement will assist in storm water management.

Recyclable Construction Materials

The construction projects 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.

LED Lighting and Signals

The city of Joplin already uses LED for lighting and signal devices and will incorporate them into these projects.

Possibly Design/Build of the Grade Separation Structures

Consideration will be given to the Design/Build delivery system for the construction of the highway-railroad grade separations.

¹⁰ August 12, 2011 Federal Register/Vol. 76, No. 156.

D. Partnership

i. Jurisdictional and Stakeholder collaboration

The project is to be jointly completed by the City of Joplin, Missouri and the Missouri Department of Transportation. The Joplin Area Transportation Study Organization and the Citizens Advisory Recovery Team also back this grant application.

This application has broad support from all levels of leadership striving to rebuild Joplin. Included as an appendix to this application are letters of support from the following individuals and organizations:

Resolution of Support for the Joplin City Council
U.S. Senator Roy Blunt
U.S. Rep. Billy Long (7th District)
MO Sen. Ron Richard (District 32)
MO Rep. Bill White (District 129)
MO Rep. Charlie Davis (District 128)
Jasper County Commission
Joplin Area Transportation Study Organization (MPO)
Citizens Advisory Recovery Team (CART)
Joplin Area Chamber of Commerce
Missouri Department of Transportation

ii. Disciplinary Integration

To date, Joplin has received \$350,000 in Community Development Block Grant funding to establish a Habitat for Humanity program following the tornado. The Federal Emergency Management Agency has provided an emergency response team. Other than payments to eligible individuals, FEMA has not provided direct funding to rebuild Joplin at this time.

Because of the destruction caused by the May 2011 tornado, resources have been stretched to help in the disaster recovery. Federal funds matched with local monies are required to undertake the projects of this magnitude in order to aid in Joplin's recovery.

E. Results of Benefit-Cost Analysis

This Benefit-Cost Analysis (BCA) addresses the requirements of the TIGER Discretionary Grants application. The US Department of Transportation expects applicants to identify, quantify, and compare expected benefits and costs under the five long-term outcomes as outlined in the August 12, 2011 Federal Register/Vol. 76, No. 156.

The Long-Term Outcomes are as follows:

State of Good Repair: Improving the condition of existing transportation facilities and systems, with particular emphasis on projects that minimize lifecycle costs.

“The spirit and can-do attitude of this community is really unsurpassed,” Napolitano said. “I’ve been in a number of communities, this past year especially, and I will say Joplin certainly has something special going for it.”

She said Joplin’s rebuild is moving rapidly, but did note concerns with the balance in the federal Disaster Relief Fund, saying it was at an all-time low.

“Right now, quite frankly, we’re running on fumes,” Napolitano said. “We’ve had a lot of disasters this year, a lot drawn out on the fund. We have asked for supplemental funding.”

– *The Joplin Globe*

Director of Homeland Security, Janet Napolitano’s Visit to Joplin on September 22, 2011

Economic Competitiveness: Contributing to the economic competitiveness of the U.S. over the medium to long-term.

Livability: Fostering livable communities through place-based policies and investments that increase transportation choices and access to transportation services for people in communities across the U.S.

Sustainability: Improving energy efficiency, reducing dependence on oil, reducing greenhouse gas emissions and benefitting the environment.

Safety: Improving the safety of U.S. transportation facilities and systems. The following BCA outlines the benefits under each outcome, the benefit calculations, the project costs, and the resulting overall benefit-cost ratio. Included is additional information on qualitative benefits of the project.

PROJECT BENEFITS BY LONG-TERM OUTCOME

This project will provide benefit in each category of the desired long-term outcomes. Many of the benefits of these projects address more than one long-term outcome. The following table illustrates the quantitative and qualitative benefits and the outcomes they address.

Benefit Categories Based on Long-Term Outcomes					
Benefit	Long-Term Outcomes				
	State of Good Repair	Economic Competitiveness	Livability	Sustainability	Safety
Quantitative					
Reduced Travel Time		CI, GS	CI, GS, T/P	CI, GS, T/P	
Reduced Fuel Consumption		CI, GS, T/P	CI, GS, T/P	CI, GS, T/P	
Avoided Highway Maintenance	T/P	T/P	T/P	T/P	T/P
Construction Job Creation		CI, GS, T/P	CI, GS, T/P		
Safety			CI, GS, T/P		CI, GS, T/P
Reduced Emissions		CI, GS, T/P	CI, GS, T/P	CI, GS, T/P	CI, GS, T/P
Qualitative					
Emergency Response Time		CI, GS, T/P	CI, GS, T/P		CI, GS, T/P
Residual Value	GS				

