



Traffic Noise Analysis Technical Report

Southeast Connector

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

Tarrant County, Texas
Fort Worth District

CSJ: 0008-13-125, etc.

March 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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I. 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 proposed 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 proposed project is collectively referred to as the "Southeast Connector." Please see the following document and figures that have been uploaded into TXECOS: Project Description (0008-13-125, etc.).pdf, Project Location Map (0008-13-125, etc.).pdf, and Aerial Project Location Map (0008-13-125, etc.).pdf.

II. NOISE ASSESSMENT

This analysis was accomplished in accordance with TxDOT's (Federal Highway Administration [FHWA] approved) *Guidelines for Analysis and Abatement of Roadway Traffic Noise (2011)* and TxDOT's *Reasonable Cost Proposal for 2018 Noise Policy* memo.

Sound from highway traffic is generated primarily from a vehicle's tires, engine and exhaust. It is commonly measured in decibels and is expressed as "dB."

Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dB(A)."

Also, because traffic sound levels are never constant due to the changing number, type and speed of vehicles, a single value is used to represent the average or equivalent sound level and is expressed as "Leq."

The traffic noise analysis typically includes the following elements:

Identification of land use activity areas that might be impacted by traffic noise.

- Determination of existing noise levels.
- Prediction of future noise levels.
- Identification of possible noise impacts.
- Consideration and evaluation of measures to reduce noise impacts.

The FHWA has established the following Noise Abatement Criteria (NAC) for various land use activity areas that are used as one of two means to determine when a traffic noise impact would occur (Table 1).

Table 1: FHWA Noise Abatement Criteria

Activity Category	dB(A) Leq	Description of Land Use Activity Areas
A	57 (exterior)	Lands on which serenity and quiet are of extra-ordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	Residential
C	67 (exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	--	Agricultural, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.

A noise impact occurs when either the absolute or relative criterion is met:

Absolute criterion - The predicted noise level at a receiver approaches, equals or exceeds the NAC. "Approach" is defined as one dB(A) below the NAC. For example, a noise impact would occur at a Category B residence if the noise level is predicted to be 66 dB(A) or above.

Relative criterion - The predicted noise level substantially exceeds the existing noise level at a receiver even though the predicted noise level does not approach, equal or exceed the NAC. "Substantially exceeds" is defined as more than 10 dB(A). For example, a noise impact would occur at a Category B residence if the existing level is 54 dB(A) and the predicted level is 65 dB(A).

When a traffic noise impact occurs, noise abatement measures must be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area.

The FHWA traffic noise modeling software was used to calculate existing and predicted traffic noise levels. The model primarily considers the number, type and speed of vehicles; highway alignment and grade; cuts, fills and natural berms; surrounding terrain features; and the

locations of activity areas likely to be impacted by the associated traffic noise. Existing year traffic volumes utilized in the model were approved by TxDOT – Transportation Planning and Programing Division (TPP) and 2045 volumes were extrapolated utilizing the TxDOT-TPP approved data (August 20, 2019).

Existing and predicted traffic noise levels were modeled at receiver locations (**Table 2** and **Noise Receiver Location Map**) that represent the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

Table 2: 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
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 ¹	Yes
R16 - Single-family Residential	B	67	74	69	-5 ¹	Yes
R17 - Single-family Residential	B	67	73	73	0 ¹	Yes
R18 - Single-family Residential	B	67	72	67	-5 ¹	Yes
R19 - Knights Inn (motel, pool)	E	72	71	64	-7 ¹	No
R20 - Single-family Residential (mobile home)	D	52	46	43	-3 ¹	No
R21 - Galileo Christian Church (interior)	B	67	66	65	-1 ¹	No
R22 - Single-family Residential	B	67	64	62	-2 ¹	No
R23 - Single-family Residential	B	67	69	66	-3 ¹	Yes
R24 - Single-family Residential	B	67	71	69	-2 ¹	Yes
R25 - Single-family Residential	B	67	74	75	+1	Yes
R26 - Single-family Residential	B	67	66	66	0 ¹	Yes
R27 - Single-family Residential	B	67	63	63	0 ¹	No
R28 - Single-family Residential	B	67	70	73	+3	Yes
R29 - Kingdom Hall Church (interior)	D	52	43	42	-1 ¹	No
R30 - Sterling Crest Apartments (2-story)	B	67	78	78	0 ¹	Yes
R31 - Single-family Residential	B	67	71	74	+3	Yes
R32 - The Trails Apartments (3-story)	B	67	74	74	0 ¹	Yes

Table 2: Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2045	Change (+/-)	Noise Impact
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 ¹	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 ¹	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 ¹	Yes
R49 - Single-family Residential	B	67	68	71	+3	Yes
R50 - Single-family Residential	B	67	73	68	-5 ¹	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
R53 - Pleasantview Baptist Church (interior)	D	52	44	41	-3 ¹	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 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 ¹	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

Table 2: Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2045	Change (+/-)	Noise Impact
R69 - Single-family Residential	B	67	68	74	+6	Yes
R70 - Plaza Circle Park (memorial)	C	67	65	65	0 ¹	No
R71 - Single-family Residential	B	67	60	60	0 ¹	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
R75 - Scarborough-Handley Field (FWISD Football Stadium seating)	C	67	57	57	0 ¹	No
R76 - Single-family Residential	B	67	66	64	-2 ¹	No
R77 - Handley Park (baseball seating)	C	67	64	62	-2 ¹	No
R78 - Single-family Residential	B	67	72	73	+1	Yes
R79 - Single-family Residential	B	67	68	67	-1 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 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 ¹	No
R95 - Single-family Residential	B	67	70	72	+2	Yes
R96 - Single-family Residential	B	67	69	72	+3	Yes
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 ¹	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

Table 2: Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2045	Change (+/-)	Noise Impact
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
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 ¹	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

¹ - Sound levels are predicted by the traffic noise modeling software to perceptibly increase, remain the same, or decrease due to a change in roadway geometry (moving the traffic to/from the receiver).

As indicated in **Table 2**, 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.

III. PROPOSED MITIGATION

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 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 propose 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 **Attachments**.

Traffic management - Control devices could be used to reduce the speed of the traffic; however, the minor benefit of one dB(A) per five miles per hour reduction in speed does not outweigh the associated increase in congestion and air pollution. Other measures such as time or use restrictions for certain vehicles are prohibited on state highways.

Alteration of horizontal and/or vertical alignments - Any alteration of the existing alignment would displace existing businesses and residences, require additional right of way (ROW) and not be cost-effective/reasonable.

Buffer zone: the acquisition of undeveloped property to act as a buffer zone is designed to avoid rather than abate traffic noise impacts and, therefore, is not feasible.

Noise barriers - This is the most commonly used noise abatement measure. Noise barriers were evaluated for each of the impacted receiver locations.

Noise barriers would not be feasible and reasonable for the following impacted receivers and, therefore, are not proposed for incorporation into the project:

R14 and R15: These receivers represent 18 single-family residences. A continuous noise barrier along the ROW would restrict access to these residences. Gaps in the noise barriers would satisfy access requirements but the resulting noise barrier 822 feet in length (15 barriers, one 71 feet long, one 47 feet long, two 43 feet long, one 38 feet long, two 39 feet long, one 36 feet long, one 42 feet long, two 63 feet long, one 72 feet long, one 83 feet long, one 45 feet long, and one 98 feet long) and 20-foot tall non-continuous barrier segments would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 1,406 feet in length and 20 feet in height between the main lanes and frontage road would meet the 7 dB(A) design goal for at least one receiver, but it would fail to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers.

R16, R17 and R18: These receivers represent five single-family residences. A continuous noise barrier along the ROW would restrict access to these residences. Gaps in the noise barriers would satisfy access requirements but the resulting noise barrier 556 feet in length (three barriers, one 197 feet long, one 120 feet long, and one 239 feet long) and 20-foot tall non-continuous barrier segments would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 1,185 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R24: This receiver represents a single-family residence. A noise barrier 390 feet in length and 20 feet in height along the ROW would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R26: This receiver represents a single-family residence. A noise barrier cannot be proposed along the ROW because it would restrict access to a commercial property.

A noise barrier 173 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R39: This receiver represents Little Old West Cafe outdoor seating. A 500 feet in length and 20 feet in height along the ROW would fail to meet the minimum, feasible reduction of 5 dB(A) and the 7 dB(A) design goal for at least one receiver.

R44 and R46: These receivers represent 24 single-family residences. A noise barrier 1,110 feet in length and 20 feet in height would meet the 7 dB(A) design goal for at least one receiver, but it would fail to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers.

A noise barrier 1,472 feet in length (two barriers, one 660 feet long, and one 812 feet long) and 20 feet in height between the main lanes and frontage road would be achieve the 7 dB(A) design goal for at least one receiver , but would fail to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers.

R50: This receiver represents 12 single-family residences. A noise barrier 1,358 feet in length and 20 feet in height would meet the 7 dB(A) design goal for at least one receiver, but it would fail to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers.

R54: This receiver represents the City Chapel (playground). A noise barrier 286 feet in length and 20 feet in height along the ROW would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 945 feet in length and 20 feet in height along the ROW would be sufficient to achieve the minimum, feasible reduction of 5 dB(A) and the 7 dB(A) design goal for at least one receiver. However, the noise barriers would exceed the reasonable, cost-effectiveness criterion of \$52,500 per benefitted receiver and the cost averaging criterion of \$105,000 per benefitted receiver.

R56: This receiver represents the Amelia Parc Apartments, consisting 56 adjacent apartment units (including balconies). A noise barrier 727 feet in length (two barriers, one 319 feet long and one 408 feet long) and 20 feet in height would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 1,295 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R57: This receiver represents The Villas by the Lake apartments. There are eight adjacent apartment units (including balconies). A noise barrier 508 feet in length and 20 feet in height along the ROW would meet the 7 dB(A) design goal for at least one receiver; however, it would fail to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers.

A noise barrier 664 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R58: This receiver represents Economy Inn. A noise barrier 155 feet in length (two barriers, one 73 feet long and one 82 feet long) and 20 feet in height along the ROW would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 289 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R59: This receiver represents two single-family residences. A noise barrier 352 feet in length (two barriers, one 117 feet long and one 235 feet long) and 20 feet in height along the ROW would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 298 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R62: This receiver represents four single-family residences (mobile homes). A noise barrier 250 feet in length (two barriers, one 73 feet long and one 177 feet long) and 20 feet in height along the ROW would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 366 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R63: This receiver represents two single-family residences. A noise barrier 295 feet in length and 20 feet in height along the ROW would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 641 feet in length (2 barriers, one 421 feet long, and one 220 feet long) and 20 feet in height between the main lanes and frontage road would meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers, but would fail to meet the 7 dB(A) design goal for at least one receiver.

R65: This receiver represents two single-family residences. Access to cross streets and vacant property adjacent to the roadway excludes a barrier along the ROW as it would block access to the street and property. A noise barrier 352 feet in length and 20 feet in height along inside of the frontage road would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 379 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R68 and R69: These receivers represent 25 single-family residences. A continuous noise barrier along the ROW would restrict access to these residences. Gaps in the noise barriers would satisfy access requirements but the resulting noise barrier 2,056 feet in length (69 barriers, one 140 feet long, one 227 feet long, one 235 feet long, one 227 feet long, one 117 feet long, one 49 feet long, two 124 feet long, one 28 feet long, one 79 feet long, one 70 feet long, one 99 feet long, one 38 feet long, one 35 feet long, one 43 feet long, one 51 feet long, one 165 feet long, one 50 feet long, one 44 feet long, and one 42 feet long) and 20-foot tall non-continuous barrier segments would meet the 7 dB(A) design goal for at least

one receiver, but it would fail to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers.

A noise barrier 2,941 feet in length (two barriers, one 2,585 feet long, and one 356 feet long) and 20 feet in height between the main lanes and frontage road would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R72 and R74: These receivers represent 24 residences of a subdivision. A continuous noise barrier along the ROW would restrict access to these residences. Gaps in the noise barriers would satisfy access requirements but the resulting non-continuous 16-barrier segments would be less than 30 feet in length and 20 feet in height along the ROW and would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 2,572 feet in length (three barriers, one 466 feet long one 1,360 feet long, and one 746 feet long) and 20 feet in height between the main lanes and frontage road would meet the 7 dB(A) design goal for at least one receiver, but it would fail to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers.

R79 and R81: These receivers represent five single-family residences. A noise barrier 1,061 feet in length (six barriers, one 170 feet long, one 296 feet long, one 167 feet long, one 66 feet long, one 281 feet long, and one 79 feet long) and 20 feet in height along the ROW would be sufficient to achieve the minimum, feasible reduction of 5 dB(A) and the 7 dB(A) design goal for at least one receiver. However, the noise barriers would exceed the reasonable, cost-effectiveness criterion of \$52,500 per benefitted receiver and the cost averaging criterion of \$105,000 per benefitted receiver.

A noise barrier 810 feet in length (two barriers, one 411 feet long and one 399 feet long) and 20 feet in height between the main lanes and frontage road would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R82: This receiver represents Las Mariposas Apartments. There are 56 adjacent apartment units (including balconies). A noise barrier 685 feet in length (three barriers, one 179 feet long, one 293 feet long, and one 213 feet long) and 20 feet in height along the ROW would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 800 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R83 and **R85**: These receivers represent 15 single-family residences. A noise barrier 1,708 feet in length (seven barriers, one 276 feet long, one 135 feet long, one 139 feet long, one 206 feet long, one 284 feet long, one 338 feet long, and one 330 feet long) and 14 feet in height along the ROW would meet the minimum, feasible reduction of 5 dB(A) and the 7 dB(A) design goal for at least one receiver. However, the noise barriers would exceed the reasonable, cost-effectiveness criterion of \$52,500 per benefitted receiver and the cost averaging criterion of \$105,000 per benefitted receiver.

A noise barrier 2,340 feet in length (two barriers, one 1,068 feet long and one 1,272 feet long) and 20 feet in height between the main lanes and frontage road would meet the minimum feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers, but it would fail to achieve the 7 dB(A) design goal for at least one receiver.

R87: Saintsville Child Care (play area). A noise barrier 161 feet in length (two barriers, one 37 feet long and one 124 feet long) and 20 feet in height along the ROW would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 1,067 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R88: This receiver represents the Bridgewood Church of Christ (pavilion). A noise barrier 648 feet in length (two barriers, 335 feet long and one 313 feet long) and 20 feet in height along ROW would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R93: This receiver represents three single-family residences. A noise barrier 148 feet in length and 20 feet in height along the ROW would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 159 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R96: This receiver represents seven single-family residences. A noise barrier 837 feet in length (three barriers, one 182 feet long, one 327 feet long, and one 328 feet long) and 16 feet in height along the ROW would meet the 7 dB(A) design goal for at least one receiver, but it would fail to achieve the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers .

A noise barrier 1,072 feet in length and 14 feet in height between the main lanes and frontage road would meet the minimum, feasible reduction of 5 dB(A) and the 7 dB(A) design goal for

at least one receiver. However, the noise barriers would exceed the reasonable, cost-effectiveness criterion of \$52,500 per benefitted receiver and the cost averaging criterion of \$105,000 per benefitted receiver.

R102: This receiver represents six single-family residences. A noise barrier 280 feet in length and 20 feet in height along the ROW would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 1,310 feet in length (two barriers, one 565 feet long and one 745 feet long) and ranging from 8 to 20 feet in height between the main lanes and frontage road would meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers, but would not be sufficient to achieve the 7 dB(A) design goal for at least one receiver.

R103: This receiver represents Magical Moments Day Care Center (playground). A noise barrier 549 feet in length and 20 feet in height along the ROW would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 1,075 feet in length (two barriers, one 565 feet long and one 510 feet long) and ranging from 8 to 20 feet in height between the main lanes and frontage road would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R104: This receiver represents three single-family residences. A noise barrier 381 feet in length (two barriers, one 152 feet long and one 229 feet long) and 20 feet in height along the ROW would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 362 feet in length and 20 feet in height between the main lanes and frontage road would not meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R107 and R108: These receivers represent two single-family residences. A noise barrier 301 feet in length (three barriers, one 166 feet long, one 47 feet long, and one 88 feet long) and 20 feet in height along the ROW would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 544 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R113: This receiver represents three single-family residences. A noise barrier 502 feet in length and 20 feet in height along the inside of the frontage road would not be sufficient to

meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 476 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R119: This receiver represents Hawkins Cemetery. A noise barrier 200 feet in length and 20 feet in height along the inside of the frontage road would meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers, but would fail to meet the 7 dB(A) design goal for at least one receiver.

A noise barrier 625 feet in length and 20 feet in height between the main lanes and frontage road would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

R122: This receiver represents one single-family residence. A noise barrier 406 feet in length (two barriers, one 296 feet long and one 110 feet long) and 20 feet in height along the ROW would not be sufficient to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

A noise barrier 1,215 feet in length and 20 feet in height between the main lanes and frontage road would meet the minimum, feasible reduction of 5 dB(A), but would fail to meet the 7 dB(A) design goal for at least one receiver.

R129: This receiver represents Starbucks (outdoor seating). A noise barrier 423 feet in length and 20 feet in height along the ROW to meet the minimum, feasible reduction of 5 dB(A) for at least 50 percent of the first row receivers and the 7 dB(A) design goal for at least one receiver.

Noise barriers would be feasible and reasonable for the following impacted receivers and, therefore, are proposed for incorporation into the project (**Table 3**).

R1: This receiver represents eight single-family residences. Based on preliminary calculations, a noise barrier 886 feet in length (four barriers, one 79 feet long, one 171 feet long, one 227 feet long, and one 409 feet long) and 10 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for six first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$310,100 or \$51,683 for each benefitted receiver. The estimated cost of the barrier is cost-effective stand alone; therefore, this noise barrier is proposed for incorporation into the proposed project.

R2 through R7, R9, R12, and R13: These receivers represent 16 single-family residences, Chua Vien An Temple, and Forest Hill Memorial Park. Based on preliminary calculations, a noise barrier 3,110 feet in length (three barriers, one 282 feet long, one 2,309 feet long, and one 519 feet long) and 8 feet in height along the ROW would reduce noise levels by at least

5 dB(A) for 16 first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$870,800 or \$54,425 for each benefitted receiver. The estimated cost of the barrier exceeds the reasonable, individual cost-effectiveness criterion of \$52,500 per benefitted receiver, but is less than the cost averaging criterion of \$105,000 per benefitted receiver. The cumulative estimated build cost per benefitted receiver is \$38,547 and is cost-effective cumulatively; therefore, this noise barrier is proposed for incorporation into the proposed project.

R23 and R25: These receivers represent 27 single-family residences. 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. Based on preliminary calculations, a noise barrier 2,150 feet in length (two barriers, one 1,525 feet long and one 625 feet long) and 16 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for 17 first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$1,532,984 or \$90,176 for each benefitted receiver. The estimated cost of the barrier exceeds the reasonable, individual cost-effectiveness criterion of \$52,500 per benefitted receiver, but is less than the cost averaging criterion of \$105,000 per benefitted receiver. The cumulative estimated build cost per benefitted receiver is \$48,244 and is cost-effective cumulatively; therefore, this noise barrier is proposed for incorporation into the proposed project.

