

Narrative Application Form – Individual FD/Construction Part I



High-Speed Intercity Passenger Rail (HSIPR) Program

Applicants interested in applying for funding under the March 2011 Notice of Funding Availability (NOFA) are required to submit the narrative application forms, parts I and II, and other required documents according to the checklist contained in Section 4.2 of the NOFA and the Application Package Instructions available on FRA’s website. All supporting documentation submitted for this FD/Construction project should be listed and described in Section G of this form. Questions about the HSIPR program or this application should be directed to the Federal Railroad Administration (FRA) at HSIPR@dot.gov.

Applicants must enter the required information in the gray narrative fields, check boxes, or drop-down menus of this form. Submit this completed form, along with all supporting documentation, electronically by uploading them to www.GrantSolutions.gov by 8:00 p.m. EDT on April 4, 2011.

A. Point of Contact and Applicant Information

Applicant should ensure that the information provided in this section matches the information provided on the SF-424 forms.

(1) Name the submitting agency: Missouri Department of Transportation		Provide the submitting agency Authorized Representative name and title: Rodney Massman, Administrator of Railroads		
Address 1: P.O. Box 270	City: Jefferson City	State: MO	Zip Code: 65102	Authorized Representative telephone: (573) 751-7476 Authorized Representative email: rodney.massman@modot.mo.gov
Provide the submitting agency Point of Contact (POC) name and title (if different from Authorized Representative): Rodney Massman, Administrator of Railroads		Submitting agency POC telephone: 573) 751-7476 Submitting agency POC email: rodney.massman@modot.mo.gov		
(2) List out the name(s) of additional State(s) applying (if applicable): NA				

B. Eligibility Information

Complete the following section to demonstrate satisfaction of an application’s eligibility requirements.

(1) Select the appropriate box from the list below to identify applicant type. Eligible applicants are listed in Section 3.1 of the NOFA.

- State
- Group of States
- Amtrak
- Amtrak in cooperation with one or more States

If selecting one of the applicant types below, additional documentation is required to establish applicant eligibility. Please select the appropriate box and submit supporting documentation to demonstrate applicant eligibility, as described in Section 3.2 of the NOFA, to GrantSolutions.gov and list the supporting documentation under “Additional Information” in Section G.2 of this application.

- Interstate Compact
- Public Agency established by one or more States

(2) Indicate the planning processes used to identify the proposed FD/Construction project. As defined in Section 3.5.1 of the NOFA, the process should analyze the investment needs and service objectives of the service that the individual project is intended to benefit. Refer to the FD/Construction Application Package Instructions for more information. The appropriate planning document must be submitted with the application package and listed in Section G.2 of this application.

- State Rail Plan
- Service Development Plan (SDP)
- Service Improvement Plan (SIP)
- Statewide Transportation Improvement Plan (STIP)
- Other, please list this document in Section G.2 with “Other Appropriate Planning Document” as the title
- This project is not included in a relevant and documented planning process

(3) Verify the completion of Preliminary Engineering requirements. List the documents that establish completion of Preliminary Engineering for the project covered by this application. Refer to the NOFA and FD/Construction Application Package Instructions for more information. Any document not available online should be submitted with the application package and listed in Section G.2 of this application. If more rows are required, please provide the same information for additional PE requirements in a separate supporting document and list it in Section G.2 of this application.

Documentation	Date of Issue (mm/yyyy)	Describe How Documentation Can Be Verified (choose one)	
		Submitted in GrantSolutions	Web Link (if available)
Preliminary Engineering Plans (65% plans developed by KCT’s engineering consultant)	02/2011	<input checked="" type="checkbox"/>	
Project Cost Estimate (developed by KCT’s engineering consultant to estimate construction cost)	03/2011	<input checked="" type="checkbox"/>	
Construction Phasing Plan (developed by KCT’s engineering consultant to phase construction activities)	03/2011	<input checked="" type="checkbox"/>	
Construction Schedule (developed by KCT’s engineering consultant to schedule construction)	08/2010	<input checked="" type="checkbox"/>	

activities)			
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(4) Verify the completion of NEPA documentation. Indicate the date the document was issued and how the document can be verified by FRA. A NEPA decision document (Record of Decision, Finding of No Significant Impact, or FRA Categorical Exclusion concurrence) is not required for an application but must have been issued by FRA prior to award of a construction grant. Applications that are accompanied by a final NEPA determination will be looked upon favorably during the application review and selection process. Verified documents can be submitted as a supporting document or referenced through an active public URL. Any document not available online should be submitted with the application package and listed in Section G.2 of this application. Refer to the NOFA and FD/Construction Application Package Instructions for more information.

Documentation	Date of Issue (mm/yyyy)	Describe How Documentation Can Be Verified (choose one)	
		Submitted in GrantSolutions	Web Link (if available)
NEPA Documentation			
<input checked="" type="checkbox"/> Categorical Exclusion Documentation (worksheet)	03/2011	<input checked="" type="checkbox"/>	
<input type="checkbox"/> Environmental Assessment	/	<input type="checkbox"/>	
<input type="checkbox"/> Final Environmental Impact Statement	/	<input type="checkbox"/>	
Project NEPA Determination			
<input type="checkbox"/> Categorical Exclusion	/	<input type="checkbox"/>	
<input type="checkbox"/> Finding of No Significant Impact	/	<input type="checkbox"/>	
<input type="checkbox"/> Record of Decision	/	<input type="checkbox"/>	

(5) Select and describe the operational independence of the proposed FD/Construction project.¹ Refer to Sections 3.4.4 and 3.5.2 of the NOFA for more information about operational independence and applications related to previously-selected projects.

- This project is operationally independent.
- This project is operationally independent when considered in conjunction with previously selected or awarded HSIPR project(s) (identify previously selected or awarded projects below).
- This project is not operationally independent.

Briefly clarify the response:

The replacement of the Kansas City Terminal Railway's Independence Avenue rail bridge will improve the operational reliability of six daily Amtrak trains.

¹ A project is considered to have operational independence if, upon implementation, it will have tangible and measurable benefits, either independently of other investments or cumulatively with projects selected to receive awards under previous HSIPR program solicitations.

C. FD/Construction Project Summary

Identify the title, location, and other information of the proposed project by completing this section.

(1) Provide a clear, concise, and descriptive project name. Use identifiers such as State abbreviations, major cities, infrastructure, and tasks of the individual project (e.g., “DC-Capital City to Dry Lake Track Improvements”). Please limit the response to 100 characters.

MO-KC to STL Corridor –KC Terminal Independence Street Bridge

(2) If the applicant submitted an application for this project, or a project within the scope, that was not selected, indicate the solicitation under which that application was submitted. Check all that apply.

- | | |
|--|---|
| <input type="checkbox"/> ARRA – Track 1 | <input type="checkbox"/> FY 2010 Service Development Program |
| <input checked="" type="checkbox"/> ARRA – Track 2 | <input type="checkbox"/> FY 2010 Individual Project – PE/NEPA |
| <input type="checkbox"/> FY 2009 – Track 4 | <input type="checkbox"/> FY 2010 Individual Project – FD/Construction |
| <input type="checkbox"/> FY 2009 Residual | <input type="checkbox"/> N/A |

(3) Indicate the activity(ies) proposed in this application. Check all that apply.

- Final Design Construction

(4) Indicate the anticipated duration, in months, for the proposed FD/Construction project. Consider that American Recovery and Reinvestment Act funding must be obligated by September 30, 2017.

