

National Infrastructure Investments Grant Program
TIGER V GRANT APPLICATION

South Orient Rehabilitation
- Sulphur Junction to
Fort Stockton

RAIL CROSSING
ROAD



Submitted By

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TABLE OF CONTENTS

I. Project Description	1
A. Project Summary.....	1
B. Project Background	3
C. Detailed Project Description	6
II. Project Parties	8
III. Grant Funds and Sources / Uses of Project Funds	8
IV. Selection Criteria	9
A. Long-Term Outcomes.....	9
i. State of Good Repair.....	9
ii. Economic Competitiveness.....	9
iii. Livability	10
iv. Sustainability	12
v. Safety	12
vi. Project Readiness.....	13
a). Technical Feasibility	13
b). Financial Feasibility.....	15
c). Project Schedule.....	15
d). Assessment of Project Risks and Mitigation Strategies.....	16
B. Innovation	16
C. Partnership.....	17
i. Jurisdictional and Stakeholder Collaboration.....	17
ii. Disciplinary Integration.....	17
D. Results of Benefit-Cost Analysis.....	17
V. Environmental Reviews and Approvals	20
i. NEPA.....	20
ii. Legislative Approvals.....	20
iii. State and Local Planning	20
VI. Federal Wage Rate Certification	20



LIST OF TABLES

Table 1: Summary Metrics Over the Study Period, 2012\$	2
Table 2: Project Budget.....	7
Table 3: Project Time line	7
Table 4: Funding Sources	8
Table 5: Uses of Funds	8
Table 6: Preliminary Risk Assessment.....	16
Table 7: Economic Benefits of Project	18
Table 8: Summary Metrics Over the Study Period, 2012\$	19

LIST OF FIGURES

Figure 1: Project Area	3
Figure 2: Acreages in the Permian basin in relation to the South Orient Railroad	4
Figure 3: Fort Stockton Transload Facility	5
Figure 4: Fort Stockton Transload Facility	5
Figure 5: Fort Stockton Transload Facility	5
Figure 6: Condition of Cross Ties	6
Figure 7: Condition of Rails	6
Figure 8: Condition of Crossings	6
Figure 9: Typical Crossing Surface to be reconstructed	11
Figure 10: TxDOT Asset Mangement Approach.....	14
Figure 11: Project Schedule	15
Figure 12: Value of Project Benefits	19

APPENDICES

- A. FRA Categorical Exclusion
- B. Wage Rate Certificate
- C. Letters of Support
- D. Detailed Benefit-Cost Analysis



I. PROJECT DESCRIPTION

A. Project Summary

The South Orient Railroad (SORR) rehabilitation project from Sulphur Junction to Fort Stockton, Texas, is a shovel-ready rural freight rail project that will have a significant impact both on the region and also the nation. The project has been environmentally cleared at the state level, meets all state and federal requirements, and can go to letting immediately upon federal approval of the Categorical Exclusion (CE) checklist and obligation of funding. The project does not include work over any navigable waterways, rivers, or streams, and no additional permits or approvals are required beyond the Federal Railroad Administration CE.

The benefits from rehabilitating the SORR between Sulphur Junction and Fort Stockton exceed \$66 million over 20 years, with a benefit – cost ratio (BCR) of 5.12 to 1, a Net Present Value (NPV) of over \$53 million¹, and an internal rate of return (IRR) of 26% (see Table 1 below). The project will create 236.7 job years during the 2014 to 2015 design/construction phase.

The project will be appropriately capitalized upfront via a public-private partnership among the federal government, the Texas Department of Transportation (TxDOT), the Fort Stockton Economic Development Corporation, and the railroad operator, Texas Pacific Transportation (TXPF). Supporting documentation is provided on the TxDOT website.²

The TIGER funding being requested is required to complete the funding package and enable the project to proceed. If this funding is not provided, this section of the line is expected to become inoperable within 5 to 10 years, threatening future transportation network efficiency, freight mobility, and economic growth in



¹The listed benefit number, NPV, and BCR ratio are discounted to 2013 at 7% and are in 2012\$.

² <http://www.txdot.gov/inside-txdot/division/rail/tiger.html>

an Economically Distressed Area, as defined by the Federal Highway Administration (FHWA). When this section of the line becomes inoperable the region will see a drastic increase in truck freight movements that will cause rapid deterioration of local roadways and vehicular safety as well as degraded quality of life due to negative environmental impacts.

The proposed project will upgrade the SORR from Sulphur Junction to Fort Stockton to Federal Railroad Administration (FRA) Class 2 (25 mph) status. The city of Fort Stockton is located 12 miles west of Sulphur Junction. The freight moved to Fort Stockton has risen from 144 car loads in 2007 to over 1,500 car loads in 2012, a huge increase. In addition, if the track is rehabilitated, this section of the line could see further major increases in traffic. This section of the line is currently FRA Class 1 (10 mph) and requires significant rehabilitation due to substandard rail, defective ties, and track alignment deficiencies. If not rehabilitated, the recent and projected increase in traffic will cause rapid deterioration of the line, resulting in a reclassification to Excepted Status and the eventual termination of rail service. The rehabilitation is necessary in order to prevent this degradation of the track structure, to continue and improve operations, and provide safe and efficient rail service to existing and new customers. Termination of rail service to the region threatens future transportation network efficiency, freight mobility, and economic growth in an Economically Distressed Area.

The project will provide significant benefits to the region, state, and nation through:

1. the integration and better use of multimodal connections on the facility,
2. improving freight rail efficiency and capacity,
3. avoiding the diversion of existing freight from rail to truck,
4. avoiding truck miles traveled,
5. avoiding highway maintenance costs
6. avoiding increased transportation costs
7. avoiding increased congestion costs
8. avoiding accident costs;, and
9. job creation.

This is the only rail line providing service to the cities and businesses in the region, which includes agricultural interests, steel manufacturers, mining businesses, energy resources, and many other customers.

A summary of the key project metrics are included in **Table 1**.

