



I-35W North Tarrant Express Segment 3C FASTLANE Grant Application

Project Name: I-35W North Tarrant Express Segment 3C	
Previously Incurred Project Cost	\$20,773,325.79
Future Eligible Project Cost	\$611,528,000
Total Project Cost	\$611,528,000
NSFHP Request	\$63,000,000
Total Federal Funding (including NSFHP)	\$260,752,000
Are matching funds restricted to a specific project component? If so, which one?	Yes, ROW acquisition, wishbone ramp, and intersection improvements
Is the project or a portion of the project currently located on National Highway Freight Network?	Yes
Is the project or a portion of the project located on the National Highway System	Yes
Does the project add capacity to the Interstate system?	Yes
Is the project in a national scenic area?	No
Do the project components include a railway-highway grade crossing or grade separation project?	No
Do the project components include an intermodal or freight rail project, or freight project within the boundaries of a public or private freight rail, water (including ports), or intermodal facility?	No
If answered yes to either of the two component questions above, how much of requested NSFHP funds will be spent on each of these projects components?	NA
State(s) in which project is located.	Texas
Small or large project	Large
Also submitting an application to TIGER for this project?	No
Urbanized Area in which project is located, if applicable.	Dallas-Fort Worth-Arlington
Population of Urbanized Area.	5,121,892
Is the project currently programmed in the:	
TIP?	Yes
STIP?	Yes
MPO Long Range Transportation Plan?	Yes
State Long Range Transportation Plan?	Yes
State Freight Plan?	Yes

CONTENTS

I. PROJECT NARRATIVE	1
A. Project Description	1
1. Eligibility	1
2. Detailed Description	2
3. Project Location	2
4. Funds and Usage	4
5. National and Regional Significance	4
6. Segment 3C Users	6
7. Transportation Challenges and Solutions	6
8. Relevant Data: Existing and Future Conditions	8
B. Project Parties	9
C. Grant Funds, Sources, and Uses of Project Funds	9
1. Future Eligible Cost	11
2. Availability and Commitment of All Committed and Expected Funding Sources and Uses for Future Eligible Costs	11
3. Federal Funds Already Provided	11
D. Cost Effectiveness Analysis	12
1. Benefit Cost Analysis	12
2. Project Costs	15
3. Monetized Benefits	15
E. Project Readiness	18
1. Technical Feasibility	18
2. Project Schedule	19
3. Required Approvals	19
4. Assessment of Project Risks and Mitigation Strategies	22

I. PROJECT NARRATIVE

A. PROJECT DESCRIPTION

1. ELIGIBILITY

The Texas Department of Transportation (TxDOT) is requesting a large project Nationally Significant Freight and Highway Projects (NSFHP) grant for the North Tarrant Express (NTE) Segment 3C project on I-35W in Tarrant County, Texas. Segment 3C is the northernmost portion of the greater NTE project that stretches from the Alliance Airport corridor to US 287. The NTE project is intended to meet future travel demands stemming from projected population growth and traffic volumes and looks to address operational, design, and capacity deficiencies on I-35W, US 81/287, and SH 170.

The grant request is for \$63 million of the \$611,520,000 total NTE Segment 3C project costs, which is approximately 10 percent of the total future eligible project costs. The Segment 3C project is anticipated to begin construction in spring 2018.

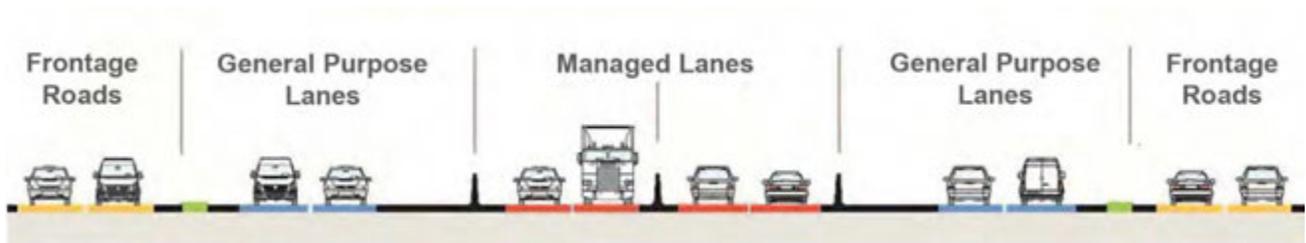


Photo 1. I-35 at the I-35W and I-820 interchange facing northbound. Photo courtesy of North Tarrant Express Segment 3A.

2. DETAILED DESCRIPTION

The I-35W Segment 3C project will have an interim phase that will reconstruct and widen the roadway to an eight-lane facility consisting of two general purpose lanes in each direction and a barrier-separated, center managed (toll) lane facility with two lanes in each direction. Auxiliary lanes will be constructed between entrance and exit ramps along the roadway. In addition, two to three-lane frontage roads will be constructed in each direction along with a shared use path along the frontage roads. Figure 1 provides the proposed typical section for the I-35W Segment 3C project.

Figure 1. Proposed I-35W Segment 3C Typical Section



3. PROJECT LOCATION

The Segment 3C project is located within the Dallas-Fort Worth-Arlington Census-designated Urbanized Area (ID 22042). Figure 2 provides a map of the project location, including its connection to surrounding transportation infrastructure.

The Urbanized Area consists of approximately 1,800 square-miles and over 5 million people according to the 2010 Census. The project area is home to the Fort Worth Alliance Airport (AFW), the world's first 100 percent industrial airport designed for cargo and corporate aviation. AFW includes an extensive portfolio of flight services, including air cargo, corporate and military aviation. The airport is the backbone for the nation's fastest-growing industrial complex, the Alliance Global Logistics Hub, one of the world's premier inland ports. Two Class 1 railroads (BNSF and UP) operate within the Alliance Airport. BNSF currently has more than 600,000 lifts annually and this is projected to increase to 1 million lifts annually. The project area is also well suited for freight travel with the Alliance Global Logistics Hub and other major distribution centers being located along I-35W.