Number of Months: 34

(5) Specify the anticipated HSIPR funding level for the proposed FD/Construction project. This information must match the SF-424 documents, and dollar figures must be rounded to the nearest whole dollar. All applicants are encouraged to contribute non-Federal matching funds. FRA will consider matching funds in evaluating the merit of the application. See Section 3.3 of the NOFA for further information regarding cost sharing.

HSIPR Federal Funding Request	Non-Federal Match Amount	Total Project Cost	Non-Federal Match Percentage of Total
\$15,389,521	\$8,286,665	\$23,676,186	35 %

(6) Indicate the source, amount, and percentage of non-Federal matching funds for the proposed FD/Construction project.
 The sum of the figures below should equal the amount provided in Section C.5. Click on the gray boxes to select the appropriate response from the lists provided in type of source, status of funding, and type of funds. Dollar figures must be rounded to the nearest whole dollar. Also, list the percentage of the total project cost represented by each non-Federal funding source. Provide supporting documentation that will allow FRA to verify each funding source, any documentation not available online should be submitted with the application package and listed in Section G.2 of this application.

Non-Federal Match Funding Sources	Type of Source	Status of Funding ²	Type of Funds	Dollar Amount	% of Total Project Cost	Describe Any Supporting Documentation to Help FRA Verify Funding Source
Kansas City Terminal Railroad (KCT)	New	Committed	Cash	\$8,286,665	35%	MoDOT and KCT Memorandum of Understanding
Sum of Non-Federal Funding Sources				\$8,286,665	35%	N/A

(7) Indicate whether the proposed activities in this application are also included as a component project or phase in a Service Development Program application submitted concurrently.

- Yes, all of the activities in this application have also been submitted as a component project or phase of a Service Development Program application.
- Yes, some of the activities within this application have also been submitted as a component project or phase of a Service Development Program application.
- No, this application and its proposed activities have not been submitted as a component project or phase of a Service Development Program application.

(8) Indicate the name of the corridor where the project is located and identify the start and end points as well as major integral cities along the route.

Kansas City to St. Louis, Missouri, corridor, also serving these Missouri stations: Independence, Lee’s Summit, Warrensburg, Sedalia, Jefferson City, Hermann, Washington and Kirkwood. (Project also benefits Amtrak’s Southwest Chief route, Chicago to Los Angeles.)

(9) Describe the project location, using municipal names, mileposts, control points, or other identifiable features such as longitude and latitude coordinates. If available, please provide a project GIS shapefile (.shp) as supporting documentation. This document must be listed in Section G.2 of this application.

The Kansas City Terminal Railway’s Independence Avenue rail bridge is located in Kansas City, Missouri. The bridge spans U.S. Highway 24/Independence Avenue between Topping and White Avenues. Bridge is located at KCT MP 4.

² The following categories and definitions are applied to funding sources:

Committed: Committed sources are programmed capital funds that have all the necessary approvals (e.g., statutory authority) to be used to fund the proposed project without any additional action. These capital funds have been formally programmed in the State Rail Plan and/or any related local, regional, or state capital investment program or appropriation guidance. Examples include dedicated or approved tax revenues, state capital grants that have been approved by all required legislative bodies, cash reserves that have been dedicated to the proposed project, and additional debt capacity that requires no further approvals and has been dedicated by the sponsoring agency to the proposed project.

Budgeted: This category is for funds that have been budgeted and/or programmed for use on the proposed project but remain uncommitted (i.e., the funds have not yet received statutory approval). Examples include debt financing in an agency-adopted capital investment program that has yet to be committed in the near future. Funds will be classified as budgeted when available funding cannot be committed until the grant is executed or due to the local practices outside of the project sponsors’ control (e.g., the project development schedule extends beyond the State Rail Program period).

Planned: This category is for funds that are identified and have a reasonable chance of being committed, but are neither committed nor budgeted. Examples include proposed sources that require a scheduled referendum, requests for state/local capital grants, and proposed debt financing that has not yet been adopted in the agency’s capital investment program.

(10) Provide an abstract outlining the proposed FD/Construction project. Briefly summarize the project narrative provided in the Statement of Work in 4-6 sentences. Capture the major milestones, outcomes, and anticipated benefits that will result from the completion of the individual project.

The KCT's Independence Avenue rail bridge, built in 1912, is part of two current Amtrak routes (*Missouri River Runner* and *Southwest Chief*) with six passenger trains daily and is expected to be part of a future Kansas City to St. Louis high-speed passenger route. It is also a component of a significant east-west intercontinental rail freight network that is vital to the United States' economy, national defense and emergency preparedness. With a roadway vertical clearance under the bridge of just 12'0", trucks traveling Independence Avenue frequently strike the rail bridge. The cumulative damage may compromise the integrity of the bridge and lead to a major bridge outage.

Should the KCT be forced to perform a major emergency repair or emergency rebuild, passenger service would, at best, be significantly inconvenienced with a detour or, at worst, suspended until the bridge could be placed back in service. With respect to freight rail traffic, the national economic impacts would be substantial since it would entail detouring 150 trains per day. The proposed bridge replacement will provide approximately 100 years more useful bridge life, allow rail capacity expansion for future high-speed passenger service with the addition of a fourth main track and increase roadway vertical clearance to 15 feet.

(11) Indicate the type of expected capital investments included in the proposed FD/Construction project. Check all that apply.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Communication, signaling, and control | <input type="checkbox"/> Rolling stock refurbishments |
| <input type="checkbox"/> Electric traction | <input type="checkbox"/> Station(s) |
| <input type="checkbox"/> Grade crossing improvements | <input checked="" type="checkbox"/> Structures (bridges, tunnels, etc.) |
| <input type="checkbox"/> Major interlocking | <input type="checkbox"/> Support facilities (yards, shops, administrative buildings) |
| <input type="checkbox"/> Positive Train Control | <input checked="" type="checkbox"/> Track rehabilitation and construction |
| <input type="checkbox"/> Rolling stock acquisition | <input checked="" type="checkbox"/> Other (please describe) Roadway, utilities, right-of-way acquisition |

(12) Indicate the anticipated service outcomes of the proposed FD/Construction project. Check all that apply.

- | | |
|--|--|
| <input type="checkbox"/> Additional service frequencies | <input checked="" type="checkbox"/> Improved operational reliability on existing route |
| <input type="checkbox"/> Service quality improvements | <input type="checkbox"/> Improved on-time performance on existing route |
| <input type="checkbox"/> Increased average speeds/shorter trip times | <input type="checkbox"/> Other (please describe) |

Briefly clarify the response(s) if needed:

Reliability of the passenger rail traffic is impaired because trucks frequently crash into the underside of the bridge, which is nearing the end of its useful life. Cumulative damage from crashes could necessitate taking the bridge out of service causing lengthy detours or suspension of passenger service.

(13) Provide the following information about job creation through the life of the proposed FD/Construction project. Please consider construction, maintenance, and operations jobs.

Anticipated number of <u>annual</u> onsite and other direct jobs created (on a 2080 work-hour per year, full-time equivalent basis).	FD/ Construction Period	First full Year of Operations	Fifth full Year of Operations
	127	1	1
Indicate the anticipated fiscal year.	2012	2015	2018

(14) Quantify the applicable service outcomes of the proposed FD/Construction project. Provide the current conditions and anticipated service outcomes. Future state information is required only for the service outcomes identified in Section C.11.