Table 1: Summary Metrics Over the Study Period, 2012\$

Project Evaluation Metric	7% Discount Rate	3% Discount Rate
Total Discounted Benefits	\$66,448,099	\$111,063,140
Total Discounted Costs*	\$12,979,303	\$13,776,476
Net Present Value	\$53,468,796	\$97,286,664
Benefit / Cost Ratio	5.12	8.06
Internal Rate of Return (%)	26.0%	
Payback Period (years)	5.0	

B. Project Background

The South Orient Railroad, a TxDOT owned rail facility, is 391 miles in length. The SORR extends from San Angelo Junction (near Coleman) to Presidio at the Texas/Mexico border. TxDOT has leased operations to Texas Pacifico (TXPF) Transportation and under the terms of the agreement, TxDOT became the railroad's permanent owner and Texas Pacifico obtained a 40-year operating lease. Under the terms of the operating lease TXPF is responsible for all maintenance works and so will maintain the length of track proposed to be rehabilitated by this project.



The SORR is one of only eight rail border crossings between the U.S. and Mexico providing opportunities for increased services and revenue generation in the future.

Train speeds on the SORR were restricted to 10 mph as a result of deferred maintenance by the prior owners, which caused deterioration of the infrastructure. Improvement projects since then have enabled 25 mph speeds from San Angelo Junction to Sulphur Junction (12 miles east of Fort Stockton) but there is still a 10 mph limit from Sulphur Junction to Fort Stockton (see **Figure 1** above). It is imperative that this section of the track be rehabilitated in order to achieve the potential economic benefits of the railroad and to avoid termination of rail service in this economically depressed area.

However it is important to note that although this region is currently economically depressed there is huge economic potential in the area due to oil and gas resource extraction which is expected to develop dramatically in the next few years.

The Cline and Wolfcamp shale plays are part of the Permian basin in west Texas. This area has recently become a huge interest for some of the biggest exploration companies. Some of the major players currently drilling in this area include Apache, Devon Energy, Pioneer Natural Resources, Range Resources, Laredo Petroleum and Firewheel Energy. Devon estimates that the Cline formation contains over 30 billion barrels of recoverable oil meaning it could contain more than three times the recoverable oil in the Eagle Ford play. The Eagle Ford play ranks as the **largest oil and gas development in the world** based on capital invested. Almost **\$30 billion** will be spent developing the play in 2013.

The oil and gas company investment in this area through acreage ownership is shown in **Figure 2**. Based on the reports of these companies, they have just begun to realize the resource potential in this area.

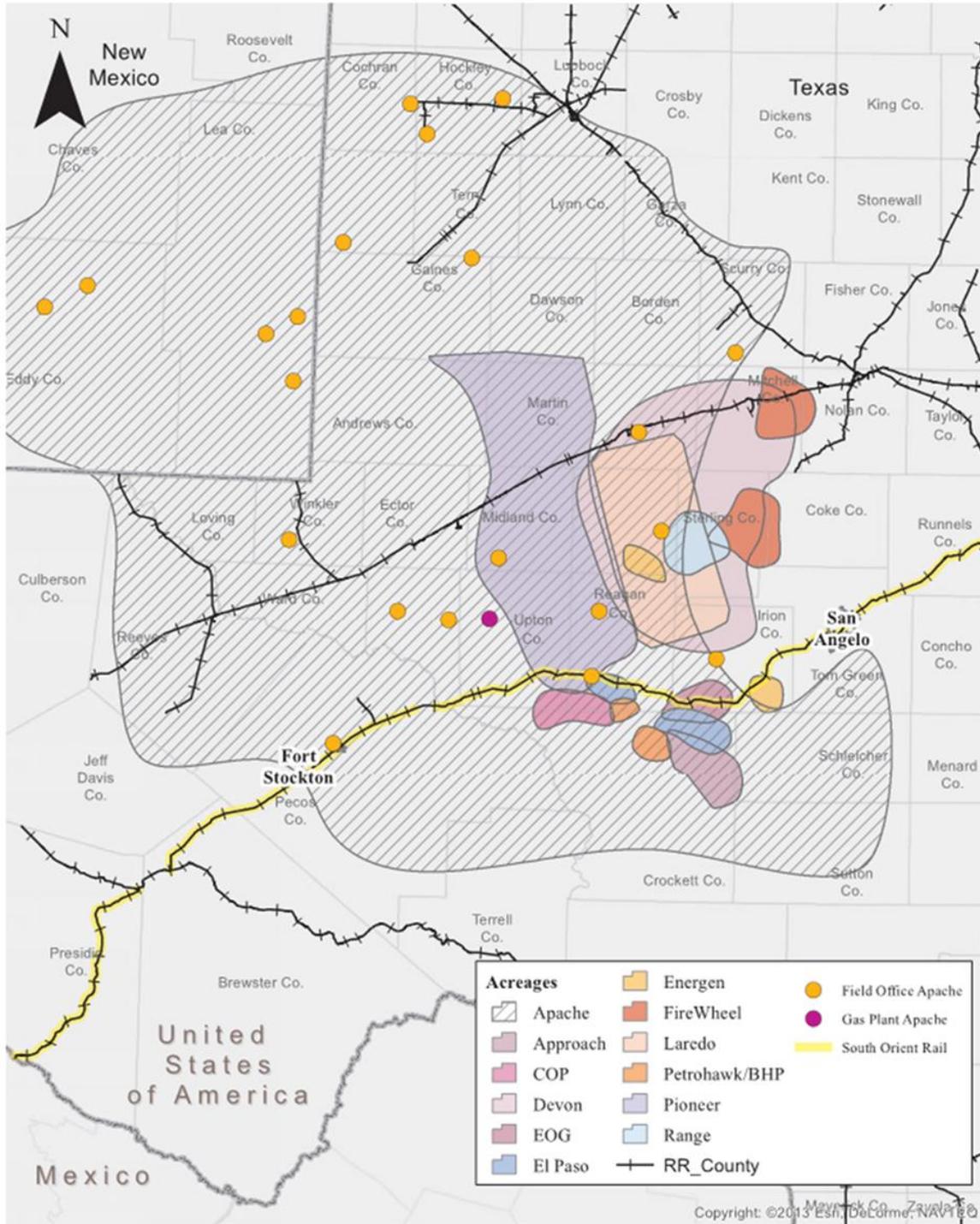


Figure 2: Acreages in the Permian basin in relation to the South Orient Railroad



Apache currently has 13 wells producing and has identified 5,571 other drilling locations. Devon Energy expects to drill more than 300 wells in the Permian Basin in 2013 with an expected 40% oil growth. Pioneer Natural Resources drilled 39 horizontal Wolfcamp wells, of which 22 wells were in production. Pioneer plans to drill several more wells in this area. Range Resources has 2,000 possible well locations with the first three wells showing encouraging results. Laredo Petroleum identified resource potential of over 1.6 billion barrel of oil equivalent (BOE) net resource potential. FireWheel has begun to develop over 150,000 acres in the Cline Shale play.