R28 and R31: These receivers represent 21 single-family residences. 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. Based on preliminary calculations, a noise barrier 921 feet in length and 10 feet in height between the main lanes and frontage road would reduce noise levels by at least 5 dB(A) for 11 first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$470,297 or \$42,754 for each benefitted receiver. The estimated cost of the barrier is cost-effective stand alone; therefore, this noise barrier is proposed for incorporation into the proposed project

R30 and R32 through R34: This receiver represents the Sterling Crest Apartments (14 adjacent apartment units, including balconies), The Trails apartments (52 adjacent apartment units, including balconies), the Oak Chase Apartments (16 adjacent apartment units, including balconies), and the Parks at Tree Point apartments (24 adjacent apartment units including balconies). Based on preliminary calculations, a noise barrier 2,985 feet in length (two barriers, one 1,577 feet long and one 1,408 feet long) and 20 feet in height between the main lanes and frontage road would reduce noise levels by at least 5 dB(A) for 68 first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$2,089,500 or \$30,728 for each benefitted receiver. The estimated cost of the barrier is cost-effective stand alone; therefore, this noise barrier is proposed for incorporation into the proposed project.

R36 and R37: These receivers represent 28 single-family residences. 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. Based on preliminary calculations, a noise barrier 2,409 feet in length (three barriers, one 131 feet long, one 1,851 feet long and one 427 feet long) and 10 feet in height between the main lanes and frontage road would reduce noise levels by at least 5 dB(A) for 22 first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$1,085,208 or \$49,328 for each benefitted receiver. The estimated cost of the barrier is cost-effective stand alone; therefore, this noise barrier is proposed for incorporation into the proposed project.

R45 and R47 through R49: These receivers represent 39 single-family residences. Two crossings of Key Branch the noise barrier has to be split between the ROW and the main lanes. Based on preliminary calculations, a noise barrier 4,311 feet in length (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) and 10 feet in height along the ROW and main lanes would reduce noise levels by at least 5 dB(A) for 26 first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$1,508,850 or \$58,033 for each benefitted receiver. The estimated cost of the barrier exceeds the reasonable, individual cost-effectiveness criterion of \$52,500 per benefitted receiver, but is less than the cost averaging criterion of \$105,000 per benefitted receiver. The cumulative estimated build cost per benefitted receiver is \$41,734 and is cost-effective cumulatively; therefore, this noise barrier is proposed for incorporation into the proposed project.

R52 and R55: These receivers represent 29 single-family residences. Based on preliminary calculations, a noise barrier 2,201 feet in length (three barriers, one 1,177 feet long, one 855 feet long, and one 169 feet long) and 10 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for 18 first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$770,350 or \$42,797 for each benefitted receiver. The estimated cost of the barrier is cost-effective stand alone; therefore, this noise barrier is proposed for incorporation into the proposed project.

R61: This receiver represents 14 single-family residences (mobile homes). 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. Based on preliminary calculations, a noise barrier 942 feet in length (two barriers, one 157 feet long and one 785 feet long) and 14 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for nine first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$518,641 or \$57,627 for each benefitted receiver. The estimated cost of the barrier exceeds the reasonable, individual cost-effectiveness criterion of \$52,500 per benefitted receiver, but is less than the cost averaging criterion of \$100,500 per benefitted receiver. The cumulative estimated build cost per benefitted

receiver is \$40,065 and is cost-effective cumulatively; therefore, this noise barrier is proposed for incorporation into the proposed project.

R78: This receiver represents 11 single-family residences. Based on preliminary calculations, a noise barrier 741 feet in length (three barriers, one 85 feet long, one 610 feet long, and one 46 feet long) and 12 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for eight first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$311,220 or \$38,903 for each benefitted receiver. The estimated cost of the barrier is cost-effective stand alone; therefore, this noise barrier is proposed for incorporation into the proposed project.

R86, Chaparral Apartments (20 adjacent apartment units including balconies). 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. Based on preliminary calculations, a noise barrier 364 feet in length (two barriers, one 156 feet long and one 208 feet long) and 16 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for eight first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$231,349 or \$28,919 for each benefitted receiver. The estimated cost of the barrier is cost-effective stand alone; therefore, this noise barrier is proposed for incorporation into the proposed project.

R89 and R91: This receiver represents six single-family residences. 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. Based on preliminary calculations, a noise barrier 815 feet in length (three barriers, one 312 feet long, one 74 feet long, and one 429 feet long) and 14 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for five first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$440,568 or \$88,114 for each benefitted receiver. The estimated cost of the barrier exceeds the reasonable, individual cost-effectiveness criterion of \$52,500 per benefitted receiver, but is less than the cost averaging criterion of \$105,000 per benefitted receiver. The cumulative estimated build cost per benefitted receiver is \$45,981 and is cost-effective cumulatively; therefore, this noise barrier is proposed for incorporation into the proposed project.

R90: This receiver represents two single-family residences. 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. Based on preliminary calculations, a noise barrier 313 feet in length and 12 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for two first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$147,290 or \$73,645 for each benefitted receiver. The estimated cost of the barrier exceeds the reasonable, individual cost-effectiveness criterion of \$52,500 per benefitted receiver, but is

less than the cost averaging criterion of \$105,000 per benefitted receiver. The cumulative estimated build cost per benefitted receiver is \$42,988 and is cost-effective cumulatively; therefore, this noise barrier is proposed for incorporation into the proposed project.

R92, R95, R97, and R99: These receivers represent 31 single-family residences. Based on preliminary calculations, a noise barrier 4,582 feet in length (four barriers, one 1,038 feet long, one 2,661 feet long, one 497 feet long, and one 386 feet long) and 12 feet in height between the main lanes and frontage road would reduce noise levels by at least 5 dB(A) for 21 first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost \$1,924,440 or \$91,640 for each benefitted receiver. The estimated cost of the barrier exceeds the reasonable, individual cost-effectiveness criterion of \$52,500 per benefitted receiver, but is less than the cost averaging criterion of \$105,000 per benefitted receiver. The cumulative estimated build cost per benefitted receiver is \$50,826; therefore, this noise barrier is proposed for incorporation into the proposed project.

R98 and R100: These receivers represent 16 single-family residences. Based on preliminary calculations, a noise barrier 2,498 feet in length (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]) and ranging from 8 to 12 feet in height between the main lanes and frontage road would reduce noise levels by at least 5 dB(A) for 11 first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$959,982 or \$87,271 for each benefitted receiver. The estimated cost of the barrier exceeds the reasonable, individual cost-effectiveness criterion of \$52,500 per benefitted receiver, but is less than the cost averaging criterion of \$105,000 per benefitted receiver. The cumulative estimated build cost per benefitted receiver is \$45,301; therefore, this noise barrier is proposed for incorporation into the proposed project.

R105, R109, and R111: This receiver represents 13 single-family residences. 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. Based on preliminary calculations, a noise barrier 1,438 feet in length (five barriers, one 257 feet long, one 124 feet long, one 518 feet long, one 407 feet long, and one 132 feet long) and 12 feet in height between the main lanes and frontage road would reduce noise levels by at least 5 dB(A) for 10 first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of 719,765 or \$71,977 for each benefitted receiver. The estimated cost of the barrier exceeds the reasonable, individual cost-effectiveness criterion of \$52,500 per benefitted receiver, but is less than the cost averaging criterion of \$105,000 per benefitted receiver. The cumulative estimated build cost per benefitted receiver is \$42,777; therefore, this noise barrier is proposed for incorporation into the proposed project.

R110: This receiver represents the Village Creek Park. Based on average residential property size of adjacent neighborhoods the park is represented by 11 receivers. Preliminary

calculations indicate that a noise barrier 947 feet in length and 10 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for nine first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$331,450 or \$36,828 for each benefitted receiver. The proposed barrier is cost-effective stand alone; therefore, this noise barrier is proposed for incorporation into the proposed project.

R112: This receiver represents eight single-family residences. 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. Based on preliminary calculations, a noise barrier 689 feet in length (two barriers, one 108 feet long and one 581 feet long) and 12 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for seven first row receivers and achieve the 5 dB(A) design goal for at least one receiver at a total cost of 530,925 or 75,846 for each benefitted receiver. The estimated cost of the barrier exceeds the reasonable, individual cost-effectiveness criterion of \$52,500 per benefitted receiver, but is less than the cost averaging criterion of \$105,000 per benefitted receiver. The cumulative estimated build cost per benefitted receiver is \$43,757; therefore, this noise barrier is proposed for incorporation into the proposed project.

R114, R115, and R117: These receivers represent 23 single-family residences. Based on preliminary calculations, a noise barrier 1,837 feet in length (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) and 14 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for 18 first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$900,130 or \$50,007 for each benefitted receiver. The proposed barrier is cost-effective stand alone; therefore, this noise barrier is proposed for incorporation into the proposed project

R116 and R118: These receivers represent 23 single-family residences. Based on preliminary calculations, a noise barrier 1,883 feet in length and 10 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for 21 first row receivers and achieve the 5 dB(A) design goal for at least one receiver at a total cost of \$659,050 or \$31,383 for each benefitted receiver. The proposed barrier is cost-effective stand alone; therefore, this noise barrier is proposed for incorporation into the proposed project.

R120 and R121: This receiver represents 14 single-family residences. 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. Based on preliminary calculations, a noise barrier 881 feet in length (three barriers, one 118 feet long, one 618 feet long, and one 145 feet long) and 10 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for 13 first row receivers and achieve the 5 dB(A) design goal for at least one receiver at a total cost of \$715,037 or \$55,003 for each benefitted receiver. The estimated cost of the barrier exceeds the

reasonable, individual cost-effectiveness criterion of \$52,500 per benefitted receiver, but is less than the cost averaging criterion of \$105,000 per benefitted receiver. The cumulative estimated build cost per benefitted receiver is \$39,420; therefore, this noise barrier is proposed for incorporation into the proposed project.

R123 through R126: These receivers represent 54 single-family residences. Based on preliminary calculations, a noise barrier 2,175 feet in length (four barriers, one 502 feet long, one 682 feet long, one 441 feet long, and one 550 feet long) and 12 feet in height along the ROW would reduce noise levels by at least 5 dB(A) for 27 first row receivers and achieve the 7 dB(A) design goal for at least one receiver at a total cost of \$913,500 or \$33,833 for each benefitted receiver. The proposed barrier is cost-effective stand alone; therefore, this noise barrier is proposed for incorporation into the proposed project.

Table 3 summarizes the corridor-wide cost averaging analysis used for acoustically feasible noise barriers.

Table 3: 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	11	10	921	\$470,297 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

Table 3: Preliminary Barrier Proposal

Barrier	Benefitted Receiver(s)	Number Benefitted Receivers	Height (feet)	Total Length (feet)	Estimated Barrier Cost	Cumulative Cost Per Benefitted Receiver
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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 completion of the project design, utility evaluation, and polling of adjacent property owners.

However, to avoid noise impacts that may result from 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 4**).

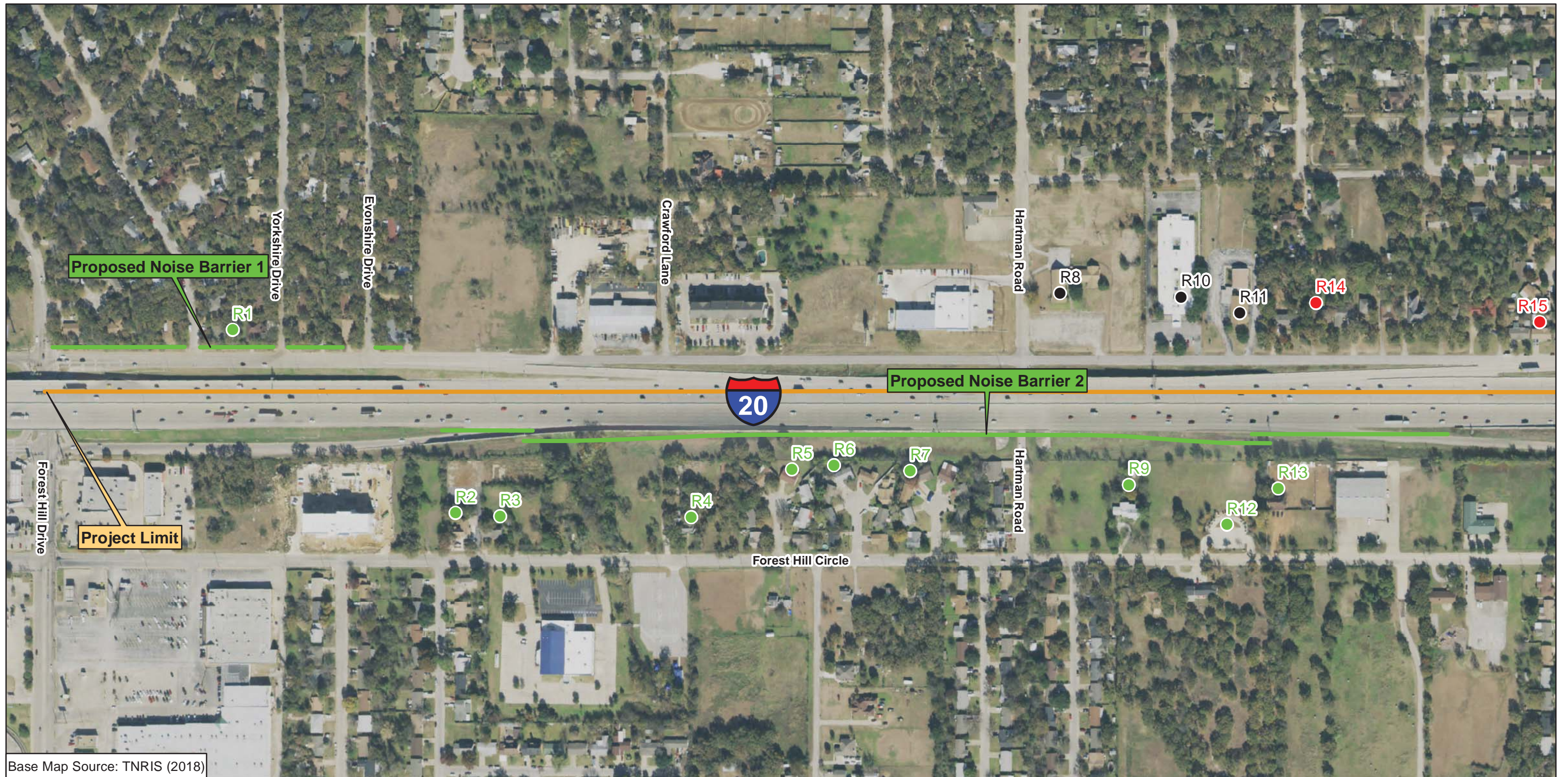
Table 4: Noise Impact Contours in the Project Study Area

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 approval of this document (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

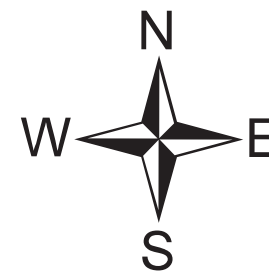
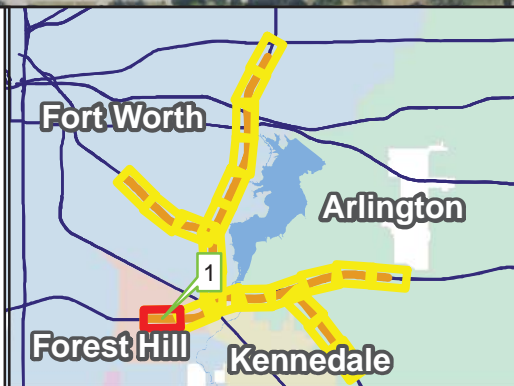
ATTACHMENTS



Base Map Source: TNRIS (2018)

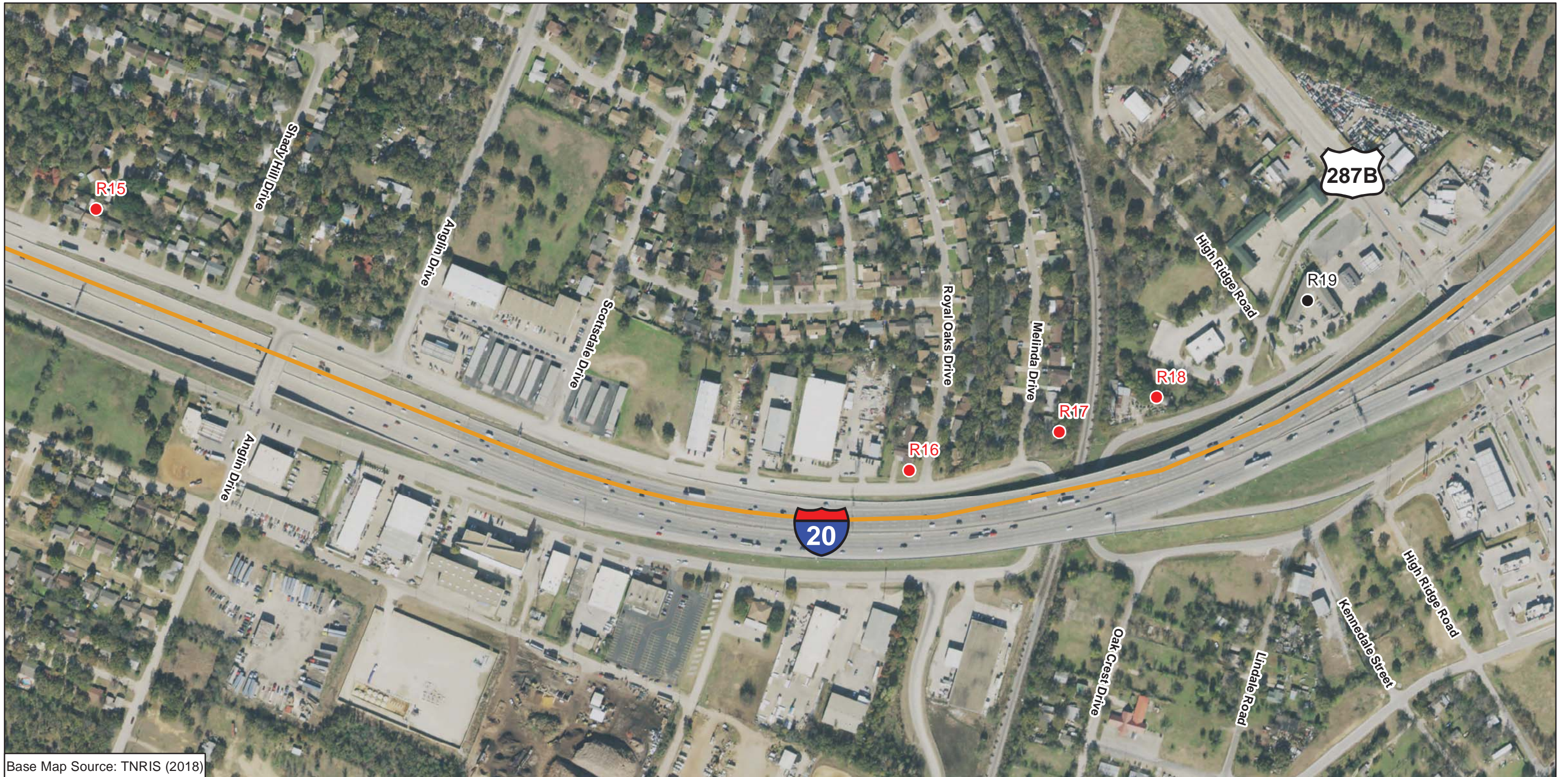
Legend

- Non-impacted Receiver
- Impacted Receiver
- Mitigated Receiver
- Project Limits
- Proposed Noise Wall