Recognizing the increasing pace of development in the area, expeditious right-of-way (ROW) acquisition is a top priority to reduce the risk of substantial land value increases. I-35W through the project area provides connections to locally- and regionally-important roadways, including Alliance Gateway Freeway (TX 170), Heritage Parkway, Timberland Boulevard, Golden Triangle Boulevard, Heritage Trace Parkway, North Tarrant Parkway, and US 81/US 287.

Figure 2. Project Location and Status Map



4. FUNDS AND USAGE

The \$63 million NSFHP grant will be used to support three elements of the I-35W Segment 3C project:

- \$18 million for ROW acquisition,
- \$45 million for the construction of:
 - A wishbone ramp structure connecting the I-35W concurrent managed (toll) lanes to the outside general purpose lanes, eliminating a weave condition between the managed lanes and the access points to SH 170; and
 - Improvements to the Golden Triangle Boulevard intersections at the I-35W northbound and southbound frontage roads, including additional left-turn lanes, through lanes, and a dedicated right-turn lane to improve intersection capacity and safety.

5. NATIONAL AND REGIONAL SIGNIFICANCE

The Dallas-Fort Worth (DFW) region is one of the largest global inland distribution centers in the world with significant trade activity coming through land, air, and rail intermodal facilities linking all the freight transportation modes. I-35W is part of the National Highway System and the National Highway Freight Network, and it plays a large part in moving goods. I-35W serves as part of a major thoroughfare for goods traveling from Canada to Mexico, in part due to the North American Free Trade Agreement (NAFTA) and linking East and West Coasts destinations, making it an important regional and national intermodal center for distribution by air, rail, and truck. In 2014, the Dallas-Fort Worth-Arlington region was considered the ninth largest export market in the U.S. with approximately \$28.7 billion in total merchandise exports.¹ The nation's two largest Class 1 railroads (BNSF and UP) have major operations hubs in the region that offer efficient freight movement to key sea ports and lane Ports of Entry across the United States (U.S.) and into Mexico and Canada.

¹ International Trade Administration (July 2015). "Dallas-Fort Worth-Arlington, TX – Merchandise Exports in 2014". Retrieved from <http://www.trade.gov/mas/ian/metroreports/Dallas.pdf>.

Figure 3. Trade Routes to and from Alliance Global Logistics Hub



I-35W Segment 3C is located near AllianceTexas, which is an 18,000-acre master-planned, mixed-use community that plays a large role in the regional, state of Texas, and the nation's economies. A cornerstone of this development is the Alliance Global Logistics Hub, an inland port offering multimodal transportation access with rail service provided by Class I railroads (BNSF and UP); intermodal facilities; Fort Worth Alliance Airport; and multiple interstate, U.S., and state highways. The Hub is a one-of-a-kind supply chain port that is not found any other place in the world, and, as shown in Figure 3, is connected to many parts of the country and world. This large, heavily commercialized facility has many tenants serving a wide variety of market sectors that rely on commercial freight carriers to receive and deliver products. The Hub is also within Foreign Trade Zone #196, a specialized area that provides national and international companies with economic and tax benefits, which makes the area an attractive location for global businesses.

I-35W is essential to trucking services between the Hub and populations up to 500 miles away. After the I-35W Segment 3C project is constructed, improved access and connectivity to this national and global logistics hub will facilitate efficient and safe movement of freight for the region, state, and nation. The project will enhance economic competitiveness of the region, state, and nation. It will also improve first and last mile connections to the air cargo airport, rail facilities, and the distribution complex in the region.

In addition to the AllianceTexas logistic complex, many properties on the periphery of the complex, especially south and east along I-35W, are quickly being developed for single- and multi-family housing and retail shops.

6. SEGMENT 3C USERS

The I-35W Segment 3C project will facilitate the efficient and safe movement of freight and people through the region, state of Texas, nation, and to and from Mexico and Canada. The North Central Texas Council of Governments (NCTCOG) conducted an origin-destination study as part of the project's Environmental Assessment (EA) and found that approximately 42 percent of the region will have at least one trip a day on I-35W in 2035 with a potential total of approximately 44,000 daily trips. The origin-destination study found that many of the project's freight and passenger users will come from the local region.

According to the project's 2007 Traffic Analysis study, approximately 11.6 percent of traffic along this segment of I-35W is comprised of freight traffic. This means that of the 42 percent of travelers using the proposed I-35W project, approximately 4 percent would include regional truck traffic. The remaining traffic is freight and passenger vehicles with destinations and origins other than the NCTCOG region.

7. TRANSPORTATION CHALLENGES AND SOLUTIONS

The I-35W Segment 3C project is needed due to projected freight, population, and employment growth in the cities of Fort Worth and Haslet and across the region. Current growth has caused a strain on the existing transportation system. As shown in Table 1, the project area and the region are anticipating substantial growth through 2040. If the needed improvements on I-35W are not implemented, freight movement and passenger mobility will be negatively impacted, in addition to the region, state, and nation's economies. According to the EA, traffic congestion has and will continue to increase alongside population growth. The I-35W Segment 3C project area is anticipated to see traffic volume increase from approximately 78,000,000 vehicles per year in 2010 to approximately 102,000,000 vehicles per year in 2040, an approximately 31 percent increase. This increase translates to a level of service F in 2040 if no corridor improvements are completed.

