

US DEPARTMENT OF TRANSPORTATION

GRANT FUNDING APPLICATION

BUILD Transportation Discretionary Grant Program

JULY 18, 2018

US HIGHWAY 160

Railroad Overpass & At-Grade Rail Crossing Consolidation Improvements



IN PARTNERSHIP WITH

Burlington Northern Santa Fe Railroad
Leonardo DRS

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I – Project Description

The U.S. Hwy 160 Railroad Overpass and At-Grade Rail Crossing Consolidation Improvements project aims to enhance safety and restore connectivity of rural West Plains, Missouri, through the construction of an overpass at U.S. Hwy 160 (Independence Drive) over the BNSF Railway and Howell Creek. Additionally, the project scope includes the closure of two (2) at-grade crossings: U.S. Hwy 160 and Thornburgh Street. The existing U.S. Hwy 160 at-grade crossing has the highest Average Daily Traffic (ADT) in West Plains, with an average of 5,552 vehicles crossing the BNSF Railway each day. **Combined, the U.S. Hwy 160 and Thornburgh at-grade crossings have the highest incident histories in West Plains—with five (5) documented incidents, including two (2) injuries, since 1995 and an additional two (2) near-misses in the last five (5) years.**

In April 2017, a record-breaking rainfall dumped over 11 inches in eight (8) hours in the City of West Plains, causing the catastrophic flooding of Howell Creek, effectively splitting the city in half, east to west, and preventing access for more than 24 hours. Currently, there is no bridge in the city that will not overtop in a 25-year or greater storm event. **This project will address vital connectivity needs highlighted by this flooding with the implementation of the U.S. Hwy 160 bridge over Howell Creek, providing one (1) foot of freeboard for a 100-year storm. This will maintain access for the community and emergency personnel in times of extreme rainfall events.**



Construction of the U.S. Hwy 160 overpass is anticipated to foster local and regional economic growth through connectivity and efficiency in congestion reduction. The project will provide unimpeded connectivity for passenger and freight vehicular transport, eliminating wait times/idling for vehicles using Independence Drive. This is anticipated to result in a cost savings for local businesses and improving the quality of life for rural citizens.

The project is located along the BNSF Thayer North Mainline and is part of the Transcontinental Rail Corridor and has significant economic impacts related to the transportation of freight from Oakland/LA to St. Louis/Memphis/Atlanta. Any delays along this vital transportation network can contribute to significant economic loss. Missouri ships approximately 12.5 million tons of goods (332,100 carloads) by rail each year while receiving 72.8 million tons (823,400 carloads) annually making the railroad important to the economies of both the nation and the state itself. **In short, the rail throughout Missouri is vital to the local, regional, and national economies.**

Leonardo DRS (DRS), a major defense contractor and fiscal project partner, will benefit directly from the project through the construction of an access road under the overpass **resulting in a reduction of product manufacturing travel time across their campus, from 15 to 6 miles from start to finish**, allowing them room for growth. In addition, this will eliminate the safety issue of trucks/ forklifts and personnel carrying product across U.S. 160 to access the North and South campus, **resulting in a reduction of sixty-four (64) daily crossings.**

Other local and regional businesses will benefit through the efficiency and connectivity provided in the U.S. Hwy 160 overpass. The reduction in potential at-grade crossing vehicle-train conflicts and implementation of an overpass will result in a safer and more efficient rail for freight transport along the BNSF Thayer Line, and nationally in freight movement along the Transcontinental Rail Corridor.

Early development of the project began in 2008 when, in a grade-separation feasibility study, the BNSF Railway proposed the elimination of all seven (7) at-grade crossings within the city limits with the implementation of three (3) grade-separated overpass structures to address the safety concerns associated with the increase in rail traffic. The approach by the BNSF Railway had limited public support and did not move forward until three (3) years later when the City of West Plains initiated effort towards implementing an overpass and at-grade closure. In 2015 the city initiated a Rail Consolidation Study to develop an At-grade Crossing & Consolidation Plan centered on a robust public outreach effort. In 2016, the city adopted a resolution accepting the recommendations for two (2) overpasses & five (5) at-grade closures (see **Appendix F**).

Following the resolution, engineering design was initiated on the U.S. Hwy 160 overpass and is currently in the Engineering Design & Review stage. This includes the completion of the West Plains Rail Consolidation and Transportation Master Plan, Pre-Final Engineering Plan development, and NEPA CE2 Document review.

The U.S. Hwy 160 overpass project is a stand-alone project. It is a top priority in the plan and will be the initial phase of implementing the Rail Consolidation & Transportation Master Plan. The U.S. Hwy 160 overpass will increase safety, reduce congestion, and improve vital access and connectivity for the rural citizens and businesses of West Plains. The proposed project achieves many key competitive requirements listed in the Notice of Federal Funding (NOFO):

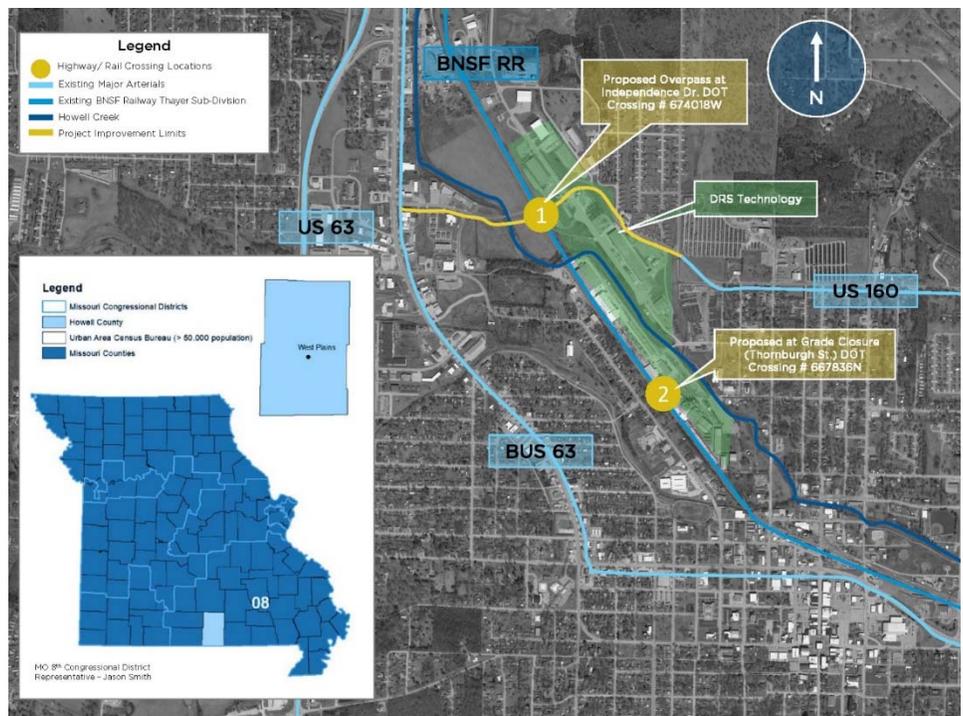
1. Located in 100% rural area
2. Private funding participation (\$500,000 Private funding contribution)
3. BUILD Federal Funding request of 75%
4. Substantial safety benefits and favorable benefit-cost ratio
5. Opportunity for economic growth acceleration in an economically distressed area
6. Increased Quality of Life for rural citizens
7. Strong project management and implementation team with exceptional qualifications

BNSF Manager of Public Projects John Caufield has endorsed the U.S. Hwy 160 Overpass project as a “great corridor project” that he would like “to see come to fruition.” Caufield has also called the Thayer South Subdivision a “high energy route” for BNSF, making construction of an overpass and the elimination of railroad closings in the city even more imperative. Caufield agrees that “this project would be an upgrade to the safety of the corridor and the town.”

The USDOT’s investment in this project will increase safety for rail traffic, vehicles, and pedestrians, improve quality of life for rural citizens, and provide opportunity for economic development for the region, state, and country.

II – Project Location

West Plains (ZIP 65775) resides in Howell County in rural south-central Missouri and has a population around 12,300. West Plains, MO, is in an Urban Cluster (UC) but is not considered an Urban Area (UA) as defined by the U.S. Census Bureau (<50,000 population). The surrounding areas are less populated, making West Plains an important service, retail, and employment hub for the region. The project (West Plains) is located within the 8th Congressional District of Missouri, which is currently represented by Congressman Jason Smith. The project is also located in an economically distressed area



of West Plains, making the potential for economic growth considerable (see **Merit Criteria**).