Capacity Improvements = CI
 Grade Separations = GS
 Transit/Pedestrian = T/P

Reduced Travel Time

The roadway capacity improvement projects will reduce travel time by increasing the speed along the corridors since the inclusion of a center turn lane will eliminate slowing down when other vehicles make a left-hand turn.. Driver Costs can be calculated using the vehicle miles traveled (VMT) and the following information:

- An assumed average speed of 28 miles per hour for the no-build scenario and 30 miles per hour for the build scenario
- Value of time (VOT) for auto drivers/passengers = \$12.50¹¹ per hour
Value of time (VOT) for truck drivers = \$23.70¹² per hour
Annual productivity increases of 1.6%¹³ augment the VOT rates above

$VMT = \text{Project distance} \times AADT \times \text{Days/Year}$

$\text{Travel Hours} = VMT \div \text{Average Speed}$

$\text{Travel Time Cost} = \text{Travel Hours} \times VOT$

It is assumed that the traffic on the arterial roads in question is 90% auto traffic and 10% truck traffic. Furthermore, autos are assumed to carry an average of 1.2 persons, while trucks carry just the driver. Annual Travel Time Savings is the difference between the travel time costs for the no build scenario and the build scenario, which stems from a faster vehicle trips.

The grade separations will also result in less travel time by eliminating delays for waiting on trains. Based on the AADT and 15 trains per day, an estimated 1,333 vehicles per day are delayed by trains on 15th and 20th Streets combined. This volume is expected to grow, not only due to growth in roadway traffic at 2% annually, but also by an increase in the number of trains on the KCS, from 15 trains to over 29 trains per day over the analysis period. The average delay per vehicle is estimated at 2.5 minutes. The same split between auto and truck traffic and number of people per vehicle as assumed for the capacity improvement projects is assumed for the grade separation projects. For grade separation projects:

$\text{Travel Hours (Auto)} = \text{Vehicles} \times 2.5 \text{ minutes} \div 60 \text{ minutes/hour} \times 365 \text{ days/year} \times 90\% \times 1.2 \text{ persons/car}$

$\text{Travel Hours (Truck)} = \text{Vehicles} \times 2.5 \text{ minutes} \div 60 \text{ minutes/hour} \times 365 \text{ days/year} \times 10\% \times 1.0 \text{ persons/truck}$

$\text{Travel Time Cost} = \text{Travel Hours} \times VOT$

Travel time savings were not factored into the benefit-cost analysis for the pedestrian/bicycle path. Some users of the pathway will incur more travel time, while others save time. Those users who are lured out of their cars and onto the path will undoubtedly travel at slower speeds; however, they may view their travel time as serving an exercise and/or leisure purpose, as well as transportation. People who currently walk or bicycle may avoid this section 20th Street because they deem it unsafe for non-motorized travel. With the pathway, these users may be able to shorten their trips, saving time.

¹¹ USDOT, The Value of Time Savings: Departmental Guidance for Conducting Economic Evaluations Revision 2, September 28, 2011

http://ostpxweb.dot.gov/policy/reports/vot_guidance_092811.pdf

¹² Ibid.

¹³ Ibid.

Reduced Fuel Consumption

The grade separation projects will reduce fuel usage by eliminating idling time waiting on trains at the grade crossings. Fuel consumption will also be reduced when motorists choose other modes of travel once the transit and pedestrian project is constructed. The benefit estimate for the grade separations is based on the idling time eliminated and the fuel consumption of idling, while for the pedestrian/bicycle/transit pathway on the reduction of miles driven by passenger vehicles average fuel consumption, and current fuel costs.

Fuel Costs can be calculated using the following information (idling vehicles):

- Time Savings
- A small car idling 5 minutes is estimated to use ½ cup gasoline. (Idling trucks would be expected to use a higher volume of fuel, but such a statistic was not readily identified. So, for purposes of the BCA, all vehicles were treated as automobiles.)
- 2011 cost of gasoline is \$3.476¹⁴

Fuel Usage = Travel Hours (auto and truck) ÷ 12 (# of 5-minute periods in an hour) ÷ 32 (# of half cups in a gallon)

Fuel Costs can be calculated using the following information and assumptions (mode change):

- An estimated 2% of AADT on 20th Street will change its mode to non-motorized travel for a distance of 1 mile.
- Average mileage for passenger vehicle is 17.6 mpg¹⁵
- 2011 cost of fuel is \$3.476¹⁶

Vehicle Miles Traveled (VMT) = Average Annual Daily Traffic (AADT) x Distance
Fuel Usage = VMT ÷ Average Mileage

For both the grade separations and the transit project:

Fuel Cost = Fuel Usage x Cost per Gallon

Annual Fuel Savings is the difference between the fuel cost for the no build scenario and the build scenario, which stems from less idling time and fewer miles driven for the grade separation and transit projects, respectively. Fuel is also expected to be saved with the roadway capacity improvement projects, as fuel efficiency is enhanced with fewer instances of slowing down and speeding up to accommodate vehicles turning left, but was not estimated for purposes of the BCA.

