



Draft Environmental Assessment

Southeast Connector, Fort Worth District

I-20/I-820/US 287 Interchanges
I-20 from Forest Hill Drive to Park Springs Boulevard
I-820 from I-20 to Brentwood Stair Road
US 287 from Bishop Street to Sublett Road

Main CSJ: 0008-13-125
Associated CSJs: 0008-13- 206, 0172-06-080, 0172-09-028, and 2374-05-066

Tarrant County, Texas

May 2020

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 9, 2019, and executed by FHWA and TxDOT.

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List of Abbreviations and Acronyms

AADT	Annual Average Daily Traffic
ACT	Antiquities Code of Texas
ACHP	Advisory Council on Historic Preservation
ADA	American Disabilities Act
APE	Area of Potential Effects
AOI	Area of Influence
ATC	Affected Transportation Corridor
BMPs	Best Management Practices
C-D	Collector-Distributor
CFR	Code of Federal Regulations
CGP	Construction General Permit
CMP	Congestion Management Process
COE	Commissioners Enforcement Orders
CO	Carbon Monoxide
CWA	Clean Water Act
CY	Cubic Yards
EA	Environmental Assessment
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
HHS	Health and Human Services
HOV	High Occupancy Vehicle
I-	Interstate Highway
ISA	Initial Site Assessment
LBP	Lead-Based Paint
LEP	Limited English Proficiency
LOS	Level of Service
LPST	Leaking Petroleum Storage Tank
LWCF	Land and Water Conservation Fund
MOU	Memorandum of Understanding
MSAT	Mobile Source Air Toxics
MS4	Municipal Separate Storm Sewer System
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standards
NCTCOG	North Central Texas Council of Governments
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NWP	Nationwide Permit
PA	Programmatic Agreement
PCN	Preconstruction Notification
PM	Particulate Matter
PS&E	Plans, Specifications, and Estimates
PST	Petroleum Storage Tank
ROW	Right of Way
SAL	State Antiquities Landmark
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Officer

List of Abbreviations and Acronyms

SOV	Single Occupancy Vehicle
SW3P	Storm Water Pollution Prevention Plan
TCEQ	Texas Commission on Environmental Quality
TERP	Texas Emissions Reduction Plan
THC	Texas Historical Commission
TIP	Transportation Improvement Program
TMDL	Total Maximum Daily Loads
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TSS	Total Suspended Solids
TWG	Technical Work Group
TxDOT	Texas Department of Transportation
UPRR	Union Pacific Railroad
US	United States Highway
USACE	United States Army Corps of Engineers
UST	Underground Storage Tank
VCNA	Village Creek Neighborhood Association
VPD	Vehicles Per Day

1. Introduction

The Texas Department of Transportation (TxDOT) is proposing to reconstruct and add capacity to Interstate Highway (I) 20, I-820 and United States Highway (US) 287 including three major interchanges in southeast Tarrant County within the cities of Arlington, Forest Hill, Fort Worth, and Kennedale. The major interchanges are the I-820/US 287 Interchange, the I-20/I-820 Interchange, and the I-20/US 287 Interchange. This project spans approximately 16 miles and would add main lanes and frontage roads to I-20 from Forest Hill Drive to Park Springs Boulevard, I-820 from I-20 to Brentwood Stair Road, and US 287 from Bishop Street to Sublett Road. New frontage roads would be constructed at various locations, and bicycle and pedestrian accommodations would be provided throughout. The project is collectively referred to as the “Southeast Connector.” See **Appendix A** for the Project Location Map.

This Environmental Assessment (EA) evaluates the social, economic, and environmental impacts of the proposed project and determines whether such impacts warrant preparation of an Environmental Impact Statement. The planning process for this project follows the TxDOT and the Federal Highway Administration (FHWA) environmental policies and procedures in compliance with the National Environmental Policy Act. The EA will be made available for public review during a public comment period; subsequently, TxDOT will consider any comments submitted. Once the comment period is over, TxDOT is planning to prepare a final EA. If TxDOT determines there are no significant adverse effects, it will prepare and sign a Finding of No Significant Impact (FONSI), which will be made available to the public.

2. Project Description

2.1 Existing Facility

2.1.1 I-20

The existing I-20 roadway from Forest Hill Drive to Park Springs Boulevard is composed of four to five 12-foot wide main travel lanes in each direction separated by a concrete safety barrier or metal beam guard fence, located along the I-20 centerline, with 10-foot inside and outside adjacent shoulders. At limited locations along I-20, a grass median is located on either side of the barrier, between the barrier and the shoulder. In addition, 12-foot wide auxiliary lanes exist between the entrance and exit ramps at various I-20 locations. Two major interchanges exist within the roadway network: the I-20/I-820 Interchange and the I-20/US 287 Interchange. Dependent on the location within each interchange, single lane, highway-to-highway direct connections are elevated and 15 feet wide with 6-foot inside shoulders and six to 10-foot wide outside shoulders or two 12-foot lanes with 6-foot wide inside shoulders and 10-foot wide outside shoulders.

Two to three-lane discontinuous I-20 frontage roads exist in each direction and are each composed of 12-foot wide lanes. The eastbound I-20 frontage road is discontinuous between Forest Hill Drive and Business 287, between Bowman Springs and Little Road through the I-20/US 287 Interchange, and between Green Oaks Boulevard and Kelly Elliott Road. The westbound I-20 frontage road is discontinuous between Anglin Drive and Business 287, through the I-20/I-820 Interchange, and between Green Oaks Boulevard and Kelly Elliott Road. Sections of the I-20 frontage roads are composed of curb and gutter with in-ground drainage systems. However, non-curb sections of frontage roads exist and are composed of variable-width inside and outside shoulders that convey drainage to

open ditches. No continuous sidewalks are located adjacent to the frontage roads. Bike lanes also do not exist within the I-20 corridor. The pedestrian facilities (sidewalks and crosswalks) that do exist are limited and discontinuous and confined to only major, high volume traffic frontage road/cross street intersections.

2.1.2 I-820

The existing I-820 roadway from I-20 northward to the I-820/US 287 Interchange is a four-lane roadway in each direction separated by a concrete safety barrier or metal beam guard fence, located along the I-820 centerline, and composed of 12-foot wide main travel lanes and 10-foot wide inside and outside shoulders. Two 12-foot wide continuous I-820 frontage road lanes exist in each direction from I-20 to the I-820/US 287 Interchange. The frontage roads are composed of curb and gutter lanes with enclosed in-ground drainage systems. However, non-curb sections of the frontage roads also exist at limited locations and are composed of variable-width inside and outside shoulders that convey drainage to open ditches.

Two major interchanges exist within the I-820 roadway network: the I-20/I-820 Interchange and the I-820/US 287 Interchange. Direct connections within the interchanges typically contain one 14-foot lane or two 12-foot lanes, dependent on location, with 4 to 6-foot wide inside shoulders and 6 to 10-foot wide outside shoulders.

Generally, I-820 from the I-820/US 287 Interchange northward to Craig Street is a two-lane roadway in each direction composed of 12-foot wide main travel lanes separated by a 40 to 44-foot wide grass median with a cable barrier (wire rope) system located adjacent to southbound lanes. The I-820 shoulders within this corridor are composed of four to 6-foot wide inside shoulders and four to 10-foot outside shoulders. I-820 from Craig Street northward to Brentwood Stair Road transitions to a three-lane roadway in each direction separated by a 28-foot concrete median separated by a concrete safety barrier or metal beam guard fence locate along the I-820 centerline. The majority of the I-820 ramps are 14 feet wide with inside curbs and 8-foot wide outside shoulders. Each ramp within the East Lancaster Road interchange, one direct connecting ramp, and three cloverleaf ramps, is composed of 18-foot wide travel lanes with traversable inside concrete curbs and traversable outside concrete curbs with an adjacent 8-foot wide paved area for drainage and off-tracking. In addition, 12-foot wide auxiliary lanes exist at various I-820 locations between the entrance and exit ramps.

The frontage roads between the I-820/US 287 interchange northward to Brentwood Stair Road are discontinuous. Typically, these frontage road locations are curbed and composed of two 12-foot lanes in each direction with two-foot-wide inside shoulder and 6-foot wide outside shoulders. The frontage roads are discontinuous between Rosedale Street and Craig Street where a one to two-lane collector distributor road system also exists in each direction. The collector-distributor (C-D) is 14 feet wide (one lane) or 26 feet wide (two lanes) with an inside curb and a traversable outside curb with an adjacent eight-foot-wide paved area for drainage and off-tracking. No southbound frontage road exists between Carey Street (at US 287) and Wilbarger Street (at I-820). The frontage roads are composed of curb and gutter lanes with enclosed in-ground drainage systems. However, non-curb sections of the frontage roads also exist at limited locations and are composed of variable-width inside and outside shoulders that convey drainage to open ditches.

A limited expanse of continuous sidewalks exists adjacent to the I-820 southbound frontage road north of Meadowbrook Drive. Bike lanes do not exist within the I-820 corridor, However, a pedestrian/cyclist

bridge located north of Craig Street overpasses the I-820 main travel lanes. The pedestrian facilities (sidewalks and marked crosswalks) that do exist are limited and discontinuous and confined to only the major, high volume traffic frontage road/cross street intersections.

The existing facility information described above is summarized in **Table 2-1**. Refer to **Appendix B** for the project photos and **Appendix D** for the existing typical sections.

2.1.3 US 287

The existing US 287 roadway from Bishop Street southward to the I-820/US 287 Interchange is a three-lane roadway in each direction separated by a concrete safety barrier or metal beam guard fence and composed of 12-foot wide main travel lanes and 10-foot wide inside and outside shoulders. The ramps are composed of 14-foot wide single lanes with inside concrete curbs and 6-foot wide outside shoulders.

The frontage roads are predominately continuous but convert to being discontinuous at the Miller Avenue/Wilbarger Street interchange and between Wilbarger Street (at I-820) and Carey Street (at US 287). The frontage roads are curbed and typically composed of two 12-foot wide lanes in each direction with two-foot-wide inside shoulders and 6-foot wide outside shoulders.

The existing US 287 roadway from the I-20/US 287 Interchange southward to Sublett Road is a two-lane roadway in each direction, composed of 12-foot wide main travel lanes with a 6-foot wide inside shoulder and a 10-foot wide outside shoulders. The northbound and southbound main travel lanes are separated by an approximately 60-foot wide grass median which contains a concrete safety barrier located directly adjacent to the southbound US 287 main travel lane shoulder. The ramps are composed of 15-foot wide single lanes with inside concrete curbs and 6-foot wide outside shoulders.

Two-lane US 287 frontage roads exist in each direction from I-20 southward to Sublett Road. The northbound US 287 frontage road is discontinuous at Little Road. The frontage roads are composed of two 12-foot wide lanes with a 2-foot wide inside shoulder and a 6-foot wide outside shoulder. Sections of the frontage roads are composed of curb and gutter lanes with enclosed in-ground drainage systems. However, non-curb sections of the frontage roads also exist at limited locations and are composed of variable-width inside and outside shoulders that convey drainage to open ditches. No continuous sidewalks are located adjacent to the frontage roads. Bike lanes also do not exist within the US 287 corridor. The pedestrian facilities (sidewalks and crosswalks) that do exist are limited and discontinuous and confined to only major, high volume traffic frontage road/cross street intersections.

2.2 Proposed Facility

2.2.1 I-20

Along I-20, from Forest Hill Drive eastward to the I-20/I-820 Interchange, the existing I-20 main travel lanes would be reconstructed and widened to six 12-foot wide main travel lanes in each direction with adjacent 10-foot wide inside and 12-foot wide outside shoulders, 12-foot wide auxiliary lanes would be added between the entrance and exit ramps to allow for efficient vehicular weaving. The I-20 frontage roads would be reconstructed and widened to two to four 12-foot wide lanes in each direction. A 10-foot wide bidirectional shared-use path (for bicyclists and pedestrians) on one side/direction and a 6-foot sidewalk on the other side/direction would also be constructed. The frontage roads would be a curb and gutter in-ground drainage design composed of 2-foot wide curb offsets (separation between the face of curb and edge of frontage road travel lane). New location frontage roads would be

constructed over the Union Pacific Railroad (UPRR), and a new eastbound frontage road would be constructed from Forest Hill Drive eastward to Anglin Drive. All of the frontage roads would be continuous from Forest Hill Drive eastward to the I-20/I-820 interchange.

Along I-20, from I-820 eastward to US 287, the existing I-20 main travel lanes and the I-20/I-820 and I-20/US 287 interchanges would be reconstructed to provide five 12-foot wide I-20 main travel lanes in each direction with an adjacent four-lane C-D road system installed in each direction as a means to separate vehicular movements and reduce main lane vehicular weaving. The existing I-20 frontage roads with in-ground drainage would be reconstructed and widened to two to four 12-foot wide continuous lanes in each direction. A 10-foot wide bidirectional shared-use path (for bicyclists and pedestrians) on one side/direction and a 6-foot sidewalk on the other side/direction would also be constructed.

Along I-20, from the I-20/US 287 interchange eastward to Park Springs Boulevard, the existing I-20 main travel lanes would be reconstructed and widened to five 12-foot lanes in each direction with auxiliary lanes added between the entrance and exit ramps. The existing I-20 frontage roads would be reconstructed and widened to two to four 12-foot lanes in each direction. A 10-foot wide bidirectional shared-use path (for bicyclists and pedestrians) on one side/direction and a 6-foot sidewalk on the other side/direction would also be constructed. New location frontage roads would be constructed between Green Oaks Boulevard to Kelly Elliott Road. The frontage roads would be a curb and gutter design with in-ground drainage and composed of 2-foot wide curb offsets (separation between the face of curb and edge of frontage road travel lane).

The reconstructed cross street interchanges would include sidewalks and each intersection would include wheelchair-accessible ramps and marked crosswalks. Some cross streets would have buffer separated bicycle lanes, while other cross streets would have shared-use paths (for bicycles and pedestrians). The Bowman Springs Road bridge which overpasses I-20 would include a 10-foot wide shared use path in each direction. The sidewalks widths approaching Bowman Springs Road would be six feet wide.

2.2.2 I-820

Along I-820, from I-20 northward to US 287, the existing I-820 main travel lanes would be reconstructed and widened to seven 12-foot lanes in each direction. This reconstruction would allow merging and diverging US 287 vehicles to enter and exit, respectively, I-820 on the right-hand side of the I-820 corridor in both directions to eliminate the major main lane weaving that currently exists with the left-hand ramp access system. The existing frontage roads would be reconstructed and widened with in-ground drainage to two to four 12-foot wide continuous lanes in each direction. A 10-foot wide bidirectional shared-use path (for bicyclists and pedestrians) on one side/direction and a 6-foot sidewalk on the other side/direction would also be constructed.

Along I-820, from US 287 northward to Meadowbrook Drive, the existing I-820 main travel lanes would be reconstructed to four 12-foot lanes in each direction with 12-foot wide auxiliary lanes between the entrance and exit ramps. The frontage roads would be reconstructed and widened with in-ground drainage to two to three 12-foot wide continuous lanes in each direction. A 10-foot wide bidirectional shared-use path (for bicyclists and pedestrians) on one side/direction and 6-foot-sidewalk on the other side/direction would also be constructed. The frontage roads would be a curb and gutter design with in-ground drainage and composed of two-foot-wide curb offsets (separation between the face of curb and edge of frontage road travel lane). New location frontage roads would be constructed from

Rosedale Street northward to Craig Street, and from Carey Street (at US 287) northward to Wilbarger Street (at I-820).

The reconstructed cross street interchanges would include sidewalks and each intersection would include wheelchair-accessible ramps and marked crosswalks. Some cross streets would have buffer separated bicycle lanes, while other cross streets would have shared-use paths (for bicycles and pedestrians). The Craig Street bridge which overpasses I-820 would include 10-foot-wide shared-use paths to accommodate bike and foot traffic. The sidewalks widths approaching the Craig Street bridge would be 6 to 11-feet wide. Also, a 10-foot-wide bidirectional shared-use path (for bicyclists and pedestrians) on one side/direction and a 6-foot sidewalk on the other side/direction would also be constructed along the jug-handle connections between Craig Street and the frontage roads. The existing pedestrian bridge north of Craig Street would be removed and not replaced.

Along I-820, north of Meadowbrook Drive, operational improvements consisting of ramp modifications to and from Meadowbrook Drive and Brentwood Stair Road would eliminate the current weaving between closely spaced ramps.

2.2.3 US 287

Along US 287 from Bishop Street to I-820, the project would reconstruct US 287 with three 12-foot main travel lanes in each direction with 12-foot wide auxiliary lanes between the entrance and exit ramps. The existing frontage roads would be reconstructed to two to three 12-foot lanes in each direction. A 10-foot wide bidirectional shared-use path (for bicyclists and pedestrians) on one side/direction and a 6-foot sidewalk on the other side/direction would also be constructed. The frontage roads would be a curb and gutter in-ground drainage design composed of two-foot-wide curb offsets (separation between the face of curb and edge of frontage road travel lane).

Along US 287 from I-20 to Sublett Road, the project would widen the existing main lanes to three 12-foot lanes in each direction with auxiliary 12-foot lanes between ramps with the I-20/US 287 Interchange. The frontage roads would be reconstructed to two to three 12-foot wide lanes in each direction. A 10-foot wide bidirectional shared-use path (for bicyclists and pedestrians) on one side/direction and a 6-foot sidewalk on the other side/direction would also be constructed. The frontage roads would be a curb and gutter design composed of two-foot-wide curb offsets (separation between the face of curb and edge of frontage road travel lane).

The reconstructed cross street interchanges would include sidewalks and each intersection would include wheelchair-accessible ramps and marked crosswalks. Some cross streets would have buffer separated bicycle lanes, while other cross streets would have shared-use paths (for bicycles and pedestrians).

The Proposed Facility information described above is summarized in **Table 2-1**. Refer to **Appendix A** for the project location maps, **Appendix C** for the schematic and **Appendix D** for the proposed typical sections.

Table 2-1: Summary of Existing and Proposed Facilities

Existing Facility	Proposed Project
I-20 from Forest Hill Drive to Park Springs Boulevard	
<ul style="list-style-type: none"> ▪ Four to five main lanes in each direction; ▪ Auxiliary lanes between the entrance and exit ramps at various ramp locations; and ▪ Two to three-lane discontinuous frontage roads in each direction. 	<p>I-20 full reconstruction, widening and capacity improvements from Forest Hill Drive to the I-820/I-20 interchange:</p> <ul style="list-style-type: none"> ▪ Six main lanes in each direction, with auxiliary lanes between the entrance and exit ramps; ▪ Two to four-lane frontage roads in each direction; ▪ Two new two-lane frontage roads crossing over the UPRR; and ▪ New two-lane eastbound frontage road from Forest Hill Drive to Anglin Drive. <p>I-20 full reconstruction, widening and capacity improvements between I-820 and US 287:</p> <ul style="list-style-type: none"> ▪ Five main lanes in each direction; ▪ Four C-D roads in each direction; and, ▪ Two to four-lane frontage roads in each direction. <p>I-20 full reconstruction, widening and capacity improvements from the I-20/US 287 interchange to Park Springs Boulevard:</p> <ul style="list-style-type: none"> ▪ Five main lanes in each direction with auxiliary lanes between the entrance and exit ramps; and, ▪ New sections of frontage roads eastbound and westbound between Green Oaks Boulevard and Kelly Elliot Road.
I-820 from I-20 to Brentwood Stair Road	
<ul style="list-style-type: none"> ▪ Two to four main lanes in each direction with auxiliary lanes located between the various entrance and exit ramps; and ▪ Two frontage roads in each direction <ul style="list-style-type: none"> ○ No southbound frontage road exists between Carey Street and Wilbarger Street; and ○ Discontinuous frontage roads between Rosedale Street and Craig Street where two C-D lanes exist in each direction 	<p>Full reconstruction, widening, and capacity improvements:</p> <ul style="list-style-type: none"> ▪ Seven main lanes in each direction between I-20 and US 287; ▪ Four main lanes each direction with auxiliary lanes between the entrance and exit ramps between US 287 and Brentwood Stair Road; new frontage roads northbound and southbound between Rosedale Street and Craig Street, and southbound between Carey Street and Wilbarger Street.