**NOISE RECEIVER LOCATION MAP
SOUTHEAST CONNECTOR**

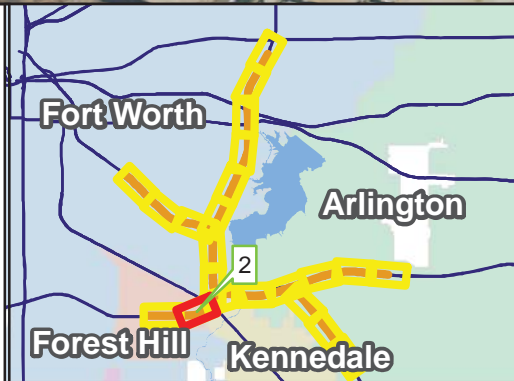
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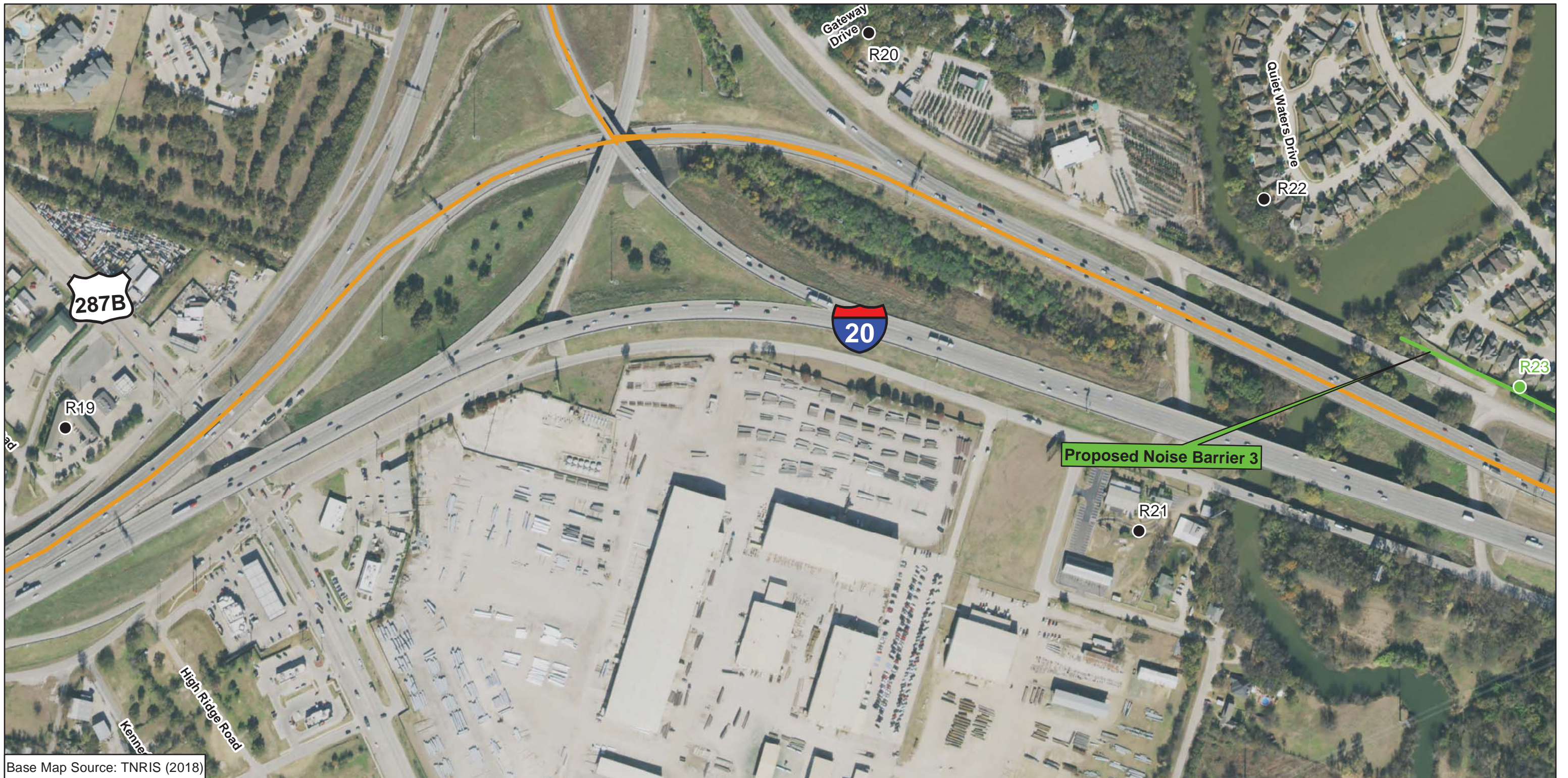
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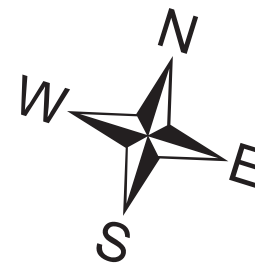
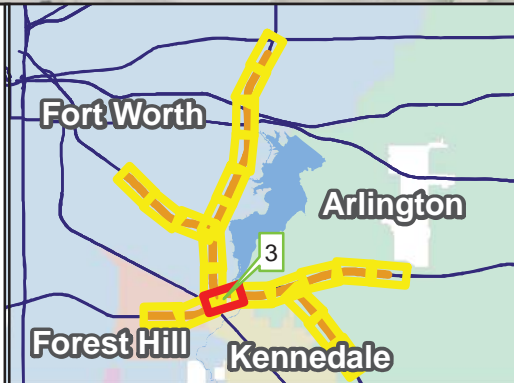
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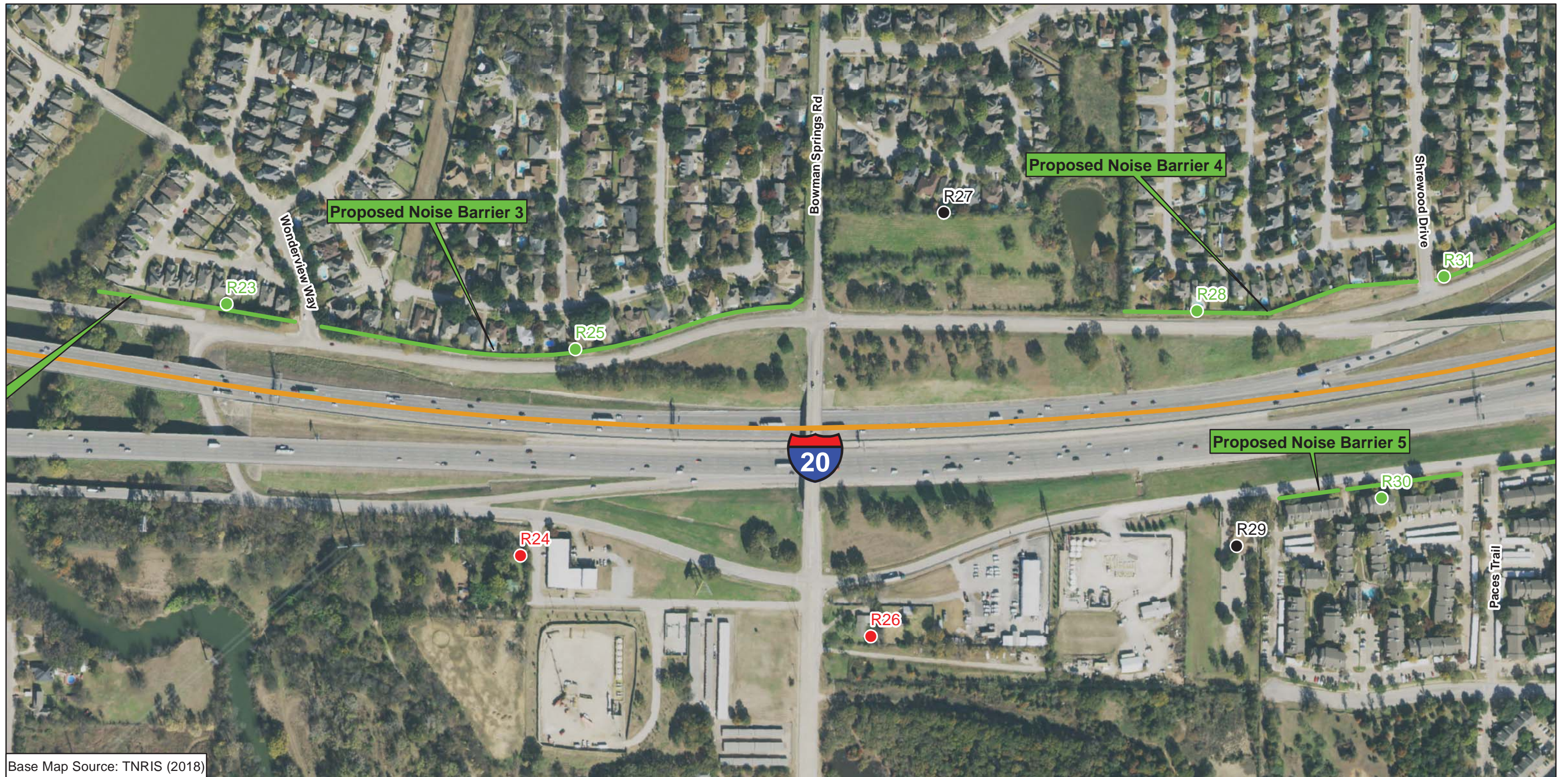
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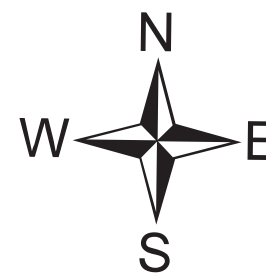
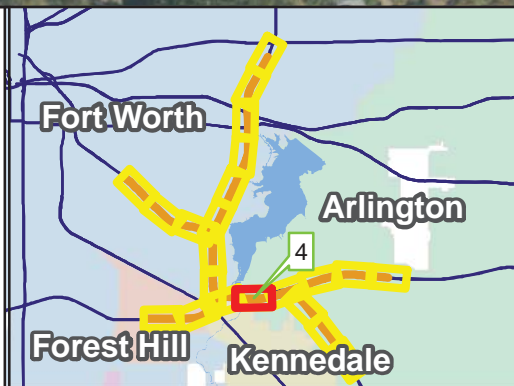
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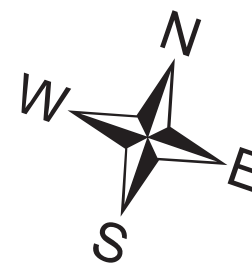
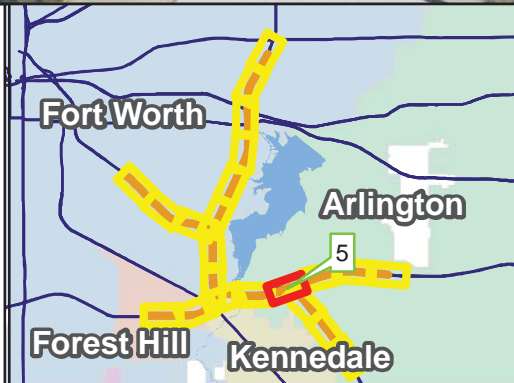
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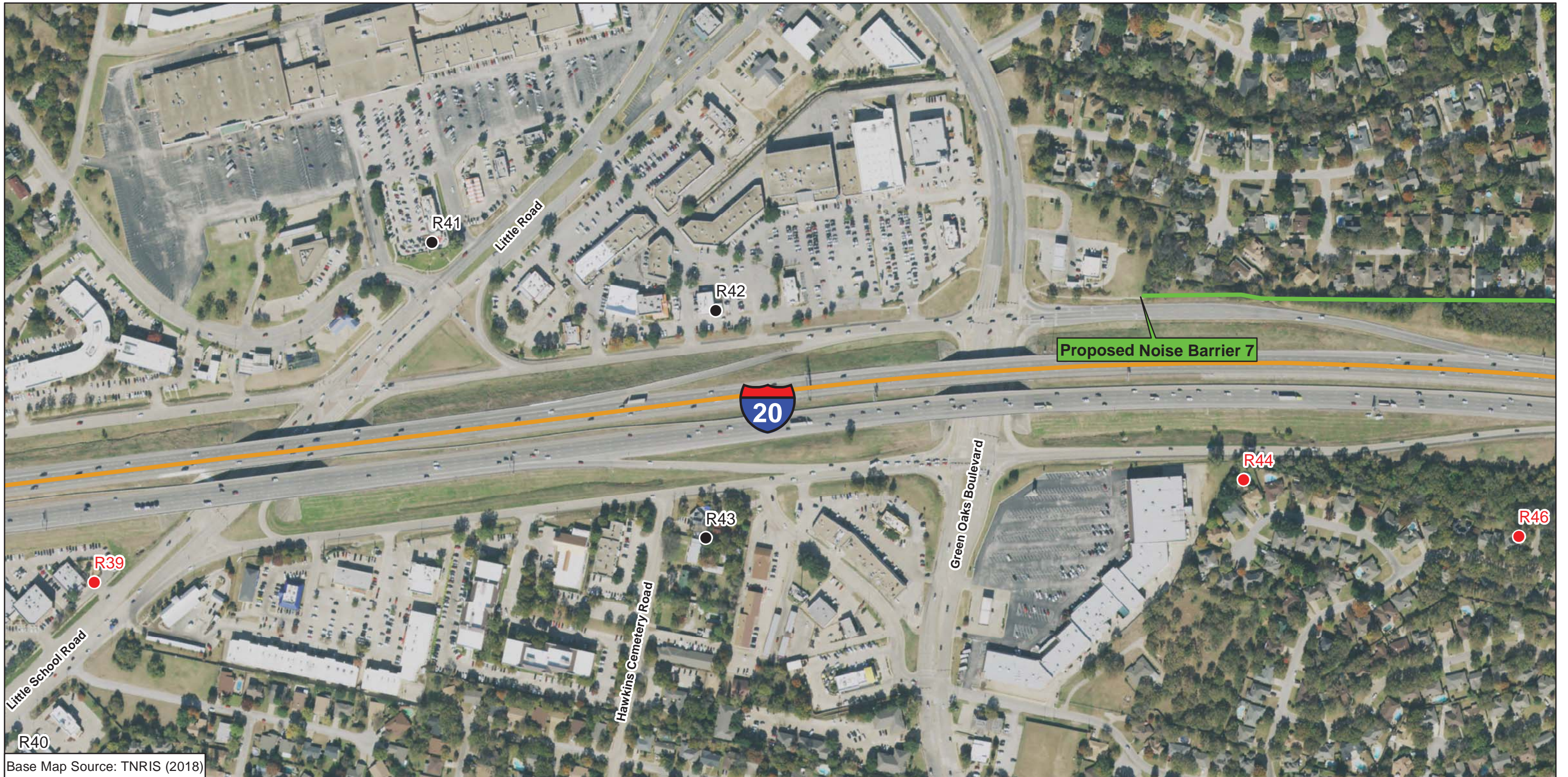
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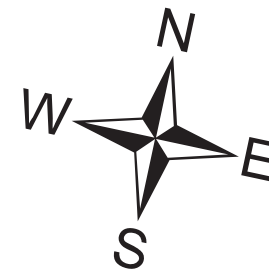
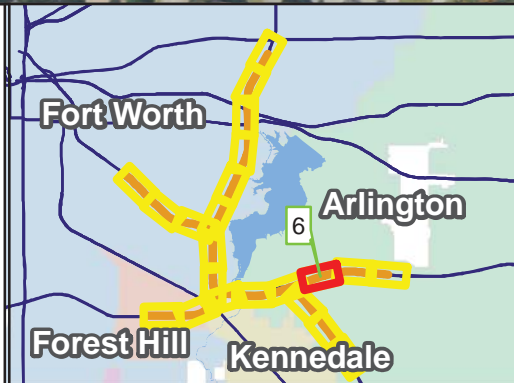
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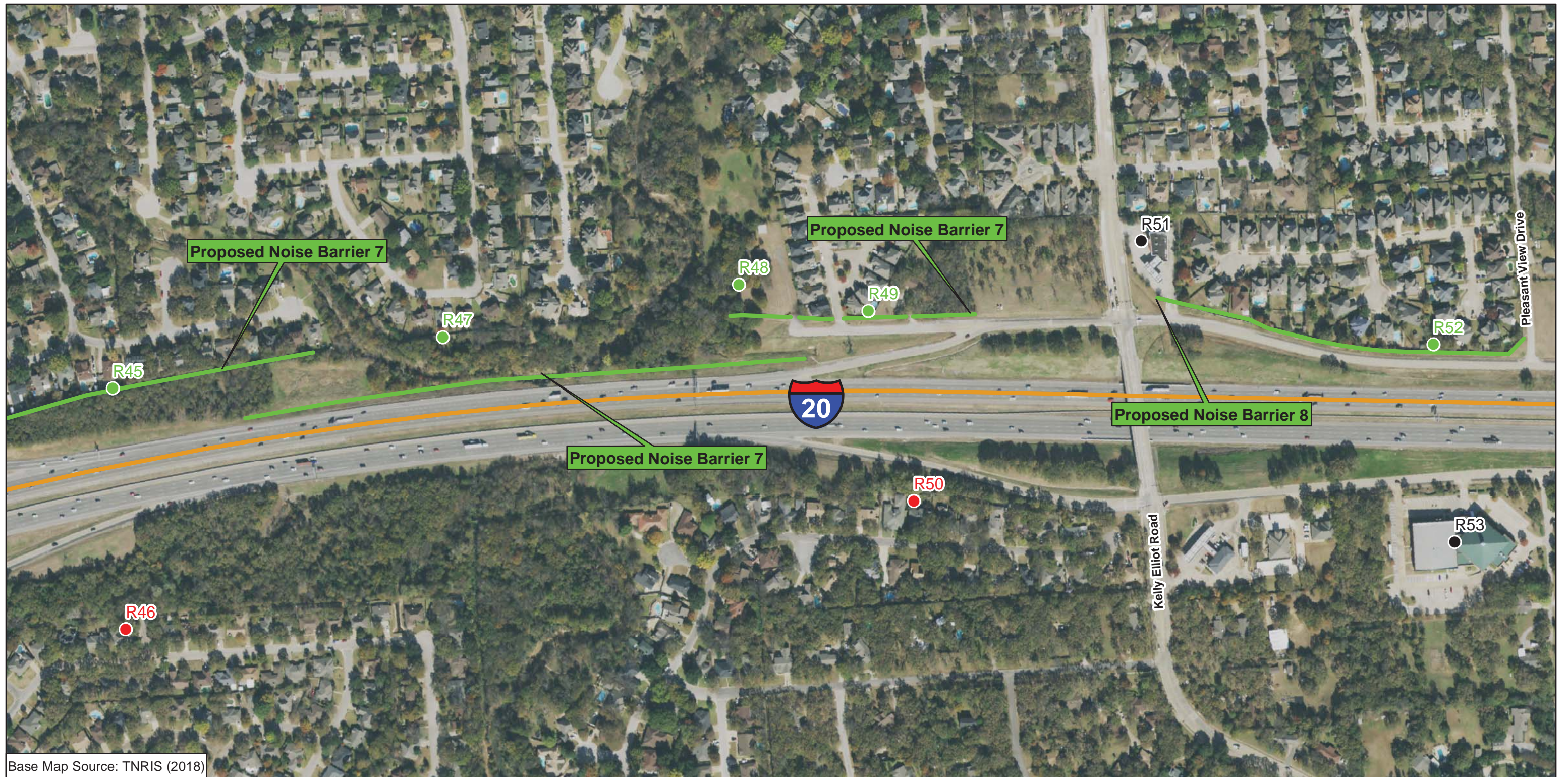
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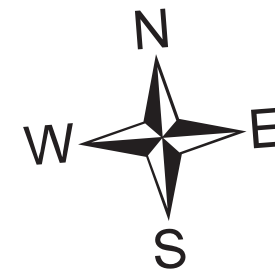
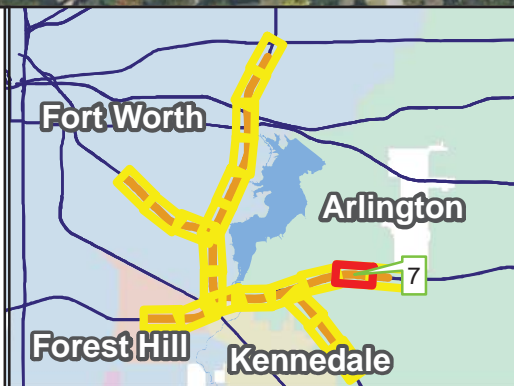
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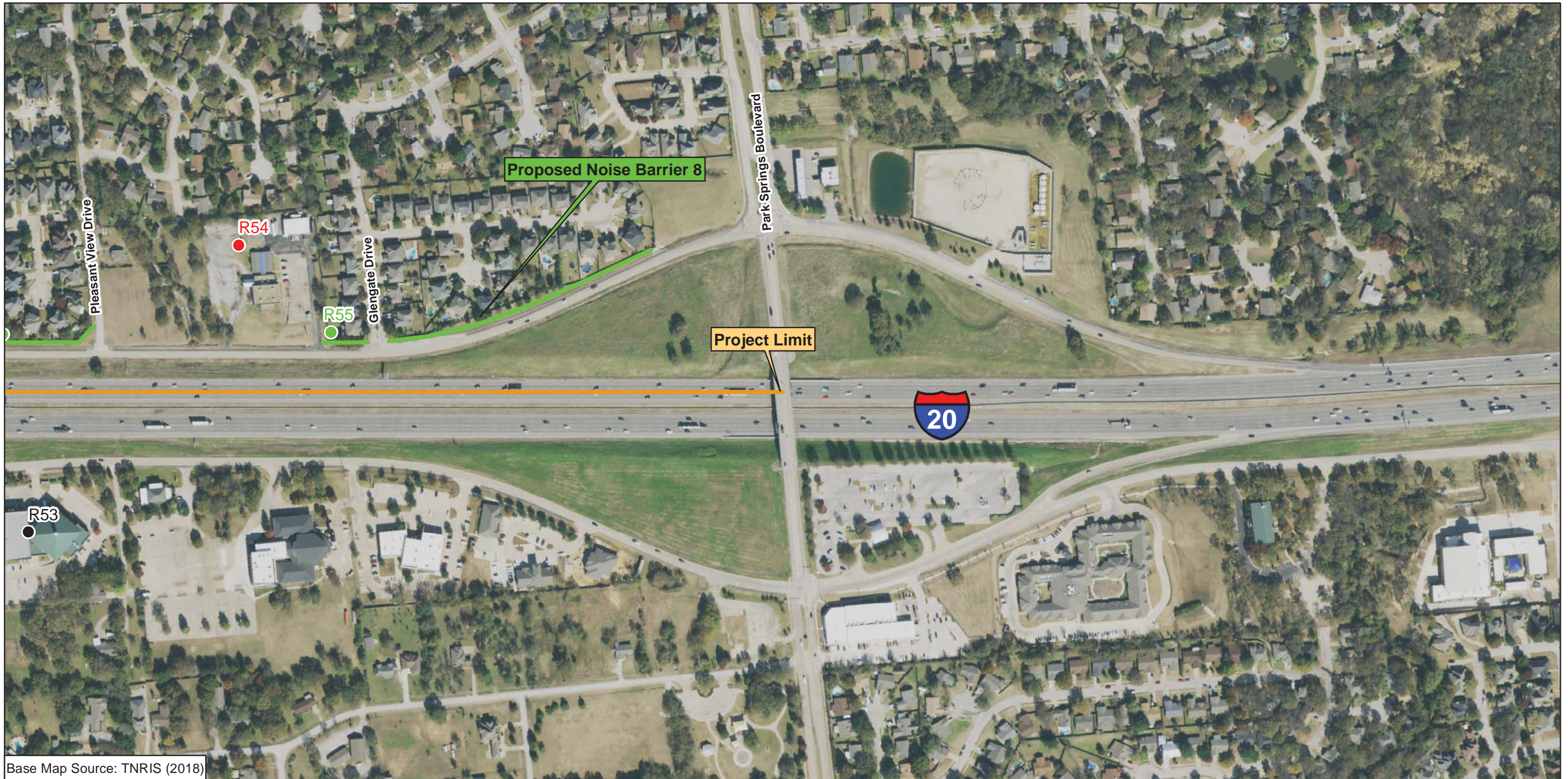
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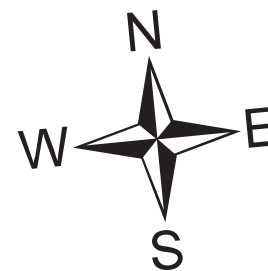
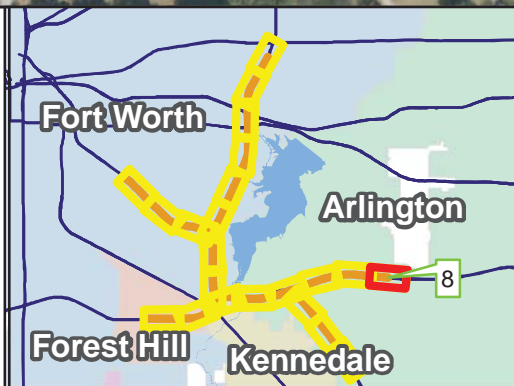
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SOUTHEAST CONNECTOR**

