



# IH 35E/IH 35W Merge Interchange

FASTLANE FUNDING APPLICATION – APRIL 2016



North Central Texas  
Council of Governments  
Transportation Department





North Central Texas  
Council of Governments

**IH 35E/35W Merge Interchange Project**

**FASTLANE**

U.S. Department of Transportation

FASTLANE GRANT APPLICATION

**A. Project Name:** Interstate Highway (IH) 35E/IH 35W Merge Interchange

<b>B. Previously Incurred Project Cost.</b>	\$ 1,400,000,000
<b>C. Future Eligible Project Cost.</b>	\$ -
<b>D. Total Project Cost.</b>	\$ 210,189,000
<b>E. Nationally Significant Freight &amp; Highway Projects (NSFHP).</b>	\$ 126,000,000
<b>F. Total Federal Funding.</b>	\$ 168,151,200
<b>G. Are matching funds restricted to a specific project component?</b>	NO
<b>H. Is the project or a portion of the project currently located on the National Highway Freight Network?</b>	YES
<b>I. Is the project or a portion of the project location on the National Highway System?</b>	YES
i. Does the project add capacity to the Interstate system?	YES
ii. Is the project in a national scenic area?	NO
<b>J. Do the project components include a railway-highway grade crossing or grade separation project?</b>	NO
<b>K. 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?</b>	NO
<b>L. If answered yes to either of the two component questions above, how much of the requested NSFHP funds will be spent on each of these project components?</b>	(\$)
<b>M. State(s) in which project is located.</b>	Texas
<b>N. Small or large project?</b>	LARGE
<b>O. Also submitting an application to TIGER for this project?</b>	NO
<b>P. Urbanized Area in which project is located, if applicable.</b>	DENTON - LEWISVILLE
<b>Q. Population of Urbanized Area.</b>	366,174
<b>R. Is the project currently programmed in the:</b>	
i. TIP	YES - 2015-2018 APPENDIX D 2017-2020 UNDER FEDERAL REVIEW
ii. STIP	NO - TO BE ADDED TO 2015-2018
iii. MPO Long Range Transportation Plan	YES - MTP 2035 - 2014 AMENDMENT MTP 2040 - UNDER FEDERAL REVIEW
iv. State Long Range Transportation Plan	YES - TEXAS TRANSPORTATION PLAN 2040
v. State Freight Plan	NO

**TABLE OF CONTENTS**

**Executive Summary ..... 1**

**1.0 Project Description..... 3**

    1.1 *Project Overview and Background ..... 3*

    1.2 *Socio-Economic Context ..... 5*

    1.3 *Targeted Transportation Challenges ..... 9*

    1.4 *Challenges Addressed ..... 13*

**2.0 Project Parties ..... 18**

**3.0 Grant Funds and Sources/Uses of Project Funds..... 18**

**4.0 Results of the Benefit –Cost Analysis ..... 21**

**5.0 Project Readiness ..... 23**

    5.1 *Project Schedule ..... 23*

    5.2 *Procurement Mechanism ..... 24*

    5.3 *NEPA Status ..... 24*

    5.4 *State and Local Approvals ..... 24*

    5.5 *Project Risks and Mitigation Strategies ..... 25*

**6.0 Federal Wage Rate Certification ..... 25**

**LIST OF EXHIBITS**

**Exhibit E1: Dallas-Fort Worth Area Funded Roadway Recommendations..... 1**

**Exhibit E2: Project Overview and Limits ..... 2**

**Exhibit E3: Benefit-Cost Summary Results ..... 2**

**Exhibit 1: Project Location ..... 4**

**Exhibit 2: Current/Future Daily Volumes – IH 35E/IH 35W Approach Segments ..... 5**

**Exhibit 3: Population Trends and Forecasts for Project-Related Locations..... 6**

**Exhibit 4: Project Area Land Use Map..... 7**

**Exhibit 5: Project Area Major Employers ..... 8**

**Exhibit 6: Project Area Population Density ..... 9**

**Exhibit 7: 35Express Interim Schematic – IH 35E/IH 35W Merge Interchange ..... 11**

**Exhibit 8: Ultimate Schematic – IH 35E/IH 35W Merge Interchange ..... 14**

**Exhibit 9: IH 35E/IH 35W Merge Interchange Funding Sources..... 19**

**Exhibit 10: IH 35E/IH 35W Merge Interchange Cost Estimate..... 19**

**Exhibit 11: Total Project Benefits..... 21**

**Exhibit 12: Net Project Benefits ..... 22**

**Exhibit 13 – IH 35E/IH 35W Merge Interchange Project Schedule ..... 23**

**LIST OF APPENDICES:**

- Appendix A: Benefit-Cost Analysis Documentation**
- Appendix B: Letters of Support**
- Appendix C: Federal Wage Rate Certification**

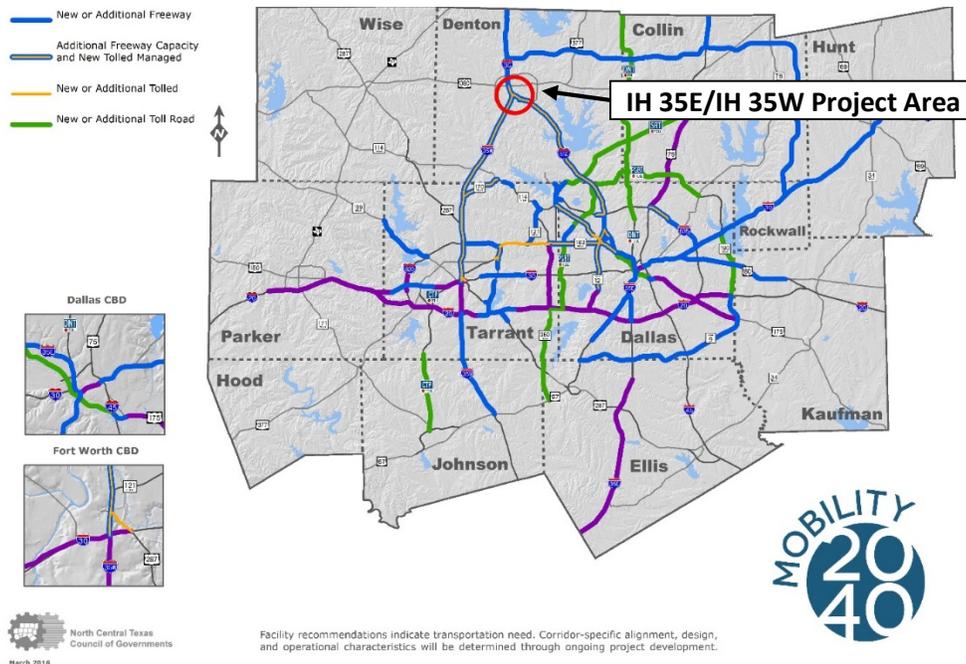
**LIST OF ABBREVIATIONS**

ADT	Average Daily Traffic	NAFTA	National American Free Trade Agreement
BCA	Benefit-Cost Analysis	NCTCOG	North Central Texas Council of Governments
CBD	Central Business District	NEPA	National Environment Policy Act
CDA	Comprehensive Development Agreement	NSFHP	Nationally Significant Freight and Highway Projects
CMF	Crash Modification Factor	NTTA	North Texas Tollway Authority
CMV	Commercial Motor Vehicle	OMB	Office of Management and Budget
DFW	Dallas-Fort Worth	PE	Preliminary Engineering
EA	Environmental Assessment	PGBT	President George Bush Turnpike
EB	Eastbound	PPP	Public-Private Partnership
FASTLANE	Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies	RCC	Re-Evaluation Consultation Checklist
FHWA	Federal Highway Administration	ROW	Right-of-Way
FM	Farm-to-Market Road	RTC	Regional Transportation Council
FONSI	Finding of No Significant Impact	RTR	Regional Toll Revenue
FY	Fiscal Year	SB	Southbound
GC&SF	Golf, Colorado and Santa Fe	SH	State Highway
GDP	Gross Domestic Product	SRT	Sam Rayburn Tollway
IH	Interstate Highway	STIP	State Transportation Improvement Program
MOSERS	Mobile Source Emission Reduction Strategies	STP-MM	Surface Transportation Program – Metropolitan Mobility
MPA	Metropolitan Planning Area	TIP	Transportation Improvement Program
MPH	Miles-per-Hour	TxDOT	Texas Department of Transportation
MPO	Metropolitan Planning Organization	UNT	University of North Texas
MTP	Metropolitan Transportation Plan	WB	Westbound
NB	Northbound		

**Executive Summary**

Known as “Main Street Texas”, in addition to its designation as the North American Free Trade Agreement (NAFTA) Superhighway, Interstate Highway (IH) 35 is the most heavily traveled north-south corridor in Texas, with multiple sections in the North Central Texas region listed among the Texas Department of Transportation (TxDOT) annual list of 100 Most Congested Roadways, and contributing to millions of dollars of delay costs each year. In the city of Denton, where much of the corridor infrastructure still exists with its 1950’s/60’s-era capacity and design, the **IH 35E/IH 35W Merge Interchange** (shown in **Exhibit E1**) splits the facility where one branch travels through Dallas and the other travels through Fort Worth.