The U.S. Hwy 160 Railroad Overpass and At-Grade Rail Crossing Consolidation Improvements project is in West Plains, Missouri. The project will replace the U.S. Hwy 160 (Independence Dr.) at-grade crossing (DOT #674018W) located at Milepost (M.P.) 313.09 with an overpass and will close the Thornburgh Street at-grade crossing (DOT #667836N) located at M.P. 313.66 on the BNSF Thayer Subdivision. **The BNSF Thayer Subdivision is part of the Transcontinental Rail Corridor stretching from Oakland/LA to St. Louis/Memphis/Atlanta.**

The BNSF Thayer Subdivision halves West Plains into two sections: east and west. **Emergency vehicles and personnel must cross the railroad to provide vital services to citizens and are often delayed due to heavy rail traffic.** U.S. Hwy 160 provides vital access to West Plains, connecting the city with the more-rural surrounding areas of Howell County. U.S. 160 also serves as a major bus route for the local West Plains R-7 School District, with school facilities located on the east side of the railroad. The West Plains R-VII Superintendent of Schools Lori Wilson called a railroad overpass at Independence Drive (U.S. 160) “a necessity” for the school district, adding that “in a day and age where student safety is paramount, and delay in the response time of emergency personnel could mean the lives of several children” (**Appendix E**).

U.S. 160 is an east-west thoroughfare spanning across southern Missouri and serving many rural communities. In West Plains, U.S. 160 intersects U.S. 63—a major north-south highway traversing from Louisiana to Wisconsin. Additionally, the U.S. 160 (Independence Drive) at-grade crossing intersects two intrastate highways that connect the east, west, and central parts of Missouri to each other and makes shipment of goods more convenient.

DRS owns and operates a manufacturing campus adjacent to the project location. DRS operates buildings on either side of U.S. 160 and uses the at-grade crossing to transport heavy defense machinery and technology from their facility. The industrial assembly and manufacturing process requires material to be transported by truck or forklift from one building to another (North to South), resulting in multiple oversized trucks crossing U.S. 160. Implementation of an overpass at Independence Drive will eliminate this safety issue and reduce product manufacturing assembly distance through a new direct access underneath U.S. 160 (**Merit Criteria**).

Howell Creek runs parallel to the BNSF Thayer Railway, intersects U.S. Hwy 160 west of the railroad, and runs through the middle of DRS property. During the catastrophic 2017 flooding event, Howell Creek overtopped U.S. Hwy 160 and flooded the DRS campus. **The city experienced limited access resulting in increased emergency response time, traffic delays & truck route delays, increased exposure at railroad crossing locations, and massive loss of personal property.** The event highlighted the need for a grade separated crossing within the city.

III – Grant Funds, Sources & Uses of all Project Funding

The total estimated cost of the project is \$9,066,177. The USDOT BUILD Grant Administration will contribute an estimated 75% of the total cost but no more than \$6,799,632.75. Any additional expense required beyond that provided here will be borne by Missouri Department of Transportation (MoDOT) and the City of West Plains. These are estimates only and cover work that will be required regardless of other specific design details that MoDOT, the City of West Plains and the USDOT BUILD Grant Administration ultimately implement. All funds allocated towards this project will be spent in a rural area (**Section II**). Shown below in the *Project Funding Table* are expected contributions toward the project. It should be noted that all contingency costs (6.4%) are built into the Project Construction (see **Section V**).

PROJECT FUNDING TABLE										
Task No.	Task Name/ Project Component	Total Cost (Dollars)	Applicant (Dollars)	Applicant (% Cost)	Private (Dollars)	Private (% Cost)	Other-Federal (Dollars)	Other-Federal (% Cost)	BUILD (Dollars)	BUILD (% Cost)
0100	Program Management	\$814,107.00	\$81,410.70	0.9%	\$0.00	0.0%	\$0.00	0.0%	\$732,696.30	8.0%
0200	Environmental Review	\$50,000.00	\$0.00	0.0%	\$0.00	0.0%	\$0.00	0.0%	\$50,000.00	0.55%
0300	Design Development	\$200,000.00	\$40,000.00	0.4%	\$0.00	0.0%	\$0.00	0.0%	\$160,000.00	1.76%
0400	Right-Of-Way Acquisition	\$251,750.00	\$50,350.00	0.6%	\$0.00	0.0%	\$0.00	0.0%	\$201,400.00	2.22%

0500	Utility Relocation	\$560,000.00	\$560,000.00	6.2%	\$0.00	0.0%	\$0.00	0.0%	\$0.00	0.00%
0600	Project Construction	\$7,190,320.00	\$434,783.55	4.8%	\$500,000.00	5.5%	\$600,000.00	5.5%	\$5,655,536.45	62.38%
TOTAL		\$9,066,177.00	\$1,166,544.25	13%	\$500,000.00	6%	\$600,000.00	7%	\$6,799,632.75	75%
Total Project Cost		\$9,066,177.00								100%
Non-Federal Funding/Match		\$1,666,544.25								18%
Other-Federal Funding		\$600,000.00								7%
BUILD Federal Funding Request		\$6,799,632.75								75%

Non-Federal Match & Private Contributions

Collectively, the City of West Plains and MoDOT have collaborated with the private entities involved, BNSF and Leonardo DRS, for the feasibility and design of the U.S. 160 Overpass and both BNSF and DRS have pledged monetary support for this project (**Appendix D**). The BNSF Railway has committed \$250,000 in private funding contributions towards the project for the closure of two (2) at-grade crossings and construction of an overpass. DRS has committed an additional \$250,000 towards the construction of an overpass at U.S. Hwy 160. A funding agreement between the City of West Plains, MoDOT, and each entity will be executed upon successful notification of the BUILD Grant award.

MoDOT’s portion of the funding for the project is \$250,000 of state funds, generated from a non-federal funding source, and will be allocate through the State of Missouri transportation revenue from Missouri user fees. Missouri user fees are paid by the users of the users of the transportation system and are dedicated for transportation use in the state. They include fuel taxes, registration and licensing fees, and motor vehicle sales taxes.

The City of West Plains’ portion of the project funding is \$916,544.25, generated from a non-federal funding source, and will be allocated through the city’s transportation tax revenue (**Innovative Financing**).

Other-Federal Contributions

The MoDOT Multimodal Division has committed \$600,000 in support of this project (**Appendix E**). MoDOT is committed to increasing the safety for trains, vehicles, and pedestrians at multimodal intersections and plans to use Federal Section 130 money in support of closing two (2) at-grade crossings and the construction of an overpass at the Hwy 160 crossing. Federal Section 130 funds are allocated through the Federal Highway Administration (FHWA) towards the “elimination of hazards at railway-highway crossings.”¹ There is no required non-federal match for Section 130 funds.

PROJECT ESTIMATE CONTRIBUTIONS		
Funding Source	Project Contribution Amount	Percentage of Total Cost
BUILD Grant	\$6,799,632.75	75%
MoDOT - Section 130 (Co-Applicant)	\$600,000.00	7%
MoDOT – State Funds (Co-Applicant)	\$250,000.00	3%
City of West Plains (Co-Applicant)	\$916,544.25	10%
Project Partner (BNSF)	\$250,000.00	3%
Project Partner (DRS)	\$250,000.00	3%
TOTAL PROJECT COST	\$9,066,177.00	100%

¹ <https://safety.fhwa.dot.gov/hsip/xings>

Dependency on Other Funding Sources

There are no requests for federal funding pending or anticipated towards the project. MoDOT Multimodal has allocated a portion of its allotted Section 130 funds towards the implementation of this project. There is no commitment to spend BUILD Grant dollars by a specific date, other than that agreed upon by the USDOT, MoDOT, and the City of West Plains pending successful award of the BUILD Grant.

IV – Merit Criteria

The U.S. Hwy 160 overpass and Rail Consolidation project and co-applicants (MoDOT/ West Plains) meet all eligible criteria as defined in the Notice of Funding Opportunity (NOFO) Section C. Specific project merits and benefits are further detailed on the following page. **The overall purpose of this project is to increase safety measures, meet infrastructure demands for economic growth, reduce congestion, and provide connectivity throughout the city of West Plains and surrounding rural areas.**

Safety

The project aims to consolidate and address the safety challenges of at-grade rail-highway crossings in West Plains. As described above in **Section I**, the Independence Drive (U.S. 160) and Thornburgh crossings combined have the highest accident histories and highest ADT—with five (5) documented accidents, four (4) near-misses, and 8,037 ADT (2016).