I-20/I-820/US 287 Interchanges

I-20

From Forest Hill Dr to Park Springs Blvd

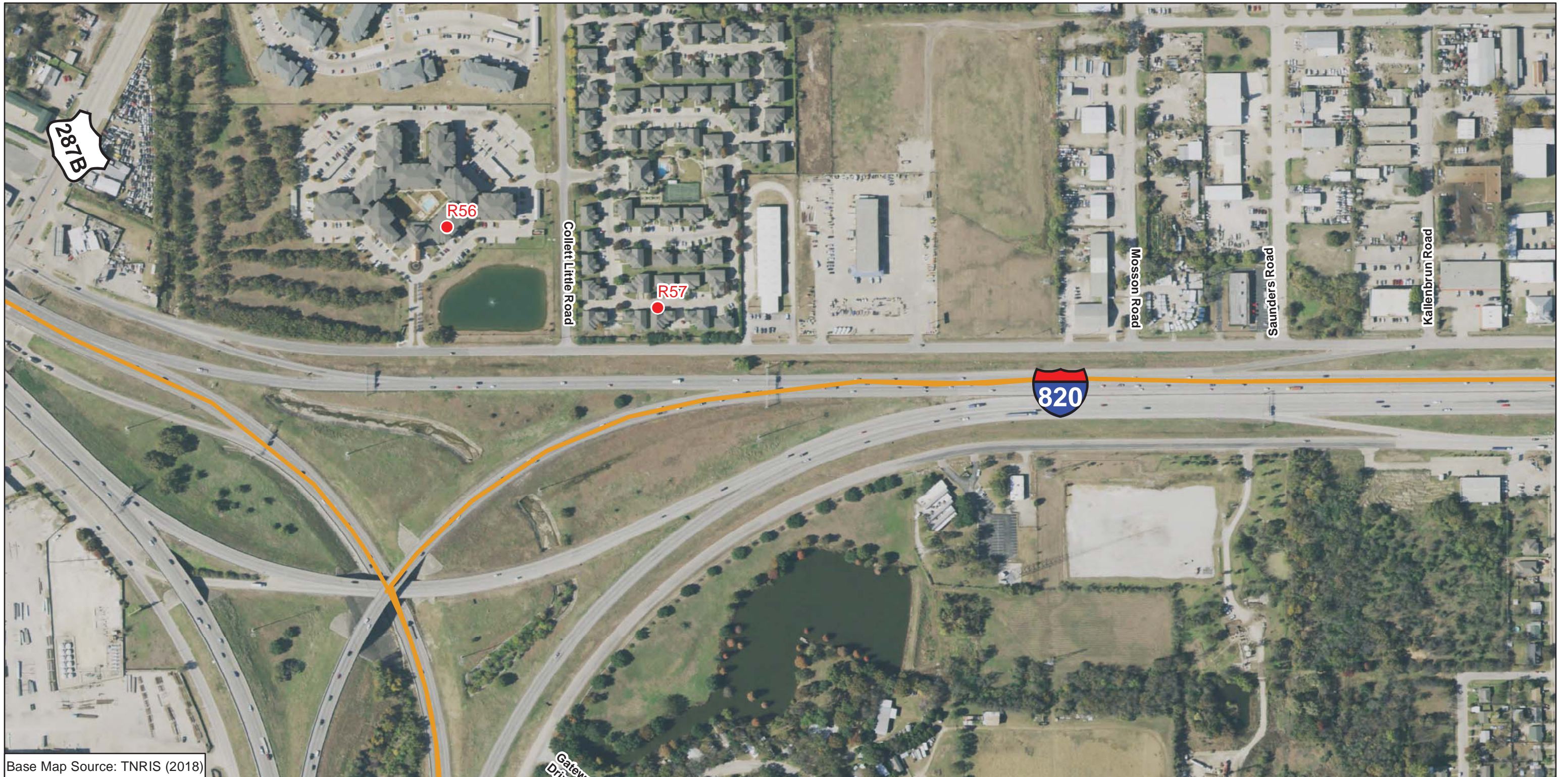
I-820

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US 287

From Bishop Street to Sublett Rd

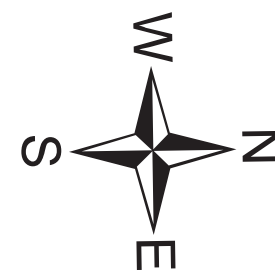
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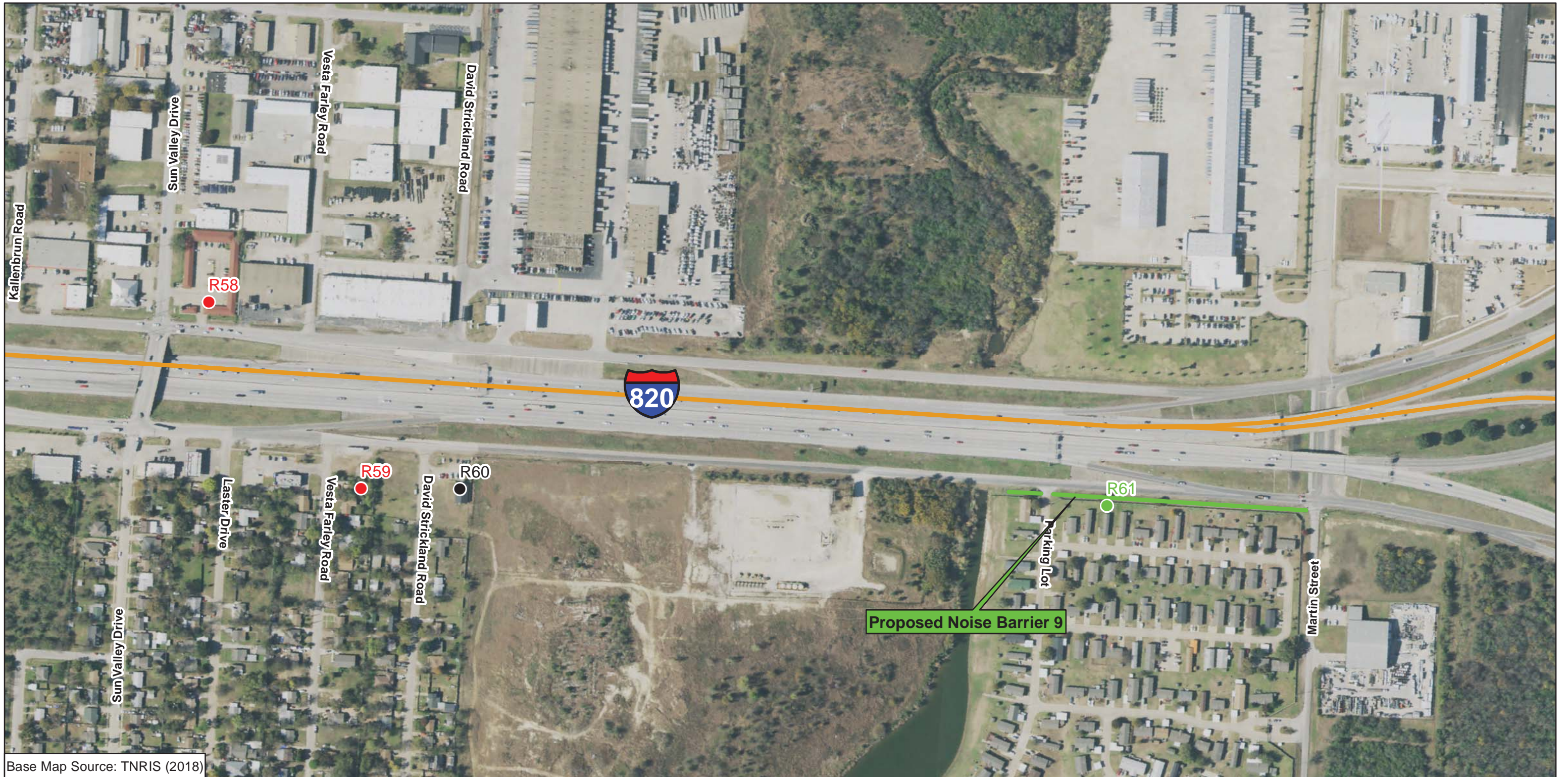
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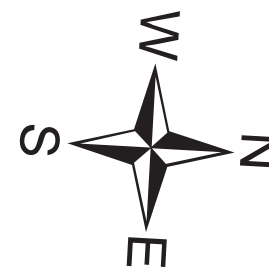
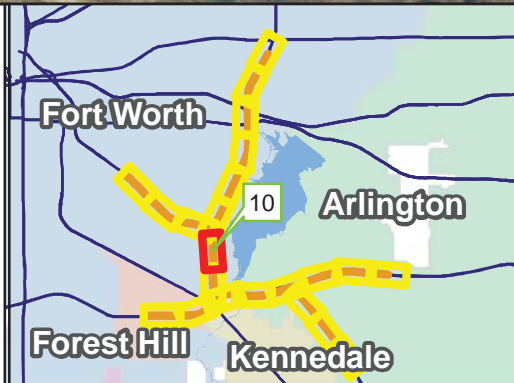
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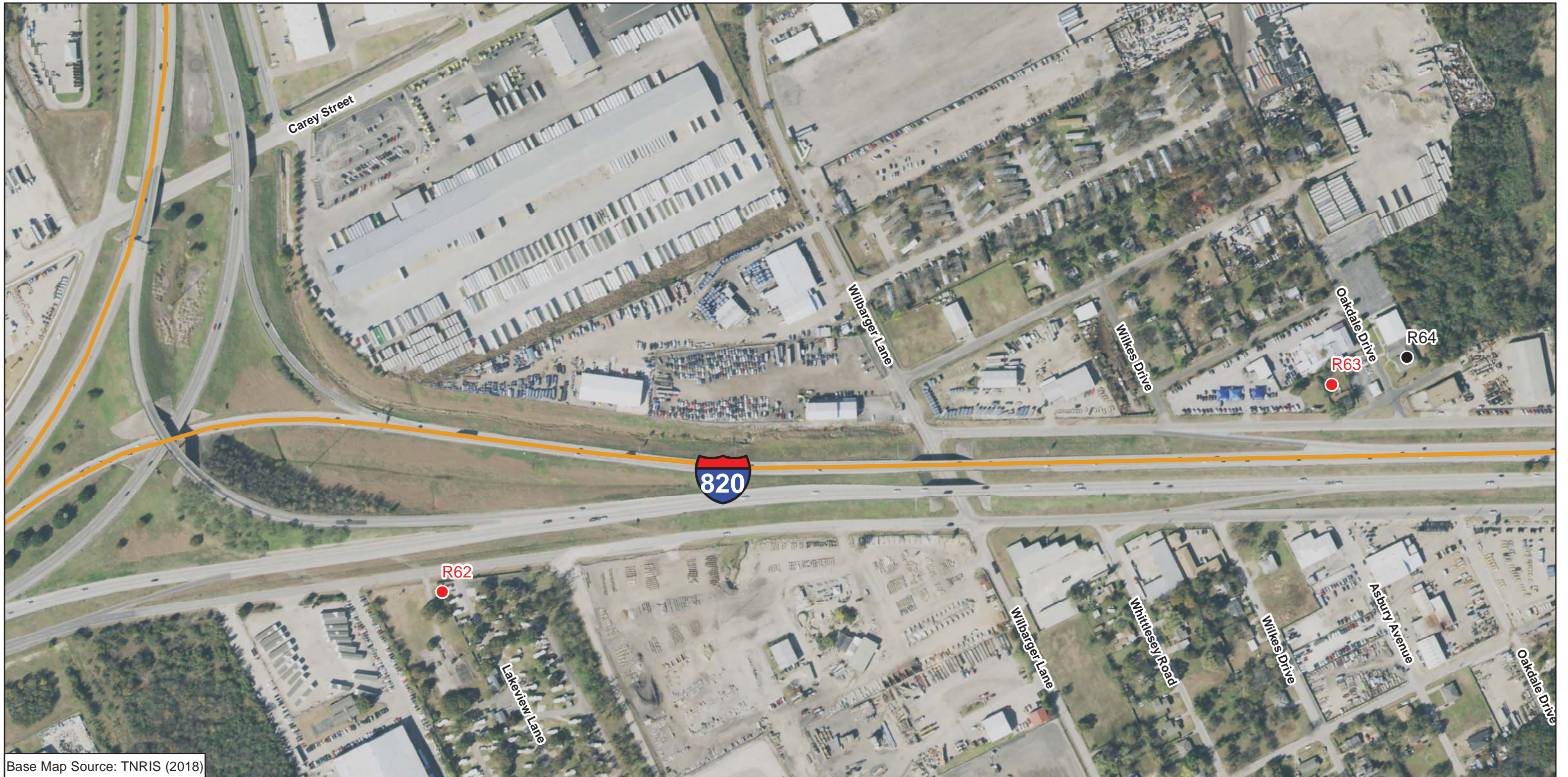
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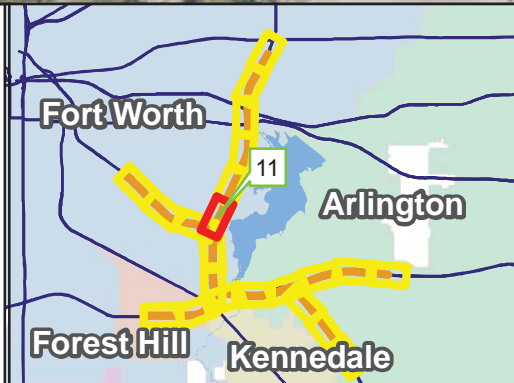
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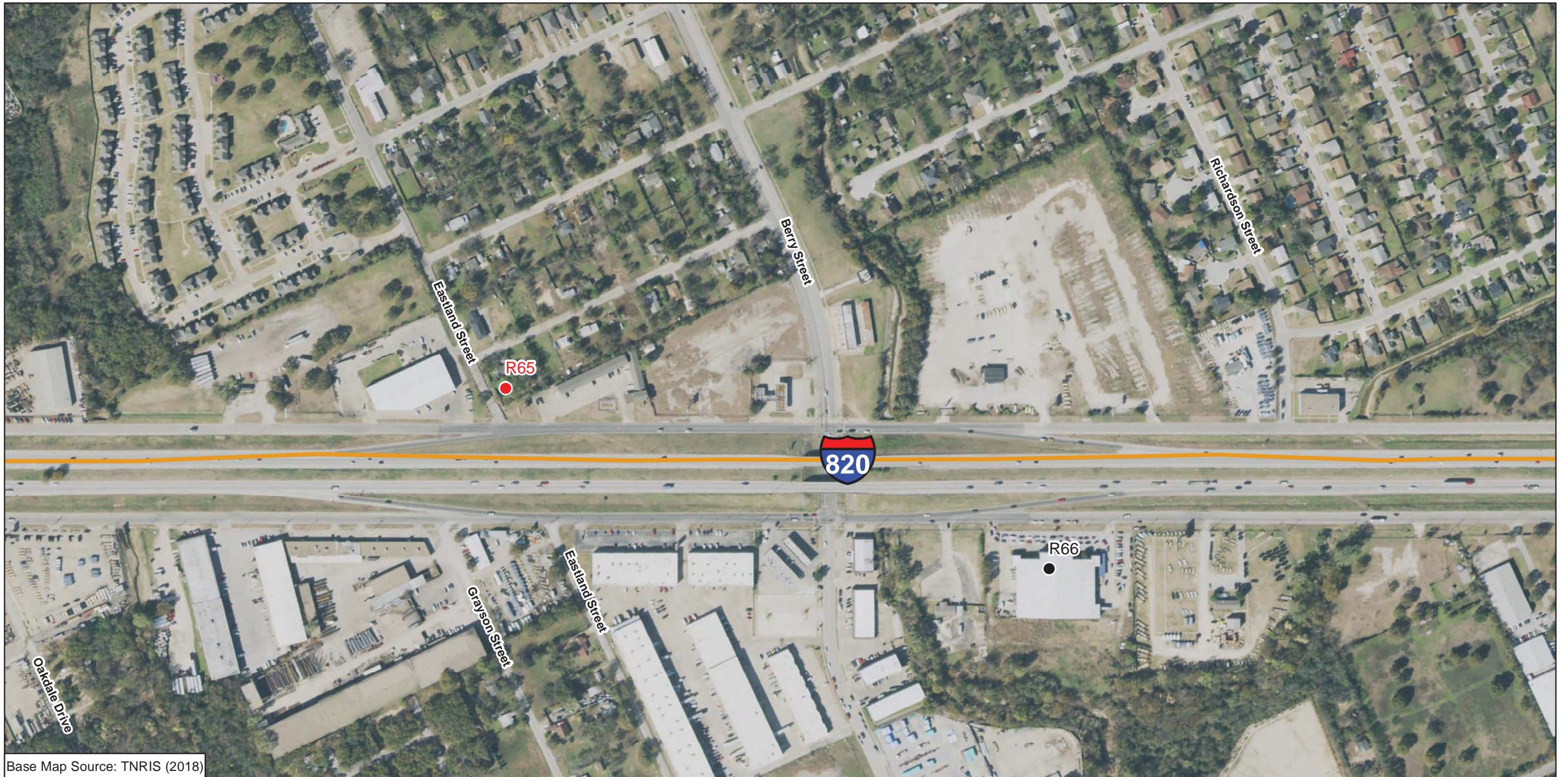
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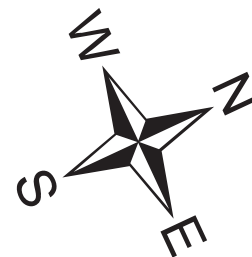