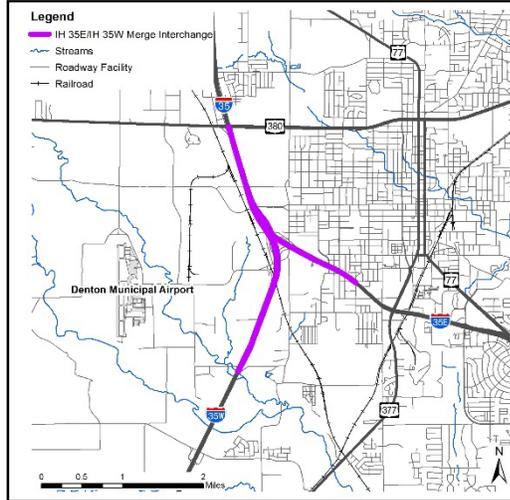
***Exhibit E1: Dallas-Fort Worth Area Funded Roadway Recommendations***



After many years of study and initiation of TxDOT’s innovative design-build comprehensive development agreement (CDA) partnership in 2013 with AGL Constructors, construction of the \$1.4 billion 35Express Project ([www.35express.org/](http://www.35express.org/)) will provide an initial improvement package of additional general purpose lanes, reversible managed lanes, and revisions to ramps and frontage roads along a 30-mile-long segment between U.S. Highway (US) 380 in Denton and IH 635 in Dallas. However, the resulting mobility and safety benefits upon the project’s completion in late 2017 will fall well short of the \$4.8 billion in approved ultimate improvements recommended for the corridor, and continued rapid growth in demographic and economic activity forecasts for Denton and the surrounding region indicate the IH 35E/IH 35W Merge Interchange will become a significant bottleneck inhibiting additional needed expansions of the trunk IH 35 corridor. Expedited full-scope reconstruction of the IH 35E/IH 35W Merge Interchange is necessary to help relieve congestion, reduce travel time, improve air quality, and

provide the social and economic benefits consistent with the vision outlined in the corridor’s dual designation (final IH 35E EA information – [www.keepitmovingdallas.com/projects/interstate-highways/ih-35e-from-ih-635-to-us-380](http://www.keepitmovingdallas.com/projects/interstate-highways/ih-35e-from-ih-635-to-us-380)).

**Exhibit E2: Project Overview and Limits**



The North Central Texas Council of Governments (NCTCOG), in cooperation with TxDOT, is preparing this application to seek funding assistance of **\$126 million** through the FY 2016 Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies (FASTLANE) Discretionary Grant Program to build the ultimate IH 35E/IH 35W Merge Interchange (project limits displayed in **Exhibit E2**), with an estimated total cost of **\$210 million**.

This application includes estimates of the project’s expected benefits based on the requirements and outcomes specified in the Nationally Significant Freight and Highway Projects (NSFHP) Final Notice of Funding Opportunity. This application narrative and benefit-cost analysis (BCA) appendix identify the benefit calculation methodology, quantify the monetary benefit in net present value for the IH 35E/IH 35W Merge Interchange, and substantiate the expected benefits and costs in accordance with federal requirements.

The costs and benefits contained within this application were derived using travel demand model data, assumptions from TxDOT safety and performance data/documents, NCTCOG demographic and economic activity trends/forecasts, and additional relevant information from all levels of government.

The BCA appendix to this application was utilized to analyze the benefits verses the costs for the project. The analysis summarizes net benefits and the benefit/cost (“B/C”) ratio for a net present value utilizing a 7 percent discount rate scenario. Net benefits of nearly **\$414 million** over the 20-year time horizon are attainable with a B/C ratio of **1.9**. **Exhibit E3** outlines a summary of costs and benefits for the IH 35E/IH 35W Merge Interchange Project.

**Exhibit E3: Benefit-Cost Summary Results**

Benefit-Cost Summary Results			Average Annual	Total Over 20 Years
Life-Cycle Costs (mil. \$)	\$210.1	<b>ITEMIZED BENEFITS</b>		
Life-Cycle Benefits (mil. \$)	\$1,119.8	Travel Time Savings (mil. \$)	\$17.3	\$365.2
Net Present Value (mil. \$)	\$413.7	Safety Cost Savings (mil. \$)	\$12.6	\$265.3
<b>BENEFIT/COST RATIO</b>	<b>1.9</b>	Emissions Cost Savings (thou. \$)	\$2.7	\$57.9
		<b>TOTAL BENEFITS 7% NPV (mil. \$)</b>	<b>\$16.5</b>	<b>\$413.7</b>
Return on Investment (rate):	9.3%	Person Hours of Delay Saved	1,889,135	45,339,247
Payback Period:	4 years			

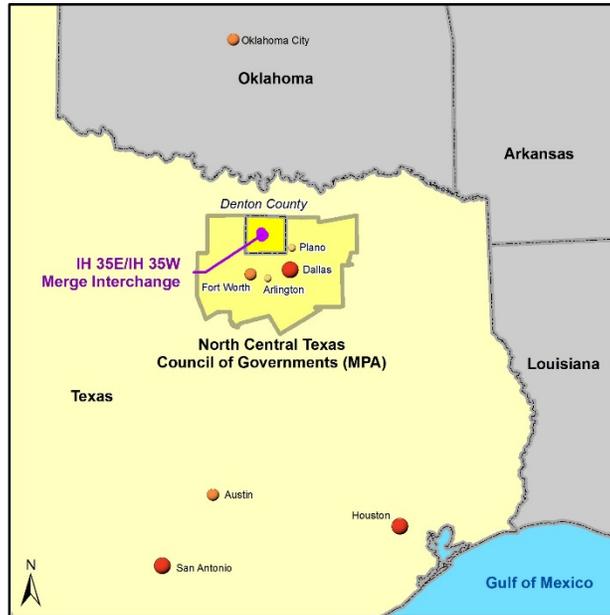
## **1.0 Project Description**

### *1.1 Project Overview and Background*

Located in the United States Census-designated Denton-Lewisville Urbanized Area within the city of Denton, Denton County, Texas, the project identified for this fiscal year (FY) 2016 Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies (FASTLANE) Discretionary Grant Program application will advance the proposed reconstruction of the **Interstate Highway (IH) 35E/IH 35W Merge Interchange**. **Exhibit 1** displays the project area location with respect to the spatial extent of the North Central Texas Metropolitan Planning Area (MPA) and the Denton-Lewisville Urbanized Area. This project represents a \$4.8 billion overall effort to improve a 30-mile-long section of IH 35E. Because of the cost and magnitude of the ultimate improvements, the project is being staged as funding becomes available. The first phase of construction is currently underway as part of the 35Express Project ([www.35express.org](http://www.35express.org)). This is a \$1.4 billion initial design-build improvement program resulting from a public-private partnership (PPP) initiated in 2013 between the Texas Department of Transportation (TxDOT) and AGL Constructors delivering new general purpose lanes, reversible managed lanes, and a variety of additional mobility improvements from U.S. Highway (US) 380 in Denton to IH 635 in Dallas. The IH 35E/IH 35W Merge Interchange serves as a key regional focal point to distribute long-distance passenger and freight traffic north and south through the Dallas-Fort Worth Metropolitan Area, and reconstruction of the nearly 50-year-old interchange is a critical component to long-term mobility, circulation, safety, and continued economic vitality for both the city of Denton and the North Central Texas region at large. With expedited delivery of new infrastructure containing modern design and increased capacity features, as well as new median space provisions and initial support structures permitting the future incorporation of managed lanes, this project will provide vital build-out accommodations for additional planned capacity expansions on IH 35E toward Dallas, IH 35W toward Fort Worth, and on the trunk IH 35 corridor north toward the Texas/Oklahoma border. Facilitating implementation of this project as part of the Fixing America's Surface Transportation (FAST) Act execution of the Nationally Significant Freight and Highway Projects (NSFHP) Program, the IH 35 corridor will more adequately fulfill its dual designation as "Main Street Texas", and more importantly the North American Free Trade Agreement (NAFTA) Superhighway.

The IH 35E/IH 35W Merge Interchange and its various approaches are part of a \$4.8 billion effort to improve IH 35E. TxDOT has completed the environmental documents for the overall project length and has been acquiring the necessary right-of-way (ROW). Metropolitan Transportation Plan (MTP) revenue forecasts anticipate availability of funds through the horizon year to ultimately construct the IH 35E corridor project. To maximize initial mobility benefits quickly, comprehensively, and cost-effectively for as much of the 30-mile corridor as possible, TxDOT was authorized during the 82<sup>nd</sup> Texas Legislature in 2011 through passage of Senate Bill 1420 to seek

***Exhibit 1: Project Location***



a public-private partnership and initiate a comprehensive development agreement (CDA) with potential qualified design-build contractors. Following a series of public scoping meetings and a TxDOT competitive bidding process, a joint venture of several notable design and construction firms known collectively as AGL Constructors was selected and certified in 2013 to begin building the \$1.4 billion 35Express Project. Consisting of various local, regional, State, and Federal construction funds, including a Transportation Infrastructure Finance and Innovation Act (TIFIA) loan, the 35Express Project will add substantial capacity, safety, and accessibility improvements through a complex mix of new infrastructure, as well as enhancements or modifications to existing assets, scheduled to be opened to traffic by fall 2017.

The importance of the IH 35E/IH 35W Merge Interchange to the State of Texas, as well as implications of this proposed project to the National Freight Highway Network and advancement of the NSFHP Program can't be understated. The North Central Texas region is centrally located within the lower 48 states, and it is the largest metropolitan area along the IH 35 NAFTA Corridor. This provides a logistics advantage, but also a critical function, in enabling the region to serve as an effective primary distribution center, or inland port, for the southwestern United States and the nation as a whole. Trucks can travel between the Dallas-Fort Worth Metropolitan Area and a majority of the country within 72 hours. However, truck congestion through North Central Texas in 2010 cost freight shippers an estimated \$948 million annually, the fifth highest metropolitan regional cost, and freight bottlenecks nationwide cost approximately \$200 billion, or 1.6 percent, of the country's gross domestic product (GDP) during that year. The current state of IH 35E/IH 35W Merge Interchange epitomizes how highways and bridges, used daily by freight and passenger traffic, have been neglected in recent decades, while at the same time highway

congestion has grown worse. Congestion is now impacting not only commuters, but also the freight shipments many companies rely on for just-in-time deliveries. In addition, when freight infrastructure and industrial land uses are lost due to congestion related issues and costs, it is difficult to recover or purchase new industrial land within a rapidly growing urban area. As a result, freight facilities may be forced to close or relocate farther from direct connections to the National Freight Highway Network. When this occurs, transportation efficiencies are lost, the prices of goods increase, and freight shippers, residents, and the region’s economy are negatively affected. The following sections will highlight how this proposed project is an excellent candidate to help halt or reverse these conditions.