Table 1. Population and Employment Data for the Project Area and Region

Census Data	Location				
	City of Fort Worth ¹	City of Haslet ¹	Tarrant County	Denton County	12-County NCTCOG Region
1970 Census	393,476	276	716,317	75,633	2,425,927
1980 Census	385,164	262	860,880	143,126	3,030,053
1990 Census	447,619	795	1,170,103	273,775	4,013,418
2000 Census	534,694	1,134	1,446,219	432,976	5,197,317
2010 Census	741,206	1,517	1,809,034	662,614	6,417,724
2005/2010 Employment ³	--	--	944,583	189,349	--
2030/2035 Population Forecast	1,009,371 ²	7,000 ²	2,823,535 ³	1,053,903 ³	9,833,378 ³
2030/2035 Employment ³	--	--	1,644,463	406,105	--
2040 Population Forecast	1,236,870 ²	7,000 ³	3,046,531 ³	1,147,493 ³	10,543,336 ³
2040 Employment Forecast ³	--	--	1,766,177	448,229	--
2010 – 2040 Population Growth Rate	66.9	361.4	68.4	73.2	64.3

Sources:

¹U.S. Census 2010 PL94-171, NCTCOG (February 2011)

²Texas Water Development Board, 2011 Regional Water Plan Population Projections for 2000-2060 For Cities, Utilities, and County- Other Region by County, Region C (July 2010)

³NCTCOG 2040 Demographic Forecast, <http://www.nctcog.org/ris/demographics/forecast.asp> (February 2011), available at county-level only.

In addition, the current highway infrastructure has several design and operational deficiencies. The weaving distances between I-35W and SH 170 are currently too short, which cause unsafe driving conditions. Drivers must make unsafe maneuvers and bottlenecks result. Traffic accident rates for I-35W in the project area from March 2013 through February 2016 showed that I-35W experienced approximately 518 crashes, including six fatalities.²

² TxDOT (July 2015). Crash Records Information System. Retrieved from

<http://www.txdot.gov/government/enforcement/data-access.html>. Accessed March 28, 2016.

The purpose of the I-35W Segment 3C project is to improve the mobility, reliability, and safety of I-35W. Additional mobility and reliability will be addressed by adding capacity through the additional managed lanes, which will help meet the projected demands for I-35W. The project will also upgrade I-35W to current design standards and ensure that operational and design deficiencies are addressed to facilitate efficient and safe movement of freight and passenger vehicles in this national highway and freight corridor. Two of the proposed project elements for this grant will enhance traffic operations and safety in the corridor by providing more efficient connections between the I-35W managed lanes and SH 170. The elements will also facilitate traffic movements at the I-35W and Golden Triangle Boulevard intersection. Intersection improvements are needed at Golden Triangle Boulevard to support traffic circulating around shopping centers and nearby residential areas that eventually funnel onto I-35W.

8. RELEVANT DATA: EXISTING AND FUTURE CONDITIONS

Table 2 summarizes project benefits, including passenger and freight traffic volumes and congestion, infrastructure conditions, and crash data.

Table 2. Project Benefits for Current Year vs. Year 2040

Condition	Current Year (2010)	Forecast Year Build (2040)	Forecast Year No Build (2040)
Passenger Vehicle Average Volume Per Year	77,606,229	101,908,000	101,908,000
Freight Average Volume Per Year	9,002,323	11,821,328	11,821,328
Annual Person-Trips	84,164,557	117,286,438	110,520,016
Total Network Daily Vehicle Hours of Delay ¹	7,771	21,573	25,017
Infrastructure Conditions	<ul style="list-style-type: none"> • Short distances between exit ramps to cross streets • Substandard inside shoulders on I-35W • Unsafe weaving 	<ul style="list-style-type: none"> • Auxiliary lanes between exit ramps • Widened inside shoulders • Extended ramps and safer weaving conditions 	<ul style="list-style-type: none"> • No improvements to the existing facility would occur
Accident Reduction Benefits	<ul style="list-style-type: none"> • 518 accidents between 2013 and 2016 	<ul style="list-style-type: none"> • No anticipated increase in accidents due to improved roadway geometry 	<ul style="list-style-type: none"> • Increased accidents anticipated due to lack of improved conditions

Sources:
I-35W Segment 3C Benefit Cost Analysis Appendix
I1-35W Environmental Assessment

A. PROJECT PARTIES



Photo 2. I-35W at SH 121 facing northbound. Photo courtesy of North Tarrant Express Segment 3A.

The I-35W Segment 3C grant recipient will be the TxDOT Fort Worth District, which is responsible for executing the regional responsibilities of TxDOT. TxDOT, in cooperation with local and regional officials, is responsible for planning, designing, building, operating and maintaining the state's transportation system. This includes acquiring ROW for state highways and other modes of transportation; researching issues to save lives and solve transportation problems; constructing roads and bridges; and improving and maintaining roadways, bridges, airports, and other transportation infrastructure. The Dallas-Fort Worth-Arlington region's economy is heavily dependent on Texas' extensive highway and rail network and is vital that TxDOT target improvements that hold the greatest potential for long-term, system-wide impacts.

The other major party involved with the I-35W Segment 3C project is NTE Mobility Partners, which represents a group of companies that are developing the NTE project, including Segment 3C, under a Comprehensive

Development Agreement (CDA). These companies include Cintra US, North Tarrant Infrastructure, Ferrovial Agroman, Webber, Meridiam Infrastructure, and the Dallas Police and Fire Pension System. In addition to NTE Mobility Partners, the Federal Highway Administration (FHWA), the cities of Fort Worth and Haslet, Tarrant County, and NCTCOG are major parties involved with the I-35W Segment 3C project.

B. GRANT FUNDS, SOURCES, AND USES OF PROJECT FUNDS

The I-35W Segment 3C project represents a significant surface transportation infrastructure investment to improve freight and passenger vehicle mobility. Accordingly, multiple revenue sources will be utilized throughout construction to balance project needs against the broader fiscal constraints of TxDOT's statewide construction program. Table 3 and Table 4 show the planned sources and uses of project funds, which assume a \$63 million FASTLANE grant.