	Frequencies ³	Scheduled Trip Time (round-trips, in minutes)	Average Speed (mph)	Top Speed (mph)	Reliability – Provide Either On-Time Performance Percentage or Delay Minutes
Current	3	680	44	44	85% on time YE 02/11
Future	3	680	44	44	86%

(15) Indicate if any FD or Construction activities that are part of this proposed project are underway or completed. Check all that apply.

- | | |
|---|--|
| <input type="checkbox"/> Final Design activities are complete. | <input type="checkbox"/> Construction activities are complete. |
| <input checked="" type="checkbox"/> Final Design activities are in progress. | <input type="checkbox"/> Construction activities are in progress. |
| <input type="checkbox"/> No Final Design activities are in progress or completed. | <input checked="" type="checkbox"/> No Construction activities are in progress or completed. |

Describe any activities that are underway or completed in the table below. If more space is necessary, please provide the same information for additional activities underway or completed in a supporting document and list in Section G.2 of this application.

Activity	Description	Completed? (If yes, check box)	Start Date (mm/yyyy)	Actual or Anticipated Completion Date (mm/yyyy)
Preliminary Engineering Plans	65% plans developed by KCT's engineering consultant	<input checked="" type="checkbox"/>	03/2011	03/2011
Project Cost Estimate	Estimation of project construction costs developed by KCT's engineering consultant	<input checked="" type="checkbox"/>	03/2011	03/2011
Construction Phasing Plan	Preliminary phasing of construction activities developed by KCT's engineering consultant	<input checked="" type="checkbox"/>	03/2011	03/2011
Construction Schedule	Preliminary schedule of construction activities developed by KCT's engineering consultant	<input checked="" type="checkbox"/>	03/2011	03/2011
Categorical Exclusion Worksheet	NEPA evaluation completed by MoDOT	<input checked="" type="checkbox"/>	03/2011	03/2011

³ Frequency is measured in daily round-trip train operations. One daily round-trip operation should be counted as one frequency.

D. Infrastructure Owner(s) and Operator(s)

Address the section below with information regarding railroad infrastructure owners and operators of the proposed FD/Construction Project. Applicants that own and/or control the infrastructure to be improved by the project or have a service outcomes agreement in place with the infrastructure owning railroad for the proposed project, or an executed agreement that could be amended with the infrastructure owning railroad for a project(s) located on the same corridor as the proposed project, will be looked upon favorably during the application review and selection process.

(1) Provide information regarding Right-of-Way Owner(s). Where railroads currently share ownership, identify the primary owner. Click on the gray boxes to select the appropriate response from the lists of railroad type, right-of-way owner and status of agreement. If the Right-of-Way Owner is not included on the prepopulated list, select “Other” and type the name in the adjacent text box within that field. Should the application have more than five owners, please provide the same information for additional owners in a separate supporting document and list it in Section G.2 of this application.

Type of Railroad	Right-of-Way Owner	Route-Miles	Track-Miles	Status of Agreement to Implement
Freight	Kansas City Terminal Railway	0.2	87	Executed Memorandum of Understanding between Commission and KCT

(2) Name the Intercity Passenger Rail Operator and provide the status of agreement. If applicable, provide the status of the agreement with the partner that will operate the planned passenger rail service (e.g., Amtrak). Click on the gray box to select the appropriate response from the status of agreement list. Should the proposed service have more than three operators, please provide the same information for additional operators in a separate supporting document and list it in Section G.2 of this application.

Name of Rail Service Operator	Status of Agreement
Amtrak	Final Executed Agreement on Project Scope/Outcomes

(3) Provide information about the existing rail services within the project boundaries (e.g., freight, commuter, and intercity passenger). Click on the gray boxes to select the appropriate response from the list of types of service. If the Name of Operator is not included in the prepopulated list, select “Other” and type the name in the adjacent text box within that field.

Type of Service	Name of Operator	Top Existing Speeds Within Project Boundaries (mph)		Number of Route-Miles Within Project Boundaries (miles)	Average Number of Daily One-Way Train Operations ⁴ within Project Boundaries
		Passenger	Freight		
Intercity Passenger	Amtrak	45	N/A	0.2	6
Freight	Kansas City Terminal Railway	N/A	45	0.2	150

(4) Estimate the share of benefits that will be realized by non-intercity passenger rail services and select the approximate cost share to be paid by the beneficiary.⁵ Click on the gray boxes to select the appropriate response from the lists of type of beneficiary, expected share of benefits, and approximate cost share. If more than three types of non-intercity passenger rail are beneficiaries, please provide additional information in a separate supporting document, and list it in Section G.2 of this application.

Type of Non-Intercity Passenger Rail	Expected Share of Benefits	Approximate Cost Share
Freight rail – KCT	25%-45%	35%
Freight rail – Other	Greater than 50%	0%

⁴ One daily round-trip operation should be counted as two daily one-way train operations.

⁵ Benefits include service improvements such as increased speed or on-time performance, improved reliability, and other service quality improvements.

E. Additional Response to Evaluation Criteria

Respond to each of the following evaluation criteria in the gray text boxes provided to demonstrate how the proposed FD/Construction project will achieve these benefits.

(1) Project Readiness

Describe the feasibility of the proposed FD/Construction project to proceed promptly to award, including addressing:

- The applicant's progress, at the time of application, in reaching compliance with NEPA for the proposed project. Although a NEPA decision document (Record of Decision, Finding of No Significant Impact, Categorical Exclusion determination) is not required at the time of application, applications for Individual FD/Construction Projects that are accompanied by a final NEPA determination will be looked upon favorably during the application review and selection process;
- The applicant's progress, at the time of application, in reaching final service outcomes agreements (where necessary) with key project partners. Applicants that own and/or control the infrastructure to be improved by the project or have a service outcomes agreement in place with the infrastructure owning railroad for the proposed project, or an executed agreement that could be amended with the infrastructure owning railroad for a project(s) located on the same corridor as the proposed project, will be looked upon favorably during the application review and selection process; and
- The quality and completeness of the project's Statement of Work, including whether the Statement of Work provides a sufficient level of detail regarding scope, schedule, and budget to immediately advance the project to award.

The preliminary design is complete identifying the scope, schedule and budget for the project, as identified in the supporting Statement of Work, so final design plans should move forward relatively quickly. A Categorical Exclusion worksheet has been completed and submitted with the application for FRA's review and approvals, demonstrating no environmental impacts are associated with the project. In addition, the State Historic Preservation Office was contacted and provided clearance of no historical impacts.

The KCT and Amtrak already have an operating agreement in place. Upon completion of the project, there will not immediately be any change to the passenger operations, so no new agreement is necessary. In addition, a memorandum of understanding has been executed between KCT and Missouri's Highways and Transportation Commission (which governs MoDOT) for support and collaboration of this project.

MoDOT has been successful in securing Service Outcomes Agreements (SOA) with other respective railroad hosts, including Union Pacific Railroad and Terminal Railroad Association of St. Louis, so the grounds for obtaining an SOA with KCT have been established and should move forward quickly. The Kansas City area local metropolitan planning organization (Mid-America Regional Council) has submitted a letter of support on behalf of this project and the high-speed rail initiative.

There is no known funding risk if approved per the cost-sharing terms with the KCT per the MOU. The project can be completed in a two-year construction timeframe, so barring extreme unforeseen 'acts of God,' such as earthquakes, tornados, floods or fires, there are no schedule risks. Amtrak has shown no propensity to discontinue service as long as there is state financial support on this route. Many communities have invested substantial funds in their train stations and have a vested interest in ensuring the route's success, so there is no substantial risk of cities discontinuing support of their station stops.