Construction Job Creation

The number of construction jobs estimated to be created by the Joplin Transportation and Disaster Recovery Initiative is 20 full time equivalent jobs over a 2-year construction period¹⁷. The annual mean wage in the Joplin Missouri region for Construction and Extraction Occupations is \$35,150.¹⁸

¹⁴ U.S. Energy Information Administration, Independent Statistics and Analysis, U.S. Gasoline and Diesel Fuel Prices, 10/17/11 for Midwest

¹⁵ Bureau of Transportation Statistics. National Transportation Statistics. 2010. Table 4-23.

¹⁶ U.S. Energy Information Administration, Independent Statistics and Analysis, U.S. Gasoline and Diesel Fuel Prices, 10/17/11 for Midwest

¹⁷ See project schedule as included in overall TIGER application.

¹⁸ Bureau of Labor Statistics, Occupational Employment Statistics, May 2010 release date. The Standard Occupational Classification Code used is 47-0000, Construction and Extraction occupations.

In addition to direct construction jobs, construction activity tends to generate an equal number of indirect positions. These indirect jobs are for the production of building materials and various professional services, such as accounting and services. To be conservative, the earnings for indirect jobs were estimated at the rate for production jobs, rather than that for higher-paying professional positions. The annual mean wage in the Joplin, Missouri region for Production Occupations is \$28,760.¹⁹ In addition to direct and indirect jobs, induced jobs are estimated to be 36%²⁰ of total job creation. Instructional materials for TIGER grant BCA, however, say that multiplier effects should be omitted, so induced jobs are not included as a monetary benefit in our analysis. The anticipated total income received by workers in the region as a result of the construction of the Joplin Transportation and Disaster Recovery Initiatives projects can be calculated as follows:

Direct Job Earnings = Number of Construction Jobs x Annual Wage x Years Duration

Indirect Job Earnings = Number of Indirect Jobs (= Construction Jobs) x Annual Wage x Years Duration

Total Job Earnings = Direct Job Earnings + Indirect Job Earnings

The Joplin Transportation and Disaster Recovery Initiative is expected to quickly create construction and other jobs that would otherwise not be generated. The Unemployment rate in Jasper County, Missouri, was 7.2% in April, 2011²¹. Following the Joplin tornado, the unemployment rate quickly rose to 8.9% in June, 2011. While payroll costs are normally considered an “impact”, rather than a benefit, the construction projects are likely to put many unemployed people to work or retain workers that might otherwise have lost employment due to businesses being destroyed. Therefore, the full amount of pay is considered a productivity increase. Accordingly, the job creation benefit of the project equals the total job earnings for construction and indirect jobs.

Reduction in Crashes

The grade separation projects will lead to a reduction in the number of highway rail grade crossing crashes.

Crash Costs can be calculated using the following information:

- Probability of a crash at each grade crossing is 2.38115%²², the average of the probability at DOT Crossing Number 33057L and 33055X
- Percentage of crashes that entail injury is 71% and fatality is 7.1%²³
- All train-vehicle crashes are assumed to entail property damage.
- Value of statistical life (VSL) is \$5.8 million²⁴
- Disutility Factor for a moderate injury is 0.0155²⁵ of VSL (Injuries range from minor to fatal with corresponding disutility factors of 0.0020 to 1.0000. BCA assumes all injuries are “severe”, rather than applying a distribution curve.)
- Cost of a property damage only (PDO) crash estimated at \$2,000²⁶ in 1994, increased to 2011 dollars of \$3,023 by applying an average annual inflation rate of 2.46% in the interim years²⁷

¹⁹ Bureau of Labor Statistics, Occupational Employment Statistics, May 2010 release date. The Standard Occupational Classification Code used is 51-0000, Production occupations.

²⁰ Executive Office of the President, Council of Economic Advisers, "Estimates of Job Creation from the American Recovery and Reinvestment Act of 2009", May 2009.

²¹ Bureau of Labor Statistics.

²² www.fra.dot.gov.

²³ Based on FRA incident reports found on www.fra.dot.gov.

²⁴ USDOT, <http://ostpxweb.dot.gov/policy/reports/VSL%20Guidance%20031809%20a.pdf> accessed 9/29/11

²⁵ Ibid.