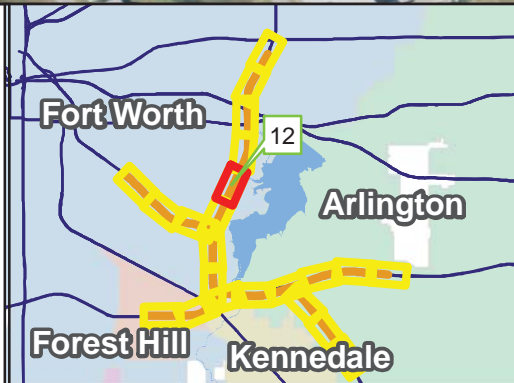
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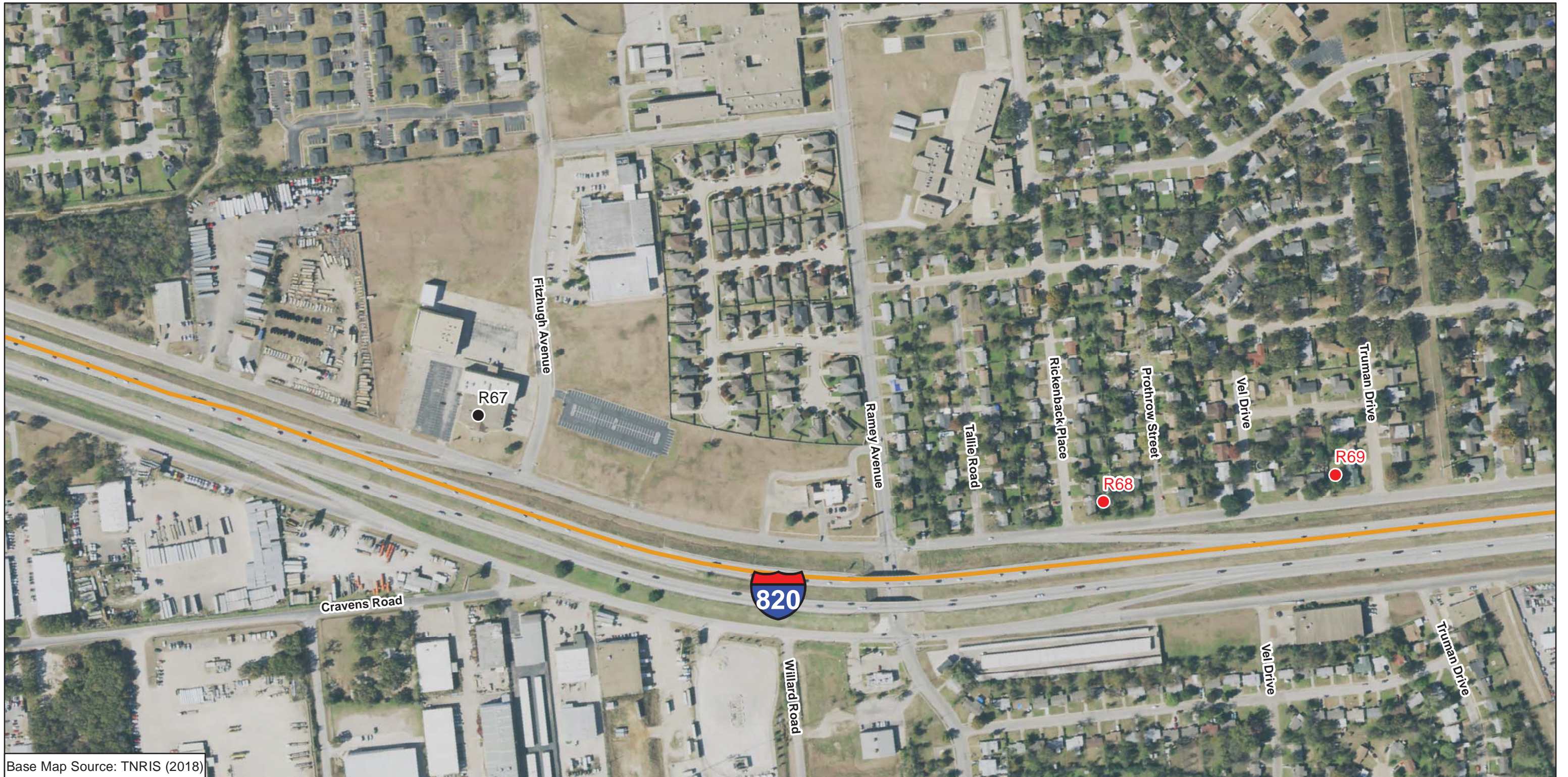
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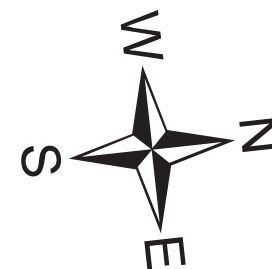
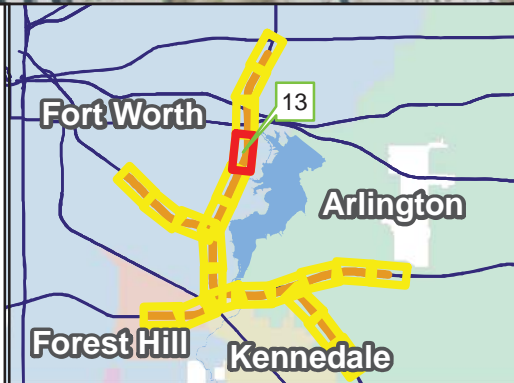
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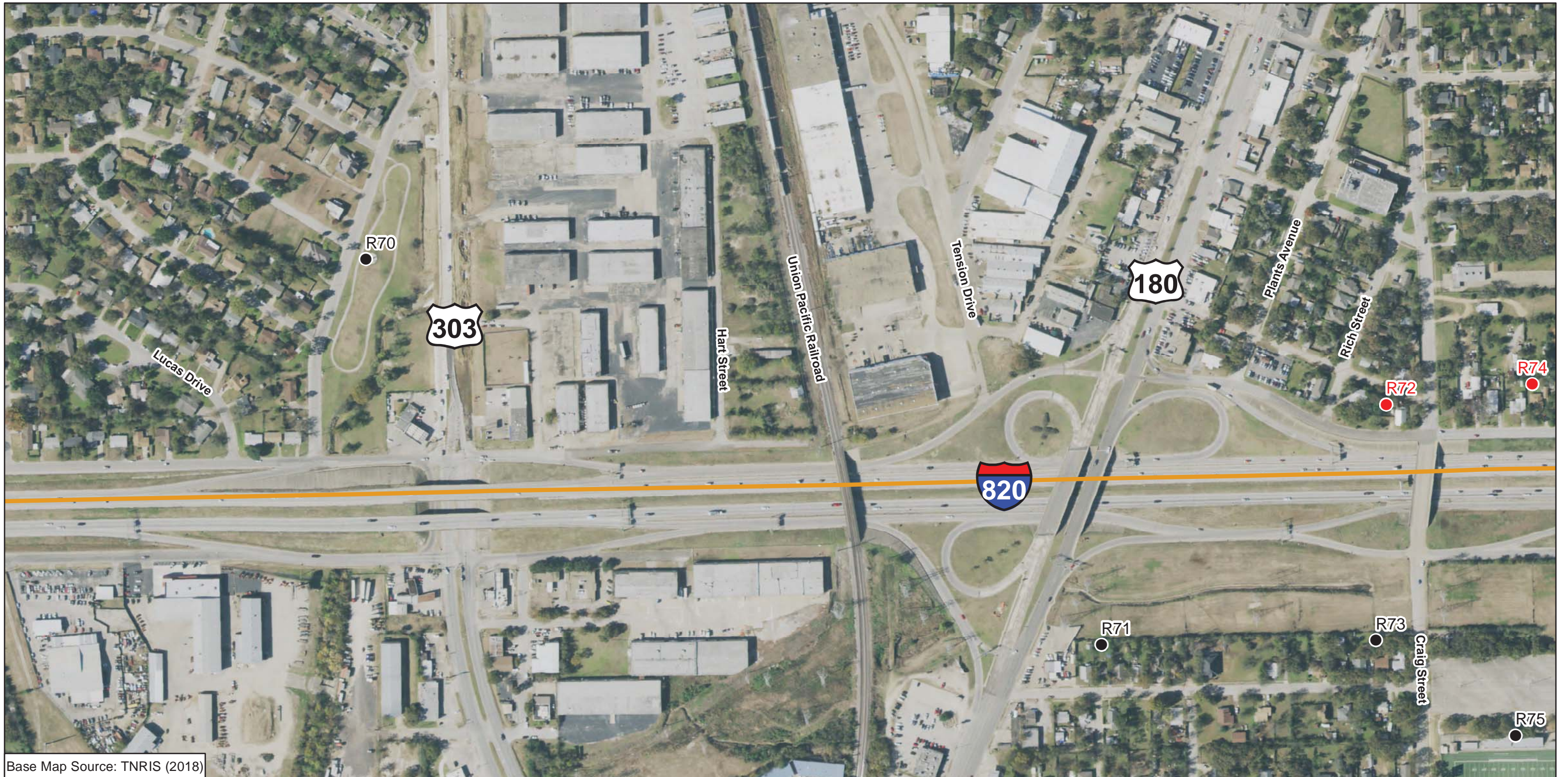
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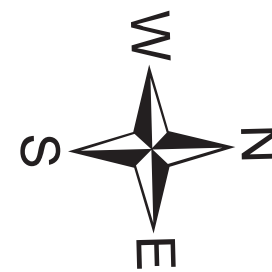
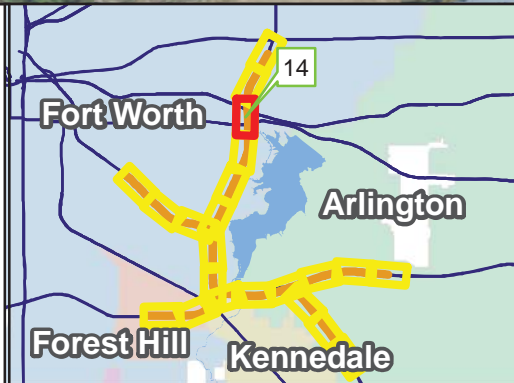
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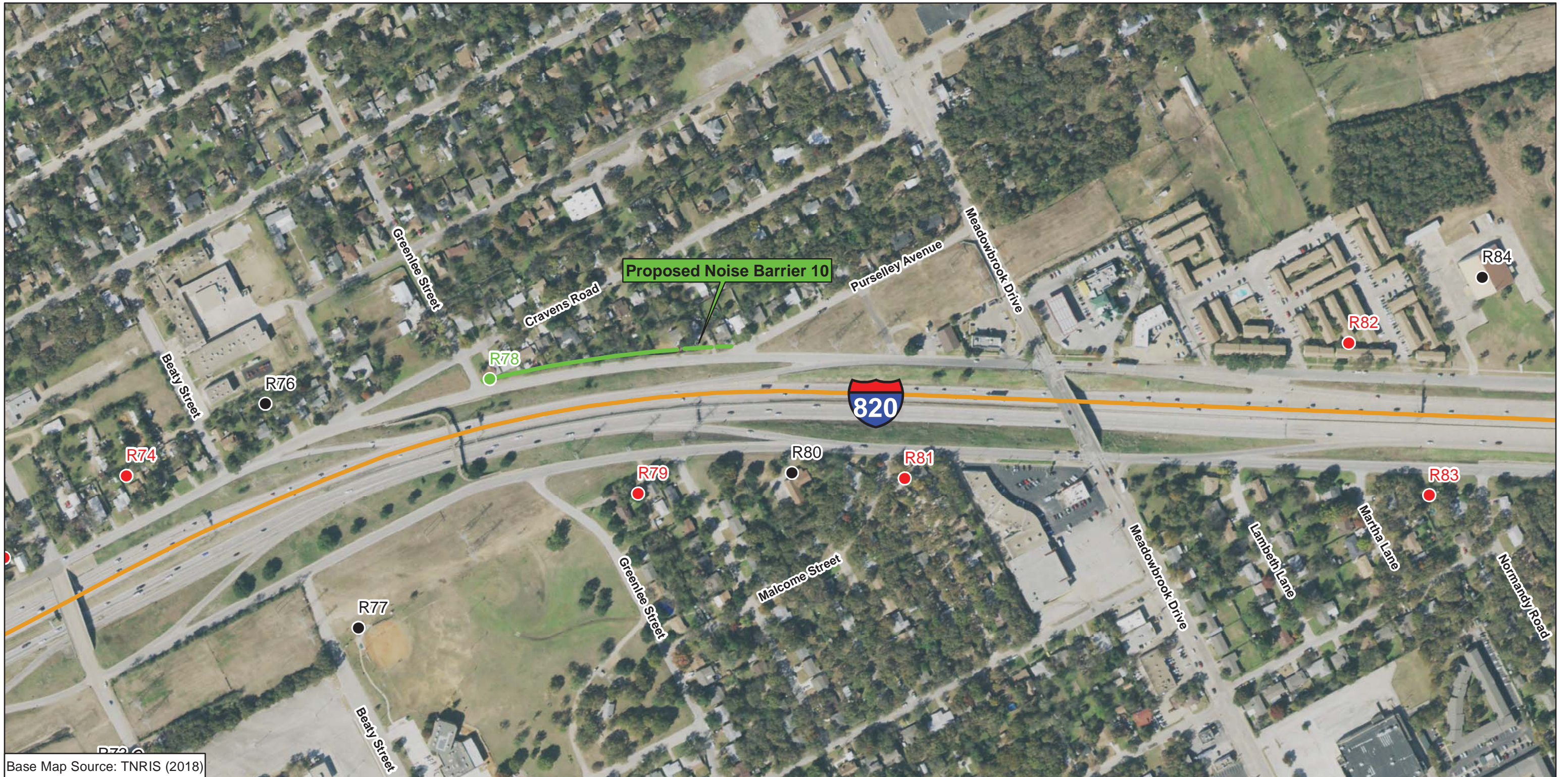
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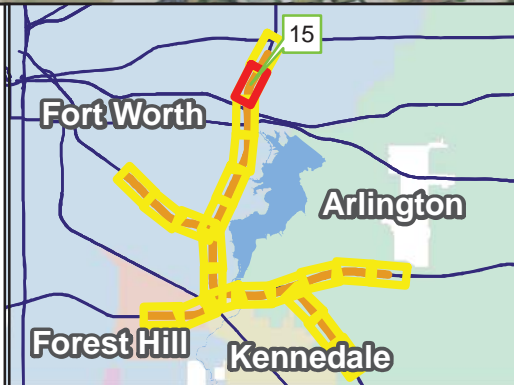
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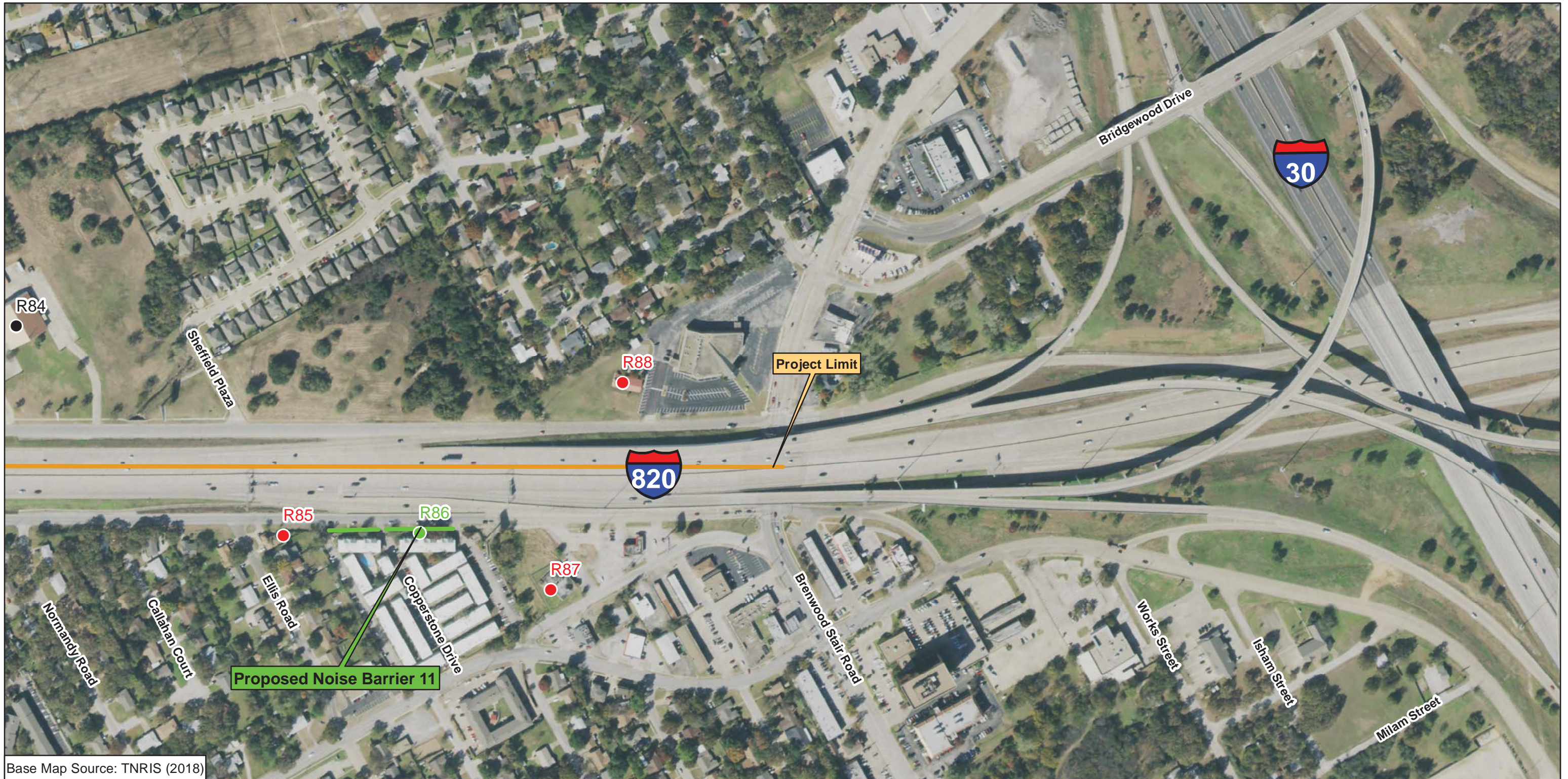
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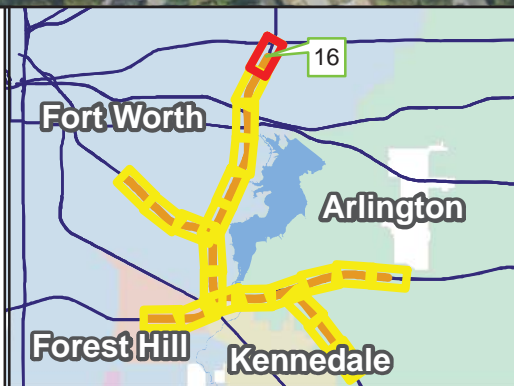