**1.2 Socio-Economic Context**

IH 35 serves local, urban, and suburban travelers, and the facility is an integral component of the North Central Texas regional transportation network. As an Interstate Highway, the facility also carries substantial amounts of intrastate, interstate, and international passenger and freight traffic on a daily basis, and including both the 97-mile-long IH 35E branch through Dallas and the 85-mile-long IH 35W branch through Fort Worth, the route is designated as the primary NAFTA corridor through the central United States. In 2015, the IH 35E segment south of the IH 35W split through the city of Denton was identified as the fifty-first most congested roadway in the state of Texas. **Exhibit 2** displays existing traffic counts and future travel demand model estimates for the freeway segments within the project area.

***Exhibit 2: Current/Future Daily Volumes – IH 35E/IH 35W Approach Segments***

<b>Location</b>	<b>2014 Traffic Volumes<sup>1</sup></b>	<b>2040 Traffic Volumes<sup>2</sup></b>	<b>Change</b>	<b>% Change</b>
IH 35 (South of US 380)	<b>81,100</b>	<b>185,000</b>	<b>103,900</b>	<b>128%</b>
IH 35E (North of North Texas Boulevard)	<b>79,300</b>	<b>128,200</b>	<b>48,900</b>	<b>62%</b>
IH 35W (South of FM 1515)	<b>46,000</b>	<b>134,300</b>	<b>88,300</b>	<b>192%</b>

1. TxDOT average daily traffic counts in 2014
2. NCTCOG DFWDFX regional travel demand model

It should be noted that the rate of future traffic growth for IH 35W exceeds that for IH 35E as a result of significant population surges predicted for cities and transitioning rural areas in southwestern Denton County, identified to be even greater than the average rapid growth for the rest of the North Central Texas region. This condition forms the basis for a key consideration of need for the proposed FASTLANE Grant project at the IH 35E/IH 35W Merge Interchange, and it is a primary challenge among others the project will be able to address. To further illustrate the consistent pattern of strong local and regional growth surrounding the project location,

**Exhibit 3** highlights the past trends and future forecasts for population growth within the city of Denton, Denton County, and the 12-county North Central Texas Council of Governments (NCTCOG) MPA. The increasing population of the city, county, and region translates into large numbers of additional passenger vehicles and trucks utilizing area roadways.

**Exhibit 3: Population Trends and Forecasts for Project-Related Locations**

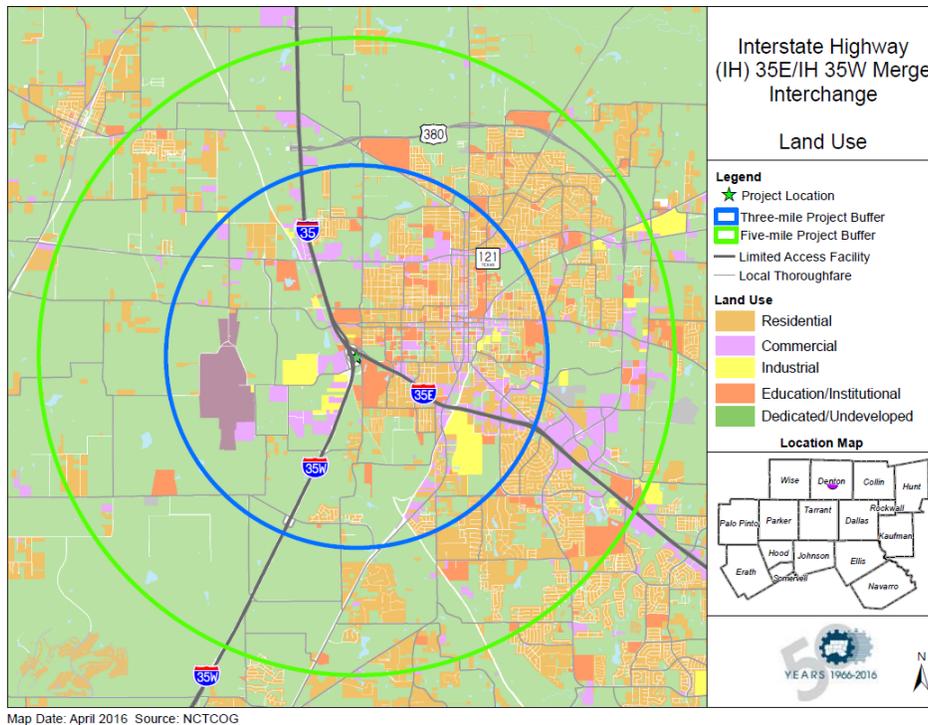
Location	1970 Census <sup>1</sup>	1980 Census <sup>1</sup>	1990 Census <sup>1</sup>	2000 Census <sup>1</sup>	2010 Census <sup>1</sup>	2020 Forecast <sup>2</sup>	2040 Forecast <sup>3</sup>	Growth 2010-2040
City of Denton	39,874	48,063	66,270	80,537	113,383	160,145 <sup>2</sup>	268,780 <sup>2</sup>	137%
Denton County	75,633	143,126	273,525	432,976	662,614	901,645 <sup>2</sup>	1,241,681 <sup>3</sup>	87%
12-County NCTCOG MPA	2,425,927	3,030,053	4,013,418	5,197,317	6,417,724	7,504,200 <sup>2</sup>	10,676,844 <sup>3</sup>	66%

Sources:

1. U.S. Census 2010 PL94-171, NCTCOG (February 2011).
2. Texas Water Development Board, 2016 Regional Water Plan Population Projections for 2020-2070 for Cities, Utilities, and County-Other by Region by County, Region C (December 2015).
3. NCTCOG 2040 Demographic Forecast, <http://rdc.nctcog.org/Index.aspx> (May 2015), available at county level only.

The type, intensity, distribution, and availability of specific land uses can be an important determinant for identifying and prioritizing transportation needs. The IH 35E/IH 35W Merge Interchange is located at the southwest corner of the city of Denton within a rapidly growing area that already contains several large traffic generators and major employment centers. **Exhibit 4** illustrates the distribution of current land uses in and around the project location, and buffer limits of three-mile and five-mile radii are displayed to highlight proximity to the project location. The predominant land uses adjacent to the project are institutional, industrial, and commercial in nature, and their extents underscore the importance of providing comprehensive local access along freeway corridors in addition to maximizing high-capacity freeway through-movements. One prominent land use feature approximately two miles west of the project location is Denton Enterprise Airport ([www.cityofdenton.com/departments-services/departments-a-f/airport](http://www.cityofdenton.com/departments-services/departments-a-f/airport)), a general aviation facility designated by the Federal Aviation Administration (FAA) as a “Super-Reliever” (one of only three in the state of Texas) with a 7,000-foot runway, approximately 165,000 flight operations annually, two fixed-base operators, two flight schools, and a large quantity of adjacent developable land. The airport and other predominant land uses surrounding the project are typically characteristic and attractive to large employers, and they are also locations where substantial freight-oriented and non-home-based trips occur.

### Exhibit 4: Project Area Land Use Map

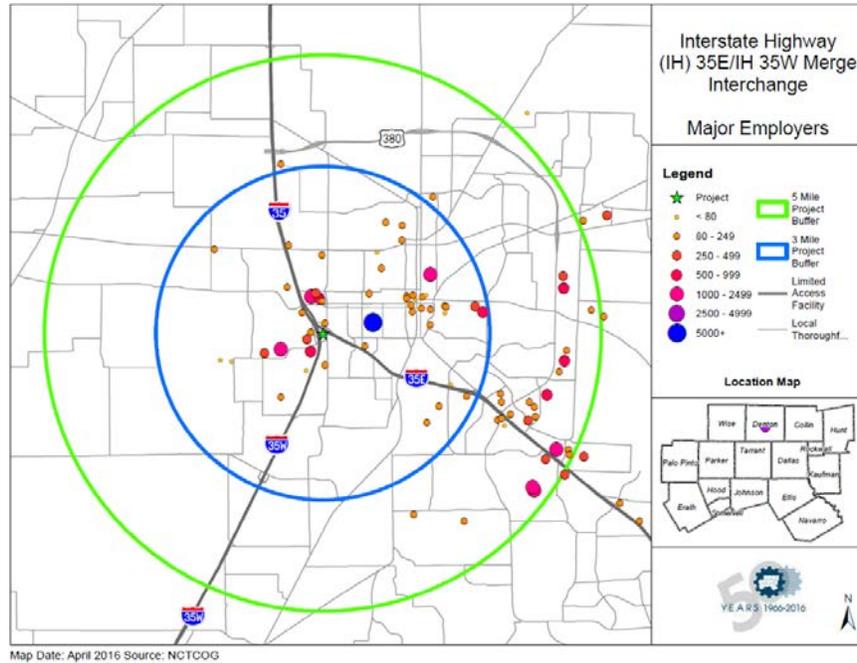


**Exhibit 5** shows the location and size of major employers surrounding the IH 35E/IH 35W Merge Interchange. The most notable employment source is the University of North Texas (UNT), which is the largest public university in the Dallas-Fort Worth Metropolitan Area and fifth largest in the State of Texas ([www.unt.edu/about-unt.htm](http://www.unt.edu/about-unt.htm)). UNT is also the largest employer in both the City of Denton and in Denton County at-large, and its 8,900 jobs and 36,000 enrolled students both generate and attract significant traffic. Additionally, the campus is home to several activity centers of considerable size immediately adjacent to the freeway corridor, including 31,000-seat Apogee Stadium and 10,500-seat UNT Coliseum. Other large public employers such as the Denton Independent School District (3,800 jobs), Texas Woman’s University (1,672 jobs), and the City of Denton (1,300 jobs) are located within the three-mile buffer zone and would experience some project implementation effects, but not as profound compared to the UNT campus. Examples of large private employers adjacent or in close proximity to the project location are:

- Peterbilt Motors Company (Manufacturing Plant/Corporate Headquarters) – 2,100 jobs
- Texas Health Presbyterian Denton Hospital – 1,076 jobs
- Anderson Merchandisers – 450 jobs
- Victor Technologies – 450 jobs
- Tetra Pak Materials, L.P. – 375 jobs

Source: Denton, Texas Economic Development Partnership; <http://dentonedp.com/major-employers> (2015).