Viability and Completeness of the Project's Financing

Table 3 shows that the FASTLANE grant will meet the requirements that it cover no more than 60 percent of the total project costs. Also, the proposed funding plan meets the requirement that federal funds do not exceed 80 percent of the total funding for the project, since the combination of FASTLANE grant and Transportation Infrastructure Finance and Innovation Act (TIFIA) funds would represent about 43 percent of the total sources. A substantial infusion of private equity and Private Activity Bonds totaling \$350.77 million complete the funding plan for the I-35W Segment 3C project.

Table 3. Overall Project Sources

Source	Cost
FASTLANE Grant	\$63,000,000
Other Federal Funds (TIFIA)	\$197,752,000
Private Activity Bonds	\$191,000,000
Private Equity	\$159,776,000
TOTAL SOURCES	\$611,520,000

Table 4. Overall Project Uses

Use	Cost
Design	\$30,470,000
Right-of Way	\$18,000,000
Construction	\$428,297,000
Admin/Miscellaneous	\$79,160,000
Contingencies	\$55,593,000
TOTAL USES	\$611,520,000

Stable and Reliable Fund Commitments

Traditionally, TxDOT annually oversees approximately \$7.5 billion in the state highway fund (35 percent), \$3.4 billion in state bond proceeds (16 percent), \$1.8 billion in other funding mechanisms (tolls, mobility fund, concession fees), and over \$8.6 billion in federal funds (40 percent) to construct, maintain, and operate approximately 197,100 miles of state highway system.

Contingency Reserves

Despite the strong funding plan that is in place, TxDOT recognizes the need for contingency funding in the event of potential funding interruptions. The possibility of federal or state transportation dollars being unavailable for project expenditures is remote. Historically, periodic short term interruptions in federal reimbursements have been successfully managed through cash management practices. In 1946, language was added to the Texas Constitution requiring three-fourths of all net revenue generated by motor fuels taxes to be used only for acquiring ROW; constructing, maintaining, and policing public roadways; or for the payment of principal and interest on certain road district bonds or warrants. The Texas Constitution dedicates the remaining one-fourth of the motor fuels tax to the Available School Fund.

In the unlikely event that federal and state dollars are both unavailable, Texas has a variety of contingency solutions available depending upon the duration of the unavailability of funds ranging from short term cash management techniques to longer term access to credit and capital markets.

Financial Condition of the Project Sponsor

As a 100-year-old organization, TxDOT has the financial wherewithal to see the I-35W Segment 3C project through to completion. TxDOT oversees a biennial budget of \$8.6 billion and is able to access capital markets by selling general obligation debt backed by the full faith and credit of the state government. This debt is rated triple-A by all three national rating agencies.

Ability to Manage Grants

The financial strength of TxDOT goes hand-in-hand with past success in managing several federal grants and hundreds of federal contracts, both as a recipient and a pass-through agency for sub-recipients. TxDOT complies with all federal government expenditure and reporting requirements, including the general requirements of the Office of Management and Budget's "Super Circular" and the transportation specific guidance outlined in the Stewardship and Oversight Agreement between TxDOT and FHWA.

1. FUTURE ELIGIBLE COST

The future eligible cost of this project, \$611,520,000, is comprised of design, construction, ROW, utilities, and tolling/ ITS components, which are deemed as eligible costs under this funding program.

2. AVAILABILITY AND COMMITMENT OF FUNDS

As previously described, the funding for this project is comprised of the following sources:

- Federal
 - TIFIA: \$197,752,000
 - FASTLANE Grant: \$ \$63,000,000
- Private
 - Private Activity Bonds: \$191,000,000
 - Private Equity: \$159,776,000

3. FEDERAL FUNDS ALREADY PROVIDED

The I-35W Segment 3C project is included in the approved 2015-2018 State Transportation Improvement Plan (STIP). The project is also a fiscally-constrained project identified in the NCTGOG's metropolitan transportation plan entitled, *Mobility 2040*. The other federal funds identified are TIFIA funds, which make up approximately 32 percent of the total initial project cost or \$197,752,000.

C. COST EFFECTIVENESS ANALYSIS

A Benefit-Cost Analysis (BCA) was conducted in conformance with U.S. Department of Transportation guidance to assess the impacts of the I-35W Segment 3C project. The grant request is limited to support two project elements and ROW acquisition that were deferred during construction contract negotiations due to lack of funding. The two elements include wishbone ramps between the managed toll lanes and general purpose lanes, and intersection improvements at I-35W and Golden Triangle Boulevard. Insufficient information was available for deferred project elements to support an incremental BCA that isolates the impacts of the two additional construction elements and the ROW acquisition; therefore the BCA encompasses the benefits and costs for the entire Segment 3C project. The BCA conducted for the I-35W Segment 3C project indicated a favorable benefit/cost (B/C) ratio, with the monetized benefits of the project exceeding the estimated project-related costs. In the summary discussion that follows, individual analysis inputs and results are presented for each of the BCA's.

The 2016 Cal-B/C TIGER Grant Application version of a model developed by the California Department of Transportation (Caltrans) was used for the I-35W Segment 3C project. This version incorporates project costs by category and benefits related to travel time, vehicle operation, accidents, and emissions. The model incorporated the parameter updates, including unit values emissions, accidents, and other factors made by Caltrans to reflect USDOT guidance for 2016 TIGER grants. The average fuel price was updated to reflect the average price in Fort Worth. The default values were used unless otherwise stated. A summary of the BCA results is provided in this section and more detail regarding the inputs, sources, analysis, and results is provided in the attachments. All monetary values were adjusted to 2015 dollars, the default value of the "2016 TIGER" version of the Cal B/C model, based on the Gross Domestic Product Price Index, unless otherwise stated. A seven percent (7%) discount rate was used to compute net present values of benefits and costs.