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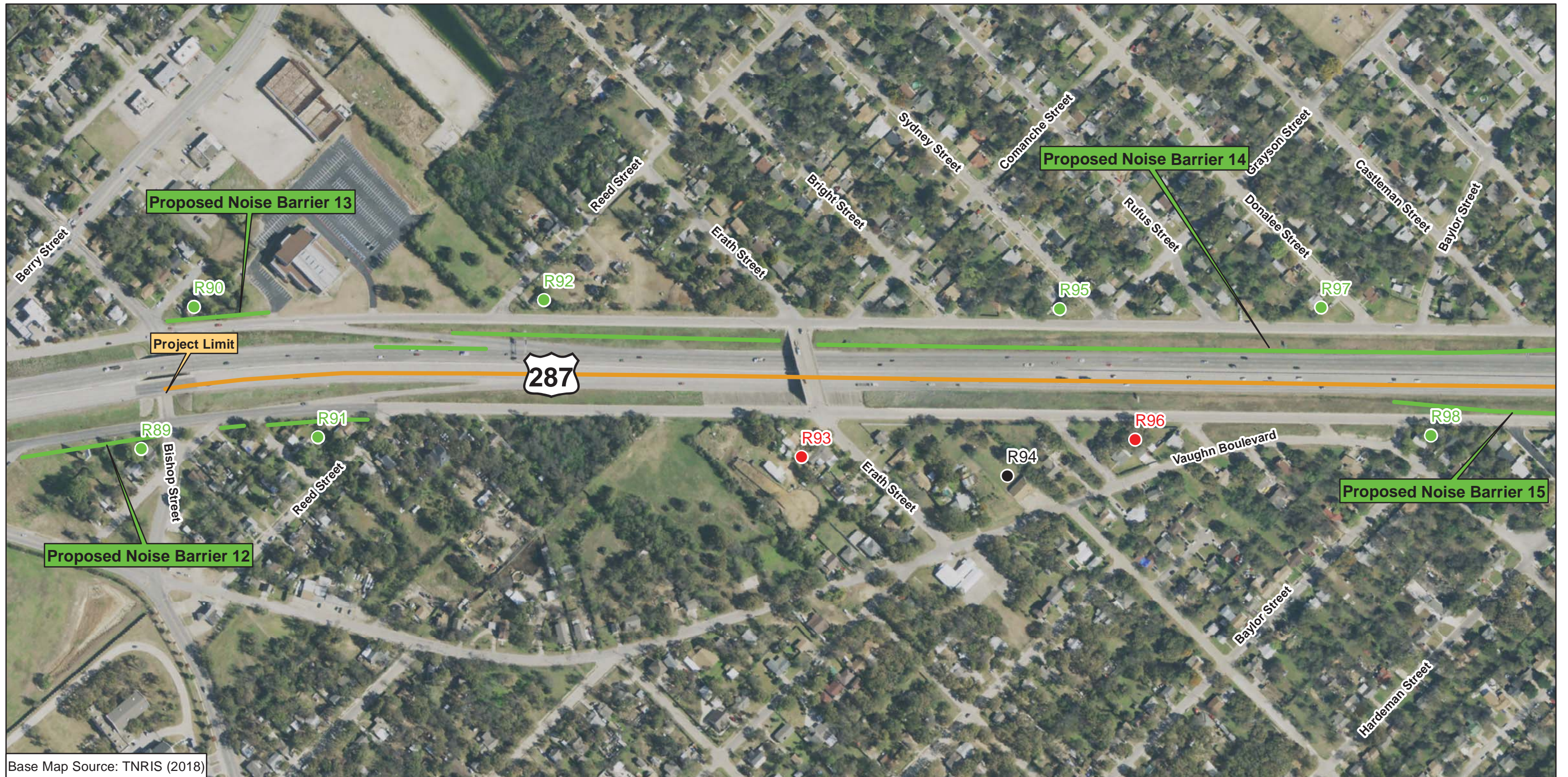
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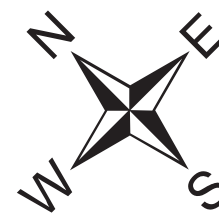
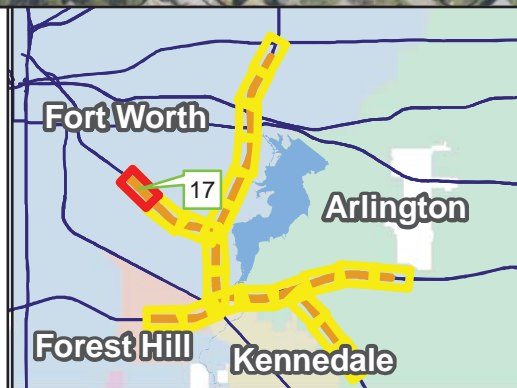
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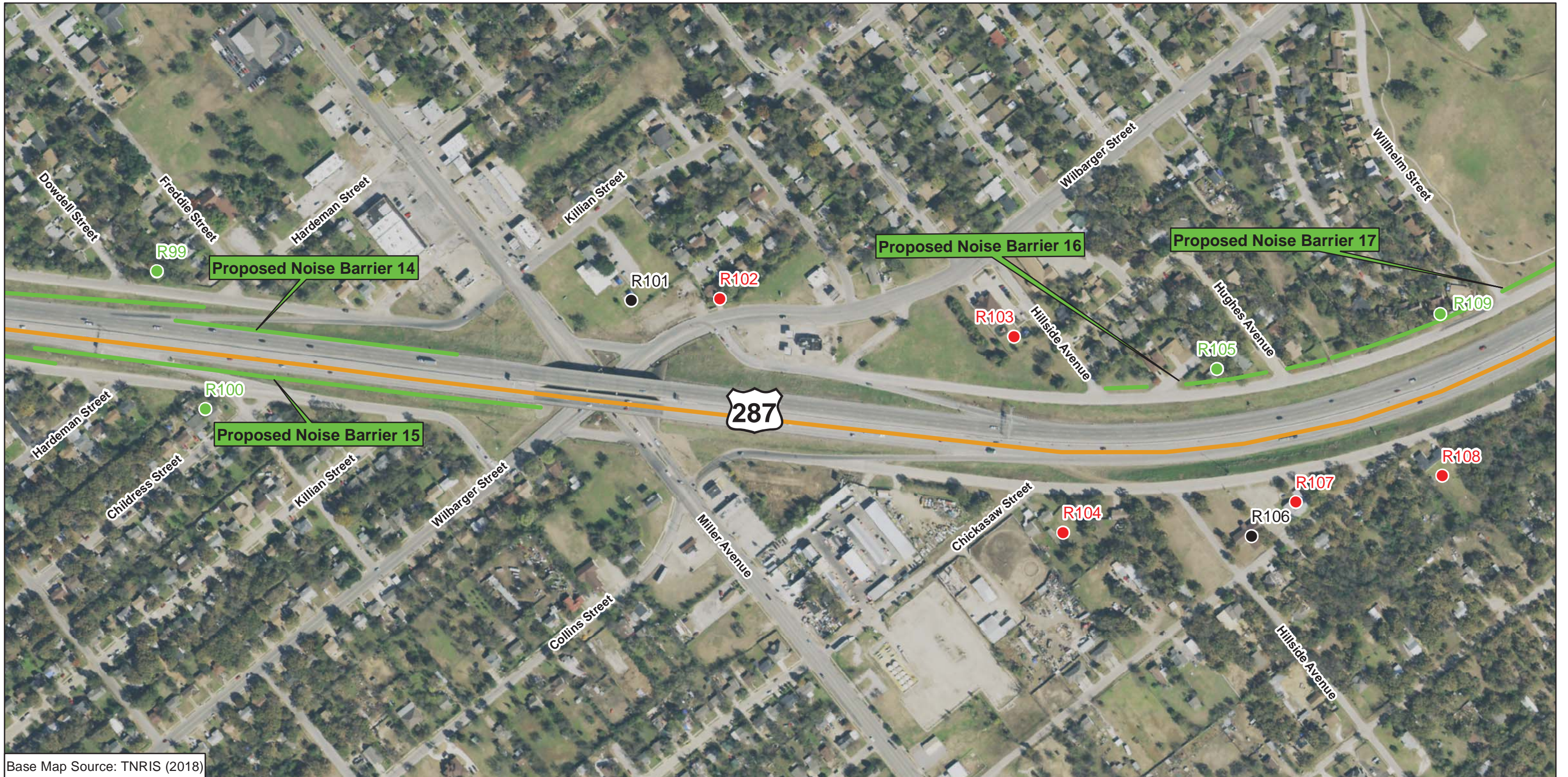
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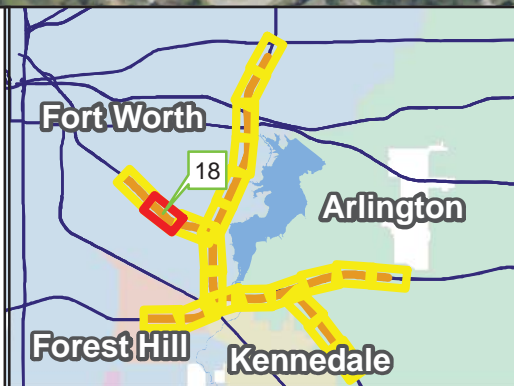
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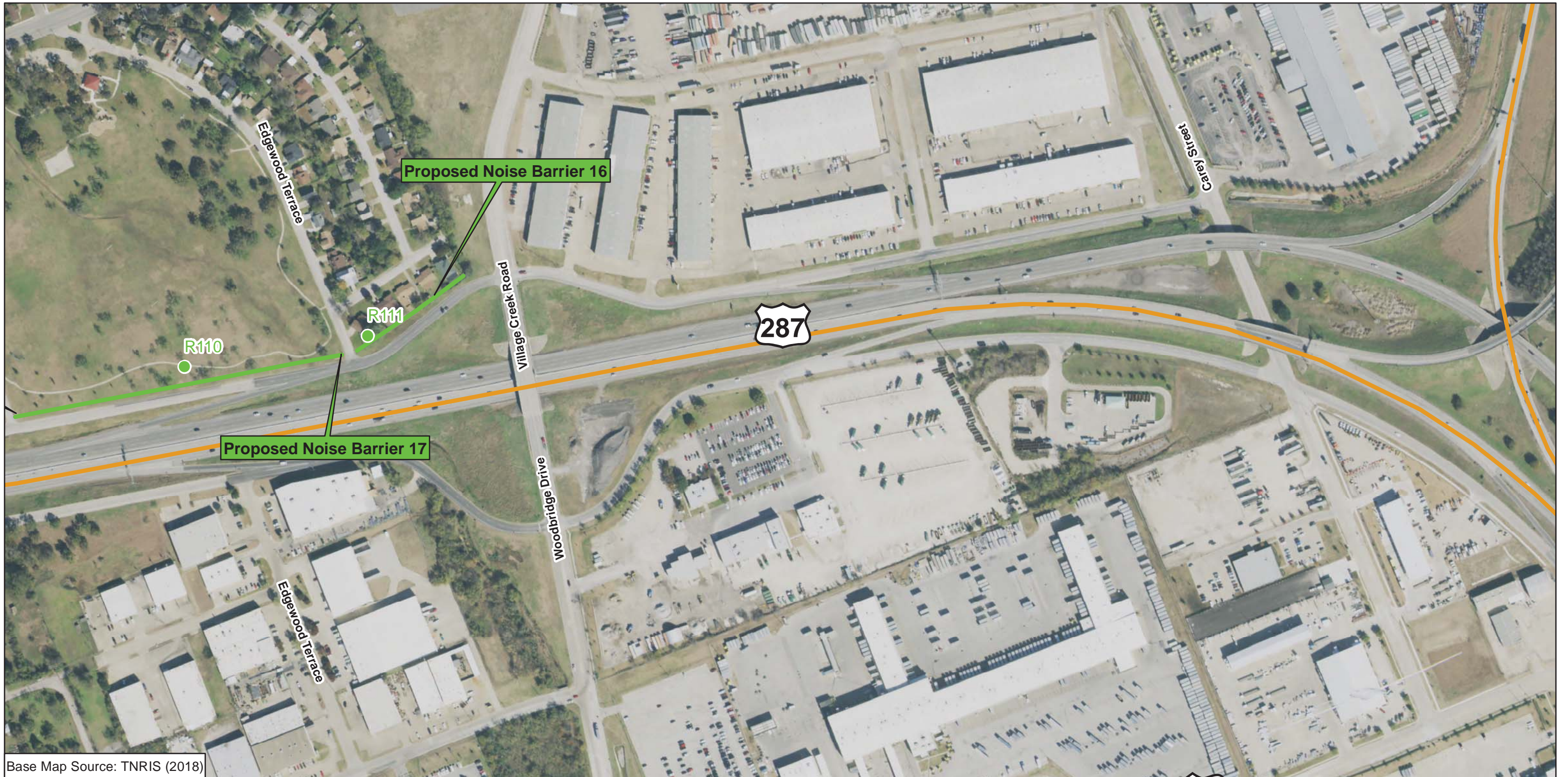
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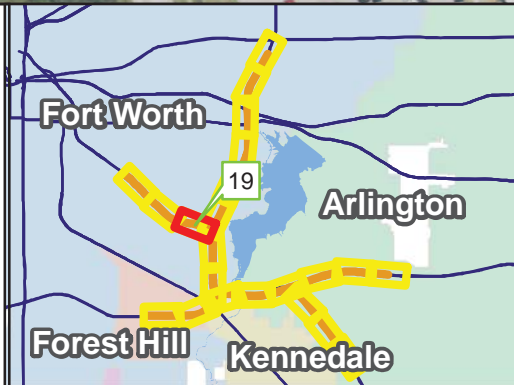
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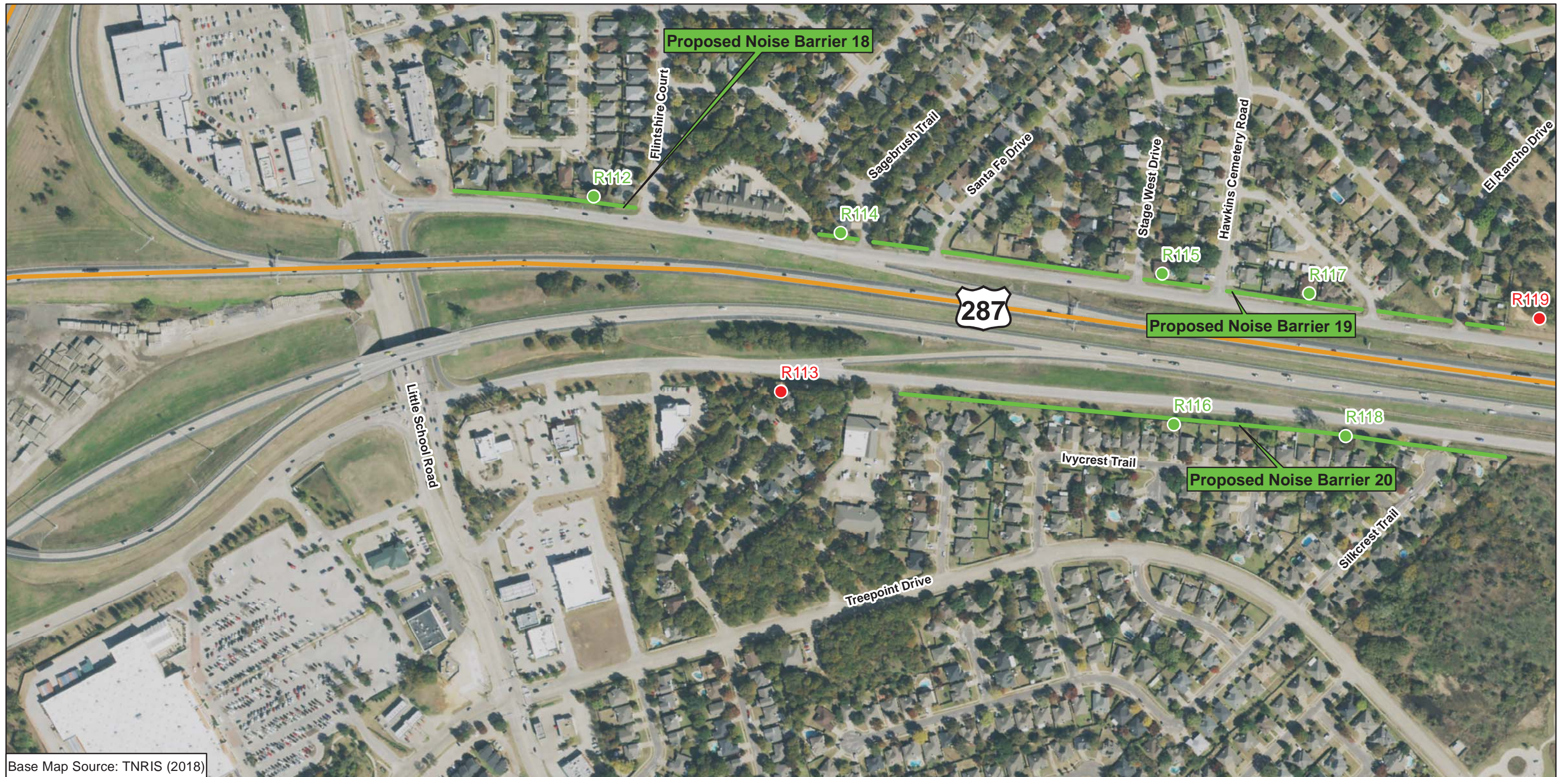
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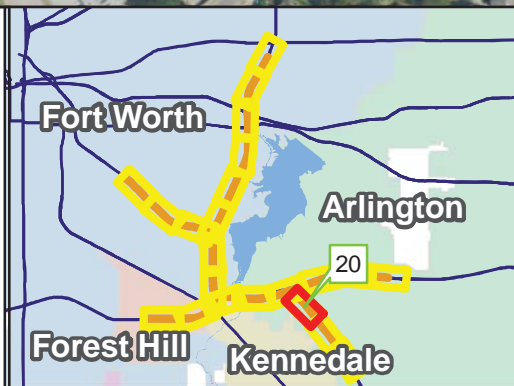
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- CSJs: 0008-13-125, etc.