**Exhibit 5: Project Area Major Employers**

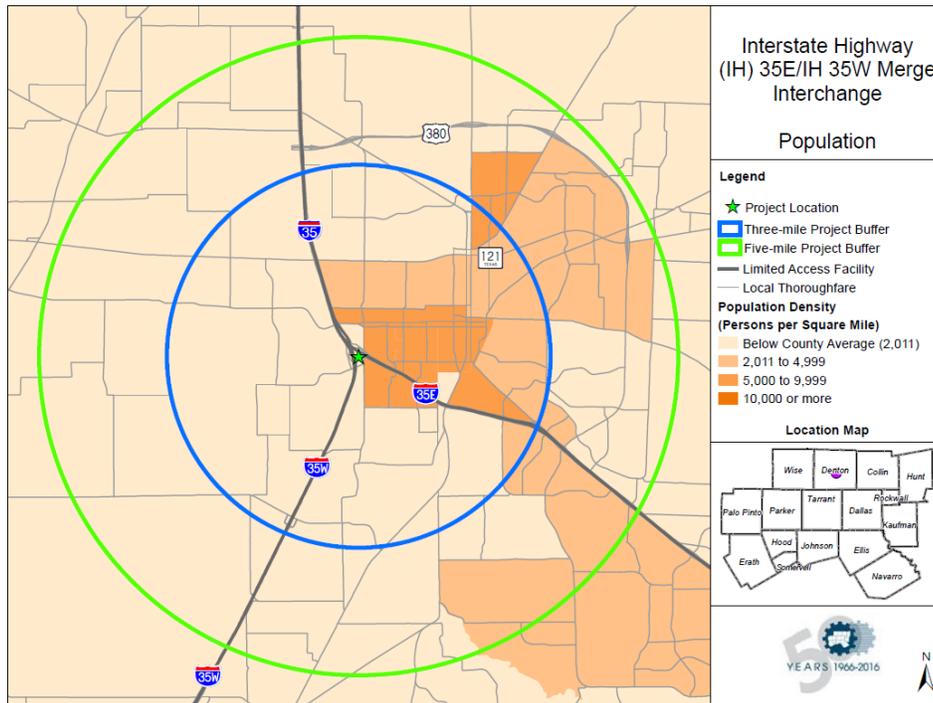


Projected increases in traffic volumes for IH 35 and its branch segments may also be attributed to greater economic activity resulting from enhanced job growth. The current MTP, *Mobility 2040: The Metropolitan Transportation Plan for North Central Texas* ([www.nctcog.org/trans/mtp/2040](http://www.nctcog.org/trans/mtp/2040)), indicates that employment within the 12-county MPA is projected to grow from 4,584,235 jobs in the present year to 6,691,449 jobs by 2040, resulting in an average employment density that will rise from 508 to 742 jobs per square-mile across the region. Denton County is estimated to experience growth from 298,071 jobs currently to 445,070 jobs in 2040, the fourth highest numerical increase by county in the region, but also the second greatest increase by percentage. A large portion of this job growth is expected within the city of Denton, where the CBD, surrounding neighborhoods, and areas adjacent to the UNT campus are experiencing a renaissance of redevelopment activities translating to new employment in multiple sectors. However, it is also evident that the Dallas-Fort Worth region is a complex metropolitan area with multiple large employment clusters that are all experiencing strong growth rates.

Population density is also a critical value in defining appropriate transportation needs. **Exhibit 6** illustrates U.S. Census population density for the area encompassing the project location. The area of greatest density is immediately east of the IH 35E/IH 35W Merge Interchange which comprises the UNT campus and the large stock of single-family and multi-family residences that have grown through the years between it and Denton central business district. Regional data

from the current MTP outlines that Denton County, as a whole, is anticipated to experience a 54 percent increase in population density between the current year and 2040. Additionally, the projected Denton County population density average of 1,394 persons per square mile will exceed the year 2040 MPA average density by 18 percent. Ultimately, this will result in greater clusters of population within close proximity and access to/from the proposed project, and it will certainly generate a wide variety of trip purposes in addition to through-movements that must be accommodated.

**Exhibit 6: Project Area Population Density**



Considered together, these maps demonstrate that the project location has substantial resources to both produce and attract traffic, and the effective provisions for local access and circulation needs within the project area are as essential for incorporation as meeting travel needs at a much larger scale.

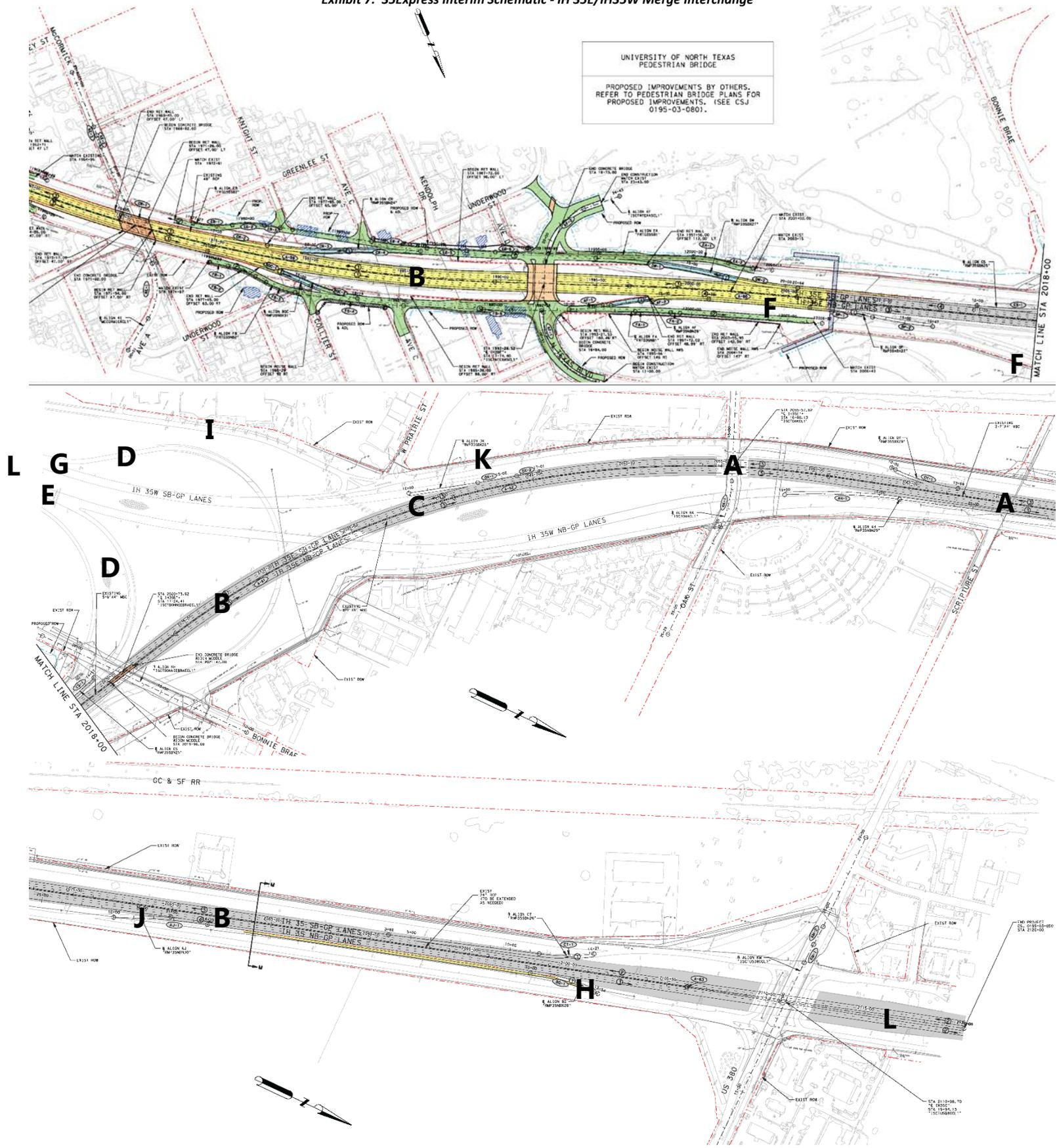
### 1.3 Targeted Transportation Challenges