²⁶ FHWA, Motor Vehicle Accident Costs, T 7570.2, October 31, 1994,

http://safetyentryinc.com/~safetyse/images/pdf/1994_Motor_Vehicle_Accident_Costs.pdf accessed 9/29/11

Fatality Costs = Probability of a crash x 2 crossings x Fatality Rate x VSL
Injury Costs = Probability of a crash x 2 crossings x Injury Rate x VSL x Disutility Factor
PDO Costs = Probability of a crash x 2 crossings x PDO Rate x PDO Cost
Total Crash Cost = Fatality Costs + Injury Costs + PDO Costs

Annual Crash Savings related to the construction of the grade separated crossings is the difference between the crash costs for the no build and the build scenarios. The Build Scenario was assumed to cost \$0 because the grade separation would eliminate highway rail grade crossing crashes. The roadway capacity projects and the pedestrian/bicycle/transit pathway project are also expected to reduce accidents in these corridors, but these savings were not estimated for the BCA.

Reduction in CO2 Emissions - Idling

The Grade Separation project will reduce the amount of CO2 emissions as a result of the reduction in fuel consumption and reduced idling of vehicles at the crossing. The reduction is based on the annual fuel reduction calculated previously.

The following data is necessary to calculate the economic cost of emissions:

- Annual CO2 emissions per daily vehicle idling 2.5 minutes is 110 pounds
- Value of CO2 Emission Reduction = \$22.8 to \$34.1 per metric ton²⁸ in 2013 through 2032

The cost of CO2 emissions can be calculated as follows:

CO2 Cost = Number of vehicles delayed x 110 pounds x Conversion Factor x Value of CO2 Emissions

Annual Emissions Savings, associated with the reduction in fuel consumed is based on the elimination of the idling time that vehicles would experience without the build scenario. The roadway capacity projects and the pedestrian/bicycle/transit pathway project are also expected to reduce emissions, but these savings were not estimated for the BCA.

Avoided Highway Maintenance

Highway maintenance costs will also be reduced as a result of reducing the number of truck miles. The Federal Highway administration estimates highway improvements costs at 0.8 cents²⁹ per passenger vehicle mile.

Highway Maintenance Cost = VMT x Cost per Mile

Annual Maintenance Savings related to the Joplin pedestrian/bicycle/transit pathway project is the difference between the maintenance costs for the no build and the build scenarios. The roadway capacity and grade separation projects are not expected to impact road maintenance costs significantly.

²⁷ http://inflationdata.com/inflation/Inflation_Rate/HistoricalInflation.aspx?dsInflation_currentPage=0 accessed 10/17/11.

²⁸ EPA, Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis, February 2010, <http://www.epa.gov/oms/climate/regulations/scc-tsd.pdf> accessed 9/29/11.

²⁹ FHWA, Addendum to the 1997 Federal Highway Cost Allocation Study Final Report, May 2000, <http://www.fhwa.dot.gov/policy/hcas/addendum.htm> accessed 9/28/11.

Additional Qualitative Benefits

Reduced Emergency Response Time:

The Joplin Fire Department serves an area of approximately 50 square miles and a daytime population of 250,000. The city is protected by a daily, on-duty strength of 24 members plus 7 administrative personnel, staffing five strategically located stations. Firefighters serve the City on 2 engine companies, 3 truck companies, and 1 rescue/hazardous materials unit.³⁰

An important element in the decision to grade-separate highway-railroad crossings is the impact to emergency response. Understanding the existing police and fire operations is important. The measurements of delay impacts at highway-railroad grade crossings are Total Gate Down (TGD) time and Vehicle Hours of Delay (VHD) per day. These two measure gauge if the perceived amount of congestion in a community is actually evident and helps understand the magnitude of train and vehicular traffic growth in the future.

By grade separating the highway-railroad crossings at 15th and 20th Streets, the vehicle hours of delay are eliminated and emergency responders will not be delayed or required to change routes when responding to emergency calls.

Retain Useful Life (Residual Value)

Many of the six projects' assets would need to be replaced after 20 years, including the tracks, signals and roadway improvements. The railroad bridge, however, will be designed and constructed to have a 100-year useful life. Accordingly, the bridge is estimated to have a residual value of 80% of its initial cost.