Base Map Source: TNRIS (2018)

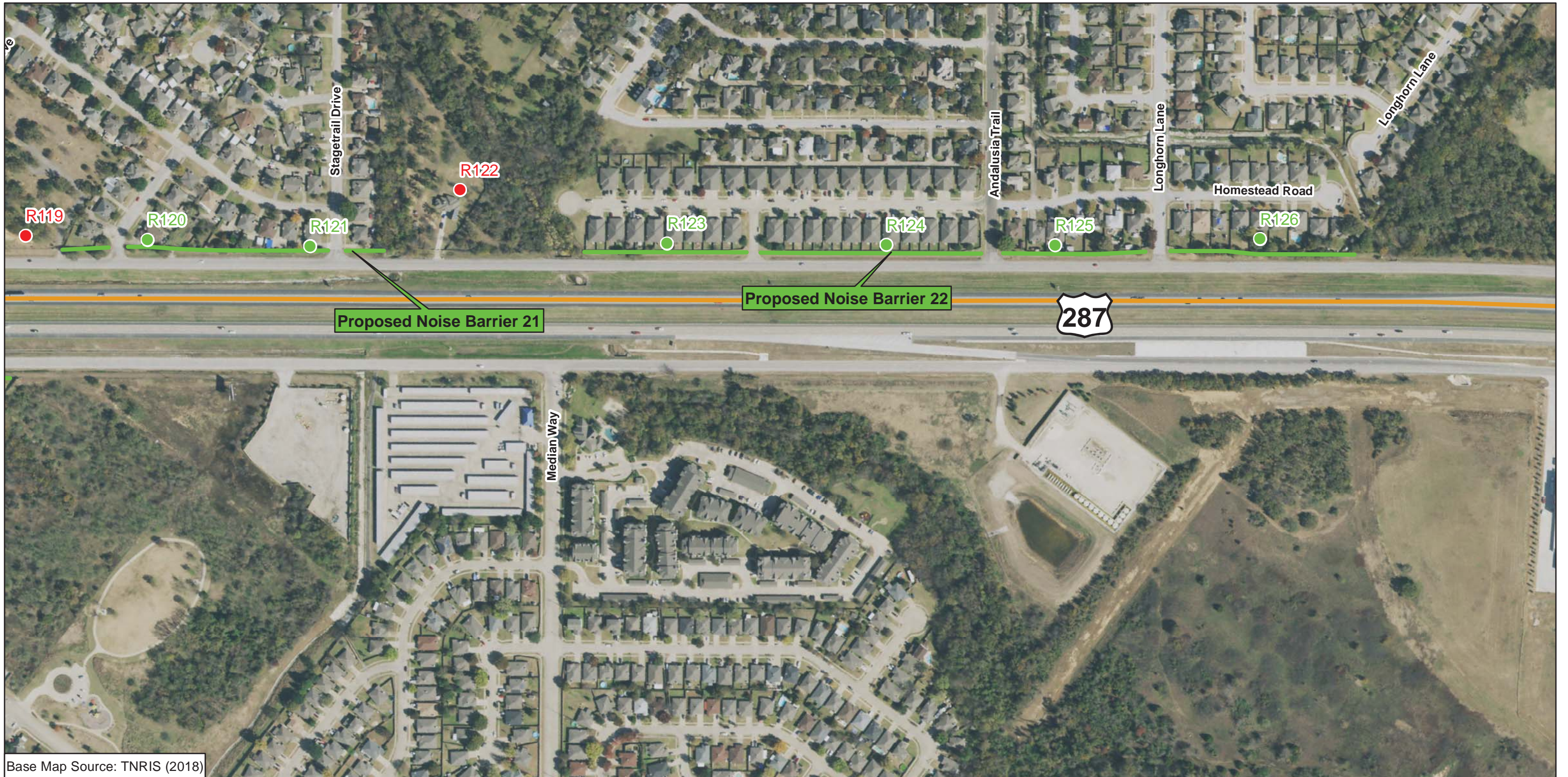
Legend

- Non-impacted Receiver
- Impacted Receiver
- Mitigated Receiver
- Project Limits
- Proposed Noise Wall



**NOISE RECEIVER LOCATION MAP
SOUTHEAST CONNECTOR**

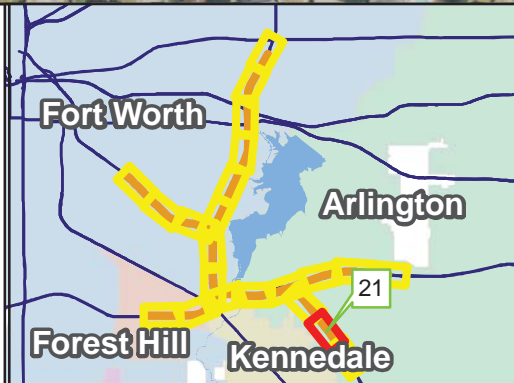
I-20/I-820/US 287 Interchanges
 I-20
 From Forest Hill Dr to Park Springs Blvd
 I-820
 From IH 20 to Brentwood Stair Rd
 US 287
 From Bishop Street to Sublett Rd
 CSJs: 0008-13-125, etc.



Base Map Source: TNRIS (2018)

Legend

- Non-impacted Receiver
- Impacted Receiver
- Mitigated Receiver
- Project Limits
- Proposed Noise Wall



**NOISE RECEIVER LOCATION MAP
SOUTHEAST CONNECTOR**

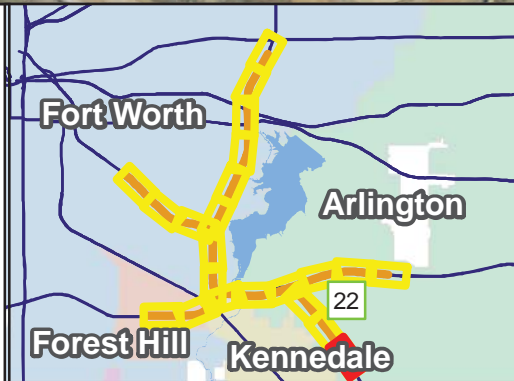
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 I-20
 From Forest Hill Dr to Park Springs Blvd
 I-820
 From IH 20 to Brentwood Stair Rd
 US 287
 From Bishop Street to Sublett Rd
 CSJs: 0008-13-125, etc.



Base Map Source: TNRIS (2018)

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**NOISE RECEIVER LOCATION MAP
SOUTHEAST CONNECTOR**

I-20/I-820/US 287 Interchanges
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 From Forest Hill Dr to Park Springs Blvd
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 From IH 20 to Brentwood Stair Rd
 US 287
 From Bishop Street to Sublett Rd
 CSJs: 0008-13-125, etc.

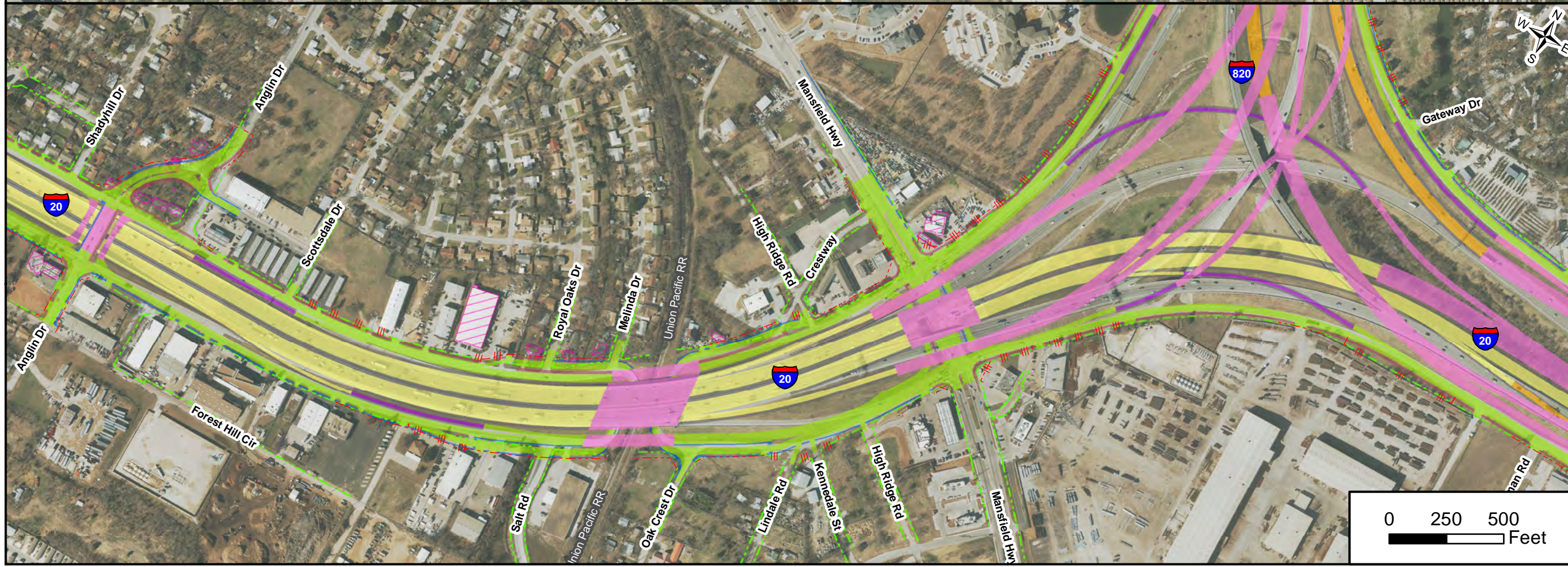
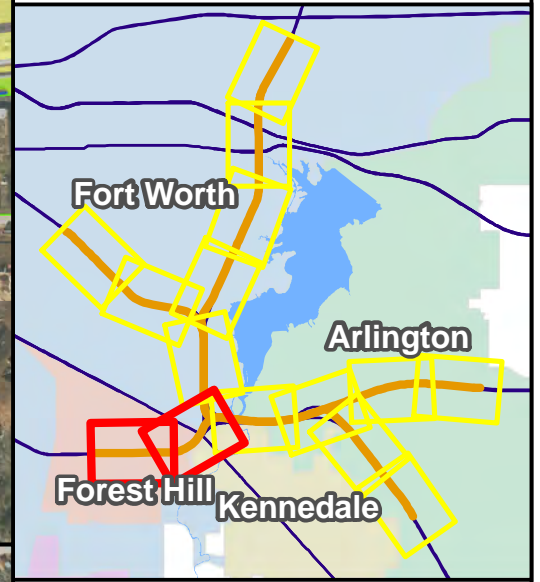
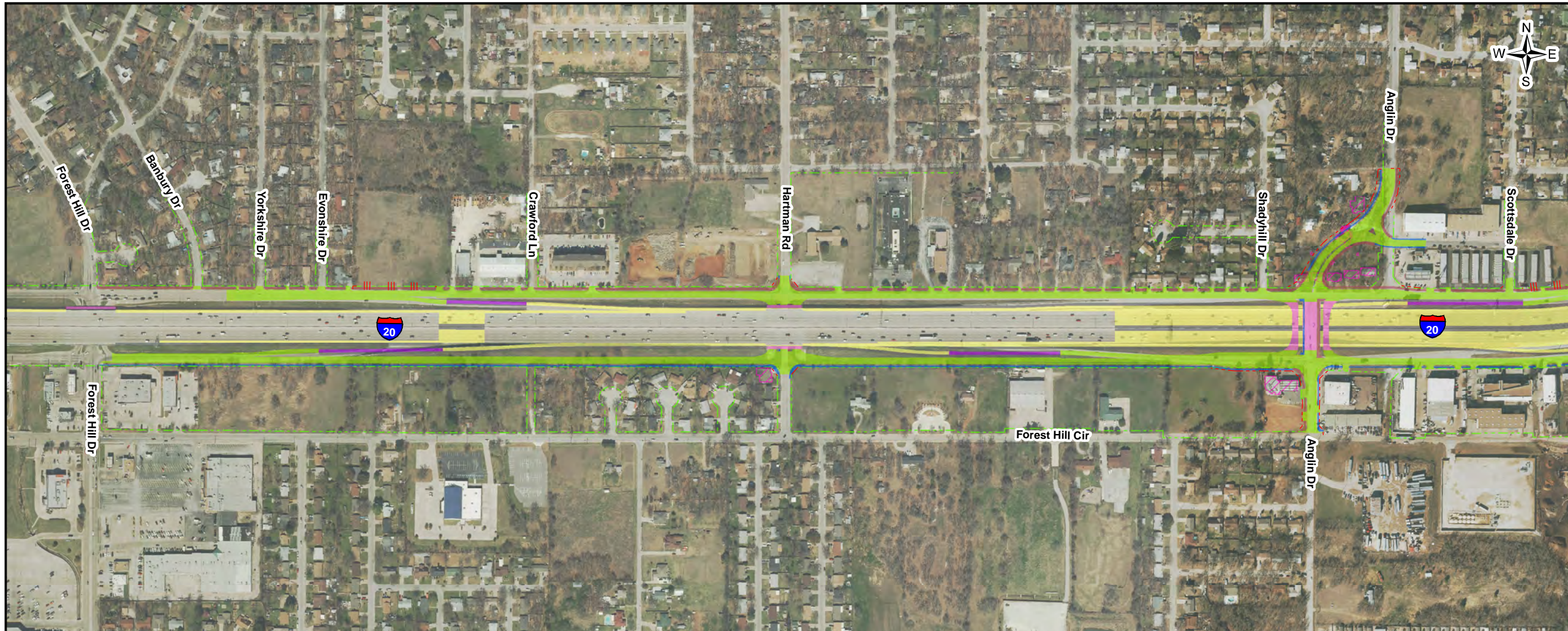
SCHEMATIC DESIGN MAP

SOUTHEAST CONNECTOR

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

CSJ: 0008-13-125, ect.

Page 1 of 8



LEGEND

- General Purpose Lanes (GP Lanes)
- Frontage Roads/ U-Turns/City Streets
- Ramps
- Collector/Distributors (C-D)
- Direct Connectors (DC)
- Bridge
- Sidewalks
- Shared Use Paths
- Shoulders
- Existing Right-of-Way (R.O.W.)
- Proposed Right-of-Way (R.O.W.)
- Proposed Denial-of-Access
- Potential Displacement