If this application is approved, MoDOT anticipates an expedited completion of the required agreements, so the project can be quickly started. MoDOT will require minimal technical assistance similar to the FRA assistance requested during the successful implementation of the application for an intercity passenger rail grant in 2008 and the 2009 second round of applications.

(2a) Transportation Benefits

Describe the transportation benefits that will result from the proposed FD/Construction project and how they will be achieved in a cost-effective manner, including addressing:

- Generating improvements to existing high-speed and intercity passenger rail service, as reflected by estimated increases in

ridership, increases in operational reliability, reductions in trip times, additional service frequencies to meet anticipated or existing demand, and other related factors;

- Generating cross-modal benefits, including anticipated favorable impacts on air or highway traffic congestion, capacity, or safety, and cost avoidance or deferral of planned investments in aviation and highway systems;
- Creating an integrated high-speed and intercity passenger rail network;
- Encouragement of intermodal connectivity and integration, including a focus on convenient connection to local transit and street networks, as well as coordination with local land use and station area development;
- Ensuring a state of good repair of key intercity passenger rail assets;
- Promoting standardized rolling stock, signaling, communications, and power equipment;
- Improved freight or commuter rail operations, in relation to proportional cost-sharing (including donated property) by those other benefiting rail users;
- Equitable financial participation from benefiting entities in the project's financing;
- Encouragement of the implementation of positive train control (PTC) technologies (with the understanding that 49 U.S.C. 20147 requires all Class I railroads and entities that provide regularly scheduled intercity or commuter rail passenger services to fully institute interoperable PTC systems by December 31, 2015); and
- Incorporating private investment in the financing of capital projects or service operations.

Replacement of the KCT's Independence Avenue rail bridge will increase the operational reliability of Amtrak's *Missouri River Runner* and *Southwest Chief* service, with four and two trains per day, respectively. (Total Amtrak station usage in Missouri in 2010, measured by boardings and alightings in Missouri stations, was 663,392⁶.) Despite posted warnings of a 12'0" vertical clearance, trucks traveling Independence Avenue frequently strike this rail bridge due to its low vertical clearance. In the past, truck incidents have not necessitated a closure of the bridge to rail traffic, but they have affected the vehicle and truck traffic on Independence Avenue. The cumulative damage of repeated truck crashes, however, may at some point lead to a major bridge outage, prohibiting all rail traffic (passenger and freight) for an extended period. Amtrak detours would entail negotiation of trackage rights with the Union Pacific Railroad, a delay of at least 60 minutes, and use of Union Pacific crews over the detour route. Detouring Amtrak trains may be deemed impractical in which case passenger service into Kansas City may instead be suspended.

Replacement of the railway bridge will generate a number of benefits to other modes. Because the replacement bridge is planned to have more clearance than the existing bridge, local truck traffic will be able to reduce their route miles. For trucks that have continued to use Independence Avenue, often striking the bridge, they will no longer hit the bridge, avoiding the resultant damage and vehicular detours. Further, the proposed bridge will allow widening of Independence Avenue and incorporate ADA-compliant sidewalks and a new bike lane. This will enhance safety for both motorists and pedestrians, accommodate proposed bus rapid transit on the roadway and promote non-motorized modes of transportation. The Kansas City to St. Louis corridor is already a designated high-speed rail corridor. Should the existing Amtrak route be used to implement high-speed rail, additional rail capacity will be needed on the railway bridge over Independence Avenue. The existing bridge has just three tracks, but the proposed bridge will include a fourth track that could provide the additional capacity needed.

Replacement of the existing 100-year old bridge will facilitate keeping this component of the passenger rail route in good repair. The existing bridge demands about \$15,000 of annual repairs and will likely require major maintenance of over \$250,000 within 10 years. A total replacement is likely within 20 years. A new bridge that poses no clearance problems to truck traffic would likely stay in good repair with virtually no maintenance costs for the first 15 years in service. For several years after that, annual maintenance costs are estimated at \$10,000.

The Independence Avenue rail bridge is part of a significant east-west intercontinental rail freight network vital to the

⁶ <http://www.amtrak.com/pdf/factsheets/MISSOURI10.pdf> accessed 3/23/11.

United States' economy, national defense and emergency preparedness. Each day, 150 trains cross this bridge, comprising approximately 17%⁷ of all rail carloads originated by the nation's Class I railroads. Should the cumulative damage of repeated truck crashes impair the condition of the bridge to an extent that the KCT is forced to perform a major emergency repair or emergency rebuild, the national economic impacts would be substantial, entailing costly detours over lengthy alternative routes. Proactively replacing the bridge would eliminate this risk.

Positive train control (PTC) technology that will eventually be used on this line is capable of preventing train-to-train collisions, over speed derailments and casualties or injuries to roadway workers. It is a process by which the train can detect speed and the train will automatically slow down or come to a complete stop if the engineer does not respond in a timely manner. This project upgrade signal circuitry allows for a smoother transition from the standardized signal systems to the new circuitry that is compatible with PCT equipment. Therefore, such upgrades will encourage the railroads to take a more immediate role in implementing PTC on the corridor, permitting freight and passenger trains to interact within a safer environment, especially in congested areas such as Kansas City.

As owner of the railroad bridge, the KCT stands to reap benefits of reduced maintenance costs should the bridge be replaced. The most significant benefit of the bridge's replacement, though, is the increased reliability along this critical freight rail corridor in a safe and efficient manner. Not only do the five Class I freight railroads that have traffic over the KCT (Union Pacific Railroad, BNSF Railway Company, Norfolk Southern, Kansas City Southern Railroad and Canadian Pacific Railway) share this benefit with KCT, but all the shippers and consumers of goods transported on these trains do, as well. Allocation of risk avoidance benefits to all of these beneficiaries would be highly subjective. The KCT has agreed to pay 35 percent of the project costs.

(2b) Other Public Benefits

Describe the other public benefits that will result from the proposed FD/Construction project and how they will be achieved in a cost-effective manner, including addressing:

- The extent to which the project is expected to create and preserve jobs and stimulate increases in economic activity;
- Promoting environmental quality, energy efficiency, and reduction in dependence on oil, including the use of renewable energy sources, energy savings from traffic diversions from other modes, employment of green building and manufacturing methods, reductions in key emissions types, and the purchase and use of environmentally sensitive, fuel-efficient, and cost-effective passenger rail equipment; and
- Promoting coordination between the planning and investment in transportation, housing, economic development, and other infrastructure decisions along the corridor, as identified in the six livability principles developed by DOT with the Department of Housing and Urban Development and the Environmental Protection Agency as part of the Partnership for Sustainable Communities, which are listed fully at <http://www.dot.gov/affairs/2009/dot8009.htm>.

The replacement of the KCT's Independence Avenue rail bridge and the related improvements to the roadway beneath it would create 127 construction jobs of various trades during a 32-month final design and construction schedule. In addition to the direct jobs created by the project, indirect jobs will be generated including jobs in the service, manufacturing and professional sectors. Although there is some variation, a generally accepted ratio is two indirect jobs per one direct job. Some of these direct and indirect jobs may be filled by residents in the immediate vicinity of the project, which is a disadvantaged area.