Table 2-1: Summary of Existing and Proposed Facilities

Existing Facility	Proposed Project
US 287 from Bishop Street to Sublett Road	
<ul style="list-style-type: none"> ▪ Three main lanes in each direction between Bishop Street and the I-820/US 287 Interchange; ▪ Two main lanes in each direction between Sublett Road and I-20/US 287 interchange; and ▪ Two discontinuous frontage road lanes in each direction between Bishop Street and I-820 and I-20 and Sublett Road. 	<p>Full reconstruction, widening, and capacity improvements:</p> <ul style="list-style-type: none"> ▪ Reconstruction including three main lanes with auxiliary lanes between the entrance and exit ramps between Bishop Street and I-820; ▪ Two to three frontage road lanes in each direction; and ▪ Widening to three main lanes in each direction between I-20 to Sublett Road with auxiliary lanes between the I-20/US 287 interchange ramps.
Within project limits.	
<ul style="list-style-type: none"> ▪ No bicycle accommodations; and ▪ Discontinuous sidewalks. 	<p>Shared-use lanes and sidewalks along each frontage road and bike lanes at cross-street intersections.</p>

2.3 Logical Termini and Independent Utility

Federal regulations require that federally funded transportation projects have logical termini. 23 Code of Federal Regulations (CFR) 771.111(f)(1). Simply stated, this means that a project must have rational beginning and end points. Those end points may not be created simply to avoid proper analysis of environmental impacts.

I-20 from Forest Hill Drive to Park Springs Boulevard

Forest Hill Drive and Park Springs Boulevard were chosen as the logical termini for I-20 because these are major origin/destination intersections for a substantial portion of traffic (major traffic generation points) along I-20 within the cities of Forest Hill and Arlington, respectively. Forest Hill Drive and Park Springs Boulevard are also major crossroads where continuous frontage roads do not exist along I-20. The conditions exist at these termini where I-20 can be properly transitioned into the unimproved section, thereby achieving lane balance.

I-820 from I-20 to Brentwood Stair Road

I-20 and Brentwood Stair Road were chosen as the logical termini for I-820 because these are major origin/destination interchange/intersections for a substantial portion of traffic along I-820 in Fort Worth. These termini are major crossroads where conditions can be properly transitioned into the unimproved section and at locations where the proposed roadway improvements can match a previously constructed, previously widened roadway section (usually, the ultimate roadway section).

US 287 from Bishop Street to Sublett Drive

Bishop Street and Sublett Drive were chosen as the logical termini for US 287. Bishop Street is a two-lane residential street and is not considered a major traffic generator; however, Bishop Street as

a terminus allows for proper transition between the proposed project and the unimproved section of US 287. Sublett drive is considered a major origin/destination interchange/intersections for a substantial portion of traffic along US 287. These termini allow for proper transition into the unimproved section and at locations where the proposed roadway improvements can match a previously constructed, previously widened roadway section (usually, the ultimate roadway section).

Federal regulations require that a project have independent utility and be a reasonable expenditure even if no other transportation improvements are made in the area. 23 CFR 771.111(f)(2). This means a project must be able to provide benefit by itself, and that the project not compel further expenditures to make the project useful. Stated another way, a project must be able to satisfy its purpose and need with no other projects being built. As proposed, the Southeast Connector project addresses specific transportation needs identified within the project limits. Specifically, the proposed project would provide congestion relief between traffic generation points by adding lanes in each direction, adding bidirectional shared use paths and sidewalks, improving frontage roads and intersections, and improving directional interchanges between highway connections, which satisfies the project's need when compared to existing conditions. The mobility and connectivity benefits of the proposed project are stand-alone. The realization of these benefits is not dependent upon other projects/future actions; thus, the proposed project passes the test of independent utility. Further, because the project would stand alone and is not dependent upon other (future) improvements to properly function, it would not compel the further expenditure of funds. For this reason, it cannot and does not irretrievably commit future federal funds.

Federal law prohibits a project from restricting consideration of alternatives for other reasonably foreseeable transportation improvements. 23 CFR 771.111(f)(3). This means that a project must not dictate or restrict any future roadway alternatives. As proposed, the Southeast Connector project can be accomplished without additional traffic improvements in the proposed project area and would in no way limit consideration of improvements, or alternatives for construction of such improvements, in adjoining sections of I-20, I-820, and US 287. For this reason, the proposed project does not foreclose consideration of alternatives for other reasonably foreseeable transportation improvements.

2.4 Planning Consistency

The total estimated cost of the proposed project is \$2 billion and would be financed with a combination of federal and state funds. The proposed project is included in the North Central Texas Council of Government's (NCTCOG) fiscally-constrained 2045 Metropolitan Transportation Plan (MTP); however, the proposed project is not consistent with the 2019–2022 Transportation Improvement Program (TIP), as amended. Steps are currently being taken to revise the TIP. TxDOT will not take final action on this environmental document until the proposed project is consistent with both the MTP and TIP. A copy of the applicable pages from the MTP and TIP are included in **Appendix E**.

3. Purpose and Need

3.1 Need

This project is needed because (a) the capacity of I-20, I-820, and US 287 within the project limits is inadequate to meet current and future traffic volumes, resulting in congestion, reduced mobility, and an unacceptable Level of Service (LOS) within these project limits, (b) the connectivity of I-20, I-820, and US 287 with the existing local transportation systems is inefficient resulting in reduced mobility such as short weave/merge distances, insufficient sight distances, and reduced vertical clearance,

and (c) there are currently no continuous pedestrian/bike facilities within or along frontage roads and no connection to municipal bike trails or facilities resulting in lack of connectivity.

3.2 Supporting Facts and/or Data

Congestion

Tarrant County and the cities of Arlington, Fort Worth, and Kennedale have experienced steady growth, development, and expansion. The City of Forest Hill experienced a slight decrease between 2000 to 2010. However, population growth percentage is projected to increase between 2010 and 2040. This overall growth and development have increased motor vehicle numbers utilizing these roadways. Traffic volumes continue to increase as a result of the area population growth and associated development. The recent change in population and projected growth in population for the cities of Arlington, Forest Hill, Fort Worth and Kennedale are presented in **Table 3-1**.

Table 3-1: Population Growth

Municipalities	2000	2010	2040	Growth Percentage (2000 - 2010)	Growth Percentage (2010 - 2040)
Arlington	332,969	365,438	472,065	10%	29%
Forest Hill	12,949	12,355	15,392	-5%	25%
Fort Worth	635,694	741,206	1,236,870	17%	67%
Kennedale	5,850	6,763	10,824	16%	60%

Sources: Census 2000, Census 2010, Texas Water Development Board 2040.

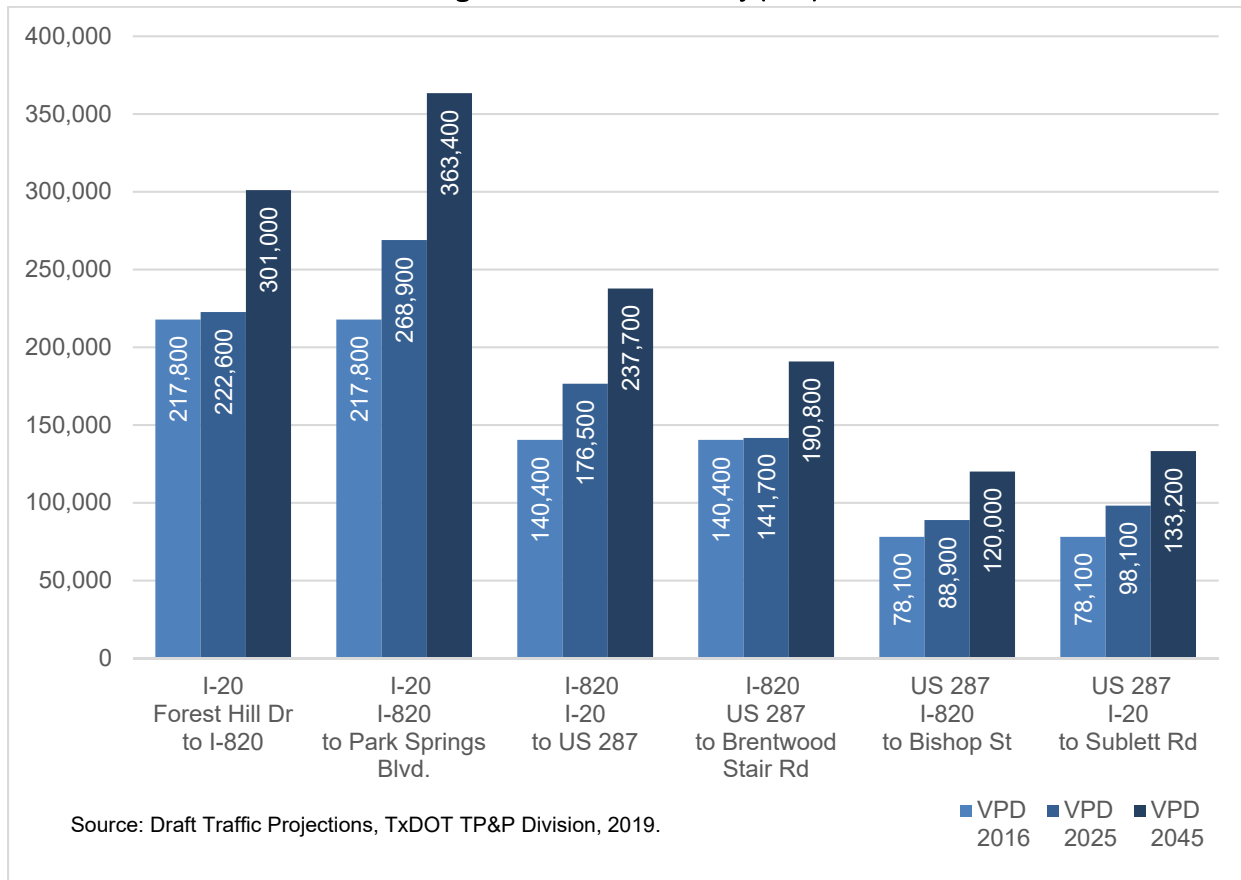
The TxDOT's Congestion 2016 Map¹ and Congestion 2036 Map² identify each portion of I-20, I-820, and US 287 within the project limits as moderately congested and congested, respectively, during peak hours.

As shown in **Figure 3-1**, traffic volumes (travel demand) along I-20, I-820, and US 287 within the project limits are projected to grow substantially.

¹ <http://ftp.dot.state.tx.us/pub/txdot-info/tpp/maps/congestion/2016.pdf>

² <http://ftp.dot.state.tx.us/pub/txdot-info/tpp/maps/congestion/2036.pdf>

Figure 3-1: Vehicles Per Day (VPD)



A LOS is a qualitative measure that classifies the quality of motor vehicle traffic service on a roadway. LOS is used to analyze roadways by categorizing traffic flow and assigning quality levels of traffic based on performance measures like vehicle speed, density, and congestion. LOS can range from A, which indicates vehicles traveling at speed limits with low densities and no congestion, to F, which indicates vehicles traveling at stop-start conditions well below speed limits with very high bumper-to-bumper densities and high congestion. **Table 3-2** presents the range of LOS for various sections of the project.

Table 3-2: Existing and No-Build

Location along I-20, I-820, and US 287	Existing 2018 LOS	No-Build 2045 LOS
I-20: Forest Hill Drive to I-820	B to D	C to F
I-20: I-820 to Park Springs Boulevard	B to F	C to F
I-820: I-20 to US 287	B to D	D to F
I-820: US 287 to Brentwood Stair Road	B to E	B to F
US 287: I-820 to Bishop Street	B to C	B to D
US 287: I-20 to Sublett Road	B to D	C to E

Location along I-20, I-820, and US 287	Existing 2018 LOS	No-Build 2045 LOS
Sources: Draft Traffic Analyses using HCS, Study Team, 2020		

Vehicle Connectivity

- Anglin Drive - This retrofitted interchange is both an operational and safety concern. The existing intersection is: a traffic operations problem (complex offset intersection with substandard turning radii); a safety issue (potential for wrong-way entry on an otherwise one-way frontage road system); and a bottleneck on both Anglin Drive and the westbound frontage road because the traffic-carrying capacity of the existing design is substantially less than a conventional interchange.
- Frontage Roads across UPRR at I-20 - Discontinuous frontage roads at the UPRR create a barrier for local traffic circulation and the adjoining street system. Traffic is forced into neighborhoods, and entrance/exit ramps (e.g., those at Business US 287) must be placed too close to the cross-streets they serve. Additionally, there is no detour route in the corridor when main lane wrecks occur, or lane closures due to maintenance activities. Without continuous frontage roads, there is no operational flexibility or incident management capability.
- Frontage road segments along I-20 - Discontinuous frontage roads exist at eastbound between Forest Hill Drive and Anglin Drive and both east and westbound over Kee Branch (between Green Oaks Boulevard and Kelly Elliot Road). These discontinuities create barriers for local traffic circulation and the adjoining street system. Traffic is forced into neighborhoods, and entrance/exit ramps are placed too close to the cross-streets they serve. Additionally, there are no detour routes in the corridor when main lane wrecks occur or lane closures due to maintenance activities. Without continuous frontage roads, there is no operational flexibility or incident management capability.
- Frontage road segment at I-820 and US 287 interchange - A discontinuous frontage road exists southbound along I-820 between Wilbarger Street and Carey Street at US 287. This discontinuity creates a barrier for local traffic circulation and the adjoining street system. Traffic is forced into neighborhoods. Additionally, there are no detour routes in the corridor when main lane wrecks occur or lane closures due to maintenance activities. Without continuous frontage roads, there is no operational flexibility or incident management capability.
- Ramping - Weaving is a problem on the existing facility due to the substandard separation distances between successive ramps on the main lanes. Many of the ramps have only 400 to 900-foot-wide separation distance between gores; the TxDOT Roadway Design Manual currently requires a minimum of 1,500 feet separation distance (with auxiliary lane) to prevent operational issues due to weaving. This ramp separation problem occurs throughout the I-820 corridor and is a major contributing factor to traffic congestion and poor connectivity at this location.

Pedestrian/Bike Facilities

The majority (approximately 80 percent) of the project limits do not currently have sidewalks along frontage roads. Limited continuous sidewalks exist adjacent to the I-820 southbound frontage road north of Meadowbrook Drive. Bike lanes also do not exist within project corridors. The pedestrian

facilities (sidewalks and crosswalks) that do exist are limited and discontinuous and confined to only major, high volume traffic frontage road/cross street intersections. A pedestrian/cyclist bridge constructed in 1960, is located north of Craig Street and overpasses the I-820 main lanes. The following are some of the pedestrian/cyclist bridge deficiencies:

- Insufficient deck width: the clear deck width is only 8 feet (10 feet is desirable) making two-way operation (especially with bicycles) difficult.
- Accessing the bridge is a safety concern: the bridge does not span the existing frontage roads on either side of I-820 and does not have crosswalks at those locations (making it unsafe for pedestrians, especially children, to access the bridge from off the ROW)
- ADA non-compliance: the bridge is not ADA compliant because it does not have required landings at 2.5-foot elevation rise intervals, and does not have curb ramps.
- Insufficient vertical clearance: the bridge does not meet required Freight Network vertical clearance requirements (existing clearance is 17 feet and 4 inches).

3.3 Purpose

The purpose of the proposed project is to (a) reduce traffic congestion and improve mobility on the I-20, I-820, and US 287 roadways within the project limits, (b) improve mobility and connectivity of I 20, I-820, and US 287 with the existing local transportation systems, and (c) provide continuous pedestrian/bike facilities within or along frontage roads and connection to planned municipal bike trails or facilities.

4. Alternatives

4.1 Build Alternative

The proposed facility described in **Section 2.2** is the Build Alternative subject to public review and comment. The Build Alternative would meet the project's purpose and need by the following:

Congestion

The Build Alternative would help alleviate congestion by adding main lanes and frontage roads, connecting frontage roads where currently disconnected, and increasing the distances between ramps to minimize weaving. Compared to the No-Build Alternative, the Build Alternative in 2045 would result in better LOS throughout all project corridors (see **Table 4-1**).

Table 4-1: No-Build and Build Levels of Service

Location along I-20, I-820, and US 287	No-Build 2045 LOS	Build 2045 LOS
I-20: Forest Hill Drive to I-820	D to F	C to F
I-20: I-820 to Park Spring Boulevard	B to F	C to F
I-820: I-20 to US 287	C to F	B to C
I-820: US 287 to Brentwood Stair Road	C to F	B to F
US 287: I-820 to Bishop Street	B to D	A to C

Location along I-20, I-820, and US 287	No-Build 2045 LOS	Build 2045 LOS
US 287: I-20 to Sublett Road	C to E	A to D
Sources: Draft Traffic Analyses using HCS, Study Team, 2020		

Vehicle Connectivity

Anglin Drive intersection would be rebuilt to remove the offset intersection.

Frontage roads along the UPRR at I-20 would allow for continuous travel patterns, removing the necessity for detours at the railroad and allowing operational flexibility and incident management capability.

A proposed eastbound frontage road would connect Forest Hill Drive to Hartman Road and Hartman Road to Anglin Drive where none exist today. In addition, proposed eastbound and westbound frontage roads over Kee Branch would connect Green Oaks Boulevard and Kelly Elliot Road where no frontage roads exist today.

A proposed southbound frontage road along I-820 would connect Wilbarger Street with Carey Street at US 287 where no frontage road exists today.

The proposed project would have variable lengths between ramps that meet the design standards and would have sufficient separation distances.

Pedestrian/Bike Facilities

The proposed project would provide continuous sidewalks or shared use paths along the frontage roads and at cross streets. It would also provide continuous bike lane facilities that do not exist within the project corridor. The addition of pedestrian/bicycle accommodations in the form of shared-use paths, sidewalks, or bicycle lanes along all frontage roads and at cross streets would improve accessibility throughout the corridors.

4.2 No-Build Alternative

Under the No-Build Alternative, the proposed facility described in **Section 2.2** would not be constructed. The No-Build Alternative would not increase the capacity of I-20, I-820, and US 287. Frontage roads would continue to be without continuous pedestrian/bike facilities nor allow a connection to municipal bike trails or facilities. Consequently, mobility benefits would not be realized and each of the I-20, I 820, and US 287 facilities would not be upgraded to current design standards. For this reason, the No-Build Alternative would not meet the need and purpose of the proposed project. However, the No-Build Alternative was carried forward for further analysis and comparison purposes and presented to the public as one of the project options.

4.3 Preliminary Alternatives Considered but Eliminated from Further Considerations

Reversible Managed Lanes

This alternative would add two reversible managed lanes [single occupancy vehicle (SOV) and high occupancy vehicle (HOV) reduced toll lanes] along I-820 and I-20. This alternative was eliminated

because the reversible option is undesirable where there is not a substantial difference in the directional distribution of traffic. Also, reversible lanes are more complex to operate and maintain than bi-directional or concurrent flow lanes. According to traffic modeling and analyses, the addition of two reversible managed lanes would not improve mobility or traffic operations as well as the Build Alternative. Additionally, this alternative would not include the rebuilding of frontage roads or the addition of bike/pedestrian facilities; therefore, local vehicle connectivity and bike/pedestrian connectivity would not improve as much as under the Build Alternative.

Bi-directional Express Lanes

This alternative would add one to two concurrent express (non-tolled) lanes per direction. Specifically, this alternative would add one express lane per direction along US 287 south of I-20 and along I-20 east of US 287, and add two express lanes per direction along I-20 between I-820 and US 287 and along I-820 between I-20 and US 287. The concurrent express lanes would link US 287 north of I-820. This alternative would also add two general purpose lanes per direction along I-820 north of US 287. This alternative was eliminated because according to traffic modeling and analyses, it would not improve mobility and traffic operations as well as the Build Alternative.