Note that there are other potential benefits resulting from the project which have not been included in the Cal-B/C analysis summarized below. Some of these additional benefit classes could potentially be quantified, while others are more qualitative. The additional benefits include (but are not limited to): improved travel time reliability, improved safety, reduced bottleneck delays, increased access and/or mobility, public safety and health benefits, improvements to the human and natural environment surrounding the project, mitigation of stormwater runoff, and noise reduction. Because the Cal-B/C model indicates a favorable B/C ratio with only the benefit categories directly supported by the model, these additional benefit categories were not analyzed at this time.

1. BENEFIT COST ANALYSIS

The Cal B/C model calculates the benefit/cost ratio based on inputs including the type of project, existing and future highway design and traffic data, and estimated project costs. Table 5 provides a summary of the Cal B/C results for the I-35W Segment 3C project.

Table 5. Benefit Cost Summary

	Network
Life-Cycle Benefits (in millions)	\$775.2
Life-Cycle Costs (in millions)	\$583.7
Benefit / Cost Ratio	1.33

Note: Cost provided are in 2015 dollars, present value over 20-year life cycle at 7% discount rate

Figures Figure 4 and Figure 5 graphically depict the share by category of total project life-cycle benefits and total project life-cycle costs associated with the I-35W Segment 3C project, as discussed in more detail in the following sub-sections.

Figure 4. Network Itemized Benefits, Present Value

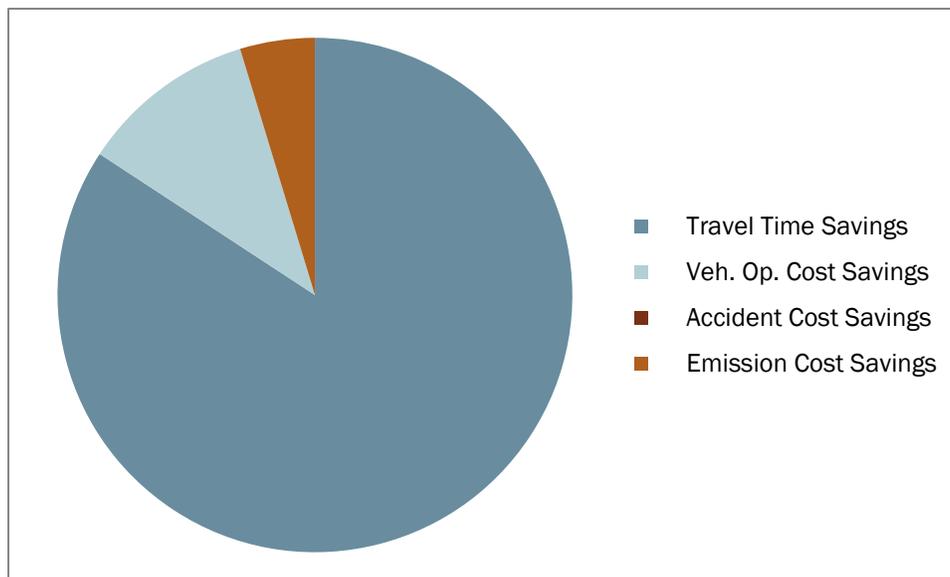


Figure 5. Network Project Costs, Present Value

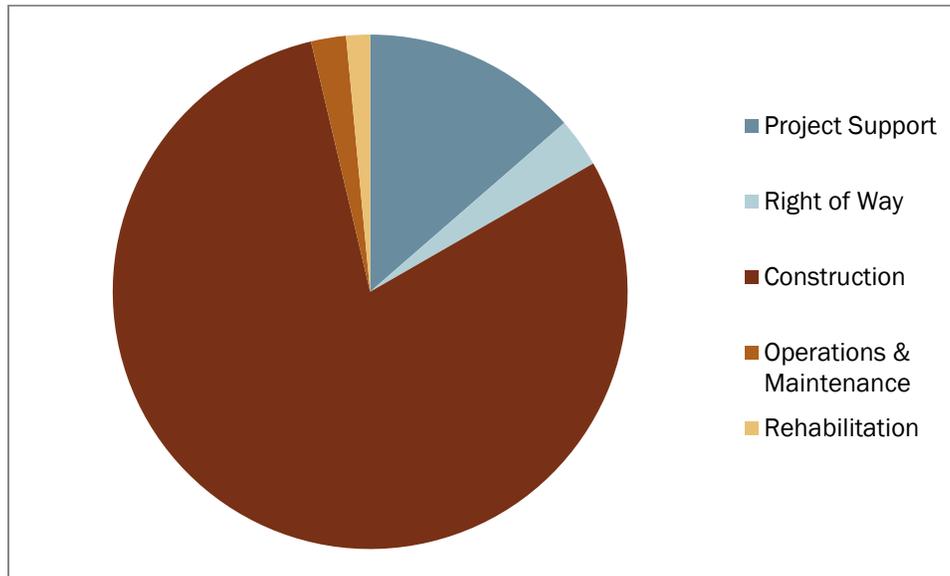


Table 6 provides a general overview of the Segment 3C project parameters in more detail throughout this application.

Table 6. Project Matrix

	Segment 3C
Current Status / Baseline & Problem to be Addressed	IH-35 is a congested four-lane facility through the Alliance global logistics hub and inland port area.
Change to Baseline / Alternatives	The project adds two managed lanes in each direction and related improvements. The wishbone ramps and intersection improvements will improve access and operations at the Golden Triangle intersection.
Type of Impacts	The project will reduce congestion, resulting in travel time savings, vehicle operating cost savings, and reduced emissions.
Affected Population	The project will improve conditions for the more than 84 million annual vehicle and truck trips through the corridor, which is projected to increase significantly by 2040.
Economic Benefit	The Cal-B/C model indicates that the project will result in 120 million person-hours of travel time savings, \$85 million in vehicle operating cost savings, and 1.4 million tons of reduced CO ₂ emissions over 20 years.
Summary of Results	The project's discounted life-cycle benefits exceed its costs, with a benefit-cost ratio of 1.33 at a 7 percent discount rate.