CITY OF WEST PLAINS, MISSOURI – U.S. 160 GRADE SEPARATED STRUCTURE OVER BNFS RAILROAD										
AT-GRADE RAILROAD CROSSING SUMMARY										
STREET	US DOT #	RR M.P.	RR SIGNAL SYSTEM	RR SPEED	ROADWAY SPEED LIMIT	# OF TRAFFIC LANES	ADT	ACCIDENTS	INJURY STATUS	DATE
U.S. HWY 160 (INDEPENDENCE DR.)	674018W	313.09	LIGHTS & GATES	45 MPH	35 MPH	2	5,552	4	UNINJURED	1/23/1995
									UNINJURED	3/28/1995
									INJURED	7/5/1995
									INJURED	1/1/2010
THORNBURGH ST.	667836N	313.66	LIGHTS & GATES	45 MPH	25 MPH	2	2,485	1	UNINJURED	5/1/1979

Increased safety of railway-highway crossings is both the top priority and benefit that this project’s improvements will provide. **The work completed will contribute tangible benefits associated with the Independence Drive and Thornburgh Street crossings:**

- A reduction in the annual predicted incidents of 2.19 incidents per year between trains and vehicles of the two (2) at-grade crossings. This will reduce the current rate of 2.19 incidents per year (existing) to 0.00 incidents per year (proposed) between trains and vehicles
- **A reduction in 144.97 in the train-vehicle exposure index at the two (2) at-grade crossings**, reducing the current index of 144.97 to 0.00 (proposed) with the implementation of a grade-separated overpass. The exposure index within West Plains city limits along the Thayer Mainline will be reduced 63.29, from 103.66 (current) to 40.37 (proposed)
- Increased pedestrian safety through the installation of ADA sidewalk on the U.S. 160 overpass
- Enhanced safety for school buses, which will eliminate the chance of any potential catastrophic collision between a train and school bus
- Reduced response time for emergency responders with increased connectivity
- **An overall cost-benefit ratio of 1.20**, which illustrates high safety benefit for the monetary investment towards the project improvements

MoDOT - BNSF RAILROAD (THAYER NORTH LINE M.P. 313 TO M.P. 315)									
USDOT GENERAL ACCIDENT PREDICTION MODEL									
STREET	US DOT #	RR M.P.	ADT (V)	# DAILY TRAINS	RECORDED INCIDENTS IN T YEARS (N)	# OF YEARS OF CRASH DATA (T)	FORMULA WEIGHTING FACTOR (To)	CRASH PREDICTION (B)	AVG.
U.S. HWY 160 (INDEPENDENCE DR.)	674018W	313.09	4,960	27	4	40	6.88722	0.0993	0.0547
THORNBURGH ST.	667836N	313.66	2,624	27	1	40	7.80373	0.0337	
*CRASH PREDICTION FORMULAS BASED FROM FHWA RAILROAD-HIGHWAY GRADE CROSSING HANDBOOK, SECTION 3									
** BASED ON RECORDED INCIDENTS FROM 1975-2016 (DOES NOT INCLUDE NEAR MISS DATA)									

MoDOT - BNSF RAILROAD (THAYER NORTH LINE FROM M.P. 313 TO M.P. 315)									
PROPOSED AT-GRADE CROSSING EXPOSURE INDEXES									
EXISTING CONDITION						RR MASTERPLAN CONDITION			
STREET	US DOT #	RR M.P.	EXPOSURE INDEX (EI)	Protection Factor (PF)	Adjusted Exposure Index (AEI)	Protection Factor (PF)	Adjusted Exposure Index (AEI)	AEI CHANGE	
U.S. Hwy 160 (Independence Dr.)	674018W	313.09	210.24	0.01	210.24	CLOSED (OVERPASS)	0.00	-210.24	
Thornburgh St.	667836N	313.66	79.70	0.01	79.70	CLOSED	0.00	-79.70	
AVG EXISTING AEI					144.97	AVG PROPOSED AEI		0.00	-144.97

The above safety measures and the implementation of this project will result in a safer transportation system for the movement of passengers and freight. The elimination of two (2) at-grade crossings eliminates all points of conflict in these areas of travel, **resulting in lasting safety benefits for decades to come.**

In addition to the safety increases due to the elimination of the at-grade crossings, the access made available to DRS will reduce the amount of private truck, pedestrian, forklift, and golf cart transport across U.S. Hwy 160. The implementation of a private access road underneath the overpass will result in the reduction of approximately 64 daily truck/forklift crossings. This will result in a safer environment for DRS Technologies personnel and the public, with the reduction of potential conflict points during times of DRS personnel crossing U.S. Hwy 160.

State of Good Repair

The U.S. Hwy 160 overpass will significantly upgrade the highway and rail transit systems in West Plains. The construction of an overpass is expected to have a service life of 50 years for the residents and local community of rural West Plains.

The implementation of an overpass upgrades the transportation system in many ways, including but not limited to (Appendix A):

- Reduction in highway-rail at-grade crossings
- Reduction in operating and maintenance costs of \$206,000 in 30 years (7% Present Value)

- Reduction in vehicular and train wait times resulting in cost travel savings of \$14.75 per hour for general purpose vehicular traffic
- The overpass structure is estimated to have a residual value of \$3,484,000 in 30 years at 7% present value, illustrating a cost savings that outweighs the long-term lifecycle costs

In the No-Build scenario, the existing at-grade crossings and transportation system will become overloaded, causing significantly time delay for vehicular and train traffic. **The average train length is expected to increase 1.41% from 6,650 ft to 9,400 ft with an average annual increase in crossings of 1.50% and the ADT is expected to increase 1.10% from 4,960 to 5,465 by Year 2049.** Given these increases in both highway and rail traffic, **the congestion created in times of rail traffic will result in total average daily delay of 142.9 minutes for vehicular traffic (Appendix A).** The construction of an overpass and bridge over the BNSF Thayer Railway and Howell Creek will increase transportation efficiency across the region, increase mobility of passengers, truck and train freight, resulting in a travel time costs savings and regional economic growth.

The U.S. Hwy 160 overpass, once constructed, will be under MoDOT jurisdiction, and the MoDOT Southeast District will be responsible for all costs and activities relating to maintenance and repair of the overpass structure, Howell Creek bridge, and Highway 160 roadway surface. This includes but is not limited to striping, resurfacing, inspection, bridge deck repair/replacement, and mowing.

Economic Competitiveness

This project aims to provide maximum benefit for the community of West Plains. The project's area is unique in that it sustains many uses of the transportation system.

Independence Drive is a major thoroughfare in West Plains, with school, passenger, work, and business traffic using it as a means of transport. **The construction of an overpass over the BNSF Thayer Railway will result in greater efficiency in travel, with reduced delays due to rail traffic or vehicle-train incidents and reduced congestion.**

Currently, 595 (12%) of the 4,960 ADT is truck traffic moving supplies and products to and from local businesses. The total average daytime wait time for truck traffic is predicted to increase 260 minutes in 30 years at the current state, from 197 to 457 minutes daily. **In 30 years, this wait time will result in a loss of \$13,002 per day** for driver overhead, with an unquantifiable amount for time delay in product. In the No-Build Scenario, traffic congestion will become overwhelming for the current system, resulting in a negative time and cost savings for businesses that utilize these crossings.

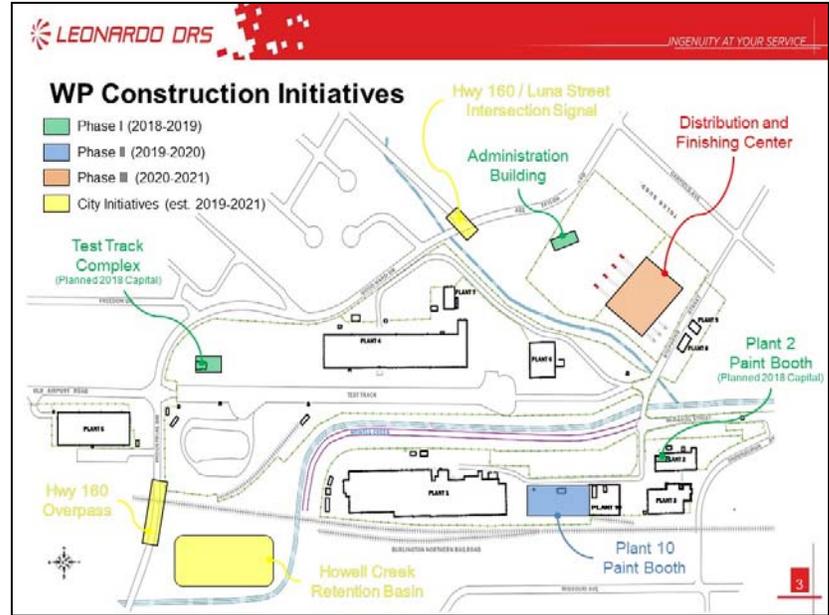
Several businesses have acknowledged the economic benefits an overpass will provide in terms of both safety and transport. Local business Armstrong Hardwood Products, a major flooring and wood manufacturer, is located directly south of Thornburg Street and adjacent to the BNSF Railway. While closure of the Thornburgh crossing means that Armstrong's trucks will need to travel a bit further, **the business understands that U.S. Hwy 160 Overpass will result in both a faster and safer crossing at times of rail traffic.**

Leonardo DRS (DRS), a major defense contractor and project partner, is located to the west of the overpass on both the north and south sides of Independence Drive. DRS utilizes the Independence Drive (U.S. 160) at-grade crossing for incoming and outgoing product delivery. Currently, due to the safety concerns of the current crossing, outgoing trucks utilize the west exit from the plant and traverse through a residential neighborhood toward U.S. 63. The addition of an overpass will result in DRS sending its outgoing heavy, oversized loads to the U.S. Hwy 160 overpass and away from residential areas. **The elimination of the at-grade crossing results in the elimination of a major train-truck accident and the elimination of the risk of loss of multi-million-dollar defense projects being transported,** as confirmed by Steve Foster, DRS Plant Manager.