With hydraulic fracturing and horizontal drilling, shale plays are much more accessible and economically viable oil production plays than they have been in the past. These oil recovery techniques require ‘frac sand’ which can be transported by rail or truck. There is a new transload facility (see **Figures Figure 3Figure 4Figure 5**) open in Fort Stockton on the SORR. This transload facility allows ‘frac sand’ to be transported from rail cars onto trucks. Upgrading the South Orient Railroad from Sulphur Junction to Fort Stockton will increase the travel speed and weight bearing capacity for ‘frac sand’ transportation by rail. This will ensure that rail transport is more economically desirable than trucking resulting in a reduction in highway infrastructure degradation and greenhouse gas emissions. This will ensure that the economic growth in the Cline shale and Wolfcamp shale areas will be serviced by the SORR.



Figure 3: Fort Stockton Transload Facility



Figure 4: Fort Stockton Transload Facility



Figure 5: Fort Stockton Transload Facility



Sand unloading facilities located in Fort Stockton in 2009 have resulted in the increase of rail traffic from 17 carloads in 2009 to 1,534 in 2012. A new facility is under development which will become operational in the summer of 2013 and will unload an additional 100 – 150 cars of sand per week. Traffic to the Fort Stockton area is projected to reach 3,500 carloads in 2013 and over 6,000 in 2014³.

C. Detailed Project Description

This 13.6 mile proposed project on the SORR is currently constructed of 70 lb. rail supported by a mixture of “good to poor” condition cross ties (See **Figure 6** , many of which were installed in the 1930’s to 1950’s. The rail is severely worn in many locations (See **Figure 7**) and the underlying defective tie conditions allow significant vertical deflection of the track as well as gauge deviations when under load. This necessitates the current low running speed of 10 mph to mitigate damage to trains and further damage to the track structure.

The 70 lb. rail was manufactured in 1912 and is subject to rapid development of defects under today’s loading, including accelerated wear, cracking, breaking, and other failures. These systemic failures and the rapid nature of their development result in significant safety issues as the failures can occur at any location with little or no warning and can have severe consequences.

The 70 lb. rail will be replaced with 115 lb. standard strength continuously welded rail (CWR). The poor condition track crossties will be replaced with new hardwood grade 5 crossties at 19.5” center spacing. The project will also replace the tie plates, track spikes, weld the joints, install compromise joint bars between the CWR and the project ends, and replace track bolts, rail anchors,



Figure 6: Condition of Cross Ties

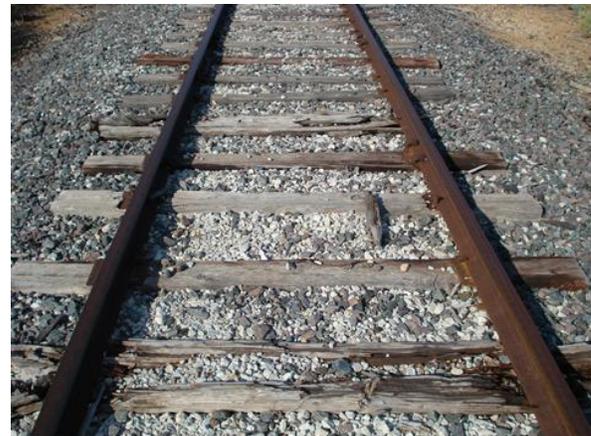


Figure 7: Condition of Rails



Figure 8: Condition of Crossings

³ However, the benefit cost analysis undertaken assumes a conservative 3% long term annual growth rate based off of the 2013 carload value of 3534.

and ballast. The track alignment and profile will be surfaced so that the deviation from horizontal alignment, profile grade, and cross level does not exceed ¾” per 62 ft. cord. The track shall be constructed to 56.5” gauge.

There are 4 at-grade highway-rail crossings within the project limits that will be reconstructed (See **Figure 8** on previous page); 2 with timber surfaces and 2 with precast concrete panels (located within the city of Fort Stockton). These crossings will be reconstructed in accordance with the appropriate AREMA standards. All on-track equipment used in connection with the project shall comply with FRA regulations contained in 49 CFR 214 Subpart D, Roadway Maintenance Machine Safety.

Estimated Budget

The estimated cost of the project is \$13,570,000. The major budget items are listed in **Table 2**.

Table 2: Project Budget

Task	Cost
Replace 143,616 track feet of 70# rail with 115 lb. CWR	\$ 6,600,000
Replace 10,000 defective cross ties, OTM, & labor	\$ 4,300,000
Install 11,000 tons of ballast	\$ 550,000
Surface and align 13.6 miles of track	\$ 90,000
Replace 4 turnouts (70#) with 115# turnouts	\$ 80,000
Reconstruct 4 roadway-rail at grade crossings (192 track linear feet)	\$ 180,000
Subtotal	\$11,800,000
Engineering & Contingencies (7% of construction costs)	\$ 826,000
Mobilization (8% of construction costs)	\$ 944,000
Total Project Cost	\$13,570,000

Table 3: Project Time line

Task	Completion Date
FRA Categorical Exclusion Approved	January 1, 2014
Mobilization, Materials Acquisition	March 15, 2014
Construction MP 869.4 – 874.0	July 15, 2014
Construction MP 874.0 - 879.0	November 1, 2014
Construction MP 879.0 – 883.0	March 1, 2015
Punch List Inspection	March 15, 2015
Final Inspection & Acceptance	March 31, 2015

The project time line is shown in **Table 3**. A more detailed Project Schedule is provided in Section IV.A.vi.(c) of this application.