As mentioned previously, the IH 35E corridor is being built in phases. The current 35Express Project construction phase will add capacity one general purpose lane in each direction (for a total of three lanes in each direction) and limited weaving lanes through the project location, as well as scattered improvements to the frontage roads and ramps. As IH 35E merges with IH 35W, the additional general purpose lane in each direction will continue north for approximately one mile before terminating as the trunk IH 35 corridor crosses over US 380. With the notable

exception of the IH 35E/North Texas Boulevard interchange, where entirely new frontage roads, a cross-street bridge, and pedestrian walkway will be provided within the ultimate right-of-way footprint immediately south of the IH 35E/IH 35W merge, much of the existing infrastructure will continue to be in place following completion of the 35Express Project. **Exhibit 7** displays maps of the 35Express schematic for the corridor sections surrounding the IH 35E/IH 35W merge area. Despite the initial mobility benefits in the area, many notable issues affecting maintenance, congestion, safety, circulation, driver expectancy, and future capacity facilitation will remain after the 35Express Project is concluded (for reference, the schematic drawing in **Exhibit 7** is labeled with letters corresponding to the order of items/issues listed below):

- a. Existing infrastructure within the IH 35E/IH 35W Merge Interchange originally built during the mid/late 1960's are approaching the end of their design life and several bridges having substandard vertical clearances.
- b. Interim IH 35/IH 35E general purpose lanes will have narrower lane widths (11 feet vs. 12 feet) and left shoulder widths (two feet vs. 10 feet).
- c. Horizontal/vertical general purpose lane design speeds and curves with existing infrastructure are 50 miles-per-hour (MPH).
- d. Existing direct connector ramps between the freeways have narrow lanes, shoulders, and low design speed/curve features that affect truck movements.
- e. Movements between IH 35W and the trunk IH 35 corridor are not provided auxiliary lanes or sufficient merge/diverge distance to accommodate current and future traffic flows.
- f. An insufficient weaving distance (less than 800 feet between ramp gore tips) occurs between the northbound (NB) IH 35E/North Texas Boulevard entrance ramp and the NB IH 35E/southbound (SB) IH 35W direct connector ramp.
- g. The NB IH 35E/SB IH 35W direct connector ramp splits with a local access exit ramp to Bonnie Brae Boulevard and FM 1515 (Airport Road) almost immediately after the direct connector ramp diverges from the general purpose lanes. This condition is often discouraged in the modern design of freeway-to-freeway interchanges unless there is sufficient distance between decision points. In addition, the exit ramp is very short both in length and distance from the Bonnie Brae Boulevard intersection. Because this ramp is the only IH 35E access point to several large freight-oriented developments along FM 1515 west of the corridor approaching Denton Enterprise Airport, as well as the final NB direct access point to the large UNT campus, signal queues at peak travel times often back up onto both the direct connector ramp and the general purpose lanes. Congestion and potential safety conflicts will likely grow worse as campus enrollment and economic development continue to expand as anticipated.

Exhibit 7: 35Express Interim Schematic - IH 35E/IH35W Merge Interchange



- h. The existing NB IH 35 exit ramp to US 380 is both too short and too close to the frontage road intersection. Recent major capacity expansions to US 380 on both sides of the freeway, as well as construction of several large nearby commercial developments, have greatly increased traffic at the interchange. Traffic signal queues extend onto the freeway itself multiple times throughout the day, and congestion will grow worse over time as additional planned development in the area is expected soon.
- i. A short two-lane, two-way frontage road section exists on the west side of the IH 35E/IH 35W Merge Interchange extending north from FM 1515. The frontage road segment provides the shortest route, both for FM 1515 traffic from the west and Bonnie Brae Boulevard traffic from the south, to access southbound IH 35W via an entrance ramp just south of the IH 35E split. The frontage road configuration is inconsistent with the preferred one-way operation of frontage roads in urban areas. Alternate access to SB IH 35W, particularly for several large industrial and freight-oriented developments west of the corridor surrounding Denton Enterprise Airport, requires backtracking for up to two miles using the local thoroughfare network and making a full trip through the IH 35E/IH 35W Merge Interchange from US 380.
- j. The first opportunity for FM 1515 and Bonnie Brae Boulevard traffic to enter NB IH 35 is via an entrance ramp just north of Oak Street, requiring travel through an additional traffic signal along the NB frontage road. This traffic includes trips originating from a substantial portion of the UNT campus, special event traffic traveling from Apogee Stadium, and freight traffic occurring from the industrial and distribution centers around Denton Enterprise Airport. Because the entrance ramp occurs immediately north of the IH 35W merge, immediately south of the short and closely-spaced US 380 exit ramp, and also within a short distance from where the general purpose lanes will drop from three to two lanes, this location will become a focus for significant congestion, weaving, and safety conflicts.
- k. The IH 35E/IH 35W Merge Interchange does not have a continuous SB frontage road in transition north-south from IH 35 at Oak Street to IH 35E at Bonnie Brae Boulevard. If a major incident were to close the SB movement to IH 35E at the interchange, bypassing traffic would either have to perform circuitous detour routes on local streets (with traffic signals) through the UNT campus north of the interchange, or travel SB IH 35W south of the interchange over two miles to the nearest exit (FM 2449) for access to other circuitous detour routes on local streets. The lack of a continuous frontage road through the interchange greatly inhibits suitable short-distance relief options for incident management.
- l. In addition to the ultimate approved IH 35E improvements south toward Dallas, additional TxDOT studies are in various stages of development evaluating expansion of IH

35W toward Fort Worth, and new capacity for IH 35 north toward the Texas-Oklahoma border. The interim improvements to the IH 35E/IH 35W Merge Interchange do not have provisions to accommodate any extra capacity in either direction, and the staged implementation of those projects would have limited effectiveness in such a high-growth region if new capacity cannot be provided continuously over long distances.

#### **1.4 Challenges Addressed**

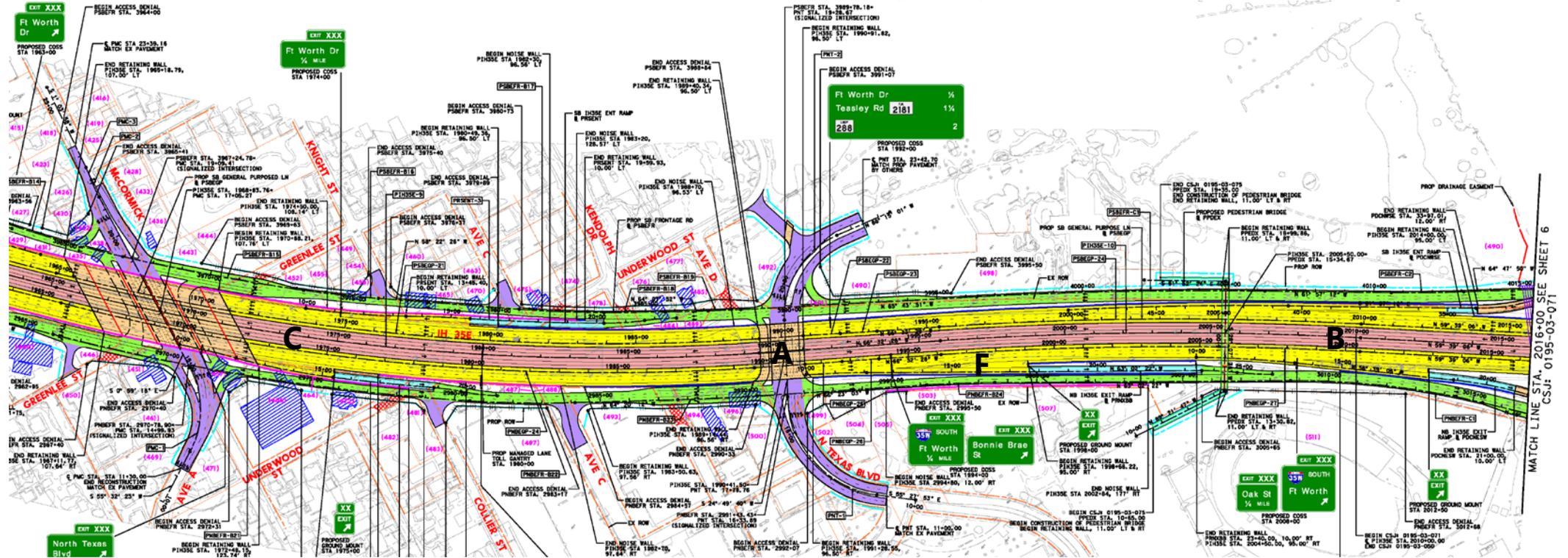
The project proposed for construction in this FASTLANE Grant application would reconstruct nearly all environmentally cleared elements for the IH 35E/IH 35W Merge Interchange within the ultimate right-of-way footprint from the US 380 interchange on IH 35 to just south of the Gulf, Colorado and Santa Fe (GC & SF) Railway grade separation on IH 35W, and to just north of the

reconstructed North Texas Boulevard bridge on IH 35E. The overall project length along IH 35, IH 35E, and IH 35W is approximately 3.2 linear miles, and the total project cost is estimated to be \$210 million in FY 2016 dollars. **Exhibit 8** displays the preliminary engineering schematic for the proposed FASTLANE project.