2. PROJECT COSTS

Project costs and the length of the construction period were entered into the Cal B/C model. Project costs are included for the following categories, as appropriate: Project Support, ROW, Construction, Maintenance/Operations, Rehabilitation, and/or Mitigation.

The initial design and construction costs for the Network are approximately **\$611.5 million** as described in more detail in the Future Eligible Cost section of this application. The construction period is assumed to be four years with annual construction expenditures assumed to be allocated equally between the first (2018) and the fourth (2021) year of the construction period. The total project cost is **\$583.7 million** in present value terms, including maintenance/operations and rehabilitation. The breakdown of project costs as reflected in the Cal B/C analysis is indicated in Table 7 below.

3. MONETIZED BENEFITS

Table 8 below provides a summary of the monetized benefits for travel time savings, vehicle operating cost savings, accident savings, and emissions reduction over the 20-year life cycle of the project that are reflected in the B/C ratio. Annual costs and benefits are presented in constant 2015 dollars. The total by category is then discounted at a seven percent (7%) annual rate to convert to present value. More information regarding the input assumptions and data sources underlying these annual benefit totals is provided in the Appendix.

The Cal-B/C model calculates that 120 million hours of time will be saved over the life cycle of the Segment 3C project. This equates to **\$1.8 billion in travel time savings**. The model indicates that the project will result in more than **\$233 million in vehicle operating cost savings** over the life of the project. The model does not project any accident reduction benefits due to the roadway classification and type not changing between the build and no-build scenarios. However, the improvements in roadway geometry, weaving reduction, and ramp congestion, could be expected to reduce accidents. The model indicates that the Segment 3C project would result in more than **\$103 million in emissions reduction benefits**.

Table 7. I-35W Segment 3C Project Costs

Year	Project Year	Undiscounted						Discounted
		Project Support	ROW	Construct	O&M	Rehab.	Total Costs	PV Costs
2018	Cons 1	\$79,410,000	\$18,000,000				\$97,410,000	\$97,410,000
2019	Cons 2			\$257,055,000			\$257,055,000	\$240,238,318
2020	Cons 3			\$257,055,000			\$257,055,000	\$224,521,792
2021	1				\$1,143,541	\$0	\$1,143,541	\$933,470
2022	2				\$1,381,201	\$0	\$1,381,201	\$1,053,711
2023	3				\$1,388,302	\$13,158	\$1,401,460	\$999,222
2024	4				\$1,409,833	\$0	\$1,409,833	\$939,431
2025	5				\$1,419,791	\$219,552	\$1,639,342	\$1,020,900
2026	6				\$1,428,337	\$12,219	\$1,440,555	\$838,416
2027	7				\$1,430,937	\$78,916	\$1,509,853	\$821,260
2028	8				\$1,438,383	\$530,974	\$1,969,357	\$1,001,121
2029	9				\$1,411,995	\$1,707,560	\$3,119,556	\$1,482,078
2030	10				\$1,430,024	\$4,161,786	\$5,591,810	\$2,482,830
2031	11				\$1,423,357	\$3,763,935	\$5,187,292	\$2,152,542
2032	12				\$1,375,938	\$1,791,761	\$3,167,699	\$1,228,488
2033	13				\$1,394,740	\$624,165	\$2,018,905	\$731,744
2034	14				\$1,404,698	\$690,555	\$2,095,253	\$709,735
2035	15				\$1,421,846	\$518,111	\$1,939,957	\$614,141
2036	16				\$1,422,946	\$654,706	\$2,077,652	\$614,702
2037	17				\$1,404,046	\$0	\$1,404,046	\$388,230
2038	18				\$1,433,314	\$2,821,840	\$4,255,154	\$1,099,613
2039	19				\$1,381,677	\$2,461,218	\$3,842,895	\$928,110
2040	20				\$1,442,375	\$5,364,254	\$6,806,630	\$1,536,346
Total (2015\$)		\$79,410,000	\$18,000,000	\$514,110,000	\$27,987,280	\$25,414,711	\$664,921,991	\$583,746,201