Bi-directional Managed Lanes

This alternative would add one to two concurrent managed lanes (SOV tolled and HOV reduced toll) per direction. This alternative was eliminated because according to traffic modeling and analyses, it would not improve mobility or traffic operations. Additionally, this alternative would not include the rebuilding of frontage roads or the addition of bike/pedestrian facilities; therefore, local vehicle connectivity and bike/pedestrian connectivity would not improve as much as under the Build Alternative.

Adding Four Managed Lanes to I-30

This alternative was eliminated because it would impact the design of the I-820/I-30 interchange, which is not a part of the proposed project (i.e., design of adding managed lanes would have to be done concurrently with the interchange design). Additionally, according to traffic modeling and analyses, it would not improve mobility or traffic operations as well as the Build Alternative.

Adding General Purpose Lanes With No Frontage-Road Rebuild

This alternative would add general purpose lanes for additional capacity just like the Build Alternative, except this alternative would not reconstruct the frontage roads or add bike/pedestrian accommodations. This alternative was eliminated because it would not improve local vehicle or bike/pedestrian connectivity as well as the Build Alternative.

Bi-directional C-D Lanes

This alternative would add concurrent C-D lanes in addition to general purpose lanes along I-820 and I-20 to achieve added capacity. This alternative was eliminated because according to traffic modeling and analyses, it would not improve mobility or traffic operations as well as the Build Alternative and would require additional ROW width and added costs.

Anglin Drive

The Build-Alternative of realigning the northern section of Anglin Drive to the west of its current location would result in the displacement of seven single-family residences (Property Nos. 3 to 9) and one commercial property (Property No. 2). One alternative considered for the Anglin Drive area would be

realigning Anglin Drive to the south of I-20. This alternative would avoid impacts to the seven single-family residences but would result in the displacement of two commercial properties with up to 15 jobs lost. Other businesses would also be impacted through the loss of parking and displacement of a billboard. Another alternative considered for the Anglin Drive area would be maintaining the current two-way frontage road. This alternative would result in one commercial displacement and no residential displacements.

The Anglin North Alternative meets current design standards, provides improved mobility, eliminates sharp turns, eliminates the two-way frontage road, and adds U-turn bridges. In addition, the Anglin North Alternative crosses I-20 approximately where it does today, thus providing the required distance away from the UPRR Bridge and I-820 Interchange to the east so that I-20 vertical gradient can be accommodated; I-20 vertical elevations must increase to provide the required vertical clearance over the UPRR.

TxDOT held a Townhall Meeting in Forest Hill on December 10, 2019, seeking feedback on the Anglin Alternatives. Considering displacements, proximity to the UPRR bridge and public involvement, the Anglin North Alternative as previously presented in past Public Meetings was incorporated into the proposed project design.

I-20 frontage roads across UPRR

The Build-Alternative of constructing a continuous I-20 eastbound (EB) and westbound (WB) frontage road across the Union Pacific Railroad (UPRR) crossing would result in the displacements of two commercial properties (Property Nos. 10 & 14), and three single-family residences (Property Nos. 11, 12, and 13). Currently, the UPRR acts as a barrier between communities on either side of the railroad. The construction of continuous frontage roads over the UPRR would enhance local access by providing grade-separated crossings over the railroad where there currently are none. This would allow for a new mode (pedestrian and bicycle) to safely cross a pre-existing barrier, thereby increasing cohesion and access.

Craig Street

The Build-Alternative for Craig Street would keep Craig Street connected to the I-820 frontage roads. At Craig Street, the horizontal alignment would remain the same as the existing; however, the vertical alignment would be raised to accommodate the wider freeway section on I-820 and its braided ramps. Because Craig Street would no longer intersect the I-820 frontage roads, jughandle ramps would be constructed to restore this access (thereby displacing ten single-family residential properties – Property Nos. 29 to 38). All remaining properties affected by the vertical realignment currently have access to either Craig Street, NB frontage road, SB frontage road, Mel Street, or Louis Street. There would be no inaccessible areas though Mel Street would have a cul-de-sac near Craig Street and Rich Street would no longer connect and have a dead-end to the northbound frontage road. Current Roadway Design Manual requirements will require the removal of some existing ramps on I-820 in order to comply with current horizontal/vertical alignment criteria and minimum ramp spacing requirements (the existing facility was built in the 1960s under different design criteria). However, direct access must be maintained for major, high-volume cross-streets such as Spur 303 (East Rosedale Street), SH 180 Lancaster, and Meadowbrook. The least impactful way to restore this direct access to the cross streets (under current design standards) is with braided ramps (see bypass lane discussion). The braided ramp bridge structures would cause the Craig Street profile to be raised, and jughandle ramps would then be needed to restore access from Craig Street to the frontage roads.

It should be noted that depressing the main lane profile (thereby allowing the frontage roads to intersect Craig Street at grade) is not design feasible due to drainage considerations. Additionally, raising the frontage road profiles (thereby allowing the frontage roads to intersect elevated Craig Street) would remove driveway access to the frontage roads for adjacent properties and potentially result in additional displacements.

Raising the vertical alignment of Craig Street would remove direct access from Mel Street; however, this access would still be available via Putnam Street (a one-block detour). Additionally, raising Craig Street would also remove driveway access to Craig Street for the residence at the Louise Street/Craig Street intersection resulting in a displacement (Property No. 29). Braided ramps are needed in this location to restore access to the adjacent major cross streets. These braided ramps, combined with the addition of freeway main lanes, occupy all of the available ROW. If frontage road bypass lanes were added, this would require additional ROW on both sides of I-820 for some distance upstream and downstream of Craig Street. This alternative would result in more displacements, more environmental impacts, further encroachment on a major Oncor utility ROW, and increase the span length of the UPRR bridge – a critical design issue. For these reasons, frontage road bypass lanes are not practical in this location.

TxDOT considered the use of a narrower Craig Street bridge; however, a four-lane bridge is needed for traffic operations to accommodate the left-turns that would occur at the jughandle ramp intersections, along with through traffic between McClung Middle School, Fort Worth ISD football stadium, West Handley Elementary School, and Handley-Meadowbrook Community Center.

The City of Fort Worth provided a letter describing a list of design recommendations related to Craig Street on August 30, 2019. The letter is provided in **Appendix G**.

In summary, maintaining access to Craig Street was a priority for TxDOT, which would be restored by jughandle ramps.

5. Affected Environment and Environmental Consequences

In support of this EA, the following technical reports were prepared:

- Quantitative Mobile Source Air Toxics Technical Report
- Carbon Monoxide Traffic Air Quantity Analysis Technical Report
- Archeological Background Study
- Biological Evaluation Form and Tier I Site Assessment
- Community Impacts Assessment Technical Report Form
- Hazardous Materials Initial Site Assessment (ISA) Report
- Hazardous Materials Impact Evaluation
- Historic Resources Survey Report
- Historical Resources Intensive Survey Report
- Induced Growth Analysis

- Traffic Noise Technical Report

The technical reports are incorporated by reference in this EA. Copies of the technical reports are on file and available for review at the TxDOT-Fort Worth District, 2501 SW Loop 820, Fort Worth, TX 76133 or at www.txdot.gov (Keyword Search: Southeast Connector).

5.1 Right-of-Way/Displacements

The Build Alternative would require the acquisition of approximately 22.6 acres of proposed right of way (ROW) and 3.3 acres of proposed permanent easements (**Appendix C**). The proposed project would potentially displace 42 parcels consisting of 23 residential homes and 19 commercial properties. The anticipated displacements are displayed in **Appendix F, Displacements Maps**.

Concerning the 19 commercial displacements, none of the businesses function as community facilities or provide services or products that are unique to the area. Both local and national businesses would be displaced and would occur throughout the project area without areas of high concentration. None of the businesses serve a specific population (such as a specific ethnic group, people living with disabilities, low-income families, etc.).

The two notable areas of concentrated potential residential displacements are at:

- Anglin Drive and UPRR (displaced Property Nos. 2 to 9, & 11 to 13)
- Craig Street (displaced Property Nos. 29 to 38)

Based on the research of several real-estate websites, the residents of the homes being displaced in these two areas would not be expected to find comparable homes available within the same neighborhood. The neighborhood for the Anglin Drive and UPRR displacement area is bounded by Shackleford Street, Wilbarger Street, and US 287. The neighborhood for the Craig Street displacement area is bounded by Greenlee Street, Cravens Road, Lancaster Avenue, and Putnam Street. Relocation within the same neighborhood is unlikely due to a shortage of housing for rent or for sale within a reasonable price range of the market rate value for their current residence.

The displaced residents within the Craig Street area would be expected to find comparable replacement housing within 1.5 miles of their current homes, which potentially would allow them to use similar facilities (such as school) that they use today. Access to the same community facilities and social support networks have important implications for community cohesion, discussed in **Section 5.6.2**. Relocating within the same area is one effort to minimize potential disruption in services, which generally eases the transition process.

The displaced residents within the Anglin Drive and UPRR area would be expected to find comparable replacement housing in the price range of greater than \$100,000 within 1.5 miles of their current homes. There currently is no comparable replacement housing in the price range of less than \$100,000 within the 1.5 miles of the Anglin Drive and UPRR area, nor within the same zip code (76119). For displaced residents in the Craig Street and UPRR area that require housing less than \$100,000, TxDOT anticipates they would need to move out of their current zip code, potentially to another city. Individual housing situations and decisions are difficult to determine, but each displaced resident will be assigned a relocation officer to meet their individual needs during the relocation process.

Potential displacements were minimized by avoiding impacts to structures where possible and using available vacant or open land where practicable. Constraints were mapped and used in the planning process to avoid important resources such as places of worship, public facilities, and other community facilities.

TxDOT is currently pursuing early ROW acquisition of 43 parcels along I-820 from Meadowbrook Drive to US 287. Early acquisition would not influence the environmental review/decision.

ROW acquisition would be conducted in accordance with the Federal Uniform Relocation and Real Property Acquisition Policy Act of 1970 (Uniform Act).

The No-Build Alternative would not result in displacements or ROW acquisitions.

5.2 Land Use

Commercial facilities are scattered along the project area, primarily adjacent to the project location along I-820 and I-20. South of I-20 is more rural with some industrial development, large areas of suburban residential areas, and two small areas of urban development in Forest Hill and Kennedale. An area west of I-820, north and south of US 287 has a large area of light industrial, within Fort Worth. The southern-most portion of the study area south of Kennedale has the largest concentration of vacant and rural land use. There is also a large area of vacant land east of I-820 adjacent to Lake Arlington.

Increased development along the project corridor's undeveloped areas can be anticipated as a result of the project (see **Section 5.15 Induced Growth**). Land use on the acquired parcels would change from residential, open space, or commercial to transportation use.

The No-Build Alternative would not have any environmental consequences on land use.

5.3 Farmlands

The proposed project would not require ROW from a farm and would not impact farmland. Coordination with the Natural Resources Conservation Service for the Farmland Protection Policy Act would not be required because the project is located in an "urbanized area," as identified by the Census Bureau.

5.4 Utilities/Emergency Services

5.4.1 Utilities

Utility adjustments are anticipated, but the exact locations of utilities have not yet been determined. Detailed information on the utility lines would be evaluated during the detailed design phase of the project in order to evaluate the need to integrate the proposed improvements and utility systems into the design plans. Coordination with utility owners would take place during the detailed design phase.

Required utility adjustments would occur prior to or during the construction of the proposed project. The adjustments and relocation of any utilities would be managed so that no substantial interruptions would occur.

The No-Build Alternative would not have any environmental consequences on utilities.

5.4.2 Emergency Services

Efforts would be made to minimize construction-related delays and to ensure emergency responders are aware of road conditions and lane closures. The proposed project area is currently served by the cities of Arlington, Forest Hill, Fort Worth, and Kennedale Fire and Police Departments. The closest fire station (Fort Worth Fire Station 24) is located approximately 0.2 miles east of the proposed project. The closest police station (Fort Worth Police Department East Division) is located approximately 0.4 miles west of the proposed project. The closest hospital (Sundance Behavioral & Mental Health Hospital) is located approximately 1.3 miles south of the proposed project.

For emergency services, project-related delays would be anticipated during construction; however, every reasonable effort would be made to minimize delays. Roadway closures are not anticipated at connecting roadways; however, traffic patterns would be temporarily affected with alternating lane closures, temporary reductions in lane widths, and reduction in speed. During construction, temporary lane closures at connecting roadways would be kept to a minimal length and time. Access would be maintained to adjacent properties during construction.

The capacity improvements to the main lanes, existing frontage roads, and intersections, along with the addition of new frontage roads are anticipated to mostly decrease emergency response times along the corridor. However, an increase in response times may occur in some areas due to fewer ramps and vehicles navigating additional signalized intersections to get to/from main lanes. Changes in access to area hospitals as a result of the proposed project are not anticipated.

Access to community services (i.e., police/fire protection, trash collection) would be improved by the introduction of additional turn lanes and cross street intersections, continuous frontage roads, U-turns to avoid signal delays, and the overall capacity increase/traffic operations improvement of the proposed project. Also, by moving the exit ramps further upstream of the cross street, direct access to more adjacent properties along the frontage roads (between the exit ramps and the cross streets) would be provided (i.e., more properties would be directly accessible downstream of the exit ramps without being required to exit further upstream and go through a traffic signal at the previous cross-street).

Additionally, this would allow more vehicle storage at the cross-street traffic signal, decreasing the chance of vehicle queues onto the exit ramps and main lanes (a safety/traffic operations issue). These improvements would reduce delays and improve response times for community services.

Under the No-Build Alternative, emergency services would generally continue as they do today, and emergency response times would be expected to gradually increase as traffic congestion increases.

5.5 Bicycle and Pedestrian Facilities

The existing bicycle and pedestrian facilities in the project corridors are discontinuous and scattered mainly along I-820 (primarily at cross-streets), making them functionally inaccessible. None were built during the original freeway construction but were subsequently added at isolated intersections. There are no accommodations along US 287 and I-20.

The proposed project would provide a 10-foot-wide, bidirectional shared-use path (for bicycles and pedestrians) on one side of the project corridors and a 6-foot-wide sidewalk on the other side of the corridors. These facilities would be located adjacent to frontage roads. For users wanting to travel along the project corridors, pedestrians will be accommodated on both sides, while bicyclists would be

accommodated on one side. Wheelchair-accessible ramps would be constructed throughout the project. The proposed bike and pedestrian facilities are shown on the schematic in **Appendix C** and typical sections in **Appendix D**.

The reconstructed cross street interchanges would include sidewalks and each intersection would include wheelchair-accessible ramps and marked crosswalks. Some cross streets would have buffer-separated bicycle lanes, while other cross streets would have shared-use paths (for bicycles and pedestrians). The proposed project would comply with the TxDOT Guidelines Emphasizing Bicycle and Pedestrian Accommodations and the March 11, 2010, US Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodations, Regulations and Recommendations. The proposed bicycle facilities are anticipated to be consistent with and accommodate the future build-out of the City of Fort Worth's Comprehensive Bicycle Transportation Plan (2009) and Active Transportation Plan (2019).

Because the current facilities provide minimal to no accommodations for cyclists and pedestrians, the proposed project is expected to enhance bike and pedestrian connectivity and mobility throughout the project area, and encourage people to pursue these alternative modes of transportation.

Under the No-Build Alternative, there would be no project-related improvements to bike/pedestrian accommodations.

Craig Street, Meadowbrook Drive, and Existing Pedestrian Bridge

A bike/pedestrian bridge is currently located north of Craig Street and provides convenient access across I-820 for users traveling from the area of West Handley Elementary School on the west side of I-820 to the area of Handley Park and Handley Meadowbrook Community Center on the east side of I-820. Bridge users must walk across existing frontage roads on both sides of I-820, and even though those frontage roads carry low volumes of traffic traveling at relatively low speeds, there is no signage or protected pedestrian crossing across the frontage roads.

TxDOT conducted pedestrian/bike counts on the bike/pedestrian bridge, the Craig Street bridge, and the Meadowbrook Drive bridge. Counts were conducted on four days during peak travel times both before and after Fort Worth ISD resumed the school year. Based on those counts, the Meadowbrook Drive bridge was crossed by 373 users. The Craig Street bridge was crossed by 65 users, and the existing bike/pedestrian bridge was crossed by 27 users. TxDOT assumes these travel counts reflect the preferences of bike/pedestrian users that currently cross I-820.

The bike/pedestrian bridge would be removed as part of the proposed project, and those bike/pedestrian users would be expected to cross I-820 using the proposed bike/pedestrian facilities at the Craig Street and Meadowbrook Drive bridges. This is anticipated to double the travel distance between the Elementary School and the Park from the approximately 2,000 feet travel distance using the existing bike/pedestrian bridge to approximately 4,100 feet using the Craig Street bridge or approximately 4,800 feet using the Meadowbrook Drive bridge.

Additionally, the proposed Craig Street bridge would be at a higher elevation compared to the existing Craig Street bridge, which requires the current design to use jughandles to maintain vehicle access. Bike/pedestrian users crossing at the proposed Craig Street bridge would travel on steeper grades, but those grades would not exceed the 5% maximum grade given in current Federal accessibility

guidelines for sidewalks. The proposed maximum grades for Craig St are 4.96%, the west jughandle ramp is 4.98%, and the eastern jughandle ramp is 2%.

Marked crosswalks would be provided at each of the jughandle intersections, providing multiple opportunities for pedestrian movements across the facility in all directions. The proposed Craig Street jughandles would have a shared-use path on one side and a sidewalk on the other. The proposed Craig Street bridge would have a shared-use path on both sides. The proposed Craig Street improvements east of I-820 would have a shared-use path on one side and a sidewalk on the other. From west of the I-820 frontage road to the jughandle connection, a sidewalk would be provided on the south side and a shared-use path on the north side. West of the jughandle connection, sidewalks would be provided on both sides of Craig Street, and the pavement width would accommodate future shared use lanes or other bicycle accommodations as part of a future City project.

The proposed improvements to the Meadowbrook Drive bridge and approaches would provide 6-foot sidewalks and 6-foot bike lanes on both sides. The additional safety element of the separation of bike and pedestrian travel from vehicular traffic will be included across both bridges. Separation from traffic in the form of buffers or barriers is a safety design principle, similar to that of a pedestrian bridge. Design elements to maximize bike/pedestrian accommodations at these crossings are described in **Section 5.6.3** of the EA. The proposed facilities at both Craig Street and Meadowbrook Drive are anticipated to be consistent with and accommodate the future build-out of the City of Fort Worth's Comprehensive Bicycle Transportation Plan (2009) and Active Transportation Plan (2019).

Although removal of the existing bicycle/pedestrian bridge would increase travel distances and require travel on steeper grades for some users, the proposed facilities along I-820 frontage roads (shared-use paths) and at the Craig Street (shared-use paths) and Meadowbrook Drive (sidewalks and barrier-separated bike lanes) interchanges would be safer and more accommodating compared to the existing conditions (No-Build Alternative).

5.6 Community Impacts

5.6.1 Changes in Access

The capacity improvements to the main lanes, existing frontage roads, and intersections, along with the addition of new frontage roads, are anticipated to increase the mobility of motorists in the project corridors. The reconfiguration of existing exit/entrance ramps would also help decrease congestion on the main lanes by decreasing conflict points. Overall, the project is anticipated to decrease congestion on the project corridors and benefit users traveling regionally. The proposed project is shown on the schematic in **Appendix C** and typical sections in **Appendix D**.

The addition of shared-use paths for bicyclists and sidewalks for pedestrians would increase mobility for those modes of travel, which is discussed in **Section 5.5** of the EA. Temporary disruptions to the Trinity Metro public transportation service would occur during construction. There is potential for temporary bus stop closures or reroutes during construction. Overall, bus routes would continue to operate normally, however, 12 bus stop locations would be impacted temporarily during construction. TxDOT would coordinate with Trinity Metro staff to adequately notify transit users of these potential temporary service impacts.

The reconfiguration of existing exit/entrance ramps would alter vehicular access for some adjacent businesses and residents along the frontage roads. Ramp removal in some areas is required to comply

with current design criteria (existing ramps do not comply with current TxDOT design standards). Frontage roads would still allow for access to all adjacent properties. The proposed project would change ramping along the corridors resulting in several cross streets losing direct access to the project main lanes. These cross streets would have the direct entrance and/or exit ramps removed, requiring motorists to travel through additional intersections/traffic signals to get access to/from the project main lanes. This is anticipated to impact direct main lane access for the following cross streets:

- Anglin Drive
- Sun Valley Drive
- Martin Street
- Wilbarger Street
- Ramey Street
- Lancaster Avenue
- Craig Street
- Brentwood Stair Road

New ramps would provide direct entrance and exit access to Bowman Springs Road with westbound I-20.