The project plans (Appendix F) include a private access road for DRS to use to move people, product, and vehicles underneath the U.S. Hwy 160 overpass east of the BNSF Railway. Current operations cross U.S. Hwy 160 between campuses several times per hour during 3-shift operations. Implementation of the access road and overpass will provide numerous benefits for DRS, including but not limited to:

- Increased safety of personnel crossing U.S. Highway 160 from one building to another
- Reduced risk of loss of product in transport from building to building
- Reduced risk of loss of product and life at highway-rail crossings
- Increased efficiency in manufacturing, reducing product travel across the facility from 15 to 6 miles.
- Reduced congestion for personnel coming/going to work, reducing wait time and improving quality of life

DRS is seeking to upgrade and expand their 85-acre (10 building) West Plains campus in three (3) phases, more than doubling the size of the current campus, along with the addition of **100 jobs** over five years. The first phase includes the construction of a new 20,000 ft² Administration Building in Quarter 3 of 2018. Phase 2 consists of a 43,750ft² facility in support of Department of Defense programs. Phase 3 includes the construction of a 90,000ft² distribution center with internal connectivity to the North campus via the new access road under the U.S. Hwy 160 overpass. The investment DRS is making in West Plains will result in local, regional, and national economic growth.



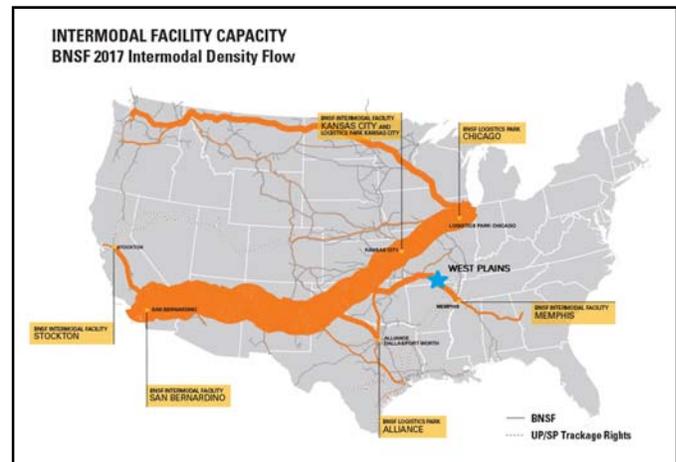
It is anticipated the result in the following local economic benefits:

- The addition of 100 jobs over the next five years, from 395 to 495 skilled technicians (30% increase)
- The daily truck volume transporting over \$500,000 in finished goods is expected to double and employee vehicle volume is expected to increase 25%
- The access road will eliminate the disruption and risk of crossing traffic and increase efficiency in the multiple crossings in each 3-shift operation.

It is vital that the local transportation network be able to accommodate such growth. DRS sees the safety and economic benefits provided through the construction of the U.S. Hwy 160 overpass and, as a result, has committed to invest \$250,000 in the project construction (Appendix D).

The reduction in at-grade crossings will also provide an economic benefit to the BNSF Railway. The closure of the two (2) crossings associated with this project will result in greater efficiency for rail traffic, with the reduction of crashes and incidents, allowing for quicker transport of product. This will also reduce rail traffic congestion along the BNSF Thayer Mainline, resulting in higher regional and national rail efficiency. According to the latest projections from the U.S. Department of Transportation², the total volume of U.S. freight rail is expected to increase by 49% from 2013 to 2040

The BNSF Thayer Mainline is the primary line that carries coal and freight from the western U.S. to the southeast. Approximately 50% of freight transported is coal on its way to the southeastern U.S.—where five of the top ten most coal-dependent states in the U.S. (Tennessee, North Carolina, Alabama, Georgia, and Florida) are located—and accounts for \$9.1 billion (2010) in annual expenditures by these states³. The



² See National Freight Strategic Plan. U.S. Department of Transportation. October 2015.

³ https://www.ucsusa.org/sites/default/files/legacy/assets/documents/clean_energy/Burning-Coal-Burning-Cash_full-report.pdf

BNSF rail that runs through West Plains is one of only seven Class 1 rail lines in the U.S. that, combined, did \$63.2 billion worth of freight revenue in 2016⁴. Missouri carries approximately 450.9 million tons of freight (1,420,674 carloads) by rail each year, making the railroad important to the economies of both the nation and the state. **While the rail throughout Missouri is vital to the local, regional, and national economies, the City of West Plains plays a more-specific and critical role in these economies.**

The BNSF Thayer Railway through West Plains carries approximately 60 to 65 million gross tons (MGT) annually and has a Daily Slow Order of over eight minutes. Slow Order miles are corridors of railway that have temporary slow orders due to track/crossing conditions. As rail and highway traffic increase, the time delay for trains will likely increase causing loss in time and revenue.

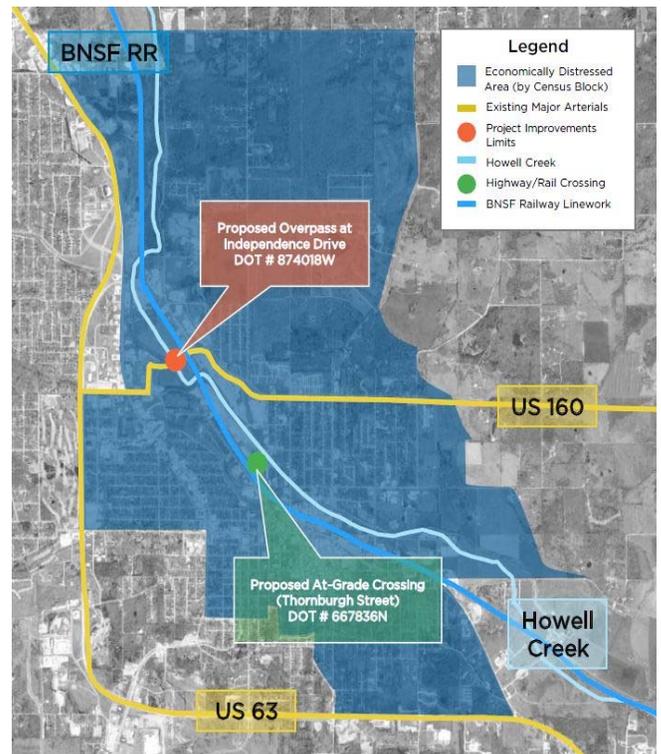
Alternatives for the potential re-route of rail traffic through West Plains were considered and discussed with the BNSF Railway. Existing route alternatives or detour routes to satisfy the origin-destination along the Transcontinental Railway were found to be unrealistic and resulted in estimated costs that required an additional investment approaching billions of dollars as well as having to mitigate significant environmental impacts. It was determined that an investment in the existing Transcontinental Railway through West Plains provided the most economically viable alternative for increasing safety, reducing congestion, and providing connectivity throughout surrounding rural areas.

Economically Distressed Areas

The U.S. Hwy 160 Overpass is located in an economically distressed portion of West Plains, with a median household income of \$32,641 and an unemployment rate of 7.0%⁵. The city estimates that 47 jobs directly result from this project. Additional jobs could be generated in the expanding local manufacturing facilities including Armstrong Flooring, DRS Technologies, Coca-Cola, Arlee Home Fashions, MFA, and numerous other small businesses that could expand and benefit as a result of this project.

The Missouri Department of Economic Development has endorsed the project and offered support towards the U.S. Hwy 160 Overpass. Director Robert Dixon states the City of West Plains has “diligently worked to align the partners and resources...to appropriately plan for key infrastructure improvements.” He further states this project will “facilitate industrial growth in the form of jobs and additional capital investment” (Appendix E).

Overall, the project will provide significant benefits for lasting years in terms of economic development. **The added regional connectivity, reduced cost of business, and job generation will help to make West Plains a competitive location in the region for private economic development.**



Environmental Protection

The project provides environmental benefits on the local, national, and global scale. The construction of the U.S. 160 overpass will eliminate wait times due to rail traffic, resulting in a reduction gasoline (oil) consumption and vehicle emissions due to idling.

⁴ <https://my.aar.org/Documents/Railroad-Statistics.pdf>

⁵ www.census.gov

Currently, there is an annual average of 2,065 minutes of passenger vehicle delays and 282 minutes of truck delays. At the end of construction, it is estimated that \$1,783 in emissions will be reduced, which equates to \$3,913 in emissions reduction in 2049 (30-years) (**Appendix A**).