Table 8. I-35W Segment 3C Project Benefits

Year	Project Year	Undiscounted					Discounted
		Travel Time Savings	Vehicle Operating Cost Savings	Accident Reduction Savings	Emissions Reduction Savings	Total Benefits	PV Benefits
2021	1	\$30,648,006	\$3,189,971	\$0	\$1,051,297	\$34,889,274	\$28,480,040
2022	2	\$33,205,827	\$3,497,846	(\$0)	\$1,175,086	\$37,878,760	\$28,897,524
2023	3	\$35,963,507	\$3,961,096	(\$0)	\$1,366,492	\$41,291,094	\$29,439,980
2024	4	\$38,952,890	\$4,496,104	(\$0)	\$1,592,022	\$45,041,016	\$30,012,731
2025	5	\$42,212,591	\$5,262,148	\$0	\$1,916,909	\$49,391,648	\$30,758,636
2026	6	\$45,789,828	\$6,071,234	(\$0)	\$2,266,980	\$54,128,042	\$31,503,013
2027	7	\$49,742,870	\$6,918,376	(\$0)	\$2,656,503	\$59,317,749	\$32,264,925
2028	8	\$54,144,365	\$7,922,738	\$0	\$2,933,064	\$65,000,168	\$33,042,789
2029	9	\$59,085,923	\$8,500,503	(\$0)	\$3,251,881	\$70,838,307	\$33,654,769
2030	10	\$64,684,536	\$9,740,057	\$0	\$3,833,856	\$78,258,449	\$34,747,687
2031	11	\$71,091,775	\$11,000,438	\$0	\$4,451,370	\$86,543,583	\$35,912,510
2032	12	\$78,507,232	\$12,279,158	(\$0)	\$5,110,387	\$95,896,776	\$37,190,423
2033	13	\$87,198,688	\$13,557,825	\$0	\$5,795,523	\$106,552,037	\$38,619,362
2034	14	\$97,533,260	\$14,828,700	(\$0)	\$6,515,283	\$118,877,243	\$40,267,835
2035	15	\$110,027,149	\$16,595,358	(\$0)	\$7,509,374	\$134,131,881	\$42,462,718
2036	16	\$125,428,322	\$18,048,204	\$0	\$8,404,944	\$151,881,470	\$44,936,247
2037	17	\$144,860,534	\$20,045,449	\$0	\$9,593,310	\$174,499,293	\$48,250,508
2038	18	\$170,089,005	\$21,829,261	(\$0)	\$10,742,801	\$202,661,067	\$52,371,471
2039	19	\$204,046,384	\$23,399,082	\$0	\$11,844,740	\$239,290,206	\$57,791,716
2040	20	\$251,972,357	\$22,386,972	\$0	\$11,620,171	\$285,979,500	\$64,549,338
Total (2015\$)		\$1,795,185,046	\$233,530,524	\$0	\$103,631,994	\$2,132,347,563	\$775,154,224

D. PROJECT READINESS

1. TECHNICAL FEASIBILITY



Photo 3. I-35W north of Northside Drive/Yucca Avenue facing southbound. Photo courtesy of North Tarrant Express Segment 3A.

The I-35W Segment 3C project is ready to begin concurrent design and construction within two years of receipt of the NSFHP grant. TxDOT has completed schematic-level drawings with final design services and construction activities to be performed by a concessionaire. All environmental permits required for construction activities to begin have been approved. The Project Schedule section includes additional information on the project's timeframes.

The project design criteria follows the TxDOT Roadway Design Manual, TxDOT Bridge Design Manual, Texas Manual on Uniform Traffic Control Devices (TMUTCD), and other state- and federally-approved design standards.

The cost estimate, which includes agency, financial, design, construction costs and contingency, is based on a detailed review of the preliminary design drawings, similar projects, and concessionaire information. A 10-percent project contingency is included in the cost estimate.

The overall statement of work for the I-35W Segment 3C project is described in the Eligibility section. The project statement of work for the NSFHP grant includes the following work within I-35W Segment 3C:

- Acquisition of ROW for the overall project segment;
- Construction of a wishbone ramp structure connecting the I-35W managed lanes to the outside general purpose lanes; and
- Implementation of operational and safety improvements at the I-35W/Golden Triangle Boulevard intersection.

2. PROJECT SCHEDULE

The schedule in Table 9. Project Schedule and below discusses anticipated timeframes for major milestones such as the acquisition of ROW, the start of project design, and the start of project construction. The construction activities for the NSFHP grant within I-35W Segment 3C of the overall project meet all identified schedule requirements.

Table 9. Project Schedule

Milestone	Timeframe
Design and Surveys	December 2017 to December 2018
Utility Relocations	December 2017 to December 2018
ROW Acquisition	December 2018
Construction	December 2018 to December 2021
Operations and Maintenance	December 2021 to 2061

a) NECESSARY ACTIVITIES TO ALLOW GRANT FUNDS TO BE OBLIGATED

FHWA environmentally cleared the project in March 2012. A concessionaire will handle the design and construction of the project, and these items would start in spring and fall of 2018, respectively. ROW acquisition will be completed by the end of 2016. Thus, the activities that allow the construction of the project and obligation of funds meet the NSFHP requirements.

b) PROJECT CONSTRUCTION TIMELINE

The final design for the project is anticipated to begin in spring 2018, and construction activities are expected to begin shortly thereafter in fall 2018. These activities will occur approximately one year before the required obligation date of September 2019.

c) PROPERTY AND/OR ROW ACQUISITION TIMELINE

All ROW acquisition for the I-35W Segment 3C project is anticipated to be completed by the end of 2016. This will allow for the NSFHP funds to be obligated within the required project timeframe.

3. REQUIRED APPROVALS

a) ENVIRONMENTAL PERMITS AND REVIEWS

(1) NEPA STATUS

An EA was completed in March 2012 for proposed improvements to Segments 3B and 3C of the I-35W NTE project, which has limits from SH 114 to I-820. Specific to this application, the EA reviewed potential impacts of improvements of I-35W Segment 3C from Eagle Parkway to US 81/US 287, including the following improvements:

- Six non-tolled general purpose lanes and auxiliary lanes
- Two tolled lanes in each direction
- Two frontage road lanes in each directions including auxiliary lanes near ramps and cross streets

FHWA issued a Finding of No Significant Impact (FONSI) for the entire project on March 21, 2012. The EA and FONSI documents are found online at <http://www.txdot.gov/government/partnerships/current-cda/north-tarrant-express/environmental-studies.html> under *I-35W Study from SH 114 to I-820*.

(2) **REVIEWS, APPROVALS, AND PERMITS BY OTHER AGENCIES**

The EA determined that the following agencies would require coordination for the project. The resources and coordination identified below are for the overall NTE project covered in the EA.

U.S. Army Corps of Engineers

The EA identified 15 Waters of the U.S. (WOUS), including seven wetlands within the project area. The project is anticipated to impact approximately 5 acres of WOUS, which would require various permits from the U.S. Army Corps of Engineers. Permits include Nationwide Permit 14 – *Linear Transportation Projects*; Nationwide Permit 25 – *Structural Discharges*; and Pre-Construction Notifications.