Ramps in some areas would be redesigned into an “X” pattern to allow increased direct access between the main lanes and frontage roads (along with adjacent properties) and to increase the vehicle storage on the frontage roads. More vehicle storage would decrease the chance of vehicle queues onto the exit ramps and main lanes (a safety and traffic operations issue). This would reduce delays and improve emergency response times for community services. This is anticipated to benefit the following areas:

- Between Green Oaks Blvd and Kelly Elliott Rd at I-20
- Between Wilbarger St and Eastland St at I-820
- Between Ramey Ave and Rosedale St.
- East of Miller Rd to Village Creek Rd at US 287
- US 287 south of Little Rd
- Between Little Road and Sublett Road

Cul-de-sacs and street closings are needed at various locations because the existing streets would conflict with control of access requirements per TxDOT’s Roadway Design Manual and Access Management Manual at ramp junctions or intersections. These cul-de-sacs would close access at one end of the street requiring travelers to access frontage roads/ramps to/from adjacent driveways and streets in a more circuitous manner. The design of the cul-de-sacs would accommodate fire trucks and other emergency vehicles. Cul-de-sacs (dead-end streets) are anticipated to impact the following streets:

- Bolen Road at Bowman Springs Road
- Forest Bend Drive at the eastbound I-20 frontage road

- Dowdell Street and Childress Street at southbound/eastbound US 287 frontage road
- Although not a cul-de-sac, Hillside Avenue would end at Pierce Avenue (and no longer connect to southbound/eastbound US 287 frontage road).
- Hart Street at southbound I-820 frontage road
- The driveway from Tension Avenue to southbound I-820 frontage road (just south of E. Lancaster Avenue)
- Rich Street at southbound I-820 frontage road (not a cul-de-sac, but dead-end)
- Mel Street at Craig Street
- Lambeth Lane at northbound I-820 frontage road (just north of Meadowbrook Drive)

Several intersections at cross streets would also be improved as part of the proposed project. This is anticipated to increase mobility across the project corridors. Below are key areas along the proposed project where changes in access and mobility would be expected.

Craig Street at I-820

The elevation of the Craig Street bridge would be increased due to the use of braided ramps to maintain access at Meadowbrook Drive. This led to the use of jughandles to maintain access between Craig Street and the I-820 frontage roads. The jughandles could slightly increase travel time and distance for some motorists; however, mobility is expected to improve for through traffic on Craig Street as the current all-way stop-controlled intersections would change to only stop-controlled for the jughandles. Elevation changes at Craig Street would require removal of direct access from Craig Street to Mel Street; however, this access would still be available from Putnam Street (a one-block detour). The elevation changes would remove access from Rich Street with the southbound frontage road.

Anglin Drive at I-20

Anglin Drive would have an alignment shift (approximately 300 feet) near I-20 to eliminate an existing segment of two-way frontage road in the westbound direction and align Anglin Drive with the existing bridge over I-20. The current two-way frontage road causes a potential safety concern since two-way frontage roads are uncommon for drivers in urban areas. Even though this realignment of Anglin Drive results in several displacements, the accessibility and mobility in this area is anticipated to improve because of the re-alignment for motorists (and bike/pedestrian users) using Anglin Drive to travel across I-20. There is also currently no eastbound frontage road between Forest Hill Drive and Anglin Drive. The proposed improvements would include the expansion of the eastbound I-20 frontage road between these two intersections.

I-20 Frontage Road between Forest Hill Drive and Hartman Road

A proposed eastbound frontage road would connect Forest Hill Drive to Hartman Road and Hartman Road to Anglin Drive where none exists today.

I-20 Frontage Roads over UPRR

Currently, the UPRR acts as a barrier between communities on either side of the railroad. The construction of continuous frontage roads over the UPRR would enhance local access by providing grade-separated crossings over the railroad where there currently are none. This would allow for new modes of transportation (pedestrian and bicycle) to safely cross the railroad, thereby increasing cohesion and access.

I-20 Frontage Roads over Kee Branch

New location frontage roads would be constructed between Green Oaks Boulevard to Kelly Elliott Road. This would also benefit local traffic along with bike and pedestrian users crossing Kee Branch.

I-820 Frontage Roads Between Rosedale Street and Craig Street

New frontage roads would be constructed along I-820 from Rosedale Street northward to Craig Street. These frontage roads replace the existing collector-distributor system and would provide better access to adjacent properties and minimize the existing weaving conditions between ramps.

Between Carey Street and Wilbarger Street

New frontage road access would be provided for property between Carey Street at US 287 and Wilbarger Street at I-820. This would provide better access to US 287 for those properties.

Automobile travel is the most common mode of transportation that community members use within the project area, followed by walking, cycling, and mass transit. Overall, the proposed project is expected to reduce congestion and increase mobility and connectivity for both regional and local users. Several changes to direct access between adjacent properties and the project main lanes would occur. The addition of shared-use paths for bicyclists and sidewalks for pedestrians would increase mobility for these modes of travel. The improved mobility from the proposed project would likely benefit Trinity Metro users and their trip times in the project area. The proposed roadway would ultimately provide drivers, pedestrians, and cyclists a more efficient route to access cross streets and adjacent properties in the project area. Community cohesion, safety, and access would increase in areas where a new mode would be provided (bike and pedestrian) to cross pre-existing barriers such as roadways and rail lines.

These benefits and changes would not occur under the No-Build Alternative.

5.6.2 Community Cohesion

The existing facility is a controlled-access highway that has functioned as a barrier between neighborhoods since the 60s and the 70s. The area traversed by I-820, I-20, and US 287 is extensively developed and consists of well-established residential, commercial, and institutional properties. The corridor also features several city parks, places of worship, and public schools.

The proposed project would require new ROW, which would widen the physical barrier. This would also result in displacements, which is expected to increase the sense of separation for some areas.

The proposed capacity improvements to the main lanes, existing frontage roads, and intersections, along with the addition of new frontage roads, are all anticipated to increase the mobility of motorists in the project corridors, which is expected to strengthen regional cohesion.

The new frontage roads proposed from Forest Hill Drive to Anglin Drive, from Carey Street to Wilbarger, from Rosedale Street to Craig Street, across Kee Branch and across the UPRR, the capacity improvements to frontage roads (which function similar to local streets), and the addition of sidewalks and shared use paths adjacent to frontage roads, are all expected to result in improved community cohesion for users traveling along the I-820, I-20, and US 287 corridors.

The proposed improvements to cross streets are expected to result in improved community cohesion across the I-820, I-20, and US 287 corridors. The proposed upgraded bridges, bridge approaches, and intersections at cross streets that include additional travel lanes, turning lanes, sidewalks, shared-

use paths, and protected bicycle lanes would result in safer and more comfortable travel across the project corridors. Although removal of the existing bicycle/pedestrian bridge would increase travel distances and require travel on steeper grades for some, the proposed facilities along I-820 frontage roads (shared-use paths) and at the Craig Street (shared-use paths) and Meadowbrook Drive (sidewalks and barrier-separated bike lanes) interchanges would be safer and more accommodating for bicyclists and pedestrians compared to the existing conditions. This contributes to cohesion on the neighborhood level by providing safe opportunities for all modes of travel, both within communities and across pre-existing barriers such as roadways and railways.

The proposed project is not expected to result in the isolation of any particular demographic population, including low-income and minority communities. Overall, the proposed project is expected to strengthen community cohesion when compared to the No-Build Alternative.

5.6.3 Environmental Justice

In compliance with the FHWA Title VI program (23 CFR Part 200) and Executive Order (EO) 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, an assessment was performed to identify potential project impacts on minority and low-income populations. For the purposes of this assessment, an environmental justice (EJ) population is present where:

- The median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines for a family of four for the current year or
- The total minority population percentage equals or exceeds 50 percent of a given geography.

Data from the 2010 Census was used to identify minority populations near the proposed project. Data for race and ethnicity was analyzed from the block-level (the smallest geographic unit available) to the county-level for comparison and context. Approximately 60.0% of the population of the project study area has a minority population greater than 50%. Of the 1,610 census blocks in the project study area, 601 (37.3%) have a minority population greater than 50%. Data is presented in the **Census Geography Map** in **Appendix F**.

The 2013-2017 American Community Survey 5-Year Estimates data was used to identify low-income populations near the proposed project. Median household incomes in the study area range from \$26,375 to \$143,778. Although the lower end of this range approaches the poverty level, no census areas indicated a median household income less than the 2020 HHS poverty level of \$26,200.

A large portion of the study area is comprised of EJ populations, with concentrations along I-820 and US 287 north and east of the I-820/US 287 Interchange, as well as along I-20 west of the I-20/I-820 interchange. These areas are within Fort Worth and Forest Hill city limits, with only small pockets of EJ populations along the project corridor in Kennedale and Arlington.

All of the potential single-family residential displacements and most commercial displacements resulting from the proposed project are located in EJ areas. As described in **Section 5.1** of this EA, residential displacement impacts are concentrated in the Anglin Drive and UPRR area and the Craig Street area. Alternatives to avoiding residential displacements in these areas of high residential displacements were evaluated and are described in **Section 4.3** of this EA. Benefits of the designs selected for the Anglin Drive and UPRR area and the Craig Street area include retaining full vehicle access to frontage roads, increased vehicle mobility through the interchanges, increased

bike/pedestrian accessibility across the project corridors, and providing a new local connection across the UPRR.

The project team was also informed by site visits and public involvement activities. The localized impacts to these EJ communities warranted additional efforts at outreach and engagement. Therefore, a town hall meeting was held in December 2019 to present alternative design concepts to the Forest Hill community. Door-to-door outreach to residents affected by the proposed realignment of Anglin Drive was conducted to ensure that the most directly impacted received adequate notice, and were provided opportunities for meaningful involvement. In addition to attending, representatives from the City of Forest Hill assisted TxDOT in outreach and planning for the meeting. A total of 50 people attended, including four elected officials. Concerns expressed during the meeting varied and ranged from concerns regarding noise impacts, displacements, access, and emergency response times.

In 2018, State Representative Nicole Collier hosted transportation town hall meetings for House District 95, which includes the Handley neighborhood in the Craig Street area, and the portion of Forest Hill displacements. TxDOT participated in these town halls as a follow-up to the July 19 public meeting and to present project updates based on input from the community. The meeting presented alternative design concepts along with ramping and pedestrian bridge options involving Meadowbrook Drive, Brentwood Stair Road, and Craig Street. The presentation also included design criteria and guidelines that were used to develop a safe and effective project design that also addresses concerns identified by community members.

The proposed addition of main lanes and expansion of the frontage roads would move traffic closer to homes and businesses resulting in increased noise levels and noise impacts to adjacent properties. Many of these noise impacts occur in EJ areas. Noise mitigation, such as noise barriers, would be considered where reasonable and feasible and is described in **Section 5.14** of this EA.

As discussed in **Section 5.6.1** of this EA, the proposed project is expected to reduce congestion and increase mobility and connectivity for both regional and local users. Several changes to direct access between adjacent properties and the project main lanes would occur. The full list of impacts to access and travel patterns within the project area can be found in the *Community Impacts Assessment Technical Report*.

The addition of shared-use paths for bicyclists and sidewalks for pedestrians would increase mobility for these modes of travel. The improved mobility from the proposed project would likely benefit Trinity Metro users and their trip times in the project area. This could benefit low-income users who may not be able to afford the costs of car ownership, in addition to other transit-dependent populations. The proposed roadway would ultimately provide all modes a more efficient route to access cross streets and adjacent properties in the project area. **Section 5.5** of this EA evaluates bike/pedestrian impacts in further detail.

The bike/pedestrian bridge located north of Craig Street provides access to Handley Park and other community facilities, and its removal would disproportionately impact minority populations. However, the proposed enhancements to the Meadowbrook Drive and Craig Street bridges, where there is far more pedestrian traffic, would minimize the adverse impact of the bike/pedestrian bridge removal. Additionally, the following design elements are incorporated into the proposed project to mitigate adverse impacts to EJ community cohesion and pedestrian safety in the Craig Street and Meadowbrook Drive area resulting from the removal of the bicycle/pedestrian bridge:

-
- All crosswalks within these high pedestrian corridors would include continental or comparable high visibility pavement markings to maximize visibility and safety, as opposed to the current conditions of standard transverse lines.
 - Where exclusive pedestrian intervals are not already planned, project designers would incorporate leading pedestrian intervals at all traffic signals for safety.
 - The general increase in roadway width would be offset by the addition of pedestrian crossing islands to assist in safely and comfortably crossing multiple lanes of traffic.
 - The Craig Street bridge which overpasses I-820 would include shared-use paths to accommodate bike and foot traffic (14-foot wide on both sides), which are wide enough to allow for two-directional, and multi-modal travel.
 - The increased path width at Craig Street would allow for the additional safety element of an inside barrier to separate bike and pedestrian travel from vehicular traffic. Further accommodations include crosswalks across Craig St at each of the jughandle intersections, providing multiple opportunities for pedestrian movements across the facility in all directions.
 - The pedestrian enhancements across the Meadowbrook Drive bridge would include 6-foot wide designated bicycle lanes with a buffer, along with 6-foot sidewalks in each direction.
 - The turning radius and crosswalk orientation of the Meadowbrook right-turn slip lane would be designed to prioritize pedestrian safety and visibility as traffic yields right onto the eastbound frontage roads. This will be accomplished by marking an advanced stop line or yield markings, in addition to crosswalk striping and clear signage. Project engineers would consider extending the pedestrian island to form a longer channelized right-turn lane, which could alternatively be accomplished by edge lines and with cross-hatching to narrow the perceived width of the lane while still accommodating larger vehicles.

In determining whether disproportionately high and adverse impacts to EJ populations would occur as a result of the proposed improvements, FHWA Order 6640.23A provides that disproportionately high and adverse refers to an adverse effect that:

- is predominantly borne by a minority and/or low-income population, or
- will be suffered by a minority and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-EJ population.

With the avoidance and mitigation measures identified here and in other sections of this EA and design elements of the project, there would be no notable disproportionately high and adverse impacts to minority and/or low-income communities. The investment in transportation infrastructure is expected to strengthen community cohesion in EJ communities overall when compared to the No-Build Alternative. Community cohesion, safety, and access would increase in areas where a new mode would be provided (bike and pedestrian) to cross pre-existing barriers such as roadways and rail lines. These benefits from the proposed project to local drivers, transit users, pedestrians, and cyclists would be equally distributed in EJ areas (including the Anglin Drive and UPRR area and the Craig Street area) as well as non-EJ areas. Following the application of minimization and mitigation measures, and considering public input on the proposed project thus far, the proposed project is not expected to result in disproportionately high and adverse impacts to EJ populations. Therefore, the requirements of EO 12898 are satisfied.

Under the No-Build Alternative, no EJ impacts would occur. However, the benefits of the proposed project (improved connectivity and mobility) would not be realized for the communities living in the project area under the No-Build Alternative.

5.6.4 Limited English Proficiency

EO 13166, “Improving Access to Service for Persons with Limited English Proficiency” (LEP), requires federal agencies to examine the services they provide, identify any need for services to those with LEP, and develop and implement a system to provide those services so that LEP persons can have meaningful access to them. The EO also requires federal agencies to ensure that recipients of federal financial assistance provide meaningful access to their LEP applicants and beneficiaries.

Based on data from the 2017 American Community Survey, block groups located within and adjacent to the project area have an LEP population ranging from approximately 0.5 to 10.5 percent. Spanish speakers make up the largest portion of the LEP population with 10.5 percent. Other LEP populations speak Asian and Pacific Islander (1.1%), Indo-European (0.5 percent), and Other (0.5%) languages. These data match observed places that serve these populations, mostly for Hispanic and Asian (Vietnamese) populations.

Public outreach was conducted for the proposed project and included town hall, community, and public meetings. These meetings were held in areas such as Dunbar High School, Martin Luther King Jr. Community Center, and Tarrant County College Opportunity Center. Although bilingual notices were provided, assistance in a language other than English was not requested at these meetings.

To ensure meaningful access to the public meeting held on July 19, 2018, TxDOT provided announcements in both English and Spanish, and Spanish-speaking staff were present at the meeting in case interpretation was needed. Meeting notices were published in English in *The Fort Worth Star-Telegram* and in Spanish in *La Estrella*, and materials handed out at the meeting were also provided in English and Spanish.

Outreach to Vietnamese populations, the most common language spoken after Spanish, showed that not many would likely benefit from translated materials. Outreach included contacting local temples serving Vietnamese populations and English as a Second Language coordinators with the Arlington library.

TxDOT would continue to comply with EO 13166 by offering to meet the needs of persons requiring language assistance or request other accommodations in all future public involvement activities and notices.

5.7 Visual/Aesthetics Impacts

I-820, I-20, and US 287 are existing, well-established interstate and US highways. The project is located within urban areas of Fort Worth, Arlington, Forest Hill, and Kennedale. With little exception, vegetation in the existing ROW consists of maintained grass with little tree cover. Outside of the existing ROW are primarily riparian and Crosstimbers woodlands and forest vegetation corridors. I-820, I-20, and US 287 are dominant visual features in the project area.

The proposed project would follow the existing alignment of I-20, I-820, and US 287. The primary changes to the visual environment in the project corridor consist of the addition of the two-lane frontage roads on each side, main lane expansion, and I-20/I-820/US 287 Interchange reconstruction. Since the proposed project would be along an existing roadway corridor, the visual and aesthetic impacts would be negligible.

The No-Build Alternative would not result in project-related visual impacts along the corridor as the proposed improvements would not be constructed.

5.8 Cultural Resources

Evaluation of impacts to cultural resources has been conducted in accordance with TxDOT's Memorandum of Understanding (MOU) with the Texas Historic Commission (THC) or the Programmatic Agreement (PA) among FHWA, TxDOT, the Texas State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) regarding the Implementation of Transportation Undertakings.

5.8.1 Archeology

The proposed project was evaluated by TxDOT archeologists with a background study on May 28, 2019. The proposed project area is located in an urban setting. A check of the Texas Archeological Sites Atlas revealed that no recorded archeological properties, SALs (13 TAC 26.8), or NRHP properties (36 CFR 800.16(l)) are located within the project footprint. The proposed project covers the same basic footprint as the existing roadway and has been previously disturbed by clearing, construction, utilities installation and maintenance. TxDOT archaeologists determined there is very little reasonable potential to expect any intact, significant archeological materials in the project area and that an archeological intensive survey is not warranted.

On April 22, 2005, SHPO determined an early version of the proposed project did not require an archaeological survey. On May 29, 2019, TxDOT archeologist determined that the current version of the proposed project would have no effect on archeological historic properties. As provided under the PA and MOU, the current version of the proposed project does not require individual coordination with the SHPO. Tribal consultation was conducted on January 6, 2017, and again on May 31, 2019. No comments were received by TxDOT within the 30-day notice. Refer to **Appendix G** for the coordination documentation.

5.8.2 Historic Properties

Surveys for historic-age resources were conducted in 2004 and 2020. The surveys resulted in the identification of approximately 460 properties with historic-age resources. These resources primarily consisted of domestic/residential buildings, commercial buildings, and religious establishments.

One historic district previously determined eligible for National Register of Historic Places (NRHP) listing, the Carver Heights Historic District, is located adjacent to the proposed project. The historic Hawkins Cemetery, also previously determined NRHP eligible, is adjacent to the project and shares a fence line with the US 287 frontage road. The project proposes no acquisitions of right-of-way or easements from within the boundaries of the Carver Heights Historic District or other listed or previously determined eligible NRHP properties. Given the long-term existence of the roadways under study and the presence of a number of non-historic intrusions throughout the project area, it is anticipated that the proposed undertaking would have no adverse effect to historic properties.