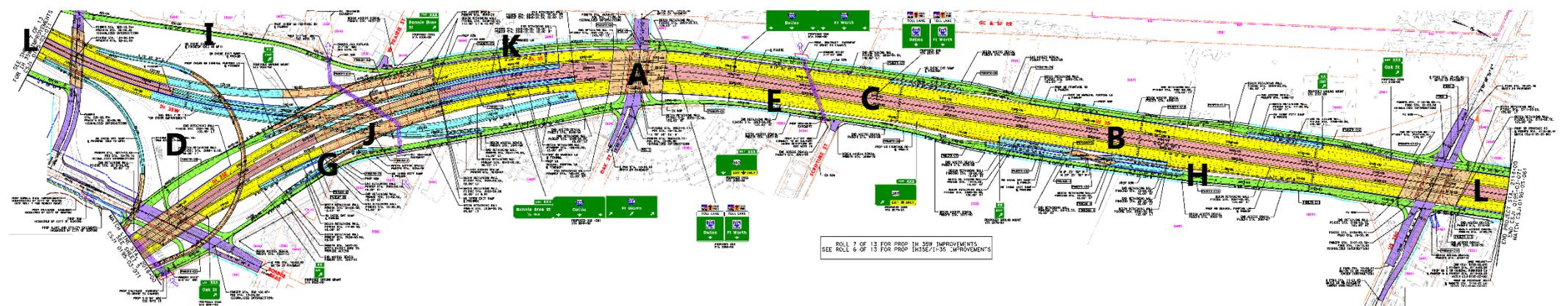
The expedited delivery of the ultimate IH 35E/IH 35W Merge Interchange will provide significant benefits for numerous project users and address each of the challenges described in Section 1.2 (for reference similar to the previous exhibit, and to allow for greater visual comparison, the schematic drawing illustrated in **Exhibit 8** is labeled with letters corresponding to the order of item/issues listed below):

- a. The project will provide a modern, high-efficiency interchange with new pavement and structures of greater design-life resiliency than the current interchange to accommodate current and future traffic demand.
- b. To provide the optimum provisions for capacity and safety, general purpose lanes and auxiliary lanes will have a standard width of 12 feet, and left/right shoulders will have a standard width of 10 feet through the project length.
- c. Modern design standards for vertical/horizontal curves and design speeds for general purpose lanes, local access ramps, and frontage roads will be consistent throughout the project length to further maximize vehicle capacity and improve driver expectancy for reaction times, sight distance, and other contributing safety factors.

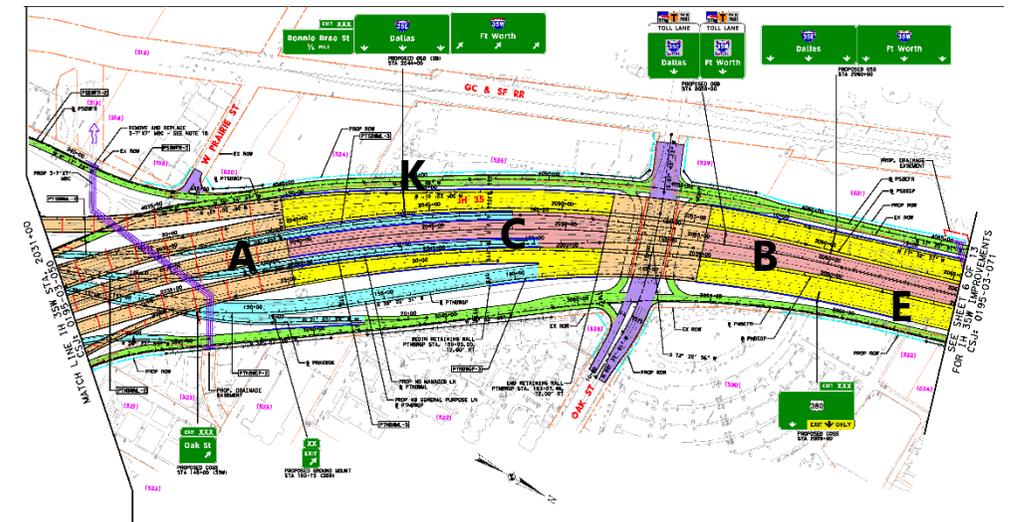
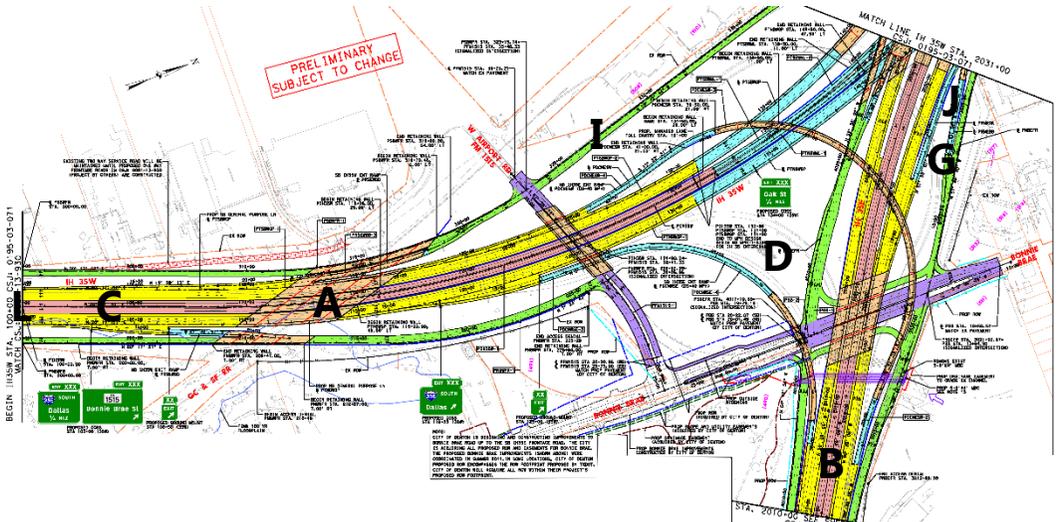
Exhibit 8: Ultimate Schematic - IH 35E/IH 35W Merge Interchange



MATCH LINE STA. 2016+00 SEE SHEET 6  
CSJF 0195-03-071



ROLL 7 OF 13 FOR PROP IN 35W IMPROVEMENTS  
SEE ROLL 6 OF 13 FOR PROP IN 35E IMPROVEMENTS



MATCH LINE SEE SHEET 6  
CSJF 0195-03-071

- d. The two one-lane direct connector ramps at the interchange (NB IH 35E – SB IH 35W and NB IH 35W – SB IH 35E) will be built to a standard pavement width of 26 feet (14-foot lane, 4-foot inside shoulder, and 8-foot outside shoulder), and the bridges will have larger horizontal curve radii and shorter vertical profile than the existing ramps to improve speed and safety potential for trucks.
- e. Movements between IH 35W and the trunk IH 35 corridor will be provided auxiliary lanes that will extend at least as far as the ramps to/from US 380. Though this project will not rebuild the IH 35 overpass at US 380, the current bridge which opened in 2006 is wide enough for up to four general purpose lanes in each direction. The current bridge provides additional length to extend the IH 35E/IH 35W merge/diverge influence zone so that general purpose lane additions/drops to the north can be more strategically located to benefit freight movements.
- f. The current/interim NB IH 35E/North Texas Boulevard entrance ramp will be eliminated prior to the NB IH 35E/SB IH 35W direct connector ramp, removing a short general purpose lane weaving section. North Texas Boulevard traffic will instead use a new NB entrance ramp north of the Bonnie Brae Boulevard intersection that enters IH 35E just prior to the IH 35W merge. Traffic from North Texas Boulevard traveling to SB IH 35W will benefit from a reconstructed Bonnie Brae Boulevard and FM 1515 (Airport Road) with improved capacity and a more effective traffic circulation pattern, as well as new dedicated IH 35W local access ramps to/from FM 1515 to be discussed further below. This change in circulation improves overall safety by removing local traffic movements from the high-volume regional or longer-distance movements on the direct connector ramps.
- g. Removal of the NB IH 35E/North Texas Boulevard entrance ramp allows for relocation of the NB IH 35E exit ramp to Bonnie Brae Boulevard and FM 1515. Compared to the current exit ramp, the new ramp will be located farther south at a greater distance from the Bonnie Brae Boulevard intersection, and it will occur south of the NB IH 35E/SB IH 35W direct connector ramp as a separate and independent movement. This project element, in combination with the improved street circulation pattern for Bonnie Brae Boulevard and FM 1515, will enhance local land use accessibility, increase storage length for turning movements, and remove potential local access conflicts from affecting movements on the reconstructed direct connector ramp.
- h. The NB IH 35E exit ramp to US 380 will be fully reconstructed as a two-lane exit ramp to be braided over the NB IH 35E entrance ramp from Oak Street prior to merging with the NB frontage road. The ramp's merge with the frontage road will occur more than twice the distance from the US 380 intersection compared to the current ramp. The increased ramp capacity, length, traffic signal distance, and extra frontage road lanes overall will provide substantial storage capabilities to improve congestion at the US 380 intersection.

This project element also enables the opening of potential direct driveway access to adjacent land parcels prior to the intersection, allowing greater accessibility and site circulation options to benefit ongoing planning for additional economic development in the area.

- i. The proposed project will eliminate the existing two-way frontage road along the west side of IH 35W north of FM 1515, and the facility will be replaced with a two-lane one-way frontage road. The existing SB IH 35W entrance ramp just south of the IH 35E split will also be eliminated. As a result of these changes, traffic from Oak Street and FM 1515 will be provided a new SB IH 35W entrance ramp south of FM 1515. The ramp will enter IH 35W at a sufficient separation distance south of the NB IH 35E/SB IH 35W direct connector ramp to optimize conditions for merging traffic, and the ramp will connect to the general purpose lanes as they travel over a new widened bridge above the GC & SF railroad corridor. The new ramp will accompany a reconstructed SB IH 35W one-way frontage road that will also be grade-separated above the GC & SF rail line for improved access to industrial properties south of FM 1515, and the reconstruction could facilitate future rail access along a previously-used rail spur corridor to the west that would be free of vehicle conflicts. It should be noted that this project will also build the companion NB IH 35W exit ramp to FM 1515 south of the cross-street as well, and it too will be grade-separated above the GC & SF rail line. These elements together provide substantial accessibility and circulation benefits for both origin and destination traffic in the southern portion of the project area, and these improvements also contribute to travel time and safety enhancements by removing local traffic movements away from the primary IH 35E/IH 35W Merge Interchange freeway connections. The new frontage road/ramp bridges over the GC & SF rail line also aid in opening future access opportunities to vast properties farther to the south, and those prospects will be more easily attainable as TxDOT and the local governments proceed with planned IH 35W and local thoroughfare expansion projects in that area.
- j. Mentioned previously in item (f.) above, the project's new IH 35E entrance ramp north of Bonnie Brae Boulevard will enable traffic from Bonnie Brae Boulevard and FM 1515 to enter the NB general purpose lanes prior to the IH 35W merge, and without having to travel through the signalized frontage road intersection at Oak Street. The new entrance ramp will be braided above a new NB IH 35E exit ramp to Oak Street. Each of these new ramps are made possible as a result of the NB IH 35E/SB IH 35W direct connector ramp reconfiguration, and unlike the current interchange they allow for greater distribution of local access at separate points away from the high-volume freeway-to-freeway connections immediately upstream or downstream. This increased local accessibility and circulation will provide convenience, travel time savings, and special event congestion relief to users destined to or originating from the UNT campus, its various activity centers,

and adjacent student housing buildings, as well as the freight-oriented developments along FM 1515 and Oak Street west of the interchange. The new ramps also provide extra traffic management options for detours around incidents that could close or degrade operations for the freeway-to-freeway movements.