While these reductions in emissions would be negligent on the global scale, **every bit of emission reduction is considered positive**. The efficiency and reduced congestion will also contribute to emissions reduction; however, it is not realized in the Benefit-Cost Analysis. Overall, the elimination of the two (2) at-grade crossings and construction of an overpass at U.S. 160 will reduce oil dependency and reduce air emissions, resulting in a net positive change in environmental value for the project.

Quality of Life

Due to the BNSF Thayer Railway location, many of the rural citizens in and surrounding West Plains must cross the railroad multiple times daily to get to work, school, or other necessary destinations.

Currently, vehicles wait an average of 5.02 minutes during rail traffic, for a combined daytime passenger vehicle delay of 1,445 minutes daily. According to the USDOT, the total volume of freight rail traffic is expected to increase by 49% by 2049⁶. In 2030 the Howell county population is expected to rise 6.7% from its current level. The projected train length in 30 years is expected to increase 1.41% and the train traffic present in crossings is expected to increase 1.50%.

The above increases in economic and demographic growth will cause significant strain on the transportation system if left at its current level of service. In 2049, the projected average wait time per vehicle will be 6.77 minutes—or, a combined daytime passenger vehicle delays of 3,355 minutes daily (**Appendix A**).

The record-breaking 2017 flooding event also caused a strain for the community's way of life. When the Howell Creek flooded and bisected the city, many people were stuck separated from families, lacking emergency responder services, or unable to commute to critical destinations.

The U.S. Hwy 160 overpass over the BNSF Railway and Howell Creek is vital to maintain a level of service to meet the growth demand of the community. **The project work will provide vital connectivity during times of rail traffic, reduce wait times, improve access and response time for emergency response services, maintain connectivity in times of high rainfall, and improve quality of life for rural citizens of West Plains, MO, with expanded access.**

Innovation

Innovative Technology

The project seeks to maximize the safety and economic benefits associated with the closure of two (2) at-grade crossings and the implementation of an overpass. In addition, innovative technology will be utilized to provide advanced warning to drivers of slow moving trucks ahead.

Many of the trucks leaving the DRS campus transport heavy, oversized loads and are slow to accelerate. Flashing advanced warning signs will be implemented to warn drivers of the hazards ahead. Flashing "Truck Crossing" signs will be placed to the north of the DRS security entrance/ exit gate, with sensors attached to the gates of DRS to activate the sign. As the gate opens and trucks exit the DRS campus onto U.S. Hwy 160, the sign will activate to warn of the slow-moving trucks ahead. Additionally, coordination with DRS revealed the opportunity to reduce product travel distance and increase safety with the implementation of a private access road under the U.S. Hwy 160 overpass.

Due to the heavy, oversized trucks traveling U.S. Hwy 160 entering and exiting DRS and other local businesses, it was determined that a stronger robust pavement was necessary to handle the high amount of heavy truck traffic. The engineering design calls for a stronger pavement to support the load without reducing the pavement service life.

⁶ See National Freight Strategic Plan. U.S. Department of Transportation. October 2015.

Innovative Project Delivery

The U.S. Hwy 160 Overpass and bridge over the BNSF Railway and Howell Creek will provide lasting benefits regarding the transportation network. Implementing an overpass will significantly reduce congestion in the presence of rail traffic, especially during peak highway traffic.

The elimination of two (2) at-grade crossings will reduce the burden of maintenance costs for the BNSF Railway, MoDOT, and West Plains. The installation of the overpass will provide benefits that significantly exceed the burden of construction. MoDOT will bear responsibility for the long-term maintenance and operation of the overpass structure including, but not limited to, inspection and repair.

In addition to the direct benefits of the overpass, the unusable land between the railroad and Howell creek offers a unique opportunity to provide greater benefits. The land is currently unusable due to the Howell Creek flood plain, allowing the opportunity to create a retention basin to alleviate downstream flooding and supplement the need for earth-fill for the overpass. This is currently being designed and modeled to be added to the project plans, with work being performed simultaneously.

Innovative Financing

The City of West Plains has strategically conserved revenue for matching the funding of this project, contingent upon successful award of the BUILD Grant. This revenue is generated towards this project is funded through the City of West Plains Transportation Tax. It was renewed without a sunset by residents in April of 2017 and **generates approximately \$1.3 million annually**. Previous work towards this project has been funded through this source, with allocations being made towards the remaining portions of the project (**Appendix D**).

MoDOT is utilizing a portion of Federal funding and state funding to contribute towards the project cost (**Section III**). **MoDOT and the city have sought sources of assistance from private entities that will benefit from this project, reducing the amount of federal funding requested to fully fund the project.** West Plains and MoDOT have executed a memorandum of understanding (MOU) with the BNSF Railway for their participation and monetary investment in this project. In addition, DRS has agreed to support the project with a private investment towards project construction (Task 0600) (**Appendix D**).

Partnership

The City of West Plains and MoDOT (co-applicants) have sought to bring several private and public partners to the table for project development and funding. MoDOT and the BNSF have both been stakeholders since the commissioning of the feasibility study and engineering plan development. DRS has recently joined the project team as a partner in support for the project development and project funding. **DRS is a contributing partner, offering legal and administrative support and contributing 3% of the total project cost.**

The BNSF Railway is a stakeholder in the project, as it seeks to benefit with the elimination and removal of at-grade crossings. The project directly benefits BNSF in providing train safety, reducing potential incidents with highway vehicles, increasing transport efficiency, and reducing annual maintenance costs. As a key stakeholder, BNSF has been important for the City of West Plains to collaborate with as the project progresses. **BNSF is a committed partner and is contributing 3% of the total project cost (Appendix D).**

The City of West Plains has sought to collaborate and maintain a line of communication with local businesses that are impacted or may benefit from this project. DRS saw value and opportunity for growth in the implementation of an overpass and has become a strong and committed partner. DRS will benefit through the addition of a private access road underneath the overpass structure, allowing for increased efficiency (see **Economic Competitiveness**) in product development. **DRS is a financial stakeholder in this project and will assist in the design review, construction costs (3% total cost), and the project audit requirements, upon successful award of the BUILD Grant.**

The MoDOT Multimodal Division has been a key stakeholder since the commencement of the feasibility study and project development. MoDOT Multimodal is currently seeking to consolidate and enhance security measures of the at-grade railway-highway crossings in the state of Missouri. With the scope of the work for this project including both the consolidation and upgrades of crossings, MoDOT has joined the team as an integral partner, including contributing 10% of the project cost towards project construction (Task 0600).

These public-private partnerships have allowed for a strong project team to be developed, with a goal of increasing safety, efficiency, and economic growth for the rural community of West Plains.

Non-Federal Revenue for Transportation Infrastructure Investments

West Plains (co-applicant) does not currently have any plans for an increase in revenue for transportation infrastructure investment. The city has successfully passed a transportation tax without sunset in April 2017 (see **Innovative Financing**).

However, **MoDOT (co-applicant) and the State of Missouri (Legislature) are proposing a 10-cent gas tax increase for the November 2018 ballot**. If passed, the revenue generated will go directly towards highway and transportation funding, including assisting city municipalities with transportation improvement projects.

V – Project Readiness

The U.S. Hwy 160 Overpass and At-Grade Rail Consolidation Improvements project is in the final design stage. The planning and analysis process (below), along with engineering design activities, were conducted by Crawford, Murphy and Tilly, Inc. (CMT). Construction is expected to begin, upon successful award of the BUILD Grant, in June 2021, with an estimated completion of December 2022.

Technical Feasibility

Planning Process

From the start of the 2015 Rail Safety Study, public involvement has been a significant factor in developing potential safety alternatives and developing the final recommendation. Meetings were held with the respective municipalities and jurisdictional authorities to seek their input and support in the consolidation of at-grade highway/rail crossings.

The project took a “listen first” approach with the community. Instead of developing concepts and alternatives with little local understanding and insight, the team engaged the public in a series of listening sessions to understand key issues and challenges related to the railroad, transportation, and safety within the study limits. Through this process, the project team connected with local business owners and residents to better understand what needed to be considered as part of the alternatives, which were offered later in the study period.

The process utilized a menu of different tools and techniques to obtain feedback and information from the public during the process. **The approach was designed to engage many different demographics and geographic participants. This collaborative and flexible approach to engaging the public was initiated throughout the process and has resulted in a plan that has the support of the public. The process is described below with the following illustration:**

This plan provides recommendations largely based on opinions and perceptions of those who know the community best: its residents, businesses and property owners. Community leaders made an essential commitment to engage the public, using multiple methods to ensure transparency and innovation to generate support and commitment towards the success of the project.

In addition to public outreach, additional planning efforts were coordinated with the MoDOT Multimodal Division, MoDOT Southeast District, and the BNSF Railway.