Coordination with SHPO and other consulting parties is ongoing. Historic resources near the proposed project are shown in **Appendix F, Resource Map**. Coordination letters are provided in **Appendix G**.

The No-Build Alternative would result in no changes to existing conditions and no impacts to historic properties.

5.9 DOT Act Section 4(f), LWCF Act Section 6(f) and PWC Chapter 26

This section describes whether the project would use any lands protected by Section 4(f) of the U.S. Department of Transportation Act (DOT), Section 6(f) of the Land and Water Conservation Fund (LWCF) Act, or Parks and Wildlife Code (PWC) Chapter 26.

The proposed project would not require the use of, nor substantially impair the purposes of, any publicly-owned land from a public park, recreational area, wildlife and waterfowl refuge lands, or historic sites of national, state, or local significance; therefore, a Section 4(f) Evaluation is not required.

The proposed project would not require the use of any Section 6(f) resources.

The proposed project would not require the use of any public land designated as a park, recreation area, scientific area, wildlife refuge, or historic site; there, the requirements in Chapter 26 of the PWC do not apply to the proposed project.

5.10 Water Resources

5.10.1 Clean Water Act Section 404

The proposed project crosses 16 stream crossings consisting of 19 waterbodies and two adjacent wetlands within the proposed project limits. These streams consist of one tributary to Village Creek, Village Creek and two adjacent wetlands, seven tributaries to Lake Arlington, seven tributaries to Kee Branch, two crossings at Kee Branch, and Wildcat Branch. Refer to **Appendix F, Section 404/10 Impacts** for stream crossing locations.

Permanent impacts to waters of the U.S. are anticipated to be minor, and the majority of temporary impacts include replacement of existing drainage culverts with new drainage culverts. Fifteen (15) crossings within the proposed project would be authorized by Nationwide Permit (NWP) 14 - *Linear Transportation Projects*. A Preconstruction Notification (PCN) would not be required because permanent impacts are less than 0.10 acre and wetlands would not be impacted. Each of the crossings have been identified as single and complete projects as defined in the NWPs because each crossing occurs at a separate and distant location. The Section 404/10 Impacts Table provided in **Appendix F, Section 404/10 Impacts Table** lists the Waters of the U.S. in the proposed project area, amount of impacts to the water bodies that would result from implementation of the proposed project, and the applicable U.S. Army Corps of Engineers (USACE) USACE permit.

Appropriate measures would be taken to maintain normal downstream flows and minimize flooding. Temporary fills would consist of clean materials and be placed in a manner that would not be eroded by expected high flows. Temporary fills would be removed in their entirety and the affected area returned to pre-construction elevations and revegetated as appropriate. If the project involves stream modification, stream channel modifications, including bank stabilization, impacts would be limited to the minimum necessary to construct or protect the structure and the immediate vicinity of the project. The activity would comply with all general and regional conditions applicable to NWP 14.

Compensatory mitigation would not be required for this project.

The No-Build Alternative would result in no impacts to resources regulated under Section 404 of the Clean Water Act (CWA).

5.10.2 Clean Water Act Section 401

For a project that will use a NWP under Section 404 or Section 10, regardless of whether the NWP is non-reporting (i.e., assumed) or reporting (i.e., requires submittal of a PCN), TxDOT complies with Section 401 of the Clean Water Act by implementing TCEQ's conditions for NWPs. For projects that require authorization under Section 404 or Section 10 beyond a NWP, TxDOT complies with Section 401 of the Clean Water Act by including a Tier I or Tier II checklist (depending upon the amount of disturbance/impact) in the individual permit, letter of permission, or regional general permit application that is submitted to the USACE, and then complying with the conditions of the Tier I or Tier II checklist.

5.10.3 Executive Order 11990 Wetlands

Field reconnaissance (including wetland delineations) was conducted to identify Waters of the U.S., including wetlands, on March 7, 13, and 28, 2019; April 2, 2019; and May 14, 2019. Results of the wetland delineations identified two wetlands within the project limits. Those wetlands are shown on the **Section 404/10 Impacts Map (Sheet 1)** in **Appendix F**. According to current plans, these wetlands are not anticipated to be impacted by the proposed project; therefore, the project complies with EO 11990.

5.10.4 Rivers and Harbors Act

Based on a project scoping analysis, it was determined that neither the Build nor the No-Build Alternative would have an impact on this resource category or subject matter.

5.10.5 Clean Water Act Section 303(d)

The proposed project is located within five linear miles of, is within the watershed of, and drains to an impaired assessment unit under Section 303(d) of the federal CWA. The 2018 TCEQ 303(d) list was consulted.

Table 5-1: Impaired TCEQ Stream Segments

Watershed	Segment name	Segment number	Assessment Unit Number
Big Fossil Creek-West Fork Trinity River	West Fork Trinity River Below Lake Worth	0806	01
	Sycamore Creek	0806E	01
Village Creek	Village Creek	0828A	01
	Kee Branch	0841M	01

To date, TCEQ has not identified (through either a total maximum daily load (TMDL) or the review of projects under the TCEQ MOU) a need to implement control measures beyond those required by the construction general permit (CGP) on road construction projects. Therefore, compliance with the project's CGP, along with coordination under the TCEQ MOU for certain transportation projects, collectively meets the need to address impaired waters during the environmental review process. As required by the CGP, the project and associated activities will be implemented, operated, and maintained using BMPs to control the discharge of pollutants from the project site.

5.10.6 Clean Water Act Section 402

Since Texas Pollutant Discharge Elimination System (TPDES) CGP authorization and compliance (and the associated documentation) occur outside of the environmental clearance process, compliance is ensured by the policies and procedures that govern the design and construction phases of the projects. The Project Development Process Manual and the Plans, Specifications, and Estimates

(PS&E) Preparation Manual require a Storm Water Pollution Prevention Plan (SW3P) to be included in the plans of all projects that disturb one or more acres. The Construction Contract Administration Manual requires that the appropriate CGP authorization documents (Notice of Intent or site notice) be completed, posted, and submitted, when required by the CGP, to TCEQ and the Municipal Separate Storm Sewer System (MS4) operator. It also requires that projects be inspected to ensure compliance with the CGP.

The PS&E Preparation Manual requires that all projects include Standard Specification Item 506 (Temporary Erosion, Sedimentation, and Environmental Controls), and the “Required Specification Checklists” require Special Provision 506-003 on all projects that need authorization under the CGP. These documents require the project contractor to comply with the CGP and SW3P and complete the appropriate authorization documents.

5.10.7 Floodplains

Tarrant County and the Cities of Arlington, Forest Hill, Fort Worth and Kennedale are participants in the National Flood Insurance Program. The proposed project crosses the 100-year floodplain associated with Village Creek and its tributary; Kee Branch and five of its tributaries, and six tributaries to Lake Arlington. The proposed project would use bridges to span the majority of floodplains in the proposed project ROW; however, some earth moving activities are expected to occur within floodplains.

This proposed project is subject to and would comply with EO 11988 on Floodplain Management. The department implements the EO on a programmatic basis through the Hydraulic Design Manual. The design of this project would be conducted in accordance with the department’s Hydraulic Design Manual. Adherence to the TxDOT Hydraulic Design Manual ensures that this project would not result in a “significant encroachment” as defined by FHWA’s rules implementing EO 11988 at 23 CFR 650.105(q). Refer to **Appendix F, Resource Map**.

The No-Build Alternative would result in no impacts to floodplains.

5.10.8 Wild and Scenic Rivers

Based on a project scoping analysis, it was determined that neither the Build nor the No-Build Alternative would have an impact on this resource category or subject matter.

5.10.9 Coastal Barrier Resources

The Coastal Barrier Resources Act (CBRA) does not apply.

5.10.10 Coastal Zone Management

The project is not located within the Texas Coastal Management Plan (TCMP) boundary. Therefore, a consistency determination is not required.

5.10.11 Edwards Aquifer

The TCEQ Edwards Aquifer Rules do not apply to the proposed project. The EPA Edwards Aquifer MOU does not apply to the proposed project.

5.10.12 International Boundary and Water Commission

This project does not cross or encroach upon the floodway of the International Boundary Water Commission (IBWC) right-of-way or an IBWC flood control project.

5.10.13 Drinking Water Systems

In accordance with TxDOT's Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges (Item 103, Disposal of Wells), any drinking water wells would need to be properly removed and disposed of during construction of the project. However, registered water wells have not been identified within the proposed project area, and there are no source water protection areas located in the proposed project area. Neither the Build nor the No-Build Alternative would impact water wells and source water protection areas.

5.11 Biological Resources

A Biological Evaluation Form, Tier 1 Site Assessment Form, and supporting documents were completed for the proposed project.

5.11.1 Texas Parks and Wildlife Coordination

An early version of the proposed project was coordinated with TPWD from April 25, 2006, to June 20, 2006. TPWD noted the presence of riparian vegetation, large trees, and unusual stands of vegetation. TPWD requested mitigation due to the loss of riparian vegetation. TxDOT has minimized impacts to riparian vegetation where feasible and is proposing to span most waterways with bridge structures to minimize impacts to streams and crossing opportunities for terrestrial animals. TPWD requested a tree survey and tree mitigation plan. As described in **Section 5.11.2, Impacts on Vegetation**, no unusual vegetation features or special habitat features would be removed or trimmed as part of the project. TPWD requested quantification of impacts to undeveloped property and mitigation of similar habitat. TxDOT quantified impacts to vegetation and that evaluation is presented in **Section 5.11.2, Impacts on Vegetation**.

Coordination with TPWD following the TxDOT-TPWD MOU of the current proposed project was initiated on July 18, 2019, and completed on August 9, 2019. TPWD requested the inclusion of all BMPs under one document, preferably the Tier I document. BMPs were incorporated in the Tier I document. TPWD requested the project span waterways, particularly perennial streams and their tributaries, to minimize impacts to aquatic species and to provide crossing opportunities for terrestrial animals. TxDOT has incorporated spanning most waterways with bridge structures to minimize impacts to streams and crossing opportunities for terrestrial animals. Concerning impacts of the proposed new I-20 frontage roads across Kee Branch as it would impact a fair amount of riparian habitat, TPWD inquired if it would be possible to place the proposed frontage road closer to the main lanes to reduce that impact. With respect to the proposed I-20 frontage roads crossing Kee Branch, these would be bridged. The existing I-20 main lanes cross Kee Branch with culverts at a lower elevation than the proposed frontage road bridges. The project is proposing ramps to/from Green Oaks Boulevard and Kelly Elliot Road to the proposed frontage roads. The ramp geometry would be difficult to implement if the frontage roads are moved closer to the main lanes. There is a stream feeding Kee Branch that is between the proposed westbound frontage roads and the main lanes; therefore, the design purposely placed the westbound I-20 frontage road away in order to minimize jurisdictional water impacts on the stream.

See **Appendix G** for the coordination documentation.

5.11.2 Impacts on Vegetation

The proposed project would impact the following MOU Type habitats: Cross Timbers Woodland and Forest (7 acres); Disturbed Prairie (0.3 acres); Riparian (8.8 acres); Urban (752.5 acres), and Open Water (1.1 acres). Refer to the **Resources Map** in **Appendix F**. There are no unusual vegetation

features or special habitat features identified during field investigations that will be removed or trimmed as part of the project. The proposed project would not impact remnant vegetation.

The majority of impacts to riparian vegetation would occur along the crossing of Kee Branch and the crossing of Village Creek. TxDOT is anticipating all vegetation within the proposed ROW near these crossings would be displaced, and the riparian vegetation located upstream/downstream of the proposed ROW would not be impacted and is anticipated to remain. TxDOT is proposing to span those waterways with bridge structures, and the use of impervious surfaces in these areas would be minimal. This would minimize impacts to the waterbodies and aquatic species, allow some disturbed areas along the streams to revegetate naturally after construction, and allow crossing opportunities for terrestrial animals under the bridge structures. Based on this and after construction and vegetation re-establishes within the ROW, these riparian corridors are anticipated to generally function as they do today. Overall impacts to riparian vegetation and riparian corridors are not anticipated to be substantial.

The proposed project would displace a notable tree. A 50-plus-year-old pine tree on the south side of Meadowbrook Drive (on the west side of I-820) would be impacted by the proposed project. There are no other notable trees identified or that would be impacted by the proposed project. Efforts to avoid undocumented notable trees during the final design would be made.

Impacts to vegetation would be avoided or minimized by limiting disturbance to only that which is necessary to construct the proposed project. The removal of native vegetation, particularly mature native trees and shrubs, would be avoided to the greatest extent practicable. A native and locally adapted seed mix would be used in the re-vegetation of disturbed areas.

The No-Build Alternative would not have any environmental consequences to vegetation.

5.11.3 Executive Order 13112 on Invasive Species

This project is subject to and will comply with federal EO 13112 on Invasive Species. The department implements this EO on a programmatic basis through its *Roadside Vegetation Management Manual* and *Landscape and Aesthetics Design Manual*.

5.11.4 Executive Memorandum on Environmentally and Economically Beneficial Landscaping

This project is subject to and will comply with the federal Executive Memorandum on Environmentally and Economically Beneficial Landscaping, effective April 26, 1994. The department implements this Executive Memorandum on a programmatic basis through its *Roadside Vegetation Management Manual* and *Landscape and Aesthetics Design Manual*.

5.11.5 Impacts to Wildlife

The proposed project is located in an urban area. Native vegetation/natural habitat is minimal and wildlife is limited to those species adapted to an urban environment. Within the areas along stream corridors, native vegetation/natural habitat is present and consists generally of riparian and Crosstimbers woodlands and forest areas, which are desirable habitat for a variety of wildlife. An intermittent stream, Kee Branch, is also within the project corridor and is surrounded by riparian habitat. This provides suitable habitat for several state-listed species and species of greatest conservation need (SGCN) (see **Section 5.11.11**). The proposed project would bridge over Kee Branch and would not impede wildlife movements.

The proposed project would result in vegetation clearing along the existing and proposed ROW and proposed drainage easements, including the riparian vegetation. This clearing activity would remove habitat for wildlife and would directly impact suitable habitat for state-listed species and SGCN. Adjacent areas are similar in vegetative composition and are in close proximity to the construction limits which allow wildlife to relocate to nearby parcels. Revegetation would occur within the disturbed areas and clearing of trees and shrubs would be avoided to the extent possible.

Based on coordination with TPWD, several BMPs to minimize impacts during construction to wildlife would be incorporated into the proposed project. Those BMPs are described in **Section 8.0**.

A rookery (nesting colony of the Cattle Egret, Little Blue Heron, and Great Egret) was documented by the Texas Colonial Waterbird Society and TPWD on the wooded lot (Post Oak trees) in Forest Hill, just north of I-20 between 1986 and 1980. This area is located outside the proposed project and would not be impacted by the proposed project. No rookery was observed at the time of the field visits.

Under the No-Build Alternative, the proposed project would not be constructed; thus, there would be no project-related impacts to wildlife.

5.11.6 Migratory Bird Treaty Act

This project will comply with applicable provisions of the Migratory Bird Treaty Act and Texas Parks and Wildlife Code Title 5, Subtitle B, Chapter 64, Birds. It is the department's policy to avoid removal and destruction of active bird nests except through federal or state-approved options. In addition, it is the department's policy to, where appropriate and practicable:

- use measures to prevent or discourage birds from building nests on man-made structures within portions of the project area planned for construction, and
- schedule construction activities outside the typical nesting season.

5.11.7 Fish and Wildlife Coordination Act

The proposed project does not require an individual permit from the U.S. Army Corps of Engineers (USACE); therefore, no coordination under the Fish and Wildlife Coordination Act would be required.

5.11.8 Bald and Golden Eagle Protection Act of 2007

The proposed project does not contain suitable habitat for Bald or Golden Eagles. The project will adhere to the National Bald Eagle Management guidelines of 2007.

5.11.9 Magnuson-Stevens Fishery Conservation Management Act

Based on a project scoping analysis, it was determined that neither the Build nor the No-Build Alternative would have an impact on this resource category or subject matter.

5.11.10 Marine Mammal Protection Act

Based on a project scoping analysis, it was determined that neither the Build nor the No-Build Alternative would have an impact on this resource category or subject matter.

5.11.11 Threatened, Endangered, and Candidate Species

As detailed in the Biological Evaluation Form and Tier 1 Site Assessment, the proposed project would have no effect on any federally listed threatened, endangered, or candidate species. U.S. Fish and Wildlife Service designated Critical Habitat is not present within the proposed project action area.

There is potentially suitable habitat present within the proposed project area for the following state-listed threatened species: western creek chubsucker, Louisiana pigtoe, sandbank pocketbook, Texas heelsplitter, and timber (canebrake) rattlesnake. BMPs that would be implemented for these species are as follows:

Western creek chubsucker:

- Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges.
- When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.
- Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.

Louisiana pigtoe, sandbank pocketbook, Texas heelsplitter:

- Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges.
- When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.
- When work is in the water; the project footprints will be surveyed for state listed and SGCN species where appropriate habitat exists. State listed and SGCN mussels discovered during surveys shall be relocated under a TPWD permit.

Timber (canebrake) rattlesnake:

- Inform contractors that if reptiles are found on the project site allow species to safely leave the project area.
- Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.
- Construction personnel will be advised of potential occurrence in the project area, and to avoid harming the species, if encountered, and to avoid unnecessary impacts.
- Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
- When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.

Considering these BMPs, it is not anticipated that the proposed project would result in the 'take' of any state-listed threatened or endangered species.

The No-Build Alternative would not have any environmental consequences to threatened, endangered, or candidate species throughout the project limits.

5.12 Air Quality

A *Quantitative Mobile Source Air Toxics Technical Report* and a *Carbon Monoxide Traffic Air Quantity Analysis Technical Report* were completed for the proposed. Because the proposed project would add capacity in a nonattainment area. Per the TxDOT-TCEQ MOU, TCEQ will be afforded the opportunity to review and comment on the Draft EA. TxDOT will provide TCEQ with a Notice of Availability notifying them that the environmental documents are available for review.

5.12.1 Transportation Conformity

This project is located within an area that has been designated by the EPA as a serious and marginal nonattainment area for the 2008 and 2015 ozone National Ambient Air Quality Standards (NAAQS) respectively; therefore, transportation conformity rules apply. Conformity for older standards is satisfied by conformity to the more stringent 2008 and 2015 ozone NAAQS.

Both the MTP and the TIP were initially found to conform to the TCEQ State Implementation Plan (SIP) by FHWA and FTA on November 21, 2018; however, the proposed project is not consistent with this conformity determination, because the TIP is being updated to revise scope by adding shared use paths and sidewalks, increasing engineering and construction funding, adding utility phase, and adding construction phase to the 2019-2022 TIP/STIP. TxDOT will not take final action on this environmental document until the proposed project is consistent with a currently conforming MTP and TIP. Copies of the MTP and TIP pages are included in **Appendix E: Plan and Program Excerpts**.

5.12.2 Hot-Spot Analysis

The project is not located within a carbon monoxide (CO) or particulate matter (PM) nonattainment or maintenance area; therefore, a project level hot spot analysis is not required.

5.12.3 Traffic Air Quality Analysis

Traffic for the estimated time of completion year (2028) and design year (2045) is estimated to be 243,410 vehicles per day and 312,600 vehicles per day, respectively; therefore triggering the need for a traffic air quality analysis. The topography and meteorology of the project area would not restrict the dispersion of the air pollutants. The traffic data used in the analysis was obtained from the TxDOT Transportation Planning and Programming (TPP) Division.

Carbon monoxide concentrations for the proposed action were modeled using CAL3QHC and MOVES2014 and factoring in adverse meteorological conditions and sensitive receptors at the right-of-way line. Local concentrations of carbon monoxide are not expected to exceed national standards at any time.

Table 5-2: Project Carbon Monoxide Concentrations

Year	1-hour CO Concentration*	1-HR % NAAQS	8-hour CO Concentration	8-HR % NAAQS
2028	2.1	6.0	1.7	18.7
2045	2.0	5.7	1.6	17.9

* The National Ambient Air Quality Standard (NAAQS) for CO is 35 ppm for 1-hour and 9 ppm for 8-hours. The analysis includes a one-hour background concentration of 1.7 ppm and an 8-hour background concentration of 1.4 ppm.