- k. Reconstruction of the IH 35E/IH 35W Merge Interchange will provide a new continuous SB frontage road to parallel the movement from IH 35 at Oak Street to IH 35E at Bonnie Brae Boulevard. As the new two-lane frontage road travels grade-separated across the incoming/outgoing IH 35W general purpose lanes (and future IH 35W managed lanes), a new southbound IH 35E exit ramp immediately south of the IH 35E/IH 35W split will connect to the frontage road prior to the Bonnie Brae Boulevard intersection. This improved local accessibility and circulation is beneficial not just for travel time savings, enhanced incident management options, and frontage road continuity, but with the proposed reconfiguration and lengthening of the NB IH 35W/SB IH 35E direct connector ramp, the downstream existing SB IH 35E exit ramp to North Texas Boulevard could not be maintained. Therefore, SB traffic heading to the UNT campus may access directly via Bonnie Brae Boulevard or indirectly continuing along the frontage road to North Texas Boulevard, but either option occurs separate and clear from the high-volume freeway-to-freeway movements. Additionally, the new SB IH 35E frontage road and Bonnie Brae Boulevard exit ramp provide alternate access and circulation options to/from FM 1515 as an extra benefit to freight-oriented activities west of the interchange.
- l. Expediting delivery of the new pavement and structures to accommodate the ultimate general purpose lanes, direct connectors, ramps, and frontage roads within the approved IH 35E/IH 35W Merge Interchange right-of-way extent permits the continued development and implementation of planned expansions on IH 35E toward Dallas, IH 35W toward Fort Worth, and the trunk IH 35 corridor north to the Texas/Oklahoma border. Completion of this project is an essential component for both the effective conveyance and distribution of NAFTA corridor freight and passenger movements across the state of Texas, and also to ensure ongoing economic vitality and efficient level of service for the area. In addition, as demographic projections for the Dallas-Fort Worth MPA continue to illustrate rapid growth, reliance on innovative means for transportation system management and propagation of future potential revenue sources will remain integral regional strategies to meet travel demands and enhance reliability. To better serve those functions, as well as alleviate possible cost inflation and more excessive future construction impacts, the project will provide sufficient median space and various foundation elements to ease implementation of concurrent managed lanes during a later construction stage. Delivering these provisions at an earlier date will help mitigate a major future obstacle to expansion of the North Central Texas managed lane system, advancing even greater success and utilization of one of most comprehensive toll financing networks in the country.

## 2.0 Project Parties

### North Central Texas Council of Governments (Submitting Agency)

NCTCOG is a voluntary association of cities, counties, school districts, and special districts established in January 1966 to assist local governments in planning for common needs, cooperating for mutual benefit, and coordinating for sound regional development. NCTCOG serves a 16-county metropolitan region comprised around the urban centers of Dallas and Fort Worth. Currently, the Council has 234 members, including 16 counties, 168 cities, 22 independent school districts, and 28 special districts. The regional area is nearly 12,800 square miles, which is larger than nine states, and the regional population is about seven million, greater than that of 38 states.

Since 1974, NCTCOG has served as the Metropolitan Planning Organization (MPO) for the Dallas-Fort Worth area. NCTCOG's Transportation Department is responsible for the regional planning process for all transportation modes. The department provides technical support and staff assistance to the Regional Transportation Council (RTC) and its technical committees, which compose the MPO policy-making structure. The department also provides technical aid to local governments and transportation providers in planning, coordinating, and implementing transportation decisions.

### Texas Department of Transportation (Roadway Implementation)

The Texas Legislature originally established TxDOT in 1917 as the Texas Highway Department. TxDOT's workforce of more than 12,000 employees is made up of engineers, administrators, designers, architects, sign makers, accountants, purchasers, maintenance workers, travel counselors, and many other professionals. Headquartered in Austin, TxDOT is made up of 25 district offices, 21 divisions, and six regional offices. This project is located in the TxDOT Dallas District which plans, designs, builds, operates, and maintains the state transportation system in the following counties: Collin, Dallas, Denton, Ellis, Kaufman, Navarro, and Rockwall.

## 3.0 Grant Funds and Sources/Uses of Project Funds

**Exhibit 9** details the project funding sources, and **Exhibit 10** details the estimated project costs to be funded through this FASTLANE Grant. All costs are in 2016 dollars. The amount of this FY 2016 FASTLANE Grant request is \$126 million, designated for use in the project's construction phase.

**Exhibit 9: IH 35E/IH 35W Merge Interchange Funding Sources**

Funding Source	Type	Funding Amount	Percent
State	TxDOT PE Funding	3,232,800	(1.5%)
State	TxDOT ROW Funding	3,232,800	(1.5%)
State	TxDOT State Matching Funds to CMAQ and STP-MM	4,072,200	(2%)
State	TxDOT State Match to FASTLANE Grant	\$31,500,000	(15%)
<b>Total of Non-Federal Funding Sources</b>		<b>\$42,037,800</b>	<b>(20%)</b>
Federal (MPO-Selected)	Leveraged STP-MM (Federal)	\$15,888,800	(7.6%)
Federal (MPO-Selected)	Leveraged CMAQ (Federal)	\$400,000	(0.2%)
Federal	TxDOT PE Funding	\$12,931,200	(6.1%)
Federal	TxDOT ROW Funding	\$12,931,200	(6.1%)
Federal	NSFHP FASTLANE Grant	\$126,000,000	(60%)
<b>Total of Federal Funding Sources</b>		<b>\$168,151,200</b>	<b>(80%)</b>
<b>TOTAL PROJECT FUNDING</b>		<b>\$210,189,000</b>	<b>(100%)</b>

**Exhibit 10: IH 35E/IH 35W Merge Interchange Cost Estimate**

Cost Category	Total Cost	Funding Source	
		Federal (Percent)	Non-Federal (Percent)
Design	16,164,000	\$12,931,200 (80%)	\$3,232,800(20%)
Right-of-Way Acquisition	8,082,000	\$6,465,600 (80%)	\$1,616,400 (20%)
Utility Relocation	\$8,082,000	\$6,465,600 (80%)	\$1,616,400 (20%)
Construction	\$145,661,000	\$116,528,800 (80%)	\$29,012,200 (20%)
Miscellaneous	\$5,200,000	\$4,160,000 (80%)	\$1,040,000 (20%)
Contingency	\$27,000,000	\$21,600,000 (80%)	\$5,400,000 (20%)
<b>TOTAL PROJECT COST</b>	<b>\$210,189,000</b>	<b>\$168,151,200 (80%)</b>	<b>\$42,037,800 (20%)</b>

NCTCOG currently manages federal, as well as state-administered, grants that are in various stages of development, implementation, and closeout. In FY 2014, NCTCOG facilitated expenditures of \$22.5 million from various federal grants including awards from the Department of Energy, Environmental Protection Agency, Federal Transit Administration, Federal Aviation Administration, Department of Housing and Urban Development, Department of Labor, and the Department of Defense. Also in FY 2014, NCTCOG facilitated expenditures of \$99.6 million from various state-administered grants including awards from the Texas Commission on Environmental Quality, Texas Department of Health, Texas State Energy Conservation Office, and TxDOT. The NCTCOG Transportation Department employs 21 fiscal and grant professionals who provide financial, legal, and compliance support for projects funded from these grants.

No adverse audit findings from standards used by states, local governments, and non-profit organizations expending federal awards (Circular A-133) have been determined at this time. NCTCOG has not been required to comply with special “high risk” terms and conditions under agency regulations in the implementation of consistency and uniformity in the management of grants and cooperative agreements with state, local, and federally-recognized Indian tribal governments (OMB Circular A-102).

The RTC recently approved and adopted the new MTP, *Mobility 2040: The Metropolitan Transportation Plan for North Central Texas*, which represents a \$118.9 billion blueprint for the continued maintenance and development of the regional transportation system over 20-plus years. The MTP complies with all federal requirements regarding identifying and defining a financially-constrained long-range transportation plan. Funds available for implementing projects and programs are estimated using financial forecasting models. These models track and project revenue based on historical trends and anticipated future growth. State legislative action in the 2013 and 2015 sessions allowed for the additional transportation revenue approved by voters as Proposition 1 and Proposition 7. The Texas Department of Transportation developed the estimate for the funding available to the region from these propositions. The MTP financial forecasts used the following sources:

- Federal and state motor fuels taxes
- State vehicle registration revenues
- Other federal and state taxes
- Revenue from the region’s toll and managed lane system
- Local funds
- Sales tax collected by transit authorities
- Proposition 1 funds
- Proposition 7 funds

Should funds be needed for the proposed project as a result of potential cost overruns or shortage of federal or state funds, Regional Toll Revenue (RTR) funds can be utilized with RTC approval. The RTR funds comprise a unique funding source created in 2007, after the North Texas Tollway Authority (NTTA) agreed to build the 28-mile-long SH 121 extension, or Sam Rayburn Tollway, through Collin, Dallas and Denton Counties. The NTTA agreement provided more than just the expedited construction of a major roadway. It also enabled delivery of a \$3.2 billion upfront payment in exchange for operating, maintaining, and upgrading the Sam Rayburn Tollway as appropriate for a minimum of 52 years, and the available revenue could be applied to projects of varying types throughout the North Central Texas region. Since inception, additional payments and toll revenues from the 10-mile-long Eastern Extension of the President George Bush Turnpike (PGBT) which opened in 2011, and the 12-mile-long PGBT Western Extension (also known as SH 161) completed in 2012, have increased the total RTR funds over time. These funds have helped leverage additional resources from multiple public and private transportation partners for a comprehensive list of projects and programs all across the region, collectively with total benefits and values that greatly exceed the overall funds received.