The proposed project recommendations were also coordinated with the BNSF’s recent capital improvement plan for the Transcontinental Rail corridor. Additional plans for Positive Train Control (PTC), as well as siding improvements to accommodate increased rail traffic and freight capacity, were considered as part of the project development.

As part of the alternative evaluation during the 2015 Safety Study, the public input process was combined with a technical safety benefit analysis for each alternative. Each consolidation alternative scenario had different safety and



benefit impacts to each at-grade crossing located within the corridor. Using a combination of the public acceptance and technical evaluation model, **the planning document was able to provide the city with analytical data to support the prioritization the closure of Thornburgh and U.S. 160 at-grade crossings and an overpass at U.S. 160.**

Investment Need Analysis

Each alternative was analyzed independently of public opinion to determine which would provide the largest safety benefit and maintain a positive benefit-cost ratio. **Analysis was conducted through the following process to illustrate which improvements provide the greatest net safety benefit:**

1. Data collection consisted of site visits, interviews with key stakeholders, and utilization of the FRA and BNSF databases.
2. Using the Missouri Exposure Index formula⁷ and USDOT Basic Crash Prediction, proposed improvements were compared to existing conditions.
3. Using the USDOT Basic and General Crash Prediction formulas⁸ simultaneously, accident prediction was based upon both crossing characteristics and historic crash data.
4. The crash costs for fatal, injury, and property damage were combined with accident prediction to estimate a crash cost per crossing.
5. The number of prevented crashes were converted to a monetary value to analyze the benefit of crossing upgrades/closures. The BCA was used to ensure the financial investment generates significant safety benefits.



The BCA analysis for each alternative was evaluated for all alternatives developed during the concept/planning phase. Following the above method of analysis, alternatives were chosen for each community based upon technical evaluation outcomes, public support, and financial feasibility.

Basis for Cost Estimate

The Project Funding Table (**Grant Funds**) and the attached SF424 Budget for Construction (**Appendix C**) show detailed costs. All quantities are based on current design dollars and the best information available to the engineer at the time. Contingency costs are based upon the engineer’s judgement for the remainder of design. The included contingency level is 6.4% of total cost, or \$576,963.

Risk Mitigation

The following steps outline the project risk management process:

Risk Management Planning – Prior to the initiation of risk management, activities in the proposed baseline (scope, schedule, and cost) are evaluated to determine their potential for risk. This risk screening evaluates all activities against a set of screening categories, typically in the areas of construction, interface control, safety, regulatory and environmental, security, design, resources, space migration, etc. Activities that are identified as project risks will be tracked within the risk management plan.

Risk Identification – Identify risks that may impact the successful completion of the project. Risks are identified for the entire lifecycle of the project. Risk associated with project work scope, cost, and schedule are identified by systematically challenging the assumptions, logic, and scope of the project and examining the identified uncertainties associated with each stage of the project.

⁷ <https://library.modot.mo.gov/RDT/reports/Ri01010/RDT03017.pdf>

⁸ https://safety.fhwa.dot.gov/hsip/xings/com_roaduser/07010/sec03.cfm

Risk Assessment – Assess the risks to determine their likelihood and impact on the project’s cost, schedule, and/or work scope. This includes a qualitative and quantitative assessment of the consequences (impact) of the risks and their probability of occurring.

Risk Handling – Determine the risk-handling strategy, whether (in order of preference) it is to eliminate, transfer, prevent, mitigate, or assume (accept the risk).

Risk Management Impact and Control Actions – Assesses the risk impact on the project and the effect of the risk handling strategies. Risk handling strategies will be reflected in the project’s baseline, whereas residual risks will be reflected in the project contingency.

Risk Reporting and Tracking – Risk reporting and tracking is the documentation of the risk management process.

The above process will be applied to the project to ensure that risk has been minimized in the scope, schedule, and budget. As the primary grant administrator, the City of West Plains will be responsible for monitoring project progress, quarterly reporting to the BUILD Administration, and maintaining and updating the project schedule and budget. The MoDOT project manager is also responsible for submitting to the BUILD’s designated contact for this project verification that all prerequisites detailed above have been met. West Plains will be responsible for all cost overruns and shall satisfy the requirements of the funding agreement, including providing all the deliverables in a timely manner for USDOT’s review, acceptance, or approval.

West Plains will perform all tasks required for the project including necessary coordination with all involved federal and state agencies and all railroad owners and operators and stakeholders using processes already in place. West Plains’ project coordination process is based on ongoing practice, executed Memoranda of Understandings and other Agreements, and public involvement processes developed for the preliminary planning phase of the project *and is shown on the following page in the organizational chart.*

All work on the U.S. Hwy 160 Overpass & At-Grade Rail Consolidation Improvements Project will be performed by a unified project team led by West Plains, which will consist of full-time employees of West Plains. This project team will work together to efficiently and effectively oversee the implementation of the project.

Statement of Work

The project will complete the following activities in accordance with the construction documents: removal of the U.S. Hwy 160 & Thornburgh at-grade crossings, construct bridge over Howell Creek, construct bridge over BNSF Railway, construct DRS access road, and realign U.S. 160 vertically and horizontally. These activities will be managed and occur in accordance with the tasks detailed in the *Project Funding Table* (above) and the *Project Schedule* (below) and all activity responsibilities are listed (above) in the *Organizational Chart*.

The following is expected to occur within the scope of work for each task:

Task 0100 – Program Management & Controls

Task 0110 - Develop Project Management Plan (PMP)

Develop a PMP in accordance with generally accepted industry practice.

Task 0120 - Administration & Contracts

Provide services to procure other services and construction for the total project implementation.

Task 0130 - Schedule & Financial Control

Prepare and maintain a master project schedule, project estimate, and financial/technical system for controlled access by project participants. Progress reporting will be provided to the USDOT monthly. Review and approve invoices as appropriate for completed work.

Task 0140 - Quality Management

Establish and implement a Quality Assurance and Quality Control (QC/QA) plan for the work of the CONSULTANT and a master plan for the project. The quality assurance plan will be reviewed monthly and at the completion of each milestone deliverable.

Task 0150 - Risk Management Plan (RMP)

Develop a program and management plan that identifies the potential risks that could threaten the timely and cost-effective completion of the project. Risks to be identified should include but are not limited to: technical, financial, institutional, and legal risks. The RMP shall address the risks identified, as appropriate, by the Project Manager. The RMP will include risk identification, risk assessment, risk allocation, and recommended risk management strategies. The plan will be updated on a quarterly basis.

Task 0160 - Project Coordination & Communication Plan

Project coordination will be achieved through regular communication and meetings with the BNSF Railway throughout the design and construction process. Each railroad will be asked to appoint a lead person with decision making authority. Regular meetings will be held with the leads for each organization and the upper management of USDOT, West Plains, MoDOT, and the BNSF, and they will be scheduled to provide briefings on project status and resolve issues. Meetings will be held quarterly.

Task 0200 – Environmental Review

Task 0210 - Permits - 404/401, Floodplain, Stormwater

If the project will result in impacts to wetlands or streams regulated under Section 404 of the Clean Water Act, permits will be required. West Plains shall prepare applications for and process all needed permits from the U.S. Army Corps of Engineers, the U.S. Fish & Wildlife Service, the Missouri Department of Conservation, the Missouri Department of Natural Resources, and other regulatory agencies. MoDOT shall identify what permits will be necessary for construction of the project and prepare applications for those permits.

Task 0300 – Design Development

Task 0370 - Final Design Development (100%)

MoDOT will develop preliminary engineering (100%) design drawings of the off-track improvements that include, but are not limited to, the roadway, sidewalk, temporary traffic/detour plan, signing, lighting, and drainage. Design drawings will be used to complete a 100% cost estimate.

Task 0400 – Right-Of-Way Acquisition

Task 0410 - Establish Guidelines & Standard Forms

MoDOT will obtain and manage the necessary property rights for the project in a lawful, fiscally sound, and publicly acceptable manner. All property interest will be acquired in accordance with the Missouri Engineering Policy Guide which ensures compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. A real estate specialist hired by West Plains shall be responsible for:

1. Ordering Title Work and Supporting Documents
2. Coordinating Appraisals and Review Appraisals.
3. Assisting with utility Subordinations, relocations and other public agency agreements.
4. Assisting with Relocations
5. Property Management. (Conveying Property to local Municipalities, as necessary)

Task 0420 - Acquisition Protocols

MoDOT will have appropriate legal support that will provide legal services and recommend acquisition standards and procedures, as well as provide quality assurance and audit of the acquisition process.

Task 0430 – Identify Acquisition Needs

Identify parcels and property (ie. fencing, landscaping, sheds, etc...) that could be impacted by the project improvements.

Task 0440 - Survey for Partial Takings

Perform field survey for partial acquisitions that result in a Plats of Survey for each parcel with a metes and bounds legal description for the proposed acquisition area.