5.12.4 Mobile Source Air Toxics

A quantitative mobile source air toxics (MSAT) assessment has been conducted relative to the Build and No-Build Alternative.

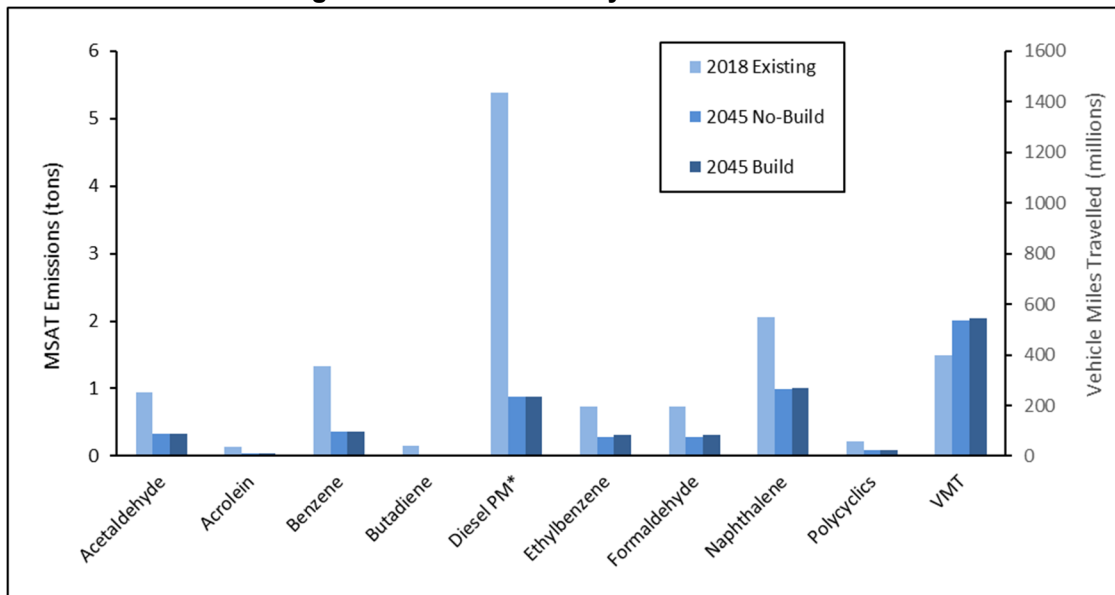
For the purpose of the MSAT analysis, the proposed project's base and design years were determined to be 2018 and 2045, respectively. An interim analysis year was determined to be unnecessary. The MSAT analysis comprises estimating the emissions from three scenarios and their respective affected transportation corridor (ATC): Base Year 2018 (Existing), Design Year (2045) No-Build Alternative, and Design Year (2045) Build Alternative. The ATC is the set of roadway links from which emissions are estimated. This study uses two ATCs: 1) the ATC for the Base Year Existing and 2045 No-Build scenarios, consisting of the current configuration of I-820, I-20, and US 287 and, 2) the ATC for the 2045 Build scenario, consisting of the main lanes and frontage roads as delineated in the Build Alternative schematic.

From the base year (2018) to the Design Year (2045), the annual VMT in the ATC was estimated to increase by 34.5 percent in the No-Build Alternative, and by 35.7 percent in the Build Alternative. Conversely, the total annual priority MSAT emissions in 2045 were estimated to decrease by 76.6 percent in the No-Build Alternative, and by 76.3 percent in the Build Alternative, as compared to base year levels (2018).

Table 5-3: Annual Priority MSAT Emissions and VMT

Scenario/Alternative	2018 Base Year	2045 No Build	2045 Build	Percent Change from 2018 vs.	
				2045 No Build	2045 Build
Priority MSAT	Emissions (tons)			Percent Change	
Acetaldehyde	0.948	0.327	0.330	-65.5%	-65.2%
Acrolein	0.133	0.046	0.046	-65.4%	-65.4%
Benzene	1.331	0.355	0.367	-73.3%	-72.4%
Butadiene	0.157	0.003	0.003	-98.1%	-98.1%
Diesel PM	10.769	1.745	1.741	-83.8%	-83.8%
Ethylbenzene	0.727	0.287	0.308	-60.5%	-57.6%
Formaldehyde	2.055	0.989	1.001	-51.9%	-51.3%
Naphthalene	0.222	0.079	0.080	-64.4%	-64.0%
Polycyclics	0.086	0.019	0.019	-77.9%	-77.9%
Total	16.43	3.850	3.900	-76.6%	-76.3%
VMT (millions per year)	999.2	1,343.7	1,356.1	34.5%	35.7%
Source: Study Team, (August 2019).					

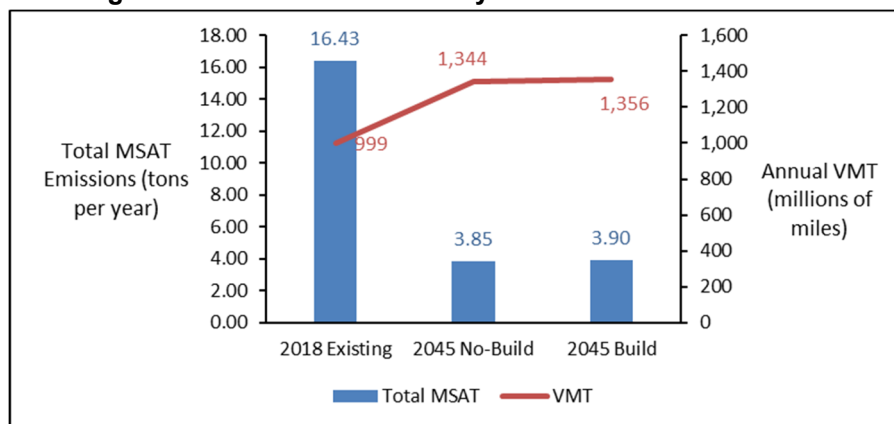
Figure 5-1: Annual Priority MSAT Emissions



Source: Table 5-3.

* Diesel PM is plotted as 50% of its actual value for visibility.

Figure 5-2: Total Annual Priority MSAT Emissions and VMT



Source: Study Team, (August 2019).

As documented in the *Quantitative Mobile Source Air Toxics Technical Report*, the quantitative assessment has acknowledged that the Build Alternative may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain and, because of this uncertainty, the health effects from these emissions cannot be estimated. Regardless of whether the No-Build Alternative or the Build Alternative is selected for the proposed project, the quantitative assessment indicates that total MSAT emissions are expected to be lower in 2045 No-Build and Build Alternative versus 2018 base year.

5.12.5 Congestion Management Process

The congestion management process (CMP) is a systematic process for managing congestion that provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs. The project was developed from the NCTCOG's CMP, which meets all requirements of 23 CFR 450.320 and 500.109, as applicable. The CMP was adopted by NCTCOG in 1994 and amended in 2013.

The region commits to operational improvements and travel demand reduction strategies at two levels of implementation: program level and project level. Program level commitments are inventoried in the regional CMP, which was adopted by NCTCOG; they are included in the financially constrained MTP, and future resources are reserved for their implementation.

The CMP element of the plan carries an inventory of all project commitments (including those resulting from major investment studies) that details the type of strategy, implementing responsibilities, schedules, and expected costs. At the project's programming stage, travel demand reduction strategies and commitments will be added to the regional TIP or included in the construction plans. The regional TIP provides for the programming of these projects at the appropriate time with respect to the single occupancy vehicle (SOV) facility implementation and project-specific elements.

Committed congestion reduction strategies and operational improvements within the study boundary will consist of roadway reconstruction, widening, and capacity improvements. Non-capacity congestion improvements associated with this project are the adding of shared use paths and sidewalks. Other improvements would entail frontage road and cross-street intersection turning lanes, signals, and ADA curb ramps. Individual projects are listed in **Table 5-4**.

Table 5-4: Congestion Management Process Strategies

Operational Improvements in Travel Corridor			
Location	Type	Project Code	Implementation Date
I-820 from I-20 to Brentwood Stair Road	Addition of Lanes	55041.0000	2023
US 287 from I-20 Interchange to Kennedale/Sublett Road	Addition of Lanes, Reconstruction	55042.0000	2022
I-20 from Anglin Drive to Park Springs	HOV	55043.0000	2023
US 287 from I-820 to Bishop Street	Addition of Lanes, Reconstruction	55044.0000	2022
I-20 from I-820/I-20 Interchange to Forest Hill Drive	55042.0000	55045.0000	2021

Source: NCTCOG Transportation Improvement Program Information System (TIPINS). Accessed February 10, 2020.

5.12.6 Construction Air Emissions

During the construction phase of this project, temporary increases in PM and MSAT emissions may occur from construction activities. The primary construction-related emissions of PM are fugitive dust from site preparation, and the primary construction-related emissions of MSAT are diesel particulate matter from diesel-powered construction equipment and vehicles.

The potential impacts of particulate matter emissions will be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. The Texas Emissions Reduction Plan (TERP) provides financial incentives to reduce emissions from vehicles and equipment. TxDOT encourages construction contractors to use this and other local and federal incentive programs to the fullest extent possible to minimize diesel emissions. Information about the TERP program can be found at: <https://www.tceq.texas.gov/airquality/terp>.

However, considering the temporary and transient nature of construction-related emissions, the use of fugitive dust control measures, the encouragement of the use of TERP, and compliance with

applicable regulatory requirements, it is not anticipated that emissions from construction of this project will have any significant impact on air quality in the area.

No-Build Alternative: The No-Build Alternative would result in gradually increasing vehicle miles traveled as traffic volumes increase and traffic congestion worsens within the existing roadway system over time. Actual and predicted trends in both criteria pollutant and MSAT emissions would be expected to continue in the future, regardless of the alternative chosen.

5.13 Hazardous Materials

A Hazardous Materials ISA and Hazardous Materials Project Impact Evaluation was completed to summarize potential hazardous materials within and adjacent to the project corridor. The ISA included reviewing project design and ROW requirements, reviewing existing and previous land use, reviewing federal and state regulatory databases and files, reviewing current and past USGS topographic maps, reviewing current and past aerial photographs, and conducting project site visits or field investigations. The ISA was completed to identify sites or facilities that might pose a potential for hazardous materials impacts to the proposed project.

Seven (7) regulatory sites, all identified as Leaking Petroleum Storage Tanks (LPST), were determined to pose either moderate or high environmental risk to the project and are shown on the **Resource Map in Appendix F**. The TCEQ regulatory files for the seven LPST sites were reviewed by TxDOT. As the project advances and detailed design is developed, further hazardous materials impact evaluation will be performed to determine the need for additional investigations. Information on the seven (7) LPST sites is presented in **Table 5-5** below.

Table 5-5: LPST Locations

Map ID	Site Information	Regulatory Database Listing	Environmental Concern Summary
13	Former Texaco 4901 E. California Pkwy (I-20) (Currently Texas Toast Autos)	LPST PST	The site formerly utilized two diesel PSTs, and two gasoline PSTs installed in 1985 and removed in 2003. Based on ROW acquisition and database records, this site is considered a moderate environmental risk to the project.
24	Zoom In Market 6 6020 E. Rosedale St.	LPST PST	The site is an active gas station utilizing two gasoline PSTs installed in 1996. The site formerly utilized three gasoline PSTs, all installed in 1987 and removed in 1996. TCEQ issued three Commissioner's Enforcement Orders (CEOs). Based on ROW acquisition, this site is considered a moderate environmental risk to the project.
28	Kwik Pik Food Mart 5304 Mansfield Hwy. (Bus 287) (Formerly 12G01 Mobil Service Station)	LPST (2) PST	The site is an active gas station utilizing one diesel PST and two gasoline PSTs installed in 1988. The site formerly utilized three gasoline PSTs installed in 1973 and removed in 1987. TCEQ issued two CEOs. One CEO is reported as "active." Based on ROW acquisition, the active CEO, and the active LPST investigation, this site is considered a high environmental risk to the project.
45	Texaco SS 6550 Forest Hill Dr.	LPST PST	The site is an active gas station utilizing one diesel PST, and three gasoline PSTs installed in 1995. The site formerly utilized one diesel PST and three gasoline PSTs installed in 1982 and removed in 1995; one used oil PST, installed in 1968 and removed in 1986; and one used oil PST, installed in 1986 and removed in 1995. Groundwater monitoring was performed from

Table 5-5: LPST Locations

Map ID	Site Information	Regulatory Database Listing	Environmental Concern Summary
	(Currently 7-Eleven 34098)		1989 to 1996. No ROW would be required. Based on the proximity of the tank hold relative to the proposed ROW, this site is considered a moderate environmental risk to the project.
46	Chevron 60106192 6101 E. Rosedale St., Fort Worth, TX (Currently Texaco)	LPST (2) PST	The site is an active gas station utilizing one split diesel/gasoline PST and one gasoline PST installed in 1995. The site formerly utilized one used oil PST installed in 1971, and three PSTs installed in 1981. All former PSTs were removed in 1989 TCEQ issued five CEOs. The statuses are reported "closed." An emergency response was reported on 10-12-2007. The database reports for two separate releases, Groundwater monitoring was conducted from 1992 through 2007. ROW acquisition and the displacement of the gas station would be required. This site is considered a high environmental risk to the project.
49	FFP 577 Earls Food Store 5800 E Berry St., Fort Worth, TX	LPST PST	The site is an active gas station utilizing one split diesel/gasoline PST installed in 2000. The site formerly utilized two gasoline PSTs installed in 1972 and removed in 1992. TCEQ issued a CEO in 2003. TCEQ reports groundwater monitoring from 2000 through 2002. TCEQ issued final concurrence on 5-2-02 and the case is closed. Based on the close proximity of the tank hold relative to the proposed ROW, this site is considered a moderate environmental risk to the project.
60	NCS 2380 6620 Brentwood Stair Rd., Fort Worth, TX 6612 Brentwood Stair Rd., Fort Worth, TX	LPST PST RCRAGR06	The site is an active gas station utilizing one split diesel/gasoline PST installed in 2011. The site formerly utilized two PSTs installed in 1969; one PST installed in 1974; and two PSTs, installed in 1983. All PSTs were removed in 2011. An emergency response occurred at the site on 9-30-13, and was issued five CEOs. All CEOs are reported "closed." Based on the proximity of the tank hold relative to the proposed ROW, this site is considered a moderate environmental risk to the project.

Utility Adjustments/Relocation — There is a potential for contamination to be encountered during utility adjustments. Coordination with utility companies concerning this contamination would be addressed during the ROW stage of project development. It is anticipated that all utility adjustments or relocation would be completed prior to construction.

Storm Water Drainage Structures in Contamination — The proposed project requires the installation of storm sewers. Due to the possible contamination from adjacent properties, special considerations or provisions for entry and monitoring in the project's PS&E may be required.

Possible Asbestos-Containing Materials — The proposed project includes the displacement of various buildings and bridge/overpass structures. The building and bridge structures may contain asbestos-containing materials. Asbestos inspections, specification, notification, license, accreditation, abatement and disposal, as applicable, would comply with federal and state regulations. Asbestos issues would be addressed during the ROW acquisition process for building structures and prior to construction for the bridge structure.

Lead-Based Paint — The proposed project includes the potential displacement of building structures and bridge replacements. The building and bridge structures may contain Lead-Based Paint (LBP). Further examination of paint-bearing building and bridge structures for LBP would be performed prior

to demolition. Any waste materials and construction debris containing LBP would be disposed of according to current disposal regulations of the TCEQ and EPA.

Active Pipelines – During the preliminary hazardous materials investigation, it was determined that six natural gas pipelines cross the project. One pipeline exists closely parallel to the project (south US 287) but is located outside the ROW. Based on the contents of the natural gas pipelines, these features are not considered an environmental concern. Formal utility locations and advance planning would be required to facilitate pipeline and utility adjustments and to otherwise avoid associated impacts. TxDOT Fort Worth District Subsurface Utility Engineering Coordinator and ROW will be responsible for the adjustments and displacements.

Special provisions or contingency language would be included in the project's construction plans to handle hazardous materials and/or petroleum contamination according to applicable federal and state regulations. In addition, the construction contractor would take appropriate measures to prevent, minimize, and control the spillage of hazardous materials in the construction staging area(s).

The No-Build Alternative would not have any environmental consequences related to hazardous materials impacts.

5.14 Traffic Noise

A traffic noise analysis was accomplished in accordance with TxDOT's (FHWA approved) *Guidelines for Analysis and Abatement of Roadway Traffic Noise (2011)* and TxDOT's *Reasonable Cost Proposal for 2018 Noise Policy* memo.

The Traffic Noise Analysis Technical Report identified 129 representative receivers along the project length (**Table 5-6** and **Noise Receiver Location Map in Appendix F**). Noise levels are expected to increase at most receivers. However, some receivers are not anticipated to experience increased noise levels and some are expected to experience decreased noise levels since the traffic noise modeling software is perceptible to changes in roadway geometry (moving traffic closer to or further from receivers).

Table 5-6: Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2045	Change (+/-)	Noise Impact
R1 - Single-family Residential	B	67	69	76	+7	Yes
R2 - Chua Vien An Temple (outdoor area)	C	67	68	74	+6	Yes
R3 - Single-family Residential	B	67	65	72	+7	Yes
R4 - Single-family Residential	B	67	64	72	+8	Yes
R5 - Single-family Residential	B	67	68	79	+11	Yes
R6 - Single-family Residential	B	67	67	78	+11	Yes
R7 - Single-family Residential	B	67	68	72	+4	Yes
R8 - Forest Hill United Methodist Church (interior)	D	52	44	48	+4	No

Table 5-6: Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2045	Change (+/-)	Noise Impact
R9 - Single-family Residential	B	67	71	74	+3	Yes
R10 - Vincent Victoria Village Assisted Living (interior)	D	52	44	49	+5	No
R11 - Agape Metropolitan Community Church (interior)	D	52	44	49	+5	No
R12 - Forest Hill Memorial Park (memorial benches)	C	67	68	73	+5	Yes
R13 - Single-family Residential	B	67	71	76	+5	Yes
R14 - Single-family Residential	B	67	70	72	+2	Yes
R15 - Single-family Residential	B	67	71	71	0	Yes
R16 - Single-family Residential	B	67	74	69	-5	Yes
R17 - Single-family Residential	B	67	73	73	0	Yes
R18 - Single-family Residential	B	67	72	67	-5	Yes
R19 - Knights Inn (motel, pool)	E	72	71	64	-7	No
R20 - Single-family Residential (mobile home)	D	52	46	43	-3	No
R21 - Galileo Christian Church (interior)	B	67	66	65	-1	No
R22 - Single-family Residential	B	67	64	62	-2	No
R23 - Single-family Residential	B	67	69	66	-3	Yes
R24 - Single-family Residential	B	67	71	69	-2	Yes
R25 - Single-family Residential	B	67	74	75	+1	Yes
R26 - Single-family Residential	B	67	66	66	0	Yes
R27 - Single-family Residential	B	67	63	63	0	No
R28 - Single-family Residential	B	67	70	73	+3	Yes
R29 - Kingdom Hall Church (interior)	D	52	43	42	-1	No
R30 - Sterling Crest Apartments (2-story)	B	67	78	78	0	Yes
R31 - Single-family Residential	B	67	71	74	+3	Yes

Table 5-6: Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2045	Change (+/-)	Noise Impact
R32 - The Trails Apartments (3-story)	B	67	74	74	0	Yes
R33 - Oak Chase Apartments (2-story)	B	67	73	74	+1	Yes
R34 - Parks at Tree Point (apartment, 2-story)	B	67	70	72	+2	Yes
R35 - Single-family Residential	B	67	62	65	+3	No
R36 - Single-family Residential	B	67	67	68	+1	Yes
R37 - Single-family Residential	B	67	68	73	+5	Yes
R38 - The Welcome Table Christian Church (interior)	D	52	42	45	+3	No
R39 - Old West Cafe (outdoor seating)	E	72	75	71	-4	Yes
R40 - Sonic Drive-In (restaurant, outdoor seating)	E	72	68	70	+2	No
R41 - Chick-fil-A (restaurant, outdoor seating)	E	72	66	68	+2	No
R42 - The Catch (restaurant, outdoor seating)	E	72	67	69	+2	No
R43 - Scholastic Education Center (school, interior)	D	52	44	45	+1	No
R44 - Single-family Residential	B	67	71	71	0	Yes
R45 - Single-family Residential	B	67	72	75	+3	Yes
R46 - Single-family Residential	B	67	67	68	+1	Yes
R47 - Single-family Residential	B	67	72	76	+4	Yes
R48 - Single-family Residential	B	67	68	68	0	Yes
R49 - Single-family Residential	B	67	68	71	+3	Yes
R50 - Single-family Residential	B	67	73	68	-5	Yes
R51 - Unlike Anything Else in the World (restaurant, outdoor seating)	E	72	63	65	+2	No
R52 - Single-family Residential	B	67	74	76	+2	Yes