Expected Users

Once completed, this project will be utilized by Texas Pacifico Transportation (TXPF), its existing freight rail customers, future customers attracted by the resource development in the area and also the traveling public using the roadway-rail crossings.

II. PROJECT PARTIES

The SORR is owned by TxDOT on behalf of the state of Texas. TxDOT has a workforce of more than 12,000 employees and is headquartered in Austin, Texas. Four regional support centers provide operational and project delivery support for the agency's 25 geographical districts located around the state. TxDOT has vast experience managing federal and state infrastructure projects including successfully completing many large rail rehabilitation and construction projects.

TxDOT leased operations on the SORR line to Texas Pacifico Transportation Company, Ltd. and under the terms of the agreement, TxDOT became the permanent owner of the right-of-way and infrastructure, and TXPF obtained a 40-year operating lease with renewal options. TxDOT and TXPF have invested over \$26.5 million in track rehabilitation to the east of Sulphur Junction in order to keep the line operable and upgraded those sections to 25 mph. The ownership of the line by TxDOT, the lease to TXPF, and their joint efforts to rehabilitate the line make this a true public-private partnership.

III. GRANT FUNDS AND SOURCES / USES OF PROJECT FUNDS

TxDOT is prohibited by state statute from using fuel-tax revenues for non-highway projects. This severely restricts the funds available for rail projects as this is TxDOT's primary source of revenue. TxDOT and TXPF have used their available resources to

Table 4: Funding Sources

Funding Source	Participation	Total
TxDOT	1.3%	\$ 170,000
Fort Stockton Economic Development Corp.	1.5%	\$ 200,000
TXPF	50.1%	\$6,800,000
TIGER	47.1%	\$ 6,400,000
TOTAL	100%	\$13,570,000

complete the rehabilitation of the line from San Angelo Junction to Sulphur Junction and do not have adequate funds remaining for the proposed rehabilitation project. All remaining TxDOT and TXPF funding will be used for matching the TIGER grant if this application receives a TIGER award. The Fort Stockton Economic Development Corporation is also contributing \$200,000 to this project if it is selected for grant funding.

The cost of developing plans, specifications, estimates, and environmental clearances for the project has been absorbed by TxDOT. The actual construction and project management costs would be funded by a 1.3% contribution in state funds from TxDOT, 1.5% in funds from Fort Stockton Economic Development Corporation, 50.1% in private contributions from TXPF, and 47.1% in TIGER Grant Funds. Any cost overruns would be paid by TXPF.

Table 5: Uses of Funds

Item	Total
Construction Costs	\$11,800,000
Engineering & Contingencies	\$826,000
Mobilization	\$944,000
Total	\$13,570,000

The funding sources are shown in **Table 4** and the uses of the funds are shown in **Table 5**.

IV. SELECTION CRITERIA

A. Long-Term Outcomes

i. State of Good Repair

The rehabilitation of the line using TIGER grant funds will improve the condition of an existing rail transportation system and minimize life-cycle costs by bringing the SORR into a state of good repair and maintaining it in that condition beyond the expected lifespan of the materials used in the rehabilitation project. The line will remain in the rehabilitated condition because TXPF is contractually obligated to maintain any segment of the SORR that is rehabilitated by TxDOT in the same or better condition as when the project is completed. The maintenance costs of the rehabilitated section of the line will be the sole responsibility of TXPF in accordance with their contractual obligations. TXPF's contractual obligations have eliminated any future maintenance or rehabilitation requirements by the state for track infrastructure or the local communities for grade crossing surface conditions.

According to the Association of American Railroads (AAR), the average train speed of the Class 1 railroads is between 23 and 25 mph. The scope of work for this project (Build) and associated funding levels are appropriate for improving track speed within the project limits to 25 mph. This will result in an efficient, effective, and safe rail service in the region, and provide for an ongoing state of good repair. This level of investment is adequate for existing and projected needs without "over investment" in unnecessary higher speeds.

If this segment of the SORR becomes inoperable (No Build), there would be an immediate and dramatic increase in large trucks on the local, regional, state, and national roadways as the existing shippers would be forced to divert their rail freight to roadways. The diversion of this freight from rail to truck would add over 218 million truck miles to the region's roadways over the 20 year period. An avoidance of heavy trucks on the highway system reduces highway maintenance costs and in particular pavement re-surfacing and maintenance costs. Over the study period, over \$28 million in highway maintenance costs is avoided (2012\$, 7% discount rate).

ii. Economic Competitiveness

The expenditure of \$13,570,000 for freight rail infrastructure rehabilitation in the region will result in over \$19.93 million in economic value added⁴ and 236.7 job years for this region, in a county where the per capita income is \$15,939⁵. Pecos County is an economically distressed county as defined by the Federal Highway Administration.⁶

⁴ Economic value added represents total business sales (output) minus the cost of purchasing intermediate products and is roughly equivalent to gross regional/domestic product. 2012\$.

⁵Source: US Census Quick Facts and Texas Association of Counties

⁶ See U.S. DEPT. OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION, ECONOMICALLY DISTRESSED AREAS PLANNING, ENVIRONMENT, REALTY (HEP), http://hepgis.fhwa.dot.gov/hepgis_v2/GeneralInfo/Map.aspx

The project will improve the long-term efficiency, reliability, and cost-competitiveness of freight movements to and from this Economically Distressed Area by providing a safe, efficient, and truck-competitive rail line with national linkages. The rehabilitated SORR will increase the efficiency and effectiveness of the existing multi-modal transportation system as a whole by enabling increased freight rail volumes to the Fort Stockton region, where it can be trans-loaded to truck for delivery to local destinations.

The long-term efficiency, reliability, and cost-competitiveness of moving freight by rail into the region can be exemplified by the fact that the freight moved to Fort Stockton has risen from 144 car loads in 2007 to over 1,500 car loads in 2012. The SORR is near capacity between Sulphur Junction and Fort Stockton due to the substandard infrastructure which restricts the efficient movement of rail freight in one of the nation's largest petroleum and natural gas production regions. If the project is not completed, this freight will eventually divert to trucks and result in reduced efficiency, reliability, and cost-competitiveness for the transportation system and the region. In particular, transportation shipping cost savings from avoiding heavy truck travel (in favor of rail) amount to roughly \$7.3 million over the study period (2012\$, 7% discount rate). However, since truck shipping times are lower than train, an inventory cost of roughly -\$68K is incurred over the study period, a negative impact (2012\$, 7% discounted). The rehabilitation of the line will allow these movements to continue by rail while effectively reducing the time spent operating trains in this area by more than half.⁷

The Fort Stockton road system includes Interstate 10, U.S. Highways 67, 285, and 385, State Highway 18, and other regional and local roads such as FMs 1053 and 1776. These roadways provide an extensive distribution system for rail freight that is being shipped to the region and trans-loaded at Fort Stockton.