Task 0450 - Title Work

Obtain and review property files, title reports, and litigation guarantee from the title company. Obtain title updates prior to parcel acquisitions, as needed.

Task 0460 - Perform Appraisals

A MoDOT Approved appraiser shall prepare an appraisal of the fair market value of the property. The appraisal report must comply with standards established by the Appraisal Institute, the Uniform Standards of Professional Appraisal Practice and the Missouri Engineering Policy Guide.

Task 0470 - Review Appraisals

A MoDOT approved review appraiser will examine the presentation and analysis of market information in all appraisals to assure that they meet the definition of appraisal found in 49 CFR 24.2(a)(3), appraisal requirements found in 49 CFR 24.103 and other applicable requirements including, to the extent appropriate, the UASFLA and support the appraisers' opinion of value.

Task 0480 - Perform Negotiations

MoDOT shall prepare conveyance documents in accordance with the property rights proposed for acquisition. In addition, the Negotiator shall prepare all documents necessary to clear title exceptions. Negotiation packages will be prepared in accordance with the Missouri Engineering Policy Guide. West Plains shall provide litigation support if condemnation of the property is necessary.

Task 0500 – Utility Relocation

Task 0510 - Notify Utility Companies of Potential Conflicts

MoDOT and the city will identify potential utility conflicts and relation needs during the design alternative development. Following the preliminary design submittal, the city will coordinate with the impacted utility companies and develop a relocation plan for impacted utility infrastructure.

Task 0520 - Relocation Design Development

MoDOT and the city will identify all utilities that will be relocated and outline the roles and responsibilities to successfully complete all early utility relocation for the Project, contracting approach, and schedule for completing all necessary utility relocations.

Task 0530 – Relocation Design Review

West Plains will submit the Utility Relocation Plan to USDOT for review and written approval. West Plains will implement the Utility Relocation Plan and periodically update the plan to reflect implementation progress.

Task 0540 - Easement & Utility Relocation Agreements

West Plains will prepare and negotiate the necessary easements and utility agreements to accommodate relocation necessary to implement the project.

Task 0600 – Project Construction

Task 0610 - Bid Advertisement

MoDOT will engage contractors through the competitive bidding process established by the State of Missouri for all construction activities and in compliance with Federal regulations. MoDOT will provide construction oversight and will give direction to the construction engineering and contractor.

Task 0620 - Bid Approval/Award

MoDOT will be responsible during the project for solicitation of bids, award of construction contracts and administration and payments associated with these contracts. BNSF will coordinate with West Plains and MoDOT with respect to the procurement of construction for the removal of at-grade crossings.

Task 0640 - Pre-Construction Meeting (Contractor, West Plains, MoDOT, BNSF, USDOT)

West Plains & MoDOT will facilitate a joint meeting at the beginning of construction to discuss construction schedule milestones, communication, and documentation requirements.

Task 0650 - Pre-Construction Public Meeting

MoDOT will identify specific methods to be used to encourage participation, group facilitation, and dispute resolution, as well as encourage as much interaction with the community as possible. The city will suggest an anticipated number of meetings, presentations, and hearings and the appropriate timing for key events relating to major milestones and decision-making points in the process.

Task 0660 – Project Construction

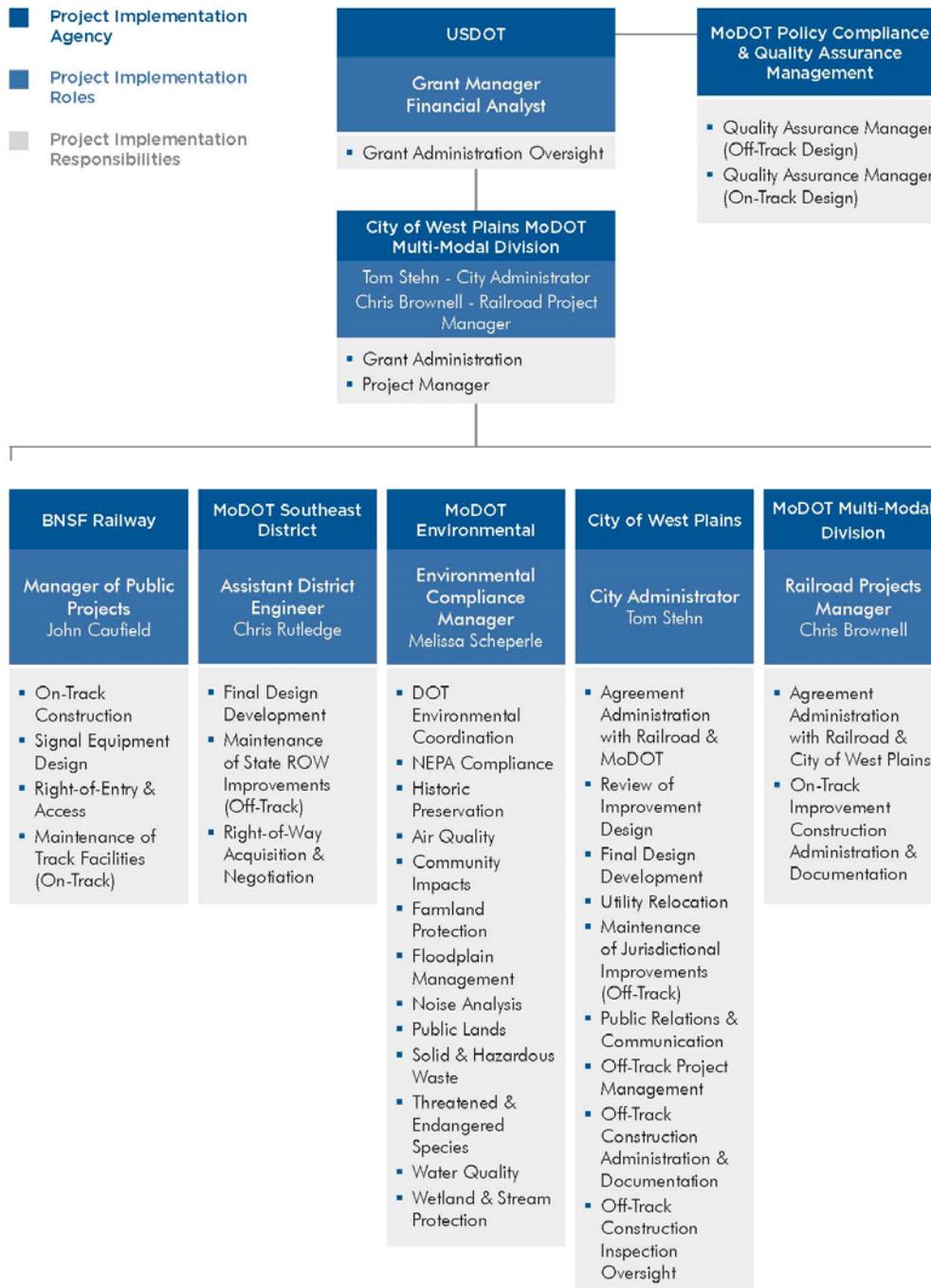
The contractor will perform all work required to complete the project. This includes, but not limited to, traffic control, removals, earthwork, sidewalk, curb and gutter, pavement, signage, and pavement marking. BNSF will coordinate with the contractor for the removal of the at-grade crossings.

Task 0670 - Project Final Walk-Thru & Punchlist

Following substantial construction completion of the project improvements, West Plains, MoDOT, BNSF, and USDOT will perform a final inspection walk-through and will inspect all completed construction elements. A list of remaining punch-list items remaining to be completed will be provided to the contractor prior to final payment.

Task 0670 - Project Close-Out

MODOT will provide the USODT with a project close-out audit to ensure contractual compliance and issue close-out report.



Project Schedule

The project period of performance is defined as a 34-month duration, starting in December of 2018, and is estimated to be completed by October of 2021. A detailed schedule outlining tasks and key milestones is attached for review and approval by the USDOT. It is not anticipated to finalize an executed grant funding agreement with the USDOT until June of 2019 (six [6] months from targeted award notification). MoDOT and the City of West Plains anticipates moving forward with environmental review, municipal agreements, and project management planning based on the recommendations and engineering plan development. Following the completion of final design review and all Right-of-Way acquirement (as per the NOFO), the project is ready to begin construction promptly.