Over time, if the frequency of truck crashes with the Independence Avenue rail bridge continues, cumulative damage could necessitate taking the bridge out of service causing lengthy detours or suspension of passenger and rail service. Due to the high freight volume over these tracks (150 trains per day) and capacity constraints on alternative routes, virtually every alternative route

⁷ Calculated as follows: 150 trains x approximately 100 cars/train x 365 days/year = 5.475 million carloads annually; As a percent of 32.110 million carloads originated by all Class I carriers in 2006, as per AAR's Class I Railroad Statistics <http://www.aar.org/pubcommon/documents/abouttheindustry/statistics.pdf> accessed 8/3/10.

available would need to be used to accommodate an outage of the Independence Avenue rail bridge. (As most of the freight traffic involved is transcontinental, alternative routes must have access to one of the approximately 10 viable rail bridges crossing the Mississippi River.) A few trains could be re-routed on Union Pacific's network through Kansas City, adding only a few miles. Other alternative routes, however, would add hundreds of "out of route" miles per train. The detour routes would entail more fuel and emissions, in particular, greenhouse gases (CO₂), volatile organic compounds (VOC), nitrogen oxides (NO_x) and particulate matter (PM).

Addition of the fourth track proposed to traverse the bridge will increase capacity for freight and passenger trains and is expected to reduce overall wait times for trains traveling on the UP rail line. Through the reduction in wait times for freight and passenger locomotives, the amount of fuel wasted by unnecessary engine idling and the associated diesel emissions will also decrease. Based on the anticipated reduction in idling, emission reductions for the criteria pollutants of oxides of nitrogen (NO_x), Carbon Monoxide (CO) and particulate matter (PM) can be calculated. As a diesel engine also emits CO₂, reducing idling will also cut CO₂ emissions. However, at this time the U.S. Environmental Protection Agency has not released a guidance document on how to calculate CO₂ emissions and reductions for diesel train engines.

Reducing the emissions of NO_x, CO and PM will result in environmental benefits to the surrounding area. The Independence Avenue Bridge is located in Jackson County, which is a maintenance area for ground level ozone. Any actions that reduce the emissions of NO_x will help to improve air quality in a region that has previously dealt with unhealthy ground-level ozone concentrations. NO_x is a major constituent of diesel emissions and is one of the two pollutants that combine to form ozone. Ozone is another criteria pollutant that has a well documented negative impact on the environment, specifically vegetative and human health.

Diesel exhaust also high concentrations of various types of PM, some of which are classified as hazardous air pollutants (considered to be hazardous to human health). The health impacts of fine particulates are well documented and include decreased lung function, aggravation of asthma, irregular heartbeat and premature mortality in those who suffer from cardiac and lung disease. In addition to reducing the impact of the facility's emissions on the overall region's air quality, localized impact on all aspects of the environment including wildlife, nearby citizens, and vegetation will be reduced.

Emission reduction calculations were performed by the Missouri Department of Natural Resources for NO_x, CO and PM to assess the environmental benefits of the Independence Avenue Bridge Replacement. Using a modeled delay reduction for both AMTRAK and Union Pacific trains, average fuel use per engine at idle, and USEPA emission factors relating pollutant mass emissions to each gallon of fuel consumed, emission reductions were estimated. Emissions of NO_x are estimated to decrease 152.6 pounds per year after completion of the siding project, CO emissions would decrease by 24.2 pounds per year, and PM emissions would decrease by 5.3 pounds per year. There may be additional emission reductions that result from the reduction in accidents under the bridge leading to fewer traffic congestion incidents, however these reductions were not estimated.

Most truck drivers avoid Independence Avenue in the vicinity of the rail bridge due to the bridge's clearance issues. If the bridge was replaced and the clearance issue eliminated, an undetermined number of trucks would use Independence Avenue to shorten their routes. The reduction of local truck miles would entail benefits including fuel savings and emissions reductions. Furthermore, since the proposed bridge replacement entails improvements to walkways and bikeways, it could have a co-benefit of diverting local automobile traffic to non-motorized modes, leading to additional environmental improvements.

Because of the roadway's current vertical alignment, the section of Independence Avenue under the rail bridge often floods when there is a significant rain event. The proposed project will remedy various drainage issues that plague the roadway. Pondered water on the roadway shortens the pavement's life. By correcting drainage issues and replacing the current pavement, the pavement's life-cycle costs will be reduced. Currently, flooding beneath the Independence Avenue rail bridge necessitates detours of roadway traffic and poses a pedestrian safety hazard. Elimination of the flooding will save driving time, fuel and emissions related to detouring traffic; save the city's public works department labor for installation and removal of road barriers; and eliminate the safety hazard, ultimately making the area more livable.

(3) Project Delivery Approach

Describe the risk associated with the delivery of the proposed FD/Construction project within budget, on time, and as designed, including addressing:

- The timeliness of project completion and the realization of the project's benefits;
- The applicant's financial, legal, and technical capacity to implement the project;
- The applicant's experience in administering similar grants and projects;
- The soundness and thoroughness of the cost methodologies, assumptions, and estimates;
- The thoroughness and quality of the project management documentation;
- The timing and amount of the project's future noncommitted investments;
- The adequacy of any completed engineering work to assess and manage/mitigate the proposed project's engineering and constructability risks; and
- The sufficiency of system safety and security planning.

The existing Independence Avenue rail bridge was built in 1912 and is nearing the end of its useful life. Despite the posted low vertical clearance, trucks repeatedly strike the bridge's underside. Damage to the bridge structure from truck collisions and general degradation due to age are evident in recent bridge inspections. The sooner the bridge is replaced, the sooner the Amtrak and freight routes can be rid of this vulnerable component and reliability of the routes ensured.

The Kansas City Terminal Railway, the owner of the railway bridge, has a good history of completing construction projects and has the backing of five Class I railroads in its daily operations. The work completed on the project to date includes preliminary engineering, cost estimate, construction phasing and scheduling. Under the phased schedule, the new structure will be completed in sections and rail traffic shifted to new track and new bridge sections before the old structure is removed, also section by section. In this way, rail traffic can continue uninterrupted during the 18-month construction schedule. Roadway traffic, however, will need to be detoured for the duration of construction schedule.

The applicant previously secured a grant from the Federal Railroad Administration, Intercity Passenger Rail Program, Grant No. 6048 of \$3,292,684 to construct a new siding at Shell Spur on the same Union Pacific-Amtrak corridor of this project. The award was made Sept. 30, 2008, and construction began May 29, 2009. Work was completed in November 2009. The award was matched to a \$5 million state appropriation. An MOU and a later multifaceted agreement were signed in 2009 with the Union Pacific Railroad to facilitate the project. A grant agreement was also signed with the FRA. Also three shovel-ready projects were awarded to MODOT in 2010 on the first round of applications, and these projects are in the pre-construction stage. In addition, the SOA was signed in March 2011.

Cost estimates were prepared for KCT by a consultant with extensive railroad and roadway experience. Cost estimates are based on previous contractor bids for similar construction and detailed project quantities.

MoDOT will perform all tasks required for project management through a coordinated process with the railroad owner (Kansas City Terminal Railway), the operator (Amtrak) and the FRA. Upon award of the project, MoDOT will monitor and evaluate the project's progress through the administration of regular progress meetings scheduled throughout the project duration. Topics of discussion may include: review of design progress, review of construction activities, field observations, identification of problems incurred and decisions/fixes for those problems, identification of potential future problems that could impede progress and proposed corrective measures to regain projected schedule, review of project schedule and progress, and review of billing invoices. There will be continued communication by all parties involved throughout the duration of final design and construction.