The Association of American Railroads has determined that a freight train (on average) can carry one ton of cargo a distance of 480 miles on a single gallon of fuel being some four times more fuel efficient than trucks per ton-mile.⁸ This high level of efficiency reduces the nation's dependence on foreign oil and helps shrink its carbon footprint.

iii. Livability

The rehabilitation of the SORR will benefit the livability of the region and have a positive impact on community life by reducing truck traffic on the region's roadways, thereby improving vehicular mobility and also safety at roadway-rail grade crossings. Four at-grade crossings that have deteriorated crossing surfaces and track structure will be reconstructed during the project. A typical crossing surface that will be reconstructed is shown in **Figure 9**.

The project will enhance points of modal connectivity by rehabilitating a deteriorating transportation asset and increasing the amount and types of freight that can move over this

⁷ Increasing train speeds from 10 mph to 25 mph reduces the operating times by more than half.

⁸ See ASSOCIATION OF AMERICAN RAILROADS, ENVIRONMENT, <http://www.aar.org/~media/aar/backgroundpapers/railroadsgreenfromthestart.ashx>



section of the SORR, which connects to an extensive highway system. The project will also enhance energy-related and support services, provide economic development opportunities, and bring additional jobs and businesses to the area as a result of an improved regional freight rail transportation system that connects to two Class 1 railroads (BNSF at San Angelo Junction and Union Pacific at Alpine).



Figure 9: Typical Crossing Surface to be reconstructed

The SORR operates through eleven counties in West Texas: Brewster, Coleman, Crane, Crockett, Irion, Pecos, Presidio, Reagan, Runnels, Tom Green, and Upton. For the purposes of this application the funding will be used for infrastructure rehabilitation in Pecos County.

The counties near the project area cover two of the Workforce Development Areas (WDA) established by the Texas Workforce Commission. Crockett, Irion, Reagan, and Tom Green Counties fall in the Concho Valley WDA; while Crane, Pecos, and Upton Counties fall in the Permian Basin WDA. Aside from Tom Green County, all but one of these counties have small populations with attrition occurring over the past twenty years. Most of these counties are largely minority communities and earn less than the median average income that is seen in many other Texas regions. These can be classed as economically disadvantaged communities.

Small cities (under 3000 population) located along the line that are within this area are Barnhart, Big Lake, McCamey, Metzton, and Rankin. Fort Stockton is the only city in the project limits.

According to the US Census Bureau, the national per capita income was \$27,041 in 2009. The counties in this area all have lower per capita incomes, a large Hispanic population, a youthful population, and relatively high poverty rates; with Pecos County (project location) having a poverty rate of 19.7 % and the lowest per capita income at \$15,939 per year. It is estimated that the project will create 263.7 job years over a period of 15 months, and approximately \$14.27M in labor income. It will also provide for the retention of 144 jobs at the existing unloading facilities in Fort Stockton.

***The SORR
 Rehabilitation will
 create 263.7 job years
 over 15 months***

This project will eliminate over 218 million truck-miles over a 20 year period from the national highway system by preventing the diversion of rail freight to roads, which will occur if this section of the line is not rehabilitated. The rehabilitation of the SORR will enhance the livability of the region and nation by the continued and increased diversion of freight from the roadways to rail, reducing on-road congestion. Congestion savings over the study period amount to nearly \$10 million (2012\$, 7% discounted). The project is part of a regionally focused effort to improve rail service on the SORR. It has broad, regional support from the eleven counties that the line passes through and the communities and citizens in those locations. The project also has the support of the connecting railroads, as well as state officials from other regions. The project includes a potential NAFTA trade corridor through the connections with Ferromex at Presidio.

iv. Environmental Sustainability

The rehabilitation of the SORR from Sulphur Junction to Fort Stockton will improve energy efficiency by increasing capacity on the line, reducing dependence on foreign oil by transporting freight in the most energy efficient manner, and reducing greenhouse gas emissions by over 466,467 tons over 20 years. The project will enable the existing shippers to continue using rail transportation and encourage the diversion of freight from roads to rail.

The project will also support the on-going development of new energy industries in west Texas that will have multiple benefits for many generations from air quality improvements, sustainability, economic growth, and reductions in the use of greenhouse gas hydrocarbons.

Emissions impacts were determined in accordance with the TIGER Benefit-Cost Analysis Resource Guide. The methodology was used to determine the emissions impacts from the diversion of existing and projected freight from rail to trucks. The analysis determined that the 7% discounted cost savings of avoided emissions (NO_x, CO₂, VOC and PM) was \$5,654,432 over a 20 year period. The rehabilitation of the SORR from Sulphur Junction to Fort Stockton would prevent the diversion of this freight from rail to roadway, therefore providing this emission cost as a benefit due to avoided emissions.

This shows that there are substantial transportation-related costs related to energy consumption and emissions. If the SORR is not rehabilitated, those costs and emissions would increase dramatically as a result of the diversion of freight from rail to roads and would cause adverse effects to the environment.

v. Safety

The rehabilitation of the SORR will provide safety improvements for the traveling public as well as the operating railroad by diverting freight from road to rail, increasing rail movements of hazardous materials, and improving roadway-rail grade crossing surfaces.

Diverting freight from road to rail will result in fewer trucks on the road system with a consequent increase in safety⁹. This is due to both lower traffic volumes resulting in fewer collisions and fewer trucks resulting in less serious collisions. The avoided truck use (in favor of rail) results in accident (fatality and injury) cost savings of nearly \$15 million over the study period.