Based on 100% Design Submitted March 2020

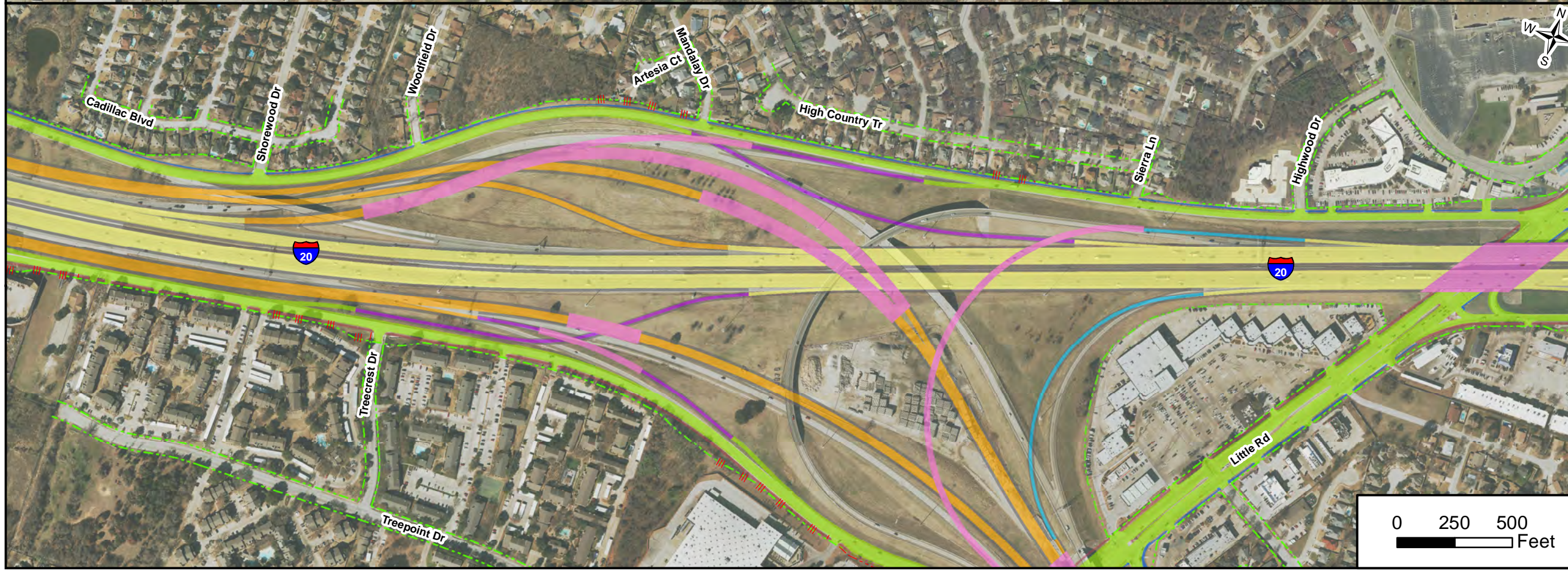
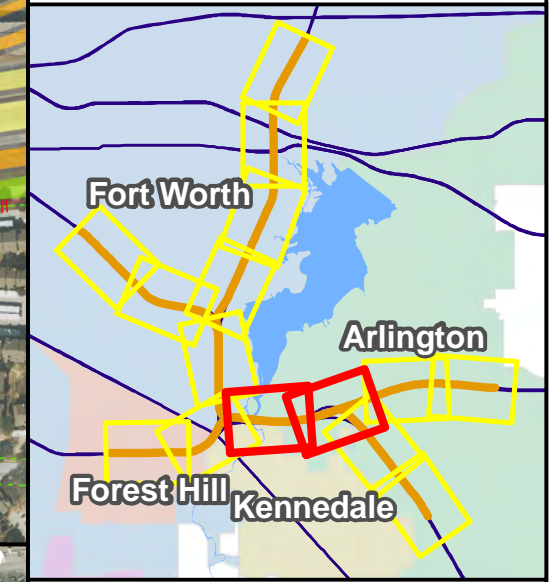
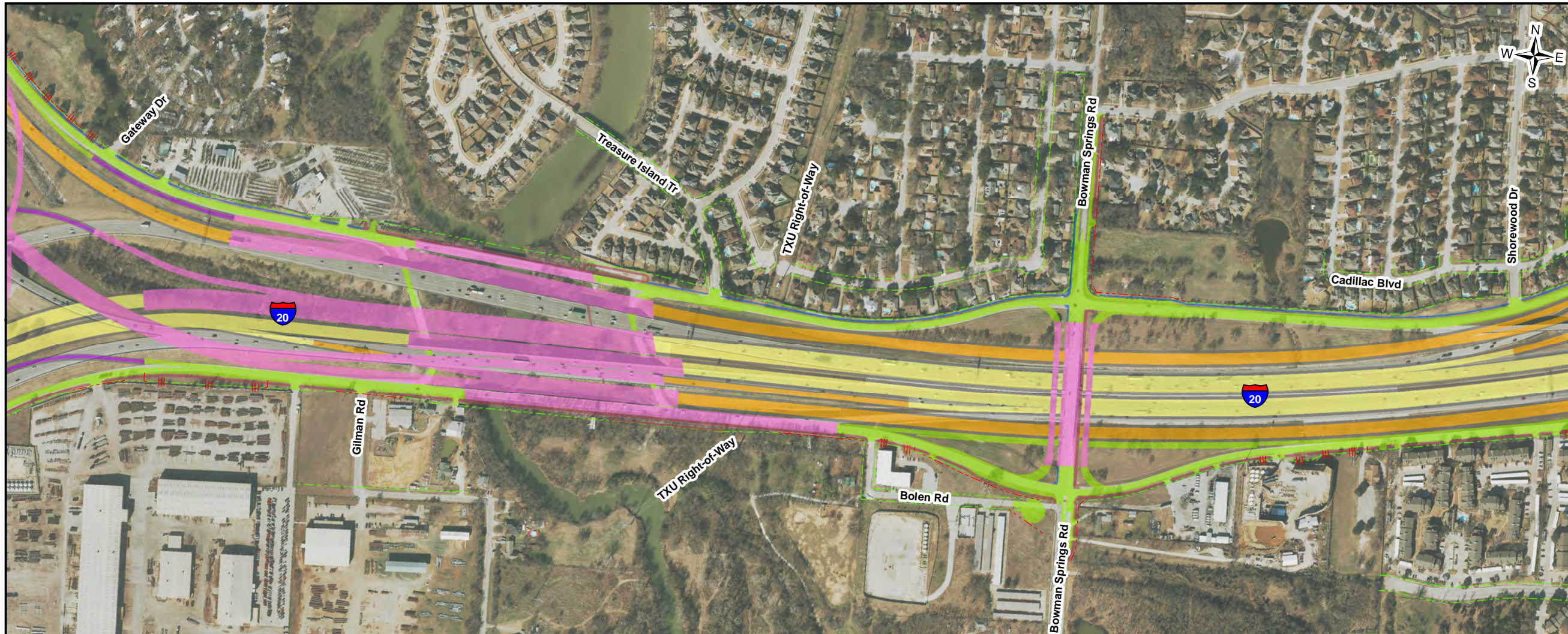
SCHEMATIC DESIGN MAP

SOUTHEAST CONNECTOR

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

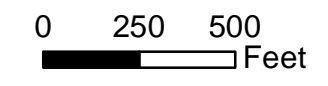
CSJ: 0008-13-125, ect.

Page 2 of 8



LEGEND

- General Purpose Lanes (GP Lanes)
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- Potential Displacement



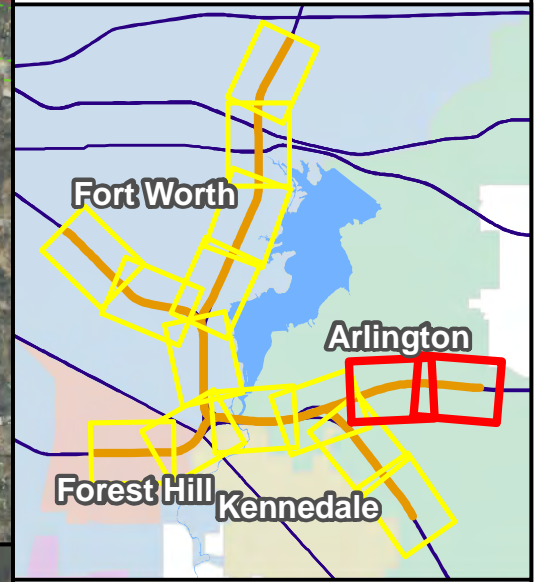
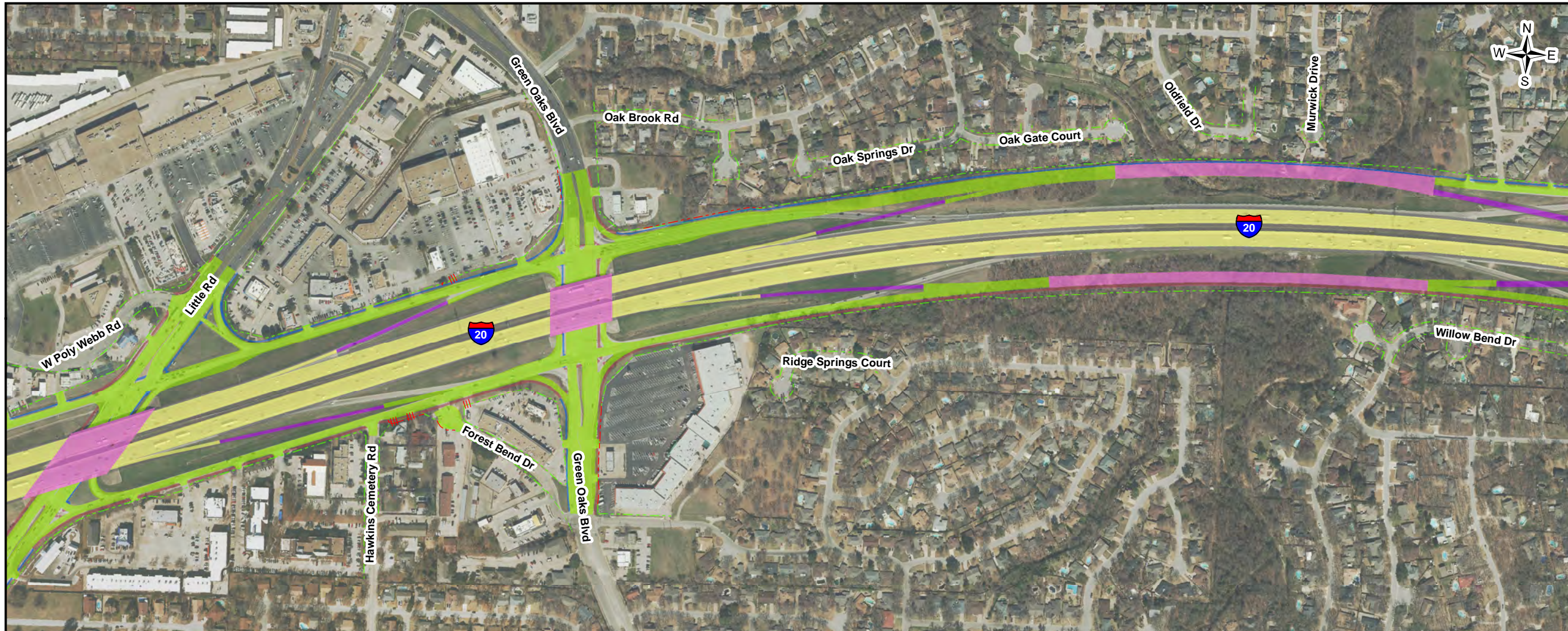
Based on 100% Design Submitted March 2020

SCHEMATIC DESIGN MAP

SOUTHEAST CONNECTOR

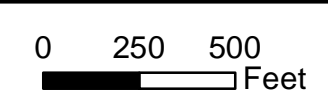
I-20/I-820/US 287 Interchanges
 I-20 from Forest Hill Drive to Park Springs Boulevard
 I-820 from I-20 to Brentwood Stair Road
 US 287 from Bishop Street to Sublett Road

CSJ: 0008-13-125, ect.
Page 3 of 8



LEGEND

- General Purpose Lanes (GP Lanes)
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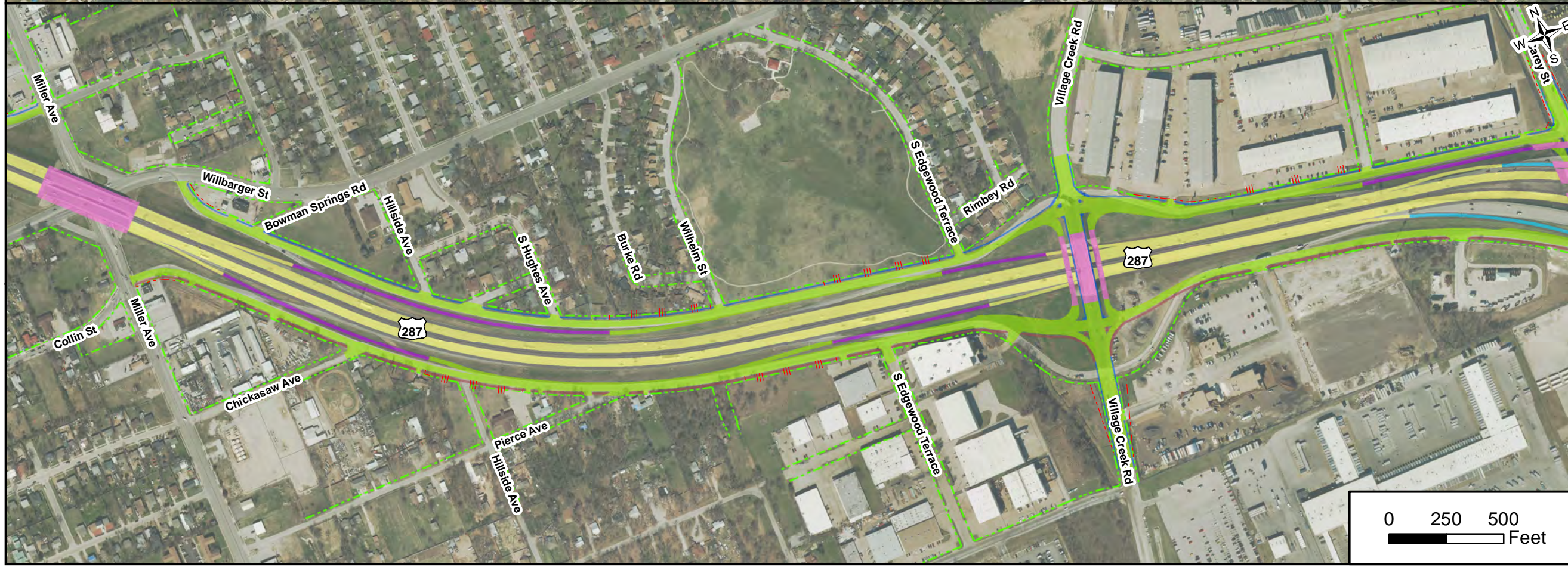
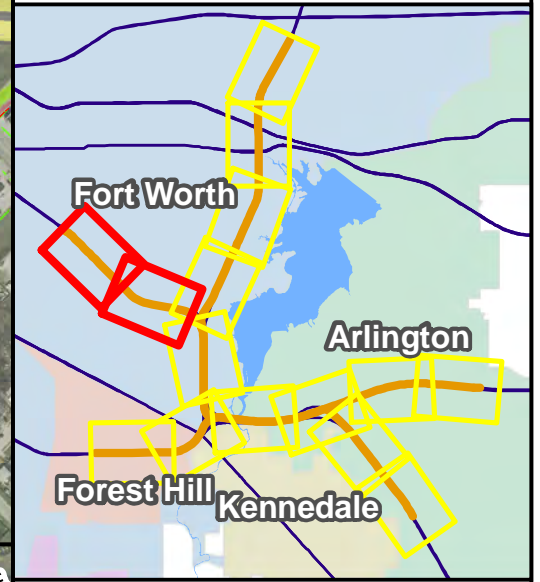
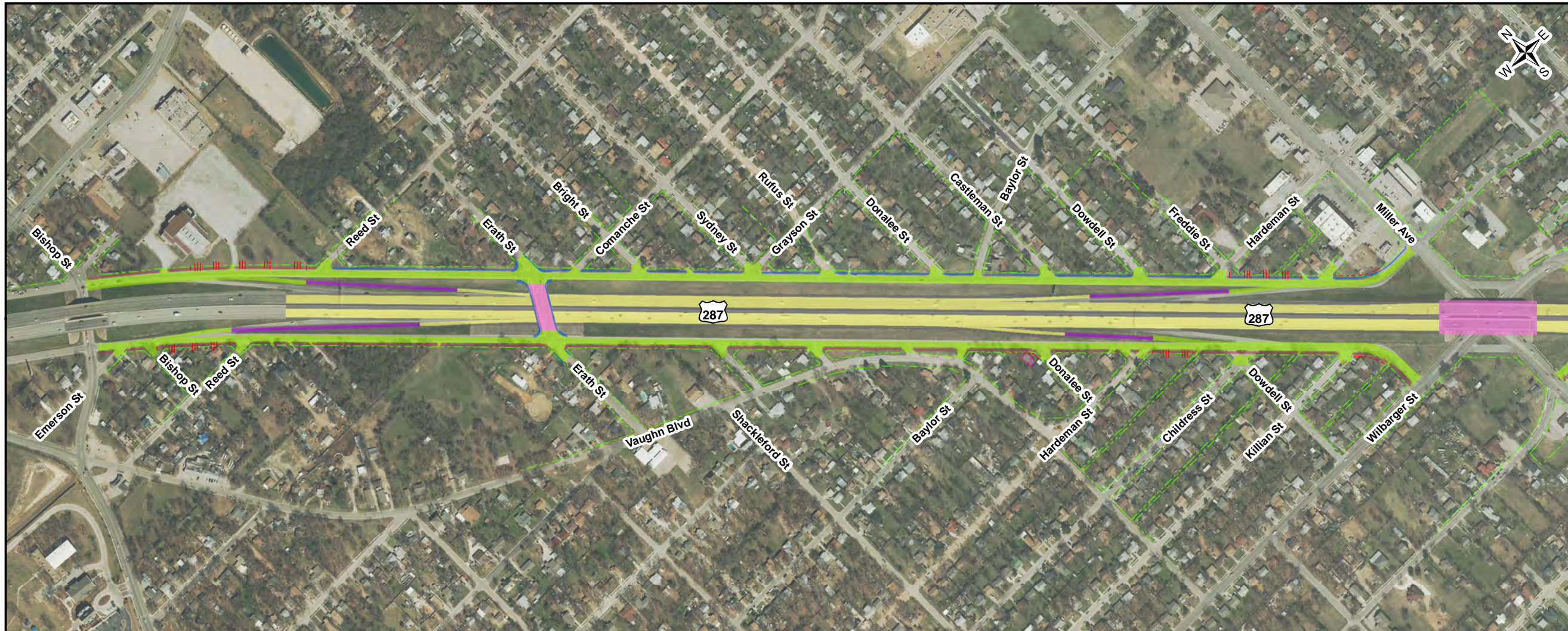
Based on 100% Design Submitted March 2020

SCHEMATIC DESIGN MAP

SOUTHEAST CONNECTOR

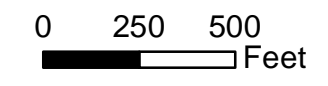
I-20/I-820/US 287 Interchanges
 I-20 from Forest Hill Drive to Park Springs Boulevard
 I-820 from I-20 to Brentwood Stair Road
 US 287 from Bishop Street to Sublett Road

CSJ: 0008-13-125, ect.



LEGEND

- General Purpose Lanes (GP Lanes)
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Based on 100% Design Submitted March 2020

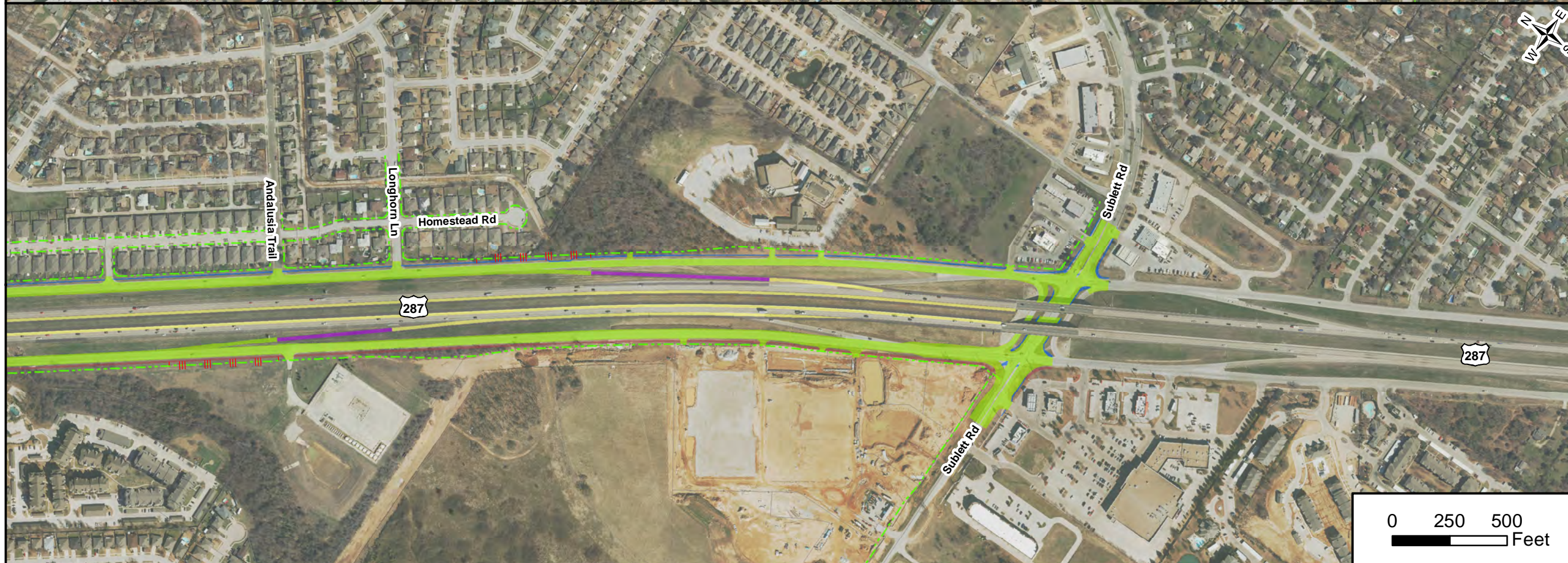