³⁰ City of Joplin

Net Benefit Analysis Summary (\$ in Thousands)			
Description	Baseline (No Build)	Build Scenario	Benefit
Capacity Improvements			
Construction Jobs	\$0	\$1,278	\$1,278
Reduced Travel Time - Auto	(\$268,806)	(\$250,885)	\$17,920
Reduced Travel Time - Truck	(\$44,682)	(\$41,703)	\$2,979
Total Net Benefits:	(\$313,488)	(\$291,310)	\$22,178
Discounted (3%):	(\$225,463)	(\$209,153)	\$16,309
Cost:			\$8,000
B-C Ratio:			2.0
Grade Separations			
Construction Jobs	\$0	\$5725	\$5725
Emissions (CO2)	(\$71)	\$0	\$71
Reduced Fuel Consumption (Idling Vehicles)	(\$1239)	\$0	\$1239
Reduced Rail Crossing Crashes	(\$6210)	\$0	\$6210
Reduced Travel Time	(\$13794)	\$0	\$13,794
Total Net Benefits:	(\$15,725)	\$5,752	\$21,477
Discounted (3%):	(\$10,998)	\$5752	\$16,750
Cost:			\$15,000
B-C Ratio:			1.12
Transit/Pedestrian Improvements			
Construction Jobs	\$0	\$160	\$160
Reduced Fuel Consumption	(\$27,149)	(\$26,606)	\$543
Reduced Highway Maintenance	(\$1,100)	(\$1,078)	\$22
Total Net Benefits:	(\$28,249)	(\$27,524)	\$725
Discounted (3%):	(\$20,609)	(\$20,037)	\$572
Cost:			\$500
B-C Ratio:			1.14

V. Project Readiness and NEPA

A. Project Schedule

These six projects outlined in this application are slated to begin construction in May 2013, with completion on or before June, 2014. The capacity improvement projects and transit/pedestrian projects are designed with minimal right-of-way acquisition required. The grade separation projects will require minimal right-of-way acquisition along with full design. Key milestones are referenced in the table below.

Project Schedule	
Design	April 2012 – March 2013
Right-of-Way Acquisition	February 2013
Construction Commences	May 2013
Construction Completion	June 2014

B. Environmental Approvals

An initial environmental screening has been conducted, indicating there will be some small impacts to floodplains. Based on that screening, Categorical Exclusions are anticipated on all projects.

This project has the potential to improve the environment. The grade separation structures should reduce idling at the tracks, thus improving air quality. Additionally, train horns will not be sounded at the crossing resulting in positive noise reduction for the community. The proposed bio swales and rain gardens will improve water quality. Native and natural plantings will reduce the need to mow. The installation of sidewalks, bike paths and transit stops will reduce vehicular trips on the system; improve air quality and the personal health of the citizens by walking and biking.

C. Legislative Approvals

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

D. State and Local Planning

The CIP and the City's Long-Range Transportation Plan have identified several of these projects for construction. The projects will be included in the local TIP. Two of the projects are also 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. 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.

E. Technical Feasibility

The projects are technically feasible and constructible. Design engineering is approximately 85% complete for the capacity improvement projects and the transit/pedestrian project.

No significant construction challenges are associated with any of the projects. Utility relocations are anticipated to be minor and will be coordinated with the appropriate utility owners and cleared prior to the award of the contract.

F. Financial Feasibility

The project will be financed through a combination of the TIGER funding award of \$17.9 million and \$5,600,000 in funds from the City of Joplin, Missouri's Transportation Sales Tax and Capital Improvements Sales Tax and the Missouri Department of Transportation (MoDOT). Therefore, the City of Joplin and MoDOT are prepared to fund 24 percent of an estimated total project cost of \$23.5

million (FY 2014 dollars). These projects are integral in initiating the long-term economic benefit cycle for which the TIGER program was intended to promote.

The City Joplin and MoDOT have the ability to match and manage grant funds; cover cost overruns and operating deficits; and maintain and operate federally funded construction projects.

Financial statements from the City of Joplin and MoDOT are in compliance with requirements applicable to federal programs and internal control and are audited on an annual basis by an independent auditor.

VI. Federal Wage Certification

All laborers and mechanics employed by contractors and subcontractors on projects funded directly, in whole or in part, by TIGER grant funds through the Federal Government, including this project, shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with U.S. Code Subchapter IV, Chapter 31, Title 40.

A signed letter of certification is included in the Appendix.

VII. Material Changes To Pre-Application

Since the pre-application was submitted an additional funding partner has committed to the project. The Missouri Department of Transportation and will join the City of Joplin, Missouri in providing matching funds for this project. Additionally, the match commitment has increased from 20% to 24%.

Funding Source	Pre-Application Amount	Final Application Amount
TIGER Discretionary Funds	\$20,100,000	17,900,000
City of Joplin, Missouri	\$5,400,000	\$5,400,000
Missouri Department of Transportation	\$0	\$200,000
Total	\$25,500,000	\$23,500,000