Rail is the safest way to transport hazardous materials, with 99.99% of shipments arriving at their destination safely. A major oil and natural gas distributor has presented plans to construct over 22,000 feet of new track in the area which will be used for outbound loading of crude oil. This company projects shipping between 15 and 40 carloads of crude oil outbound per day and receiving 15 carloads of sand inbound per day. It is essential that the SORR rehabilitation be completed from Sulphur Junction to Fort Stockton in order to support these developments and

⁹ Fatality and injury rates per mile of freight carried by truck are greater than the fatality and injury rates for an equal volume of cargo when shipped by rail

to prevent this freight from being diverted to trucks. The rehabilitation of the SORR would allow the transportation of these materials by the safest method available.

The project area includes 4 roadway-rail at-grade crossings which are not in good condition. These crossings have substandard rail with deteriorated ties, subgrade and drainage. This causes the track to pump under load, resulting in the possibility of derailments and vehicular accidents. These crossings present a hazard to vehicular traffic, which is susceptible to damage from the rough condition of the crossing surface. The scope of the project includes removing the existing crossings, reconstructing the subgrade and track with new materials and replacing the crossing with new surfaces.

vi. Project Readiness

The project is ready to proceed rapidly upon receipt of a TIGER Grant. TxDOT has completed the project development process for the project and the track rehabilitation plans and specifications for the project are complete. The project is in the State Transportation Improvement Plan (STIP) and the project schedule is only dependent upon the timing of the TIGER grant award. The project is “shovel ready” and could go to letting and construction quickly after all agreements are finalized and the grant is approved. If the TIGER grant is approved for \$6,400,000 as requested and the agreement is finalized by the end of November 2013, the project would be completed within 15 months of letting.

a). Technical Feasibility

This project consists of rail, tie and crossing replacement, ballast addition, and associated track alignment and profile surfacing work on 13.6 miles of track in existing right-of-way. The design criteria for this project meets applicable AREMA standards. The project components included in the plans are:

1. Replace 13.6 miles of 70 lb. rail with 115 lb. rail
2. Replace 10,000 crossties
3. Install 11,000 tons of ballast
4. Surface 13.6 miles of track
5. Replace 4 – 70# turnouts with 115# turnouts
6. Reconstruct 4 roadway-rail crossings

Significant components of the work will be performed using on-track equipment which minimizes the effect on the environment. The only excavation of soils will be at the crossing replacement locations and will be of minimal depth to remove the existing crossing, re-profile the base, and reconstruct the crossing. The total length of all crossings combined is 192 track feet, with an estimated maximum construction width of 12 feet.

TxDOT has an effective asset management approach (see illustration in **Figure 10**) that optimizes the long-term cost structure and ensures relevant standards are met. This includes:

- direct supervision of contractors during construction activities,
- random inspections of SORR infrastructure and TXPF maintenance practices,
- mandatory monthly maintenance and operating reports from TXPF,
- a Joint Operations and Marketing Committee that meets twice annually, and
- TXPF is contractually obligated to maintain any segment of the SORR that is rehabilitated by TxDOT in the same or better condition as when the project is completed.

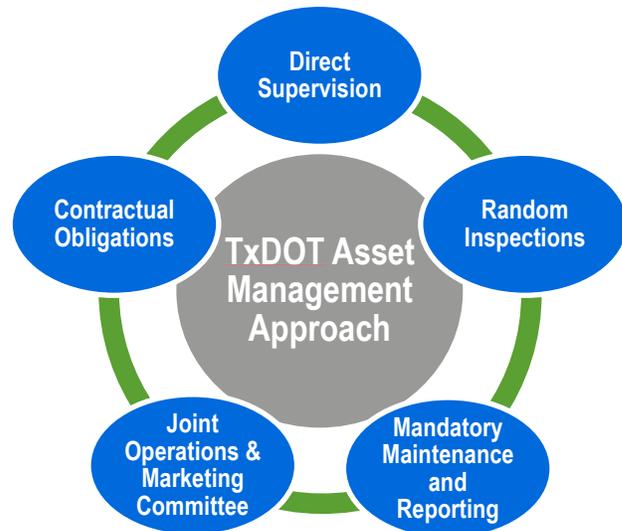


Figure 10: TxDOT Asset Management Approach

The facility’s current condition and performance and the projected condition and performance can be established and measured by the following quantifiable metrics:

1. Track Construction

Current: The current condition of the existing track from Sulphur Junction through and beyond Fort Stockton is substandard 70# rail on crossties that are generally in fair to bad condition. This segment is operated as Class 1 Track (10 mph), which inhibits the capacity of the line.

Projected: The project will improve the facilities’ condition by the replacement of the 70 lb. substandard rail and defective crossties with 115 lb. (or heavier) CWR, new crossties, and ballast.

2. Track Conditions

Current: The current tie conditions cause alignment and profile deviations which result in the track being restricted to 10 mph.

Projected: The project will replace the defective ties, install ballast as necessary, and address alignment and profile deviations to raise the Class 1 (10 mph) to Class 2 (25 mph). The infrastructure will be maintained at that classification in perpetuity in accordance with TXPF’s contractual maintenance obligations.

3. Continuation of Service

Current: The existing infrastructure is deteriorating and is expected to become inoperable within the next 5 to 10 years. This would cause the cessation of service to shippers located on this segment of the line.

Although attempts could be made to maintain the existing track infrastructure, this would be a difficult, expensive and ultimately unsuccessful strategy. The existing 70 lb. rail and associated

trackwork has deteriorated along the entire length of the project and sudden failures could occur at any location with little or no warning. It is not feasible to identify sections of track that are more susceptible to failure as the entire track is of a similar age and condition and trackwork at any location could fail. Also, as all elements of the track infrastructure require rehabilitation localized maintenance would be almost as expensive as upgrading to 115 lb. rail over the length of reconstructed track. This would also be much more expensive per linear foot than rehabilitating the full length of the proposed project. For these reasons maintenance expenditure will become increasingly high until it is no longer cost effective.

Projected: The project will provide for the rehabilitation of this segment of the line and the continuation of service in accordance with TXPF’s contractual maintenance obligations.

b). Financial Feasibility

Cost estimates were determined using averaged unit costs for similar rehabilitation projects (2009 – 2011) and direct contact with vendors to identify variations in materials cost.