Table 5-6: Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2045	Change (+/-)	Noise Impact
R53 - Pleasantview Baptist Church (interior)	D	52	44	41	-3	No
R54 - City Chapel (playground)	C	67	65	69	+4	Yes
R55 - Single-family Residential	B	67	73	76	+3	Yes
R56 - Amelia Parc Senior Apartments (4-story)	B	67	69	68	-1	Yes
R57 - The Villas by the Lake (2-story multifamily housing)	B	67	73	74	+1	Yes
R58 - Economy Inn (motel, outdoor area)	E	72	72	73	+1	Yes
R59 - Single-family Residential	B	67	64	68	+4	Yes
R60 - Sun Valley Church (interior)	D	52	42	46	+4	No
R61 - Single-family Residential (mobile home)	B	67	69	71	+2	Yes
R62 - Lakeview RV Park	B	67	68	68	0	Yes
R63 - Single-family Residential	B	67	67	72	+5	Yes
R64 - Good Shephard Temple of Praise (interior)	D	52	40	45	+5	No
R65 - Single-family Residential	B	67	69	72	+3	Yes
R66 - Without Walls Church of Fort Worth (interior)	D	52	42	46	+4	No
R67 - Holy Tabernacle Church of God in Christ (interior)	D	52	43	46	+3	No
R68 - Single-family Residential	B	67	70	74	+4	Yes
R69 - Single-family Residential	B	67	68	74	+6	Yes
R70 - Plaza Circle Park (memorial)	C	67	65	65	0	No
R71 - Single-family Residential	B	67	60	60	0	No
R72 - Single-family Residential	B	67	68	71	+3	Yes
R73 - Single-family Residential	B	67	61	63	+2	No
R74 - Single-family Residential	B	67	67	70	+3	Yes

Table 5-6: Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2045	Change (+/-)	Noise Impact
R75 - Scarborough-Handley Field (FWISD Football Stadium seating)	C	67	57	57	0	No
R76 - Single-family Residential	B	67	66	64	-2	No
R77 - Handley Park (baseball seating)	C	67	64	62	-2	No
R78 - Single-family Residential	B	67	72	73	+1	Yes
R79 - Single-family Residential	B	67	68	67	-1	Yes
R80 - New Victorious Baptist Church (interior)	D	52	41	42	+1	No
R81 - Single-family Residential	B	67	70	71	+1	Yes
R82 - Las Mariposas Apartments (2-story)	B	67	70	73	+3	Yes
R83 - Single-family Residential	B	67	71	75	+4	Yes
R84 - New Beginnings International Church (interior)	D	52	40	42	+2	No
R85 - Single-family Residential	B	67	73	76	+3	Yes
R86 - Chaparral Apartments (2-story)	B	67	75	76	+1	Yes
R87 - Saintsville Child Care (outdoor play area)	C	67	67	68	+1	Yes
R88 - Bridgewood Church of Christ (outdoor pavilion)	C	67	69	68	-1	Yes
R89 - Single-family Residential	B	67	67	69	+2	Yes
R90 - Single-family Residential	B	67	69	71	+2	Yes
R91 - Single-family Residential	B	67	69	70	+1	Yes
R92 - Single-family Residential	B	67	69	72	+3	Yes
R93 - Single-family Residential	B	67	64	66	+2	Yes
R94 - New Jerusalem Church (exterior)	D	52	40	40	0	No
R95 - Single-family Residential	B	67	70	72	+2	Yes
R96 - Single-family Residential	B	67	69	72	+3	Yes

Table 5-6: Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2045	Change (+/-)	Noise Impact
R97 - Single-family Residential	B	67	70	72	+2	Yes
R98 - Single-family Residential	B	67	71	73	+2	Yes
R99 - Single-family Residential	B	67	70	72	+2	Yes
R100 - Single-family Residential	B	67	71	72	+1	Yes
R101 - Saint John's Church (playground)	D	52	41	43	+2	No
R102 - Single-family Residential	B	67	66	67	+1	Yes
R103 - Magical Moments Day Care Center (playground)	C	67	66	67	+1	Yes
R104 - Single-family Residential	B	67	66	67	+1	Yes
R105 - Single-family Residential	B	67	69	70	+1	Yes
R106 - Unnamed Church (interior)	D	52	40	40	0	No
R107 - Single-family Residential	B	67	66	67	+1	Yes
R108 - Single-family Residential	B	67	65	67	+2	Yes
R109 - Single-family Residential	B	67	69	71	+2	Yes
R110 - Village Creek Park (trail bench)	C	67	70	72	+2	Yes
R111 - Single-family Residential	B	67	67	69	+2	Yes
R112 - Single-family Residential	B	67	68	71	+3	Yes
R113 - Single-family Residential	B	67	68	71	+3	Yes
R114 - Single-family Residential	B	67	71	74	+3	Yes
R115 - Single-family Residential	B	67	72	75	+3	Yes
R116 - Single-family Residential	B	67	69	72	+3	Yes
R117 - Single-family Residential	B	67	72	74	+2	Yes
R118 - Single-family Residential	B	67	70	73	+3	Yes
R119 - Hawkins Cemetery	C	67	70	71	+1	Yes
R120 - Single-family Residential	B	67	72	73	+1	Yes
R121 - Single-family Residential	B	67	71	74	+3	Yes
R122 - Single-family Residential	B	67	65	66	+1	Yes

Table 5-6: Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2045	Change (+/-)	Noise Impact
R123 - Single-family Residential	B	67	67	69	+2	Yes
R124 - Single-family Residential	B	67	68	69	+1	Yes
R125 - Single-family Residential	B	67	71	73	+2	Yes
R126 - Single-family Residential	B	67	66	67	+1	Yes
R127 - South Oaks Baptist Church (interior)	D	52	40	40	0	No
R128 - Chick-fil-A (restaurant, outdoor seating)	E	72	67	68	+1	No
R129 - Starbucks (coffee house, outdoor seating)	E	72	67	71	+4	Yes

As indicated in **Table 5-6**, the proposed project would result in traffic noise impact to the 95 receivers. The following noise abatement measures were considered: traffic management; alteration of horizontal and/or vertical alignments; acquisition of undeveloped property to act as a buffer zone; and the construction of noise barriers.

Before any abatement measure can be proposed for incorporation into the project, it must be both feasible and reasonable. In order to be "feasible", the abatement measure must be able to reduce the noise level at greater than 50% of impacted first row receivers by at least 5 dB(A); in order to be "reasonable", it must not exceed the cost-effectiveness criterion of \$52,500 for each receiver that would benefit by a reduction of at least 5 dB(A) and the abatement measure must be able to reduce the noise level of at least one impacted, first row receiver by at least seven dB(A).

The cost-effectiveness criteria can be met through the evaluation of individual noise barriers or through corridor-wide cost averaging of acoustically feasible noise barriers. Cost averaging provides a strategy that may be employed when there are numerous traffic noise impacts throughout a corridor where many impacts can be abated with traffic noise barriers that meet the cost-effectiveness criterion of \$52,500 for each benefitted receiver and other impacts can only be abated with barriers that exceed the cost-effectiveness criterion. By averaging the cost of the abatement measures together, the cost per benefitted receiver criterion may, in some cases, be met. Cost averaging requires that no single traffic noise abatement measure exceed two times the cost-effectiveness criterion (or \$105,000 per benefitted receiver) and that collectively all traffic noise abatement measures being averaged do not exceed \$52,500 per benefitted receiver. This noise analysis was conducted using the corridor-wide cost averaging strategy. In addition, an alternate barrier cost assessment was completed for the proposed noise barriers due to utilities and extra ROW requirements to construct the proposed noise barriers. A summary of the cost averaging methodology and the alternative barrier cost assessment worksheets can be found in the Traffic Noise Analysis Technical Report. **Table 5-7** summarizes the corridor-wide cost averaging analysis used for acoustically feasible noise barriers. These proposed barriers are shown on the **Noise Receiver Location Map** in **Appendix F**.

Table 5-7: Preliminary Barrier Proposal

Barrier	Benefitted Receiver(s)	Number Benefitted Receivers	Height (feet)	Total Length (feet)	Estimated Barrier Cost	Cumulative Cost Per Benefitted Receiver
1	R1	6	10	886 ¹	\$310,100	\$37,371
2	R2-R7, R9, R12, and R13	16	8	3,110 ²	\$870,800	\$38,547 ¹⁹
3	R23 and R25	17	16	2,150 ³	\$1,532,984 ²⁰	\$48,244 ¹⁹
4	R28 and R31	17	10	1,693	\$740,497 ²⁰	\$32,937
5	R30 and R32 through R34	68	20	2,985 ⁴	\$2,089,500	\$30,537
6	R36 and R37	22	10	2,409 ⁵	\$1,085,208 ²⁰	\$35,739
7	R45, R47 through R49	26	10	4,311 ⁶	\$1,508,850	\$41,734 ¹⁹
8	R52 and R55	18	10	2,201 ⁷	\$770,350	\$33,981
9	R61	9	14	942 ⁸	\$518,641 ²⁰	\$40,065 ¹⁹
10	R78	8	12	741 ⁹	\$311,220	\$32,171
11	R86	8	16	364 ¹⁰	\$231,349 ²⁰	\$28,919
12	R89 and R91	5	14	815 ¹¹	\$440,568 ²⁰	\$45,981 ¹⁹
13	R90	2	12	313	\$147,290 ²⁰	\$42,988 ¹⁹
14	R92, R95, R97, and R99	21	12	4,582 ¹²	\$1,924,440	\$50,826 ¹⁹
15	R98 and R100	11	8 - 12	2,498 ¹³	\$959,982	\$45,301 ¹⁹
16	R105, R109, and R111	10	12	1,438 ¹⁴	\$719,765 ²⁰	\$42,777 ¹⁹
17	R110	9	10	947	\$331,450	\$31,766
18	R112	7	12	689 ¹⁵	\$530,925 ²⁰	\$43,757 ¹⁹
19	R114, R115, and R117	18	14	1,837 ¹⁶	\$900,130	\$36,962
20	R116 and R118	21	10	1,883	\$659,050	\$30,721
21	R121 and R122	13	10	881 ¹⁷	\$715,037 ²⁰	\$39,420 ¹⁹
22	R123 through R126	27	12	2,175 ¹⁸	\$913,500	\$31,398
Cumulative Average per benefitted Receiver						\$50,826

Source: Project Team, February 2020.

¹ The proposed barrier consists of four barriers, one 79 feet long, one 171 feet long, one 227 feet long, and one 409 feet long.

² The proposed barrier consists of three barriers, one 282 feet long, one 2,309 feet long, and one 519 feet long.

³ The proposed barrier consists of two barriers, one 1,525 feet long and one 625 feet long.

⁴ The proposed barrier consists of two barriers, one 1,577 feet long and one 1,408 feet long.

⁵ The proposed barrier consists of three barriers, one 131 feet long, one 1,851 feet long and one 427 feet long.

⁶ The proposed barrier consists of six barriers, one 193 feet long, one 2,057 feet long, one 142 feet long, one 89 feet long, one 1,679 feet long, and one 151 feet long.

⁷ The proposed barrier consists of three barriers, one 1,177 feet long, one 855 feet long, and one 169 feet long.

⁸ The proposed barrier consists of two barriers, one 157 feet long and one 785 feet long.

⁹ The proposed barrier consists of three barriers, one 85 feet long, one 610 feet long, and one 46 feet long.

¹⁰ The proposed barrier consists of two barriers, one 156 feet long and one 208 feet long.

¹¹ The proposed barrier consists of three barriers, one 312 feet long, one 74 feet long, and one 429 feet long.

¹² The proposed barrier consists of four barriers, one 1,038 feet long, one 2,661 feet long, one 497 feet long, and one 386 feet long.

¹³ The proposed barrier consists of three barriers, one 555 feet long [12 feet tall], one 1,307 feet long [12 feet tall], and one 636 feet long [8 feet tall].

¹⁴ The proposed barrier consists of five barriers, one 257 feet long, one 124 feet long, one 518 feet long, one 407 feet long, and one 132 feet long.

¹⁵ The proposed barrier consists of two barriers, one 108 feet long and one 581 feet long.

¹⁶ The proposed barrier consists of seven barriers, one 581 feet long, one 200 feet long, one 423 feet long, one 227 feet long, one 117 feet long, one 168 feet long and one 121 feet long.

¹⁷ The proposed barrier consists of three barriers, one 118 feet long, one 618 feet long, and one 145 feet long.

¹⁸ The proposed barrier consists of four barriers, one 502 feet long, one 682 feet long, one 441 feet long, and one 550 feet long.

¹⁹ The cost per benefitted receiver exceeds the reasonableness criterion, but is still proposed due to cost averaging.

²⁰ Due to existing site constraints (utility relocation, and additional ROW), an Alternate Barrier Cost Assessment was performed and the additional estimated construction costs are included in the total cost of this barrier.

Any subsequent project design changes may require a reevaluation of this preliminary noise barrier proposal. The final decision to construct the proposed noise barrier will not be made until the completion of the project design, utility evaluation, and polling of adjacent property owners.

However, to avoid noise impacts that may result from the future development of properties adjacent to the project, local officials responsible for land use control programs must ensure, to the maximum extent possible, no new activities are planned or constructed along or within the following predicted (2045) noise impact contours (**Table 5-8**).

Table 5-8: Noise Impact Contours in the Project Study Area

Limits	Land Use NAC Category	Impact Contour	Distance from Proposed ROW Line
I-20 from Forest Hill Drive to I-820	B & C	66 dB(A)	235 feet
	E	71 dB(A)	60 feet
I-20 from I-820 to US 287	B & C	66 dB(A)	320 feet
	E	71 dB(A)	35 feet
I-20 from US 287 to Park Springs Boulevard	B & C	66 dB(A)	90 feet
	E	71 dB(A)	10 feet
I-820 from I-20 to US 287	B & C	66 dB(A)	270 feet
	E	71 dB(A)	90 feet
I-820 from US 287 to US 180	B & C	66 dB(A)	295 feet
	E	71 dB(A)	85 feet
I-820 from US 180 to I-30	B & C	66 dB(A)	345 feet
	E	71 dB(A)	130 feet
US 287 from Berry Street to I-820	B & C	66 dB(A)	75 feet
	E	71 dB(A)	5 feet
US 287 from I-20 to Sublett Road	B & C	66 dB(A)	180 feet
	E	71 dB(A)	40 feet

Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the receivers are expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

A copy of this traffic noise analysis will be available to local officials. On the date of this project's environmental decision (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

The proposed project would not be constructed under the No-Build Alternative. Traffic noise levels at modeled receiver locations would be expected to increase due to the increase in traffic volumes that would occur over time.

5.15 Induced Growth

An Induced Growth Analysis report was prepared for the Build Alternative in general accordance with TxDOT's Indirect Impacts Analysis Guidance.

The Build Alternative would provide increased accessibility to parcels in the project area. Considering land development constraints, the Preferred Alternative is expected to induce growth on approximately 126 acres, which is shown on **Appendix F, Resource Map**. Local/regional population and employment trends, as well as local and regional plans, support the idea that new development would occur in the area. The induced growth from the project could impact vegetation and wildlife habitat; however, none of those impacts are expected to be substantial since habitat for federally-listed species are not expected in these areas and based on existing regulations and land development requirements that would provide some resource protection. Additionally, the induced growth resulting from the project would be consistent with the development goals of the cities.

Under the No-Build Alternative, current development rates and patterns would remain constant, and no induced growth would occur. The No-Build Alternative would not have any environmental consequences related to induced growth impacts.

5.16 Cumulative Impacts

The proposed project is not expected to have substantial direct or indirect impacts on any resource, and the proposed project will not have any impact on a resource that is in poor or declining health. Based on this, no substantial cumulative impacts are anticipated, and a full cumulative impacts analysis was not conducted.

5.17 Construction Phase Impacts

Depending on required traffic control and phasing, the construction phase of the proposed project, and associated construction impacts, is anticipated to be 36 months. During the construction phase of the proposed project, there is the potential for noise, dust or light pollution; impacts associated with physical construction activity and other traffic disruptions. These potential impacts are discussed as follows:

- **Construction Noise** – There would be loud noise from heavy equipment during construction of the project. Noise associated with the construction is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns and would not be restricted to any specific location.

Construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the businesses and residences along the project are expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected.

Provisions would be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

- **Fugitive Dust and Air Pollutants** – During the construction phase of this project, temporary increases in particulate matter (PM) and MSAT emissions may occur from construction activities. The primary construction-related emissions of PM are fugitive dust from site preparation, and the primary construction-related emissions of MSAT are diesel PM from diesel-powered construction equipment and vehicles.

The potential impacts of PM emissions would be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. The Texas Emissions Reduction Plan (TERP) provides financial incentives to reduce emissions from vehicles and

equipment. TxDOT encourages construction contractors to use this and other local and federal incentive programs to the fullest extent possible to minimize diesel emissions. Information about the TERP program can be found at: <https://www.tceq.texas.gov/airquality/terp>.

However, considering the temporary and transient nature of construction-related emissions, the use of fugitive dust control measures, the encouragement of the use of TERP, and compliance with applicable regulatory requirements; it is not anticipated that emissions from construction of this project will have any significant impact on air quality in the area.

- **Light Pollution** – Construction normally occurs during daylight hours; however, construction could occur during the night-time hours to minimize impacts to the traveling public during the daylight hours.

Construction would occur during the night-time hours (7:00 PM – 6:00 AM). However, construction during the night-time hours would follow any local policies and ordinances established for construction activities, such as light limitations.

- **Temporary Lane, Road or Bridge Closures (Including Detours)** – Traffic control plans would be prepared and implemented in coordination with the city and the county. Construction that would require cross street closures would be scheduled so only one crossing in an area is affected at one time. Where detours are required, clear and visible signage for an alternative route would be displayed.

Motorists would be inconvenienced during the construction of the project due to lane and cross-street closures; however, these closures would be of short duration and alternate routes would be provided.

Residents and businesses in the immediate construction area would be notified in advance of proposed construction activity using a variety of techniques, including signage, electronic media, community newspapers, and other techniques. The proposed project would not restrict access to any existing public or community services, businesses, commercial areas, or employment centers.

The No-Build Alternative would not have any environmental consequences related to construction phase impacts.

6. Agency Coordination

This section identifies coordination conducted for the proposed project. The list below describes coordination and the status of ongoing coordination efforts.

- **THC/SHPO (see Section 5.8):** Historic properties coordination with SHPO occurred in 2006 and 2007 for an early version of the project, and that coordination concluded on March 8, 2007. Historic properties coordination with SHPO concerning the current version of the proposed project is on-going. Coordination with the SHPO regarding archeological resources and an early version of the project occurred in 2005, and SHPO concurred that no further archeological work was needed. Concerning the current version of the proposed project, TxDOT archeologists determined further SHPO coordination was not required. Coordination information is included in **Appendix G**.

- Tribal Consultation: Consultation with federally recognized Native American tribes was initiated on January 6, 2017, and again on May 31, 2019. No response was received from the federally recognized Native American tribes. The consultation letter and email are included in **Appendix G**.
- TPWD (see **Section 5.11**): An early version of the proposed project was coordinated with TPWD from April 25, 2006, to June 20, 2006. Coordination with TPWD following the TxDOT-TPWD MOU of the current proposed project was initiated on July 18, 2019, and completed on August 9, 2019. Coordination information is included in **Appendix G**.
- TCEQ: Per the TxDOT-TCEQ MOU, TCEQ will be afforded the opportunity to review and comment on the Draft EA. TxDOT will provide TCEQ with a Notice of Availability notifying them that the environmental documents are available for review.