**4.0 Results of the Benefit –Cost Analysis**

The various benefits described in previous sections were monetized in the BCA Appendix. The project benefits documented in the BCA are shown in **Exhibit 11**. The net present value of the IH 35E/IH 35W Interchange Merge project is shown in **Exhibit 12**. Applied to a total project cost of \$210 million, a substantial net benefit is achieved for both discounting scenarios. Based on a 20-year project life, the overall effect of this transportation investment will result in a positive lifetime net benefit of \$722.5 million at three percent and \$413.7 million at seven percent, after netting out the cost of the project and direct costs to managed lane system users. The calculations used to determine these totals are discussed in more detail in the BCA Appendix (Appendix B).

**Exhibit 11: Total Project Benefits**

Benefit Category	Benefits	Benefits
	7% Discount Rate	3% Discount Rate
Time Savings	\$365,226,478	\$520,526,861
Crash Reduction	\$265,325,488	\$423,167,969
Air Quality Emission Savings	\$57,920	\$98,544

**Exhibit 12: Net Project Benefits**

Discount Rate	Net Present Value of Total Benefits	Rounded Net Present Value of Total Benefits	Return on Investment
7 Percent	\$413,711,985	\$414.0 Million	<b>197 percent</b>
3 Percent	\$722,535,490	\$722.0 million	<b>343 percent</b>

The overall net effect of this transportation investment will result in a positive lifetime return on investment of **197 percent (\$414 million/\$210 million)** and **343 percent (\$722 million/\$210 million)**, after discounting at three percent and seven percent, respectively. The results of this BCA clearly indicate that this project will provide a lifetime of regional benefits and substantially improve quality of life for its residents.

There will be direct freight and economic competitiveness benefits to those who use the IH 35E/IH 35W Interchange Merge Project including reduced air quality emissions, auto and commercial vehicle travel time savings, and reductions in vehicle crashes. By providing improved direct access to/from each of the primary limited access facilities, as well to/from large employers in the area like UNT, the project benefits all transportation system users through reduced freight shipping costs, new economic development opportunities, increased system reliability, reduced roadway and freight operating costs, and fuel savings.

The travel time savings are realized by access and connection improvements for the merging facilities as well as to/from the UNT campus. Time savings benefits due to reducing the number of intersections between connections ranges from \$206,000 to \$50.7 million. The calculations of regional benefits from reduced congestion and reduced travel times associated with the project are included in the BCA. The net present value of the travel time savings to transportation system users is \$365 million assuming a discount rate of seven percent and \$520 million assuming a discount rate of three percent. Similar to travel time benefits, air quality emissions are reduced as a result of bypassing multiple intersections. The emission reduction ranges from \$4,800 to \$11,000. The net present value of emission reductions is \$52,200 assuming a discount rate of seven percent and \$89,000 assuming a discount rate of three percent.

As with all infrastructure improvements, this project would create construction jobs in the short term. Incorporation of the proposed IH 35E/IH 35W Merge Interchange Project will generate an additional increment of new jobs as well. Based on the Council of Economic Advisers' September 2011 determination that a job-year is created by every \$76,900 in transportation infrastructure spending, this \$106 million dollar project would generate

approximately 1,389.6 job-years. This number is inclusive of onsite jobs and additional employment in other industries due to the multiplier effect. Benefits from short-term job creation were not included in the BCA because some or all of these benefits would have to be considered transfer benefits.

Improvements to the radius of interchange movements and the widening of lanes will have a significant impact on the reduction of both auto and commercial motor vehicle crashes. The annual crash frequency for this project was calculated based on a three-mile buffer from the center of the project and a one hundred foot buffer from IH 35E and IH 35W. The net present value of crash reduction benefits is \$265 million assuming a discount rate of seven percent and \$423 million assuming a discount rate of three percent.

## 5.0 Project Readiness

### 5.1 Project Schedule

The IH 35E/IH 35W Merge Interchange Project is set for an expedited delivery that will be in a position to move ahead well before the FASTLANE requirement of September 30, 2019 for obligation of funding and construction commencement within 18 months thereof. The project schedule illustrated in **Exhibit 13** indicates obligation of funding and construction letting in mid-2017, with completion of the project anticipated in mid-2019.

**Exhibit 13 – IH 35E/IH 35W Merge Interchange Project Schedule**

IH 35E / IH 35W Merge Interchange	Comments	2016				2017				2018				2019			
		Q1	Q2	Q3	Q4												
<b>Activities</b>																	
<b>Contracting</b>	Change Order Amendment /NTP			■	■												
<b>Design</b>					■	■	■	■	■								
<b>Right of Way Acquisition</b>					■	■	■	■	■								
<b>Utility Relocation</b>								■	■	■	■	■	■				
<b>Construction</b>								■	■	■	■	■	■				
<b>Substantial Completion</b>	Early 2019													■			
<b>Final Acceptance</b>	Mid 2019														■		

## *5.2 Procurement Mechanism*

The IH 35E/IH 35W Merge Interchange Project will be added to the scope of the existing design-build 35Express Project currently under construction between IH 635 in the city of Dallas to US 380 in the city of Denton. The addition of the IH 35E/IH 35W Merge Interchange Project to the existing 35Express Project is the most efficient means of advancing construction, because TxDOT can elect to request pricing for additional scope from the current design-build developer. This allows for the best schedule for construction with the ability to early release some packages for construction. Some benefits to using the existing developer are:

- Key design staff, contractor staff, and TxDOT staff are already familiar with each other and the current process for changes and additions to the contract.
- Existing contract change would allow rapid mobilization for scoping and design initiation.
- Early packages would allow for rapid start of construction while design is completed.
- As labor resources in the area are consumed by competing projects, using design-build method sets the price earlier and developer assumes risk of obtaining crews and material.
- The current project has ongoing stakeholder coordination that could be leveraged to assist with concurrence.

The process for adding the IH 35E/IH 35W Merge Interchange Project to the existing 35Express Project would be for TxDOT to issue a Request for Change Proposal for the current developer (AGL Constructors) to develop a preliminary design and a cost estimate. If TxDOT accepts the price, TxDOT would issue a Directive Letter immediately for the developer to begin the proposed work. This process has been used previously on the 35Express Project for a number of changes, and it is well-defined and understood by both parties. Federal Highway Administration (FHWA) review and concurrence with the proposed changes is then obtained.

## *5.3 NEPA Status*

The IH 35E/IH 35W Merge Interchange was environmentally cleared through a Finding of No Significant Impact (FONSI) as part of the IH 35E North Segment Environmental Assessment (EA) in January 2012. If needed, a Re-Evaluation Consultation Checklist (RCC) would document advancing additional roadway capacity and show that the appropriate changes were made to the STIP/TIP. This RCC would require TxDOT District and Environmental Section review. If local approval is acceptable (under NEPA delegation), then FHWA review of the RCC would not be necessary. If local approval is not applicable, then FHWA review would be necessary.

## *5.4 State and Local Approvals*

Permits involving waters of the United States would be relatively minor in nature for culvert crossings. No major Section 404 (of the Clean Water Act) issues have been identified. A revision to the STIP/TIP would be necessary. This would be coordinated between NCTCOG and TxDOT

with an anticipated revision timeframe of November 2016 (assuming grant award in September 2016). Four of 23 needed ROW parcels have been acquired with one in negotiation.

#### *5.5 Project Risks and Mitigation Strategies*

- a. Potential procurement delays – If this project were to proceed in a conventional manner, TxDOT would likely need to perform many preconstruction activities (design, ROW, utilities, etc.) utilizing existing contracts to eliminate time to procure those professional services. Amending the existing contract with the current developer would mitigate these risks. The existing contract should have available capacity for this work, provided that TxDOT Contract Services agrees with proposed usage of the contract capacity.
  
- b. Environmental uncertainties – The project has already received federal environmental approval. Additional environmental investigations/are not anticipated. The project may require an RCC to document advancing additional roadway capacity and show that the appropriate changes were made to the STIP/TIP. The time necessary to approve an RCC is considered a low risk element.

#### **6.0 Federal Wage Rate Certification**

NCTCOG supports entities that comply with federal labor laws. Any procurement activities sponsored by these entities require compliance with all federal, state, and local laws. In addition, to qualify for incentives, businesses must abide by all federal, state, and local laws.

As indicated above, NCTCOG complies with Title VII of the Civil Rights Act of 1964 and the Americans with Disabilities Act. Both of these laws require all private employers, state and local governments, and education institutions that employ 15 or more individuals, private and public employment agencies, labor organizations, and joint labor management committees controlling apprenticeship and training to comply. As a matter of policy and law, these agencies will follow these laws and principles for this (and all) projects.

As the submitting agency, NCTCOG certifies compliance with federal wage rate requirements as indicated in Appendix C.