The project would be appropriately capitalized up-front via a public-private partnership involving the federal government, TxDOT, the Fort Stockton Economic Development Corporation, and TXPF.

c). Project Schedule

The track rehabilitation was environmentally cleared by the State in 2009. TxDOT has included a FRA Categorical Exclusion checklist for submittal with this application (See Appendix A). The engineering, social, economic, and environmental studies conducted thus far indicate that no significant environmental effects would occur; therefore, the proposed project qualifies as a Categorical Exclusion. In addition, the proposed action has no significant impacts as described in 23CFR771.117 (a) and (b).

The construction period will be 13 months, beginning February 1, 2014 and ending March 15, 2015. Milestones will be considered as the completion of all items of work between designated mileposts. The proposed project schedule is shown in **Figure 11**.

Major Activity	2013								2014												2015		
	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	
FRA Categorical Exclusion Approval	■	■	■	■	■	■	■																
Prebid, Preconstruction Activities				■	■	■	■																
Letting								■															
Materials Acquisition									■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Mobilization									■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Tie Replacement										■	■	■	■	■	■	■	■	■	■	■	■	■	
Rail Replacement											■	■	■	■	■	■	■	■	■	■	■	■	
Turnout Construction																	■	■	■	■	■	■	
Ballast Delivery																					■	■	
Surfacing & Regulating																					■	■	
Grade Crossings																					■	■	

Figure 11: Project Schedule

d). Assessment of Project Risks and Mitigation Strategies

A key factor in the success of this proposed project is the identification, assessment, mitigation, and subsequent management of risks. The project partners recognize the need to take a proactive approach in the management of project risks and will develop a Risk Management Plan that follows a continuous risk management process. The risk management process consists of five (5) phases which are to Identify, Analyze, Respond, Track, and Control project risks. The process allows the project partners to assess the identified risks, determine the probability and impacts of identified risks, develop mitigating strategies, develop contingency plans, implement strategies and plans, and monitor risk status. A risk list will be used for tracking risks throughout the project.

It is essential that the risk management process be realistic and viable without becoming unmanageable as a result of detailing each individual material item or work activity as a potential risk. The risks associated with the project have therefore been divided into four major categories as shown in Table 5 below.

The Project Manager and Project Inspectors will be responsible for direct oversight of the project and the ongoing risk identification process. Once identified, risks will be categorized and analyzed to determine the probability and impact of occurrence and ranked according to severity. Following this activity, the risk list will be updated and monitoring/management of the individual risks assigned. **Table 6** shows the risk categories and risks that have been identified during the project development process.

Table 6: Preliminary Risk Assessment

Risk Category	Identified Risk	Mitigation Strategy
Scope	<i>None currently</i>	N/A
Schedule	FRA CatEx Approval	Bi-weekly status check
Budget	Cost changes before letting	TXPF to absorb all overages
Safety	<i>None currently</i>	N/A

B. Innovation

Although there are no definitive technological benefits from this project as described in the NOFA, TxDOT has used innovative concepts and procedures in the rehabilitation and maintenance of the line by securing additional funds from TXPF (of at least 25%) for each project using state or federal funds. The lease agreement has also been amended and requires TXPF to maintain each segment of the line in the same (or better) condition as it is when a TxDOT project is completed. This contractual requirement ensures that the funds invested by TxDOT provide a long-term benefit by maintaining the line on an ongoing basis.

C. Partnership

i. Jurisdictional and Stakeholder Collaboration

TxDOT's ownership of the SORR and the lease agreement with TXPF constitute a true public-private partnership to provide essential transportation services to a large region in west Texas. TxDOT and TXPF have invested over \$26.5 million in addressing critical deficiencies to keep the line operational and increase speeds in those sections to 25 mph. It is estimated that rehabilitating the project area to 25 mph speeds will require a \$5,000 per mile annual maintenance program to keep the line in good condition. TXPF will be wholly responsible for that maintenance program.

The rehabilitation of the SORR is also part of a broader state and local partnership for economic development in the region. The project has letters of support from:

- ✓ Texas Pacifico
- ✓ Fort Stockton Economic Development Corp
- ✓ Representative Drew Darby
- ✓ Runnels County Judge

The letters of support are provided in Appendix C. Additional letters of support will be forthcoming and will be provided to DOT upon receipt.

ii. Disciplinary Integration

All aspects of this project have been fully discussed with both the operators of the rail facility and the funders of the rail rehabilitation project. All engineering disciplines involved in the design and cost estimating of the project have fully integrated their work to ensure that the project will advance smoothly and seamlessly.

D. Results of Benefit-Cost Analysis

The benefits attributable to this project have been identified and quantified over a 20 year period. These benefits have been monetized in order to determine their present value in monetary terms and also as a ratio of benefits to costs associated with the project.

The major public benefit categories and the present value of monetized benefits causal to this project are shown in **Table 7** below. The monetized values are given in 2012 dollars discounted at 7% in accordance with TIGER grant funding requirements¹⁰.

¹⁰ Values are discounted to the base year 2013.

Table 7: Economic Benefits of Project

Long Term Outcomes	Type of Impacts	Population Affected by Impacts	Summary of Results (\$2012, 7% Discounted)
State of Good Repair	Reduced Highway Maintenance Costs from truck diversion to rail.	Federal and State (Texas) Governments	\$28,544,314.30
Economic Competitiveness	Reduced Transportation Costs from truck diversion to rail.	Shippers and Receivers	\$7,309,835.41
	Short-Term Economic Impacts from construction/planning expenditure.*	Regional Citizens and Businesses	<i>Not Monetized</i>
	Change in Inventory Costs from truck diversion to rail.	Shippers and Receivers	-\$67,739.33
Livability	Reduction in Highway Congestion from truck diversion to rail	On Road Motorists Between Fort Stockton and Fort Worth Texas.	\$10,074,382.77
Environmental Sustainability	Reduced Emissions from truck diversion to rail.	Regional Citizens and Businesses	\$5,654,432.28
Safety	Reduced Accident Costs from truck diversion to rail.	Motorists/Railway Travelers Between Fort Stockton and Fort Worth Texas.	\$14,932,873.76

* Short-Term Economic Impacts from construction/planning expenditure are not included in the benefit-cost analysis and are only included for informational purposes in the Economic Impact Analysis.