Local Floodplain Managers

The project crosses 15 waters bodies and seven high-risk flood zones, including a portion of the project within the regulated floodway. Although the EA found that no changes to the base flood elevation would occur as a result of the project, coordination with local floodplain managers would be required during design and construction phases to ensure local regulation are being followed.

Utilities

Coordination with utility providers may be required due to the relocation and adjustment of subterranean and aerial utilities required for the construction of the project.

Federally-Recognized Native American Tribes

The project team met with federally-recognized Native American tribes with a historical interest in the area surrounding the project on May 4, 2009. No tribes expressed any objections or concerns regarding the project.

State Historic Preservation Officer

The 50-foot lateral buffer for a section of the project’s proposed ROW fell within the boundaries of federally-recognized Native American tribes. Due to this, project staff coordinated with the Texas Historical Commission’s State Historic Preservation Officer on July 13, 2010, to discuss Section 106 of the National Historic Preservation Act.

Federal Aviation Administration

The Fort Worth Meacham International Airport and the Alliance Airport are within the vicinity of the project. Sixteen structures fall within the Federal Aviation Administration’s notification

surface, which includes a 100:1 slope. Due to this encroachment, the Notice of Proposed Construction or Alteration Form (Form AD-7460-1) will be completed and submitted during the design phase of this project.

Department of State Health and Human Services

Part of the project will include demolition of bridges that may potentially include asbestos containing materials, which will require a 10-Day Notification to the Department prior to demolition.

(3) ENVIRONMENTAL STUDIES OR OTHER DOCUMENTS

Resources that were reviewed as part of the EA are identified below. The EA document provides detailed information on the analysis, potential impacts, and proposed mitigation of the identified resources.

- Community Impacts, including community cohesion, environmental justice communities, economic tolling impacts, ROW and utilities relocations and acquisitions, and public facilities and services
- Natural resources
- Hazardous materials
- Air quality
- Noise impacts
- Cultural and archeological resources
- Indirect and cumulative impacts

(4) DISCUSSIONS WITH FHWA

Throughout the development of the EA, the project team coordinated with FHWA to ensure proper review and compliance with federally, state, and local regulations were being appropriately followed. At the conclusion of the EA, FHWA accepted the findings from the study and issued a FONSI on March 21, 2012, which stated its support of the project team's analysis and evaluation of environmental, social, and economic impacts of the project.

(5) PUBLIC INVOLVEMENT

The project team held four public engagement opportunities over the course of the EA. Comments, responses, and summary reports for all four opportunities are available for review at the TxDOT Fort Worth District Office located at 2501 Southwest Loop 820, Fort Worth, Texas 76133. The first opportunity was a public meeting held on March 8, 2007, that was attended by 59 people. The meeting and comment period resulted in five comments that generally indicated support for the project.

The second opportunity for public engagement occurred on May 11, 2009, for a project coordination work group/stakeholders group meeting. During the meeting, one comment and one question were received during the comments and questions period.

The third opportunity on July 28, 2009, consisted of a public meeting that had 59 participants and three comments were received during the comment period. The last opportunity was a public hearing held on December 15, 2011. A total of 48 people attended and 16 comments were received that generally supported the project.

b) STATE AND LOCAL APPROVALS AND PLANNING

I-35W Segment 3C has received the necessary state and local approvals to move forward. The I-35W Segment 3C project is included in the NCTCOG's Mobility 2040 transportation plan. NCTCOG serves as the transportation planning organization for the greater North Central Texas region, which is comprised of 16 counties. The funds for I-35W Segment 3C are identified in Mobility 2040 and NCTCOG's 2015-2018 Transportation Improvement Program (TIP), adopted on April 10, 2014. The original 2015-2018 TIP and several revisions to it have been incorporated into the Statewide Transportation Improvement Program.

The I-35W Segment 3C project is identified in the 2016 Texas Freight Mobility Plan, which identifies freight needs, challenges, goals, policies, and investments across the state. The project is also identified in TxDOT's 2014 Unified Transportation Program, which serves as a 10-year planning guide and identifies projects and programs that are planned to be constructed and/or developed within the first ten years of the 24-year Statewide Long Range Transportation Plan.

4. PROJECT RISKS AND MITIGATION STRATEGIES

The I-35W Segment 3C project has several risks that are typical of any project of this type and magnitude. TxDOT has been very successful in implementing projects using alternative delivery methods, such as a design-build CDA. One of the key factors contributing to the success is the implementation of a risk management process that identifies potential risks to the project at a very early planning stage and identifies mitigation strategies to manage each risk element. The process tracks each risk element as the project moves along its development phases.

The I-35W Segment 3C project is being implemented through a CDA delivery method where several risk elements of the project are typically transferred from the "owner" (i.e., TxDOT) to the developer. This partial or complete transfer of risk does not eliminate risks, but it provides a mechanism to manage risk. Potential risks for the project are outlined below.

- **ROW:** All needed ROW has not been acquired. However, coordination with affected property owners has occurred throughout the planning process. The corridor is rapidly developing and real estate values are increasing accordingly. This is considered a medium risk considering the length of the ROW acquisition process and increasing real estate values.
- **NEPA:** The corridor has received NEPA clearance. A FONSI was issued by FHWA on March 21, 2012.
- **Hazardous Materials:** Three leaking petroleum storage tanks/petroleum storage tanks sites on two separate sites were identified during the initial site assessment discussed in the EA. These sites pose a high risk because they are located on parcels identified for acquisition.
- **Water Resources:** The required U.S. Army Corp of Engineers nationwide permits have not yet been obtained. However, these permits typically do not pose major complications in processing. This is considered a low level risk element.