Federal funding under the HSIPR program coupled with funds committed by the KCT will leave no future non-committed

investments for the project.

Preliminary engineering was performed for KCT by a professional engineering consultant with extensive railroad and roadway experience. Plans have been taken to a 65 percent completion level, sufficient to uncover engineering and constructability risks.

Safety and system security planning is a priority for the KCT and remains so in this project. The KCT has an exemplary safety record. Safety is also always a top priority for any MoDOT project. The synopsis of the process used by agencies similar to KCT and in which MoDOT oversees in other areas to ensure that planned and scheduled internal safety reviews are performed to evaluate compliance with all safety protocols for all track improvement projects, and would be required to be used on this project, includes: (i) identification of functions subject to review; (ii) responsibility for scheduling reviews; (iii) process for conducting reviews, including the development of checklists and procedures and issuing of findings; (iv) review of reporting requirements; (v) tracking the status of implemented recommendations; and (vi) coordination with the Grantee Agency (MoDOT) and the Grantor Agency (FRA). The KCT's internal safety plan is attached. Amtrak also has its own system safety plan and the Class I Railroads that own the KCT also have their own plans. A further description of the measures, controls and assurances in place to ensure that safety principles, requirements and representatives are included in the process will be developed in conjunction with MoDOT's final signing of the grant agreement for this project.

(4) Sustainability of Benefits

Identify the likelihood of realizing the proposed FD/Construction project's benefits, including addressing:

- The applicant's financial contribution to the project;
- The quality of a financial planning documentation that analyzes the financial viability of the HSIPR service that will benefit from the project;
- The availability of any required operating financial support, preferably from dedicated funding sources;
- The quality and adequacy of project identification and planning; and
- The reasonableness of estimates for user and non-user benefits for the project.

The KCT has committed more than \$8 million to the project. Operations and capital improvements made by the KCT are paid for through usage fees to its members that include five Class I railroads, which also support funding the project.

The HSIPR project that will benefit from this planning is the *Missouri River Runner* Amtrak service, which has been in existence for 31 years and continues to thrive. Recent increases in on-time performance and ridership have made it a route with a great future. As this is an existing service, its financial planning is constantly updated to ensure viability. Also benefiting from the project is the *Southwest Chief* Amtrak service. Like the *Missouri River Runner*, ridership on the *Southwest Chief* is growing. With increasing fuel prices and the public's environmental concern, ridership on both routes is expected to continue to grow.

Although it is funded by the state's general revenue and even though Missouri has had an extremely tight budget the last few years, there is no reason to expect that the service will not continue, especially as other projects to improve on-time service come on line and further support its operational funding.

Estimates for user and non-user benefits vary. The most uncertain issue regarding the project's benefits is the likelihood for the existing bridge to be rendered unsound. The probability has been estimated at 1 percent per year but could be higher. The estimate that a bridge outage would add 60 minutes to Amtrak schedules is conservative considering that the UP route assumed for the detour would also be expected to accommodate some detoured freight traffic that would strain capacity. The ramifications of a bridge outage are most significant when considering freight rail traffic and are estimated at more than \$400 million, though when factoring in the probability, is reduced to \$4 million. The \$400 million estimate consists of cost of train delays for 150 freight trains per day, additional fuel and

increased emissions related to longer alternative routes and cost of time for detoured roadway traffic for the duration of an emergency bridge repair or replacement. This estimate, while huge, is grossly understated because it overlooks the ripple effects the national freight network would experience throughout the system.

- Most volume increases over rail lines, including the significant increases these alternative routes would have, tend to slow speeds and increase terminal dwell time of the previously existing traffic. Interrupting 17 percent of the nation's rail freight traffic would undoubtedly have ramifications for much of the remaining 83 percent.
- Impacts to passenger and freight rail traffic would not immediately be eliminated when emergency reconstruction of the Independence Avenue rail bridge is completed, but rather would linger for weeks, if not months.
- The cost estimate assumed that all existing freight traffic would be accommodated with other rail routes. The capacity on other routes, however, may not allow this, particularly when considering that the AAR forecasts that the demand for railroad freight will increase 88 percent from 2002 to 2035⁸. The use of trucks as an alternative mode for some of the diverted rail freight would entail higher fuel consumption and emissions.

⁸ AAR, Overview of America's Freight Railroads, May 2008.

F. Statement of Work

The Statement of Work (SOW) is a required document. This must be submitted using the Narrative Application Form Part II. Statement of Work available on FRA's website to provide the required information. The quality and completeness of this document will be measured as a Project Readiness evaluation criterion, as outlined in Section 5.2.1 of the NOFA.

Please provide the SOW as a separate document and list it in Section G.2 of this application.

The SOW is a description of the work that will be completed under the grant agreement and must address the background, scope, and schedule, and include a high-level budget of the proposed project.

- (1) The SOW is required for a complete application package.
- (2) The SOW should contain sufficient detail so that both FRA and the applicant can:
 - a. Understand the expected outcomes of the work to be performed by the applicant, and
 - b. Track applicant progress toward completing key project tasks and deliverables during the period of performance.
- (3) The SOW should clearly describe project objectives, but allow for a reasonable amount of flexibility regarding how the objectives will be accomplished. It is important to describe the overall approach to and expectations for project/activity completion.
- (4) If the SOW describes work for phases and/or groups of component projects, the larger program should be explained in the background section of the SOW. The remainder of the SOW should be limited to describing the activities that directly contribute to the combined FRA and applicant effort which is funded under the grant agreement.

G. Optional Supporting Information

Provide a response to the following questions, as necessary, for the proposed FD/Construction project.

(1) Please provide any additional information, comments, or clarifications, and indicate the section and question number that being addressed (e.g., Section E.2). Completing this question is optional.

N/A

(2) Please provide a document title, filename, and description for all optional supporting documents. Ensure that these documents are uploaded to GrantSolutions.gov with the narrative application form and use a logical naming convention.

Document Title	Filename	Description and Purpose
Preliminary Engineering Plans	Independence Avenue Plan Set_2011.02.28.pdf	65% plans developed by KCT's engineering consultant
Project Cost Estimate	KCT - Independence Ave Bridge Construction Cost Estimate_65% Submittal_2011.03.22.pdf	Estimation of project construction costs developed by KCT's engineering consultant
Construction Phasing Plan	Independence Ave Track Phasing 11-20-07.pdf	Preliminary phasing of construction activities that allows continuous rail service developed by KCT's engineering consultant
Construction Schedule	Independence Avenue Subway Replacement Schedule_2010.08.10.pdf	Preliminary schedule of construction activities developed by KCT's engineering consultant
Categorical Exclusion Worksheet	Independence Street Categorical Exclusion.doc	Evaluates environmental impacts
Plan Sheets	Independence Avenue_Main Track Plan and Bridge Plan and Elevations_65% Submittal_2011.03.22.pdf	Identifies plans for construction.
Independence Avenue 65% Design Submittal	KCT - Independence Ave Bridge Transmittal Letter_65% Submittal_2011.03.22.pdf	Letter from consultant to KCT defining summary of 65% design
Emissions Summary	Independence Bridge Emission Benefit Summary.doc	Narrative of benefits due to project generated from Mo Dept. of Natural Resources
Emissions Calculations	Independence Bridge Emission Calucations.doc	Emission calculations generated from Mo Dept. of Natural Resources
Emissions Summary	Independence Bridge Emissions Reduction.doc	Narrative of benefits due to project generated from Mo Dept. of Natural Resources
Supporting Regional Activities	Missouri HighSpeed Rail_KC items.docx	Summary of regional support efforts
MoDOT and KCT Memorandum of Understanding	Kansas_City_Terminal_MOU.pdf	Documents KCT's funding commitment
2011 Project Map	2011_HSIPR_Project_Map.pdf	Identifies Location of projects for 2011 application.
Project profile	Indep Ave PI Handout_2009.03.25.pdf	Overview of project problem,