Prepared by HDR

The Table also demonstrates how these identified benefits relate to the desired long-term outcomes for projects applying for TIGER grant funding. It can be seen that all the long-term outcomes are significantly improved by the construction of this project. Details of the methodology and assumptions used in the estimation of these benefits are provided in the Benefit-Cost analysis in Appendix D. Appendix D also includes annual demand projections, and annual breakdowns of the benefits.

The **Table 8** includes a summary of the key metrics of the Benefit-Cost Analysis.

Table 8: Summary Metrics Over the Study Period, 2012\$

Project Evaluation Metric	7% Discount Rate	3% Discount Rate
Total Discounted Benefits	\$66,448,099	\$111,063,140
Total Discounted Costs*	\$12,979,303	\$13,776,476
Net Present Value	\$53,468,796	\$97,286,664
Benefit / Cost Ratio	5.12	8.06
Internal Rate of Return (%)	26.0%	
Payback Period (years)	5.0	

*Includes incremental O&M and capital/construction costs
Prepared by HDR

The overall results of the Benefit-Cost analysis across the 20-year impact period are: total discounted benefits of \$66,448,099, and total discounted costs of \$12,979,303; yielding a Benefit Cost Ratio of 5.12 to 1 and a Net Present Value of \$53,468,796¹¹. The project will also create 236.7 job years over the 15 month development and construction phase. For robustness, alternatives to the project were also analyzed; see the section “BCA Sensitivity/Alternative Analysis” in Appendix D. In all cases, the project B/C ratio remained greater than 1.

The breakdown and value of these benefits is demonstrated in **Figure 12**¹².

Present Value of Benefits by Category, in millions of 2012\$ (20 Years) - 7% Discount Rate

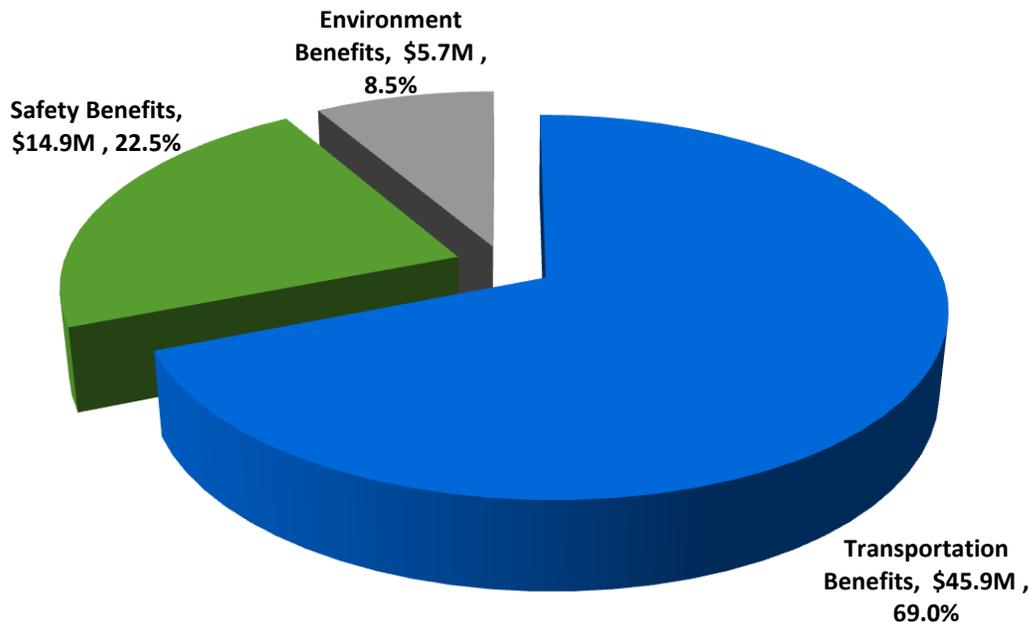


Figure 12: Value of Project Benefits
Prepared by HDR

¹¹ Values are in 2012\$, Discounted at 7% to a base year of 2013.

¹² Transportation Benefits include: Reduced Highway maintenance costs; Reduced transportation shipping costs; Reduced highway congestion costs; and Change in inventory costs.

V. ENVIRONMENTAL REVIEWS AND APPROVALS

The project site is located in the Trans Pecos Natural Region of Texas. The project is entirely located in Pecos County. The project area itself is primarily rural and contains vegetation associated with small ephemeral creeks and rangeland. The land use adjacent to the rail line in Pecos County consists almost entirely of ranching, but passes through the town of Fort Stockton. Within Fort Stockton the land use adjacent to the tracks is associated with farming, ranching, and manufacturing.

i. NEPA

To meet the NEPA requirements, TxDOT completed an FRA Categorical Exclusion checklist. and it is included for submittal with this application (See Appendix A). This FRA CatEx is the only approval needed for this project.

The conclusion of the State Environmental investigation (See Appendix B) was that the engineering, social, economic, and environmental studies conducted thus far indicate that no significant environmental effects would occur; therefore, the proposed project qualifies as a Categorical Exclusion. In addition, the proposed action has no significant impacts as described in 23CFR771.117 (a) and (b).

This investigation allowed the track rehabilitation to be environmentally cleared by the State in 2009.

ii. Legislative Approvals

TxDOT leased operations on the SORR line to Texas Pacifico Transportation Company, Ltd. ("TXPF"). Under the terms of the agreement, TxDOT became the permanent owner of the right-of-way and infrastructure, and TXPF obtained a 40-year operating lease with renewal options.

There is significant political support from Congressman K. Michael Conaway, Representative Drew Darby and Senator Carlos Uresti as shown by their letters of support.

iii. State and Local Planning

The project is in the State Transportation Improvement Plan¹³ (STIP) and the project schedule is dependent upon the timing of the TIGER grant award.

VI. FEDERAL WAGE RATE CERTIFICATION

TxDOT follows federal wage rate requirements and the federal wage rate certification is provided in Appendix B.

¹³ April 3, 2009, STIP revision: ftp://ftp.dot.state.tx.us/pub/txdot-info/tpp/stip/rev/april3_09/highway/odessa_hwy_040309.pdf