7. Public Involvement

Proactive efforts to ensure meaningful opportunities for public participation are being provided throughout the duration of this proposed project.

2000 to 2003

In 2000, the TxDOT Fort Worth District initiated a Major Investment Study (MIS) that included design and environmental studies to address traffic congestion, traffic operations, and safety for the Southeast Loop I-820 project (now titled the Southeast Connector) including the I-20 and US 287 interchanges which merge I-820. The preferred alternative (MIS proposed solution) incorporated a reversible HOV/managed lane facility to facilitate direct travel from the northern segment of US 287 to the southern segment of US 287 and the eastern segment of I-20. A draft EA was prepared in March 2005. However, due to funding, the project was indefinitely placed on hold.

- Public Meetings: The first of two public information meetings and open houses were held on April 19, 2001. Citizens had an opportunity to view proposed project exhibits and express their concerns about proposed future improvements to I-820, I-20, and US 287. The second public meeting to present the locally preferred alternative was held on December 11, 2003.
- Stakeholder Meetings (dates unknown): The TxDOT analysis team met with members of the Handley Neighborhood Association; the Historic Handley Development Corporation; the City of Fort Worth Transportation and Planning Departments; and a local elected official. These meetings discussed project designs which included several options for retaining the Craig Street bridge in its current location, including one option recommended by a citizen of Handley. Many of these options involved maintaining the Craig Street bridge in its current location and all options presented control-of-access issues for access and egress from driveways on the southbound frontage road, along with additional residential relocations when compared with the initial design.

2016 to 2020

The current TxDOT Fort Worth District planning efforts for the Southeast Connector were initiated in 2016 to revise the previous Southeast Loop I-820 design. The revision is based on the MIS proposed solution with refinements via alternatives analyses, preliminary design and regional traffic modeling scenarios; public and agency outreach and input; property owner and stakeholder meetings; and additional public involvement efforts.

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- Project Coordination Meetings (2016-2017): TxDOT formed a Project Coordination Work Group to represent a broad range of the communities within and adjacent to the proposed project. The Work Group is made up of local, State, and Federal transportation agencies, neighborhood representatives, church leaders, chambers of commerce, State and Federal agencies, and elected officials. Work Group meetings were held generally bi-monthly and were open to the public.
 - Technical Work Group (TWG) Meeting #1, June 6, 2017: The meeting was conducted at the Fort Worth East Regional Library and was attended by representatives from TxDOT, FHWA-Texas Division, Trinity Metro, the NCTCOG, Tarrant County, Texas A&M University System, cities of Kennedale, Forest Hill, Mansfield, and the consultant team. The meeting presented the goal and objectives of the project, and start a dialogue between relevant agencies to better understand the needs of the corridor users. The meeting also presented the alternatives considered for the proposed project.
 - TWG Meeting #2, June 20, 2018: The meeting was conducted at the Fort Worth East Regional Library and was attended by representatives from TxDOT, the cities of Arlington, Kennedale, Fort Worth, and Mansfield, Trinity Metro, the NCTCOG, Southeast Tarrant Transportation Partnership, Tarrant County, Texas A&M University System, Fort Worth Chamber, and the consultant team. The meeting was to review the design and presentation that would be presented to the public at the July 19, 2018, Public Meeting.
 - City of Forest Hill Meeting, June 26, 2018: The City Council and City Manager Sheyi Ipaye invited TxDOT to explain the project at an advertised council meeting.
 - Public Meeting, July 19, 2018: An Open House format Public Meeting was conducted at Dunbar High School, 5700 Ramey Avenue, Fort Worth, TX 76112 from 6 to 8 p.m. The Public Meeting presented the recommended alternative and alternatives considered for the proposed project. A total of 273 people attended the meeting, consisting of 11 elected officials, 56 project representatives, and 206 general public. A total of 277 comments were received from the public concerning displacements, project design, traffic noise, and ROW acquisition. TxDOT responded to these comments and have been posted at txdot.gov.
 - Town Hall Meeting #1, August 16, 2018: Held by TxDOT Fort Worth District in coordination with State Representative, Nicole Collier at the Martin Luther King, Jr. Community Center. This location was chosen by State Representative Collier for her constituents. The meeting was focused on a section of the project that would impact State Representative Collier's constituents. The presentation/discussion involved project design and its potential impacts to this community.
 - City of Arlington Meeting, June 20, 2018: TxDOT met with the city engineer and staff to coordinate future city projects in relation to the Southeast Connector project.
 - Community Meeting, September 15, 2018: The meeting was conducted at the Handley United Methodist Church on September 15, 2018, by the TxDOT Fort Worth District in cooperation with Fort Worth City Councilmember Gyna Bivens of District 5, and city staff. The meeting was focused on a section of the project that would impact Councilmember Biven's constituents. The presentation/discussion involved project design and its potential impacts to this community.
 - City of Fort Worth Lions Club Meeting, October 30, 2018: The meeting was conducted at the Lions Club, 6013 Craig Street, Fort Worth, TX 76112. The purpose of the meeting was to provide information regarding the proposed recommended, preferred alternative improvements to the proposed project.

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- Town Hall Meeting #2, November 8, 2018: The meeting was conducted at the TCC Opportunity Center by TxDOT in cooperation with State Representative Nicole Collier and her staff. Via a PowerPoint presentation, TxDOT summarized the July 19, 2018, Southeast Connector Public Meeting comments and reviewed the ramping and pedestrian bridge options involving Meadowbrook Drive, Brentwood Stair Road, and Craig Street, and the design criteria and guidelines the Southeast Connector designers have to abide by to produce a safe and effective design. A question and answer session followed the presentation.
 - TWG Meeting #3, February 21, 2019: The meeting was conducted at the Fort Worth East Regional Library and was attended by representatives from TxDOT, the cities of Arlington, Forest Hill, Kennedale and Mansfield, FHWA-Texas Division, NCTCOG, Trinity Metro, Tarrant County Precinct 2, Tarrant County, the Southeast Tarrant Transportation Partnership, Texas A&M University System, Fort Worth Chamber, and the consultant team. The meeting presented the outcome of the July 19, 2019, Public Meeting (attendees and comments received) and discussed the Preliminary Design and Environmental Assessment phase of the proposed project.
 - Cities of Forest Hill and Kennedale Meetings, July 17, 2019: A meeting was held with the city planners to get their input on the proposed project's indirect impacts to their respective cities. Various adjacent undeveloped properties were indicated by planners as having the potential for induced growth which were included in the Induced Growth Analysis Technical Report.
 - City of Fort Worth Meeting, July 30, 2019: A meeting was held with the city planner to get their input on the proposed project's indirect impacts to the City of Fort Worth. Large areas were indicated as likely to undergo development in the future by planners and were later revised to indicate various adjacent undeveloped properties where the potential for induced growth was most likely to occur. These locations were included in the *Induced Growth Analysis Technical Report*.
 - Bicyclist and Pedestrian Design Coordination Meeting, July 30, 2019: Held by the TxDOT Fort Worth District and attended by the cities of Arlington, Forest Hill, Fort Worth, and Kennedale, NCTCOG, Fort Worth Bicycle Association, Streams and Valleys Organization, Lone Star Cyclists, and TxDOT Environmental Affairs and Design Division personnel. The meeting discussed the City of Fort Worth's plans for bike-pedestrian routes through each city.
 - Forest Hill Town Hall Meeting, December 10, 2019: The meeting was conducted at the Forest Hill Civic and Community Center at 6:00 pm. The meeting presented an overview of the proposed project and the project activity timeline beginning in 2017. These activities included information on the design process, previous public meeting, the preparation of the preliminary design and Environmental Assessment, a future Public Hearing and the anticipated beginning of construction. A total of 77 people attended the meeting, consisting of four elected officials, 45 general public, and 28 project representatives. A total of six comments were received from the public concerning the Anglin Drive South alternative, access, and emergency response times.
 - Village Creek Neighborhood Association (VCNA) Meeting, February 11, 2020: The meeting was conducted at the Eugene McCray Community Center at 6:00 p.m. TxDOT- Fort Worth District was invited to the meeting in order to brief the association on the proposed project. TxDOT presented an overview of the proposed project and focused on the portion that occurs near or directly involves the Village Creek area of the project such as access ramps, cross-streets access and I-820 links to/from US 287. The traffic analysis, proposed recommendations, project schedule and project contact information were discussed. A total of 35 people attended the meeting, consisting of VNCA

members, City of Fort Worth staff, TxDOT staff, and project consultants. A total of 12 verbal comments were received from the public concerning traffic congestion, project design, project timeline, and future public hearing date. Exhibit rolls of the existing and proposed portion of the proposed project were presented in the VCNA area of the corridor and copies of the presentation were handed out to all attendees.

Virtual Public Hearing

The COVID-19 pandemic is currently occurring in Texas and Tarrant County, which have been under a range of emergency declarations limiting the gathering of people. Based on this, a virtual public hearing is proposed in June 2020. The virtual public hearing will be in video format, and participation/viewing will require connection to the internet using a computer, tablet, smartphone, or other device. Additionally, the Draft EA and other project materials will be accessible through the internet at the project website. Not every household has access to a computer or smartphone or access to the internet. Libraries are a source of public access to computers and the internet but may not be an option for those in the study area due to the pandemic and possible library closures.

According to the US Census Bureau's 2014-2018 American Community Survey (available at <https://www.census.gov/acs/www/data/data-tables-and-tools/narrative-profiles/>), 93.1 percent of households in Tarrant County had a computer, and 84.3 percent had a broadband internet subscription. An estimated 80.5 percent of households had a desktop or laptop, 84.1 percent had a smartphone, 62.4 percent had a tablet or other portable wireless computer, and 4.6 percent had some other computer. Among all households, 64.9 percent had a cellular data plan; 70.5 percent had a broadband subscription such as cable, fiber optic, or DSL; 6.5 percent had a satellite internet subscription; 0.4 percent had dial-up alone; and 0.2 percent had some other service alone. According to a sampling of the same dataset for census tracts along the project corridors, the project area had a lower rate of household internet subscription service compared to the County. Households in the project area with a broadband internet subscription (including cellular data plans) ranged from 79.7 percent to 49.2 percent. The areas with lower incomes appear to be associated with fewer internet subscription numbers.

The video of the public hearing will be accessible in a mobile-friendly format. Additionally, the project website and online notices will be formatted to be mobile-friendly. The Draft EA and other project documents available on the project website will not be mobile-friendly.

To increase notification of the availability of project documents and notification of the public hearing to people along the project corridors and other stakeholders, project mailouts will not just be sent to those adjacent to the project (which is required by State rules) but will also be sent to properties most likely to experience effects associated with the various street closures and access changes. Additionally, the list of the stakeholders receiving project mailouts and emails has been expanded to include a range of stakeholders that are anticipated to have connections with communities along the project corridors. These notifications will direct the public to the project website to access project materials and will provide a phone number to allow the public to request assistance with accessing project materials and the public hearing. TxDOT will then contact those individuals. Assistance with accessibility of project materials and the public hearing video may include the delivery of compact discs (CDs) to a household or other accommodations.

Notice of Impending Construction

A notice of impending construction would be provided to owners of adjoining property and affected local governments and public officials. The notice may be provided via a sign or signs posted in the

ROW, mailed notice, printed notice distributed by hand, or notice via website when the recipient has previously been informed of the relevant website address. This notice would be provided after the environmental decision (i.e. FONSI), but before earthmoving or other activities requiring the use of heavy equipment begin.

8. Environmental Permits, Issues, and Commitments

8.1 Post-Environmental Clearance Activities

Activities to be completed after environmental clearance are listed and discussed as follows:

1. **Bicycle and Pedestrian Accommodations:** The final project design will be evaluated to ensure the proposed project incorporates the design elements to maximize bike/pedestrian accommodations at the Craig Street and Meadowbrook Drive crossings as described in **Section 5.6.3** of the EA.
2. **Hazardous Materials:** Seven regulatory sites, all identified as LPST, were determined to pose either moderate or high environmental risk to the project. As the project advances and detailed design is developed, further hazardous materials impact evaluation will be performed to determine the need for additional investigations.
3. **Traffic Noise:** Traffic noise barriers are proposed to abate traffic noise. In accordance with TxDOT Guidelines for Analysis and Abatement of Roadway Traffic Noise, polling of adjacent property owners would take place to determine whether or not property owners desire the noise barrier. Additionally, a traffic noise workshop would be held to provide information on the proposed noise barrier to adjacent property owners. The traffic noise workshop would be held after the public hearing. If the barrier status changes, additional notification will be made to affected property owners to discuss changes.

8.2 Contractor Communications

1. **Detours:** County and local public safety officials would be notified of any road closures or detours during construction. Detour timing and necessary rerouting of emergency vehicles would be coordinated with the proper local agencies during construction.
2. **EJ mitigation:** The design elements to maximize bike/pedestrian accommodations at the Craig Street and Meadowbrook Drive crossings are described in Section 5.6.3 of the EA.
3. **Archeological Resources:** If unanticipated archaeological deposits are encountered during construction, work in the immediate area would cease, and TxDOT archaeological staff would be contacted to initiate post-review discovery procedures.
4. **Construction (TPDES):** The contractor shall comply with the CGP and SW3P; complete, post and submit notice of intent and notice of termination to TCEQ and the MS4 operator; and inspect the project to ensure compliance with the CGP.
5. **Drinking Water Systems:** If any unknown wells are encountered during construction activities, they would need to be properly plugged in accordance with state statutes.
6. **Vegetation:** The contractor would avoid and minimize disturbance of vegetation and soils. All disturbed areas would be revegetated, according to TxDOT specifications, as soon as it becomes practicable. In accordance with EO 13112 on Invasive Species, the Executive Memorandum on Beneficial Landscaping, and the 1999 FHWA guidance on invasive species,

all revegetation would, to the extent practicable, use only native species. Furthermore, BMPs would be used to control and prevent the spread of invasive species.

7. Invasive Species: Preserve native vegetation to the extent practical. The contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, & 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.
8. Wetlands: The construction contractor would be required to avoid and minimize unnecessary impacts on wetlands during construction.
9. Migratory Birds: Before construction use measures to prevent or discourage birds from building nests on man-made structures within portions of the project area planned for construction and, schedule construction activities outside the typical nesting season to the extent practicable.
10. Threatened, Endangered, and Candidate Species: To mitigate the potential impacts to state threatened species and SGCNs, the following BMPs will be implemented:
 - a. Potential Occurrences: The contractor will be advised of potential occurrence in the project area and to avoid harm for the following species:
 - i. Amphibians - Strecker's chorus frog and Woodhouse's toad
 - ii. Fish Alligator gar and Western creek chubsucker
 - iii. Mammals - Big brown bat, Cave myotis bat, Eastern red bat, Mexican free-tailed bat, Hoary bat, Tricolored bat, Eastern spotted skunk, Plains spotted skunk, Mink, Long-tailed weasel, Swamp rabbit, and the Western hog-nosed skunk
 - iv. Mollusks - Louisiana pigtoe, Sandbank pocketbook, and the Texas heelsplitter
 - v. Reptiles - Eastern box turtle, Slender glass lizard, Smooth softshell, Texas garter snake, and the Timber rattlesnake
 - vi. Insects - American bumblebee
 - b. For amphibian and aquatic reptiles, the following BMPs would be implemented:
 - i. Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.
 - ii. Minimize impacts to wetland, temporary and permanent open water features, including depressions, and riverine habitats.
 - iii. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural

fiber netting is preferred. Plastic netting should be avoided to the extent practicable.

- iv. Project specific locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features.
- v. When work is directly adjacent to the water, minimize impacts to shoreline basking sites (e.g., downed trees, sand bars, exposed bedrock) and overwinter sites (e.g., brush and debris piles, crayfish burrows) where feasible.
- vi. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter, which may be refugia for terrestrial amphibians, where feasible.
- vii. When riprap or other bank stabilization devices are necessary, their placement should not impede the movement of terrestrial or aquatic wildlife through the water feature. Where feasible, biotechnical streambank stabilization methods using live native vegetation or a combination of vegetative and structural materials should be used.

c. For birds, the following BMPs would be implemented:

- i. Prior to construction, perform daytime surveys for nests including under bridges and in culverts to determine if they are active before removal. Nests that are active should not be disturbed.
- ii. Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season;
- iii. Avoid the removal of unoccupied, inactive nests, as practicable;
- iv. Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair;
- v. Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.
- vi. The Eagle Protection Act prohibits the taking or possession of and commerce in eagles, parts, feathers, nests, or eggs with limited exceptions. The definition of take includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. Eagles may not be taken for any purpose unless a permit is issued prior to the taking.
- vii. For the Whooping Crane, the following BMPs would be implemented:
- viii. Construction personnel would be informed of the potential for Whooping Cranes to occur within the project limits and advised to avoid adverse impacts to this species. Construction personnel shall report all sightings to TxDOT Fort Worth District Environmental staff.

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- d. For terrestrial reptiles, the following BMPs would be implemented:
- i. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, utilize erosion control blankets or mats that contain no netting or contain loosely woven, natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
 - ii. For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
 - iii. Inform contractors that if reptiles are found on project site allow species to safely leave the project area.
 - iv. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.
 - v. Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.
- e. For bat species, the following BMPs would be implemented:
- i. For activities that have the potential to impact structures, cliffs or caves, or trees; perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible.
 - ii. If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction.
 1. Exclusion devices can be installed by a qualified individual between September 1st and March 31st. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50 °F AND minimum daytime temperatures are above 70 °F.
 2. Before excluding bats from any occupied structure, bat species, weather, temperature, season, and geographic location must be incorporated into any exclusion plans to avoid unnecessary harm or death to bats. Winter exclusion must entail a survey to confirm either, 1) bats are absent or 2) present but active (i.e. continuously active - not intermittently active due to arousals from hibernation).
 3. Avoid using materials that degrade quickly, like paper, steel wool or rags, to close holes.
 4. Avoid using chemical and ultrasonic repellents.

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5. Avoid the use of flexible netting attached with duct tape.
 6. In order to avoid entombing bats, exclusion activities should be only implemented by a qualified individual. A qualified individual or company should possess at least the following minimum qualifications:
 - a. Experience in bat exclusion (the individual, not just the company).
 - b. Proof of rabies pre-exposure vaccinations.
 - c. Demonstrated knowledge of the relevant bat species, including maternity season date range and habitat requirements.
 - d. Demonstrated knowledge of rabies and histoplasmosis in relation to bat roosts.
 - iii. Conversion of property containing cave or cliff features to transportation purposes should be avoided where feasible.
 - iv. Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape.
 - v. Retain mature, large diameter hardwood forest species and native/ornamental palm trees where feasible.
 - vi. In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.
 - f. The following water quality BMPs would be implemented:
 - i. Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges.
 - ii. When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.
 - g. For freshwater mussel species, the following BMPs would be implemented:
 - i. When work is in the water; survey project footprints for state listed species where appropriate habitat exists.
 - ii. When work is in the water and mussels are discovered during surveys; relocate state listed and SGCN mussels under TPWD authorization.

11. Air Quality: The TERP provides financial incentives to reduce emissions from vehicles and equipment. TxDOT encourages construction contractors to use this and other local and federal incentive programs to the fullest extent possible to minimize diesel emissions. Implement fugitive dust control measures contained in standard specifications to minimize potential impacts of PM emissions during construction.
12. Hazardous Materials: The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area. All construction materials used for the proposed project would be removed as soon as the work schedules permit.
13. Bridge structures being demolished or renovated would need to be assessed and mitigated for Asbestos-Containing Materials and LBP, as needed, prior to the construction process according to Standard Specification Item 6.10 (and applicable Provisions), and the TxDOT guidance document: Guidance for Handling Asbestos in Construction Projects, dated January 26, 2007.
14. Traffic Noise: Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

9. Conclusion

Implementation of the proposed project would not result in a significant impact on the human or natural environment; therefore, a FONSI is recommended.

10. References

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11. Appendices