		solution and benefits
Mid-America Regional Council Support Letter	MARCSupportLtr.pdf	Provides support of project from metropolitan planning organization.
Benefit Cost Analysis	TIGER II Benefit Cost Analysis - Indep Ave FINAL.pdf	Compares project costs and benefits (prepared for TIGER II grant application)
KCT Internal Safety Plan	Internal Control Plan.pdf	Demonstrates KCT's safety measures
Amtrak Benefits	Independence Avenue Bridge Replacement _Amtrak Benefits.pdf	Demonstrates benefits to passenger rail due to project
Introductory letter from MoDOT Director	1Intro LETTER signed by KKeith.pdf	Cover letter for the HSIPR projects signed by MoDOT Interim Director
Overview of 2011 Projects	2Project Overview.pdf	Overview of Projects
HSIPR Projects Division of Costs	3HSIPR RAIL PROJECTS DIVISION OF COSTS Mar29 2011.docx	HSIPR Projects Division of Costs
Project Map and Partner Signature Map	4 2J011_HSIPR_Project_Map.pdf	Detailed project map and same map with signatures of support
Project Map and Partner Signature Map	SPProject Map and Partner Signature Map.pdf	Detailed project map and same map with signatures of support
MOU between 4 states for joint application	6 State Equipment MOU.pdf	Demonstrates support of project by all parties.
Support Letter from UP for 2011 Applications	7 2011_UP_Support_Ltr.pdf	Provides support of projects for application
MoDOT/UP/Amtrak SOA	8Preliminary Executed SOA with UP.pdf	Identifies Service Outcomes for completion of projects
Multi State Governors MOU	9Multi - StateGovernorsMOUSigned.pdf	Demonstrates commitment to High Speed Rail
Map of High Speed Rail	10US Federally Designated High Speed Rail Corridor Map.pdf	Identifies High Speed Rail Corridors
Letters of Reduced	11Complete Letters of Support-reduced.pdf	Letters of Support
Rail Capacity Analysis I & II	12Rail Capacity Analysis ReportsI and II.pdf	Rail Capacity Analysis Reports I and II
2009, 2010 and 2011	13Economic Studies by MERIC.pdf	HSIPR Statewide and Longterm Impacts Study prepared by

Economic Studies		MERIC
Mo Passenger Rail Schedule	14MO Passenger Rail Schedule.pdf	Missouri Passenger Rail Schedule
Mo Intercity Bus Stops	15Intercity Bus Stops.pdf	Missouri Intercity Bus Stops
Statewide Transportation Improvement Plan	16MHTC Auth on Corridor Improvement Projects STIP 2011-2015.pdf	Projects identified in Statewide Transportation Improvement Plan
Amtrak Operating Agreement	17Amtrak Operating Agreement.pdf	Amtrak Operating Agreement
Amtrak-MoDOT MOU	18Amtrak-MoDOT MOU.pdf	Amtrak-MoDOT MOU
Kansas City Terminal Memorandum of Understanding	19Kansas_City_Terminal_MOU.pdf	Commitment to application by MoDOT and KCT
Terminal Railroad Association of St. Louis Memorandum of Understanding	20STLTerminal-MoDOT MOU.pdf	Commitment to application by MoDOT and TRRA
Terminal Railroad Association of St. Louis Memorandum of Understanding	21TRRA MOU N. Market and Merchants.pdf	Commitment to application by MoDOT and TRRA
UP Memorandum of Understanding	22UP-MODOT MOU signed copy.pdf	Commitment to application by MoDOT and UP
UP Track Layout	23UP Track Layout.pdf	UP Track Layout
1996 Agreement	24-1996 agreement between MODOT and UP to preserve 3 more slots.pdf	1996 Agreement between MoDOT and UP to preserve 3 more slots
Amtrak Support Letter for Merchants and N Market	25 Amtrak Support for Merchants and N. Market	Amtrak Support Letter
Shell Spur Agreement	26Shell SpurAgreement.pdf	Shell Spur Agreement

Narrative Application Form Individual FD/Construction

Part II Statement of Work



High-Speed Intercity Passenger Rail (HSIPR) Program

Statement of Work

The quality and completeness of this document will be measured as a Project Readiness evaluation criterion, as outlined in Section 5.2.1 of the NOFA. The applicant must provide a sufficient level of detail regarding scope, schedule, and budget that demonstrates the project is ready to immediately advance to award. Tables have been provided as illustrative examples for capturing data however, applicants can delete or adjust the tables as necessary. This form must be listed in Section G.2 of the Narrative Application Form Part I.

(I) Background. Briefly describe the events that led to the development of this FD/Construction project and the issue the project will address. Also describe the transparent, inclusive planning process used to analyze the investment needs and service objectives of the full *corridor on which the individual FD/Construction project is located*.

The Kansas City Terminal Railway Company is a Class III railroad headquartered and operated in Kansas City. Founded in 1906 and operating continuously over the past 103 years, KCT owns approximately 87 miles of track in and around Kansas City, Kansas and Kansas City, Missouri. Its owners, five of the nation's Class I freight railroads, include Union Pacific Railroad, BNSF Railway Company, Norfolk Southern, Kansas City Southern and Canadian Pacific Railway. Each of the member/owners operate on various segments of KCT trackage as either mainline operations through Kansas City or for interchange purposes with other carriers. Collectively the member/owner railroads, connecting via the KCT, form a critical component of the U.S. transportation network, accessing major ports on both the Atlantic and Pacific coasts and extending to the Canadian and Mexican borders.

This grant application requests funds to replace the KCT's Independence Avenue rail bridge that serves Amtrak's passenger routes through Kansas City and as a component of the nation's east-west transcontinental freight rail network. The goal of this project is to ensure the uninterrupted movement of passengers and goods along this critical rail corridor in a safe, reliable and efficient manner. A secondary goal of the project is to improve safety and quality of life conditions for the businesses and citizens in the Kansas City neighborhood that use Independence Avenue, the arterial street the rail bridge passes over.

The KCT carries passenger trains for Amtrak and freight rail traffic for Class I railroads as well as for short lines such as the Iowa, Chicago and Eastern Railroad (IC&E) and WATCO Companies through Kansas City. Much of the KCT's passenger and freight rail traffic passes over Independence Avenue, a primary arterial roadway with a speed limit of 35 miles per hour, via the Independence Avenue rail bridge. Built in 1912, the Independence Avenue rail bridge is in adequate condition and properly maintained to Federal Railroad Administration requirements. Unfortunately, the structure has a 12'-0" vertical clearance for roadway vehicles, considerably less than the 14'-6" design standard for vertical clearance recommended by American Association of State Highway and Transportation Officials.