Draft Project Schedule | US Hwy 160 Overpass and At-Grade Consolidation Improvements

Task ID	Task Description	Start	Finish	2018		2019				2020				2021			
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
0100	Program Management & Controls	Jul-18	Oct-21														
0110	Develop Project Management Plan	Jul-18	Feb-19														
0120	Administration & Contracts	Dec-18	Mar-19														
0121	Grant/Cooperative Agreement with USDOT (BUILD)	Dec-18	Mar-19														
0122	Construction Agreements with BNSF & MoDOT	Dec-18	Mar-19														
0123	Construction Agreements with Contractor	Dec-19	Feb-21														
0124	Procurement & Contract Administration	Mar-19	Jun-21														
0125	Legal Agreement Review	Jul-18	Jun-21														
0130	Schedule & Financial Control	Mar-19	Oct-21														
0131	Financial Management	Mar-19	Oct-21														
0132	Schedule Adherence	Mar-19	Oct-21														
0133	Progress Report Development	Mar-19	Oct-21														
0134	Final Performance Report	Aug-21	Oct-21														
0140	Quality Management	Mar-19	Dec-19														
0141	Quality Assurance Plan Development	Mar-19	Mar-19														
0142	Quality Assurance Plan Audit	Apr-19	Dec-19														
0143	Project-Level Final Engineering Review	Jul-19	Jul-19														
0144	Agency Review	Jul-19	Jul-19														
0150	Risk Management Plan	Mar-19	Sep-21														
0151	Risk Identification	Mar-19	May-19														
0152	Risk Assessment	Mar-19	Sep-21														
0153	Risk Allocation	Mar-19	Sep-21														
0154	Risk Management Strategies	Mar-19	Sep-21														
0160	Project Coordination & Communication Plan	Sep-19	Sep-21														
0161	BUILD Project Coordination Meetings	Sep-19	Sep-21														
0162	BNSF Railway Coordination Meetings	Sep-19	Sep-21														
0163	Public Information Meetings	Feb-20	Feb-20														
0164	Project Management Meetings	Mar-19	Oct-21														
0200	Environmental Review	Jun-19	Dec-19														
210	Permits - 404/401, Floodplain, Stormwater	Jun-19	Dec-19														
0300	Design Development	Mar-19	Sep-19														
310	Final Design Development (100%)	Mar-19	Sep-19														
311	Submit Final Design Documents (100%)	Sep-19	Sep-19														
312	Final Cost Estimate (100%)	Sep-19	Sep-19														
0400	Right-Of-Way Acquisition	Apr-19	Nov-19														
0410	Establish Guidelines & Standard Forms	Apr-19	Apr-19														
0420	Acquisition Protocols	Apr-19	May-19														
0430	Identify Acquisition Needs	Apr-19	May-19														
0440	Survey for Partial Takings	May-19	Jul-19														
0450	Title Work	Jun-19	Jul-19														
0460	Perform Appraisals	Jun-19	Aug-19														
0470	Review Appraisals	Jun-19	Sep-19														
0480	Perform Negotiations	Aug-19	Nov-19														
0500	Utility Relocation	Jun-19	Dec-19														
0510	Notify Utility Companies of Potential Conflicts	Jun-19	Jun-19														
0520	Relocation Design Development	Jun-19	Aug-19														
0530	Relocation Design Review	Jul-19	Sep-19														
0540	Easement & Utility Relocation Agreements	Sep-19	Dec-19														
0600	Project Construction	Dec-19	Oct-21														
0610	Bid Advertisement	Dec-19	Dec-19														
0620	Bid Approval	Jan-20	Jan-20														
0630	Bid Award	Feb-20	Feb-20														
0640	Pre-Construction Meeting (Contractor, West Plains, BNSF, USDOT, MoDOT)	Feb-20	Feb-20														
0650	Pre-Construction Public Meeting	Feb-20	Feb-20														
0660	Project Construction	Feb-20	Oct-21														
0670	Project Final Walk-Thru & Punchlist	Oct-21	Oct-21														
0680	USDOT (BUILD) Final Field Visit	Oct-21	Oct-21														
0690	Project Close-Out	Oct-21	Oct-21														

LEGEND
 Deliverable / Milestone
 Task Duration Bar
 Period of Performance: 12/2018 - 10/2021 (34 MONTHS)

Required Approvals

Environmental Permits and Reviews

Contact has been initiated with MoDOT’s environmental compliance department regarding the NEPA process for the proposed project and is currently underway. According to the FHWA’s Raegan Ball⁹, **the project will be classified by the FHWA as Category Exclusion 2 (CE2)**. Receipt of approval is anticipated upon successful funding agreements of all applicable parties. Attached is a copy of the required documents submitted for the NEPA Process (**Appendix F**).

To comply with state regulations, the city has contacted the Missouri Department of Natural Resources-State Historic Preservation Office (SHPO), the U.S. Army Corps of Engineers (USACE), Missouri Department of Conservation (MDC), and U.S. Fish and Wildlife Service (FWS). To date, the only agency that have responded is the USACE, who has stated that the project will require a Nationwide Permit (due to the project being in a floodplain and over Howell Creek) but that they see no immediate concerns/issues with the project as proposed. It is anticipated that SHPO, MDC, or FWS will have no comment due to the project being within city limits and in a developed area that has no identified historic buildings or sites. **It is anticipated that there will be neither negative impacts from this project on the floodplain or the general environment nor will its construction have any adverse short-term or long-range effects.**

Portions of the project, by nature, will reside in a FEMA-mapped floodplain. However, the project will be constructed at least one foot above Base Flood Elevation to comply with regulations in the city’s floodplain ordinance. This raising of the bridge outside of the floodplain will ultimately increase the overall benefit of the project. Once the foundation is complete and is verified that it is above Base Flood Elevation, it will apply to FEMA for a Conditional Letter of Map Amendment (CLOMA) prior to construction, with the final Letter of Map Amendment being submitted once construction is complete.

Public involvement has been a high priority for the city throughout the project planning and design, as explained above (see **Planning Process**). **The public consensus was in support for the overpass project to increase safety and solve connectivity issues due to rail traffic and flooding concerns along Howell Creek.**

State and Local Approvals

The U.S. Hwy 160 Railroad Overpass project is included in the City of West Plains Transportation Improvement Plan (TIP) and the South-Central Ozarks Council of Governments Transportation Advisory Committee (TAC) Plan. **The project is currently a top priority project in the TAC. The support of the project from the regionally minded South-Central Ozark TAC shows the importance of the project at the local level.**

Additionally, the Missouri Federal Assistance Clearinghouse reviewed the project and concluded with no comments or recommendations at the time (**Appendix E**).

Project Risks & Mitigation Strategies

While it is inevitable that risks will be present in a project of this magnitude, actions have been taken to reduce the risk factors affecting the success of the project. The following are considered the greatest risks to the project:

PROJECT RISKS & MITIGATION STRATEGIES	
Identified Risk	Proposed Mitigation Strategy
Securing Project Funding & Committed Funding Participation	<ul style="list-style-type: none"> There are multiple funding sources for the project and each has provided detailed commitments of their funding obligation with the application. In addition, each contributing organization has programed the project contribution from stable and available funding sources. The project schedule has been coordinated with each funding source to ensure sufficient cash flow is available for implementation.
Procurement Delays	<ul style="list-style-type: none"> Design efforts are near substantial completion and limited effort and time is necessary to complete the design and construction documents for advertisement.

⁹ Raegan Ball is the Program Development Team Leader for the FHWA, Missouri Division. She can be reached at 573-638-2620.

	<ul style="list-style-type: none"> • The project will be advertised through the MoDOT procurement process and will eliminate any potential risks associated with local project procurement processes. • The city will provide utility relocation material and labor for the impacted utilities on the project. Lengthy procurement times will be avoided with advanced material procurement by the local public agency. • Project dependency on long-lead or specialty items is limited in the scope of the project and can be provided in an expedited effort to avoid potential delays. • The final plans have been coordinated with MoDOT and the BNSF to streamline the final approval process and avoid any permits necessary to perform the work.
Potential Storm water Flooding (Similar to 2017 Event)	<ul style="list-style-type: none"> • There is currently a storm water detention improvement project located upstream of the Howell Creek crossing with US Hwy 160. Although these improvements will not prevent flooding, they are anticipated to reduce the amount of potential impacts to the project location. • The city is also performed creek and streambed maintenance to improve hydraulic capacity of the existing Howell Creek during heavy rain events.
Environmental Uncertainties	<ul style="list-style-type: none"> • Proactive collaboration and agency review of the Categorical Exclusion (CE 2) document has been completed and is awaiting a final approval pending allocated funding for the project. • Environmental agencies have been contacted and permitting process is currently underway. • The longest lead-time permit (US Arm Corps of Engineers Nationwide Permit) has been obtained for the project and is logged as Permit #SWL-2015-00337.
Potential Increase in Costs	<ul style="list-style-type: none"> • A contingency amount has been budgeted for the project and is included in the estimate to cover inflation, material cost increase, and unforeseen circumstances. • Design has entered the final stages of approval and have eliminated many unknowns from the project scope and have reduced the potential risk for additional costs.

All risks will be assessed and mitigated utilizing the Risk Mitigation Strategy (above). The above are considered the greatest risks to the project, and thus, have undergone the greatest scrutiny to minimize risk associated with the project.