Despite posted warnings of a 12'0" vertical clearance, trucks traveling Independence Avenue frequently strike this rail bridge due to its low vertical clearance. In the past, truck incidents have not necessitated a closure of the bridge to rail traffic, but they have affected the vehicle and truck traffic on Independence Avenue. The cumulative damage of repeated crashes, however, may at

some point lead to a major bridge outage, causing lengthy detours or suspension of passenger service. Both the Missouri Department of Transportation (MoDOT) and the KCT have expressed a willingness to work together to develop a solution to this problem.

The Independence Avenue rail bridge is part of a significant east-west intercontinental rail freight network is vital to the United States' economy and to national defense and emergency preparedness. Each day, 150 trains cross this bridge, comprising approximately 17%¹ of all rail carloads originated by the nation's Class I railroads. Should the cumulative damage of repeated truck crashes impair the condition of the bridge to an extent that the KCT is forced to perform a major emergency repair or emergency rebuild, the national economic impacts would be substantial, entailing costly detours over lengthy alternative routes. Proactively replacing the bridge would eliminate this risk.

(2) Scope of Activities. Clearly describe the scope of the proposed FD/Construction project and identify the general objective and key deliverables.

(2a) General Objective. Provide a general description of the work to be accomplished through this grant, including project work effort, project location, and other parties involved. Describe the end-state of the project, how it will address the need identified in Background (above), and the outcomes that will be achieved as a result of the project.

This project includes the replacement of Independence Avenue rail bridge, track improvements and future capacity improvements on and near the Kansas City Terminal, and Independence Avenue roadway improvements in east Kansas City, Missouri. The objective of the project is to create a fail-safe passage for rail traffic along the east-west KCT corridor. In addition, a fourth main line, approximately 1,500 feet, will be constructed over the Independence Avenue bridge to solve existing logistical issues and provide future capacity for the continually increasing passenger and freight rail traffic. All associated signal work with the construction of Main Line 4 and additional track work will be performed.

(2b) Description of Work. Provide a detailed description of the work to be accomplished through this grant by task (e.g., FD and Construction) including a description of the geographical and physical boundaries of the project. Address the work in a logical sequence that would lead to the anticipated outcomes and the end state of the activities.

The Independence Avenue rail bridge project includes final design and construction for bridge, track, signaling and roadway improvements. Railroad operations will be maintained throughout construction. In conjunction with the bridge replacement, the project will also entail the following improvements.

- add a fourth track to the bridge
- widen the lanes on Independence Avenue
- provide ADA-compliant sidewalks on both sides of the roadway (currently only one side is accessible)
- improve storm water management and prevent flooding from storm water

In order to increase the vertical clearance of the rail bridge to 15'-1", the proposed project will do the following.

- raise the KCT main tracks
- lower the profile of the existing roadway
- replace the existing structure

The bridge component of the project includes the replacement of the existing structure with a new steel deck superstructure built on new drilled shaft substructure. Construction of the bridge will simultaneously coincide with the construction of the railroad

¹ Calculated as follows: 150 trains x approximately 100 cars/train x 365 days/year = 5.475 million carloads annually; As a percent of 32.110 million carloads originated by all Class I carriers in 2006, as per AAR's Class I Railroad Statistics <http://www.aar.org/pubcommon/documents/abouttheindustry/statistics.pdf> accessed 8/3/10.

track construction. Phasing the bridge construction will include four sections of new bridge construction and existing bridge demolition. New sections will be completed and put in service before existing sections are removed, allowing for uninterrupted service.

The track component of the project is comprised of approximately 3,000 feet of new track construction, 7,000 feet of shifted track and 1,800 feet of track removal. Main Line 4 will be extended, at 15-foot track centers, across the Independence Avenue bridge, approximately 1,500 feet of new construction, allowing for the removal of the existing #20 turnout connecting Main Lines 1 and 3. A new #15 turnout will be installed at approximately Sta. 200+00. The track construction will be phased in accordance with the Independence Avenue bridge construction phases. This process will allow, at all times, the two high-line tracks (Main Line 2 and 3) and one low-line track (either Main Line 1 or 4) to remain in service, allowing passenger and freight services to continue uninterrupted during the construction process.

The roadway component of the project includes the lowering of Independence Avenue to assist in obtaining the vertical clearance necessary to remove the impending risk on the existing bridge structure. The proposed Independence Avenue provides four 12-foot wide lanes with 2-foot outside shoulders including ADA-compliant sidewalks and bicycle accessibility.

MoDOT will perform all tasks required for the project through a coordinated process with the railroad owner (Kansas City Terminal Railway of Kansas City), the operator (Amtrak) and the FRA. The KCT, in coordination with subordinates and MoDOT, will perform final design (100 percent design) of the track and signal improvements. Final Engineering Drawings will be furnished to the FRA after the final design check is complete. In addition, route and aspect charts depicting the proposed signal configuration for the project will also be provided.

Upon award of the project, MoDOT will monitor and evaluate the project’s progress through the administration of regular progress meetings scheduled throughout the project duration. Topics of discussion may include: review of construction activities, field observations, identification of problems incurred and decisions/fixes for those problems, identification of potential future problems that could impede progress and proposed corrective measures to regain projected schedule, review of project schedule and progress, and review of billing invoices. There will be continued communication by all parties involved.

(2c) Deliverables. Describe the work products of the project to be completed to FD, or constructed in accordance with the FD that were provided to FRA during the application process or will be completed as a part of this grant. In the table provided, list the deliverables, both interim and final, that are the outcomes of the project tasks.

	Deliverable	Task
1	Final design plans and project estimate	Final design.
2	Bid package(s)	Final design
3	Categorical Exclusion Worksheet	NEPA Evaluation
4	Physical infrastructure (new bridge with fourth track, widened roadway)	Construction

(3) Project Schedule. In the table below, estimate the approximate duration for completing each task in months. For total project duration, reference Section C.4 in the Narrative Application Form Part I.

	Task	Duration		
		Start Month	to	End Month
1	FD/Engineering	June 2011	to	December 2011
2	Construction	January 2012	to	March 2014
Total project duration		34 months		

(4) Project Cost Estimate/Budget. Provide a high-level cost summary of FD/Construction work in this section, using the FD/Construction Application Package Instructions, the HSIPR Individual Project Budget and Schedule form, and the Narrative Application Form Part I as references. The figures in this section of the Statement of Work should match exactly with the funding amounts requested in the SF-424 form, the HSIPR Individual Project Budget and Schedule form, and Section C of the Narrative Application Form Part I. If there is any discrepancy between the Federal funding amounts requested in this section, the SF-424 form, the HSIPR Individual Project Budget and Schedule form, or Section C of the Narrative Application Form Part I, the lesser amount will be considered as the Federal funding request. Round to the nearest whole dollar when estimating costs.

The total estimated cost of the proposed FD/Construction project is provided below, for which the FRA grant will contribute no more than the Federal funding request amount indicated. Any additional expense required beyond that provided in this grant to complete the proposed FD/Construction project shall be borne by the Grantee.

FD/Construction Project Overall Cost Summary			
#	Task	Cost in FY11 Dollars	
1	FD/Engineering	\$ 223,360	
2	Construction	\$ 23,452,826	
	Total FD/Construction project cost	\$ 23,676,186	
Federal/Non-Federal Funding			
		Cost in FY11 Dollars	Percentage of Total Activities Cost
	Federal funding request	\$ 15,389,521	65 %
	Non-Federal match amount	\$ 8,286,665	35 %
	Total FD/Construction project cost	\$ 23,676,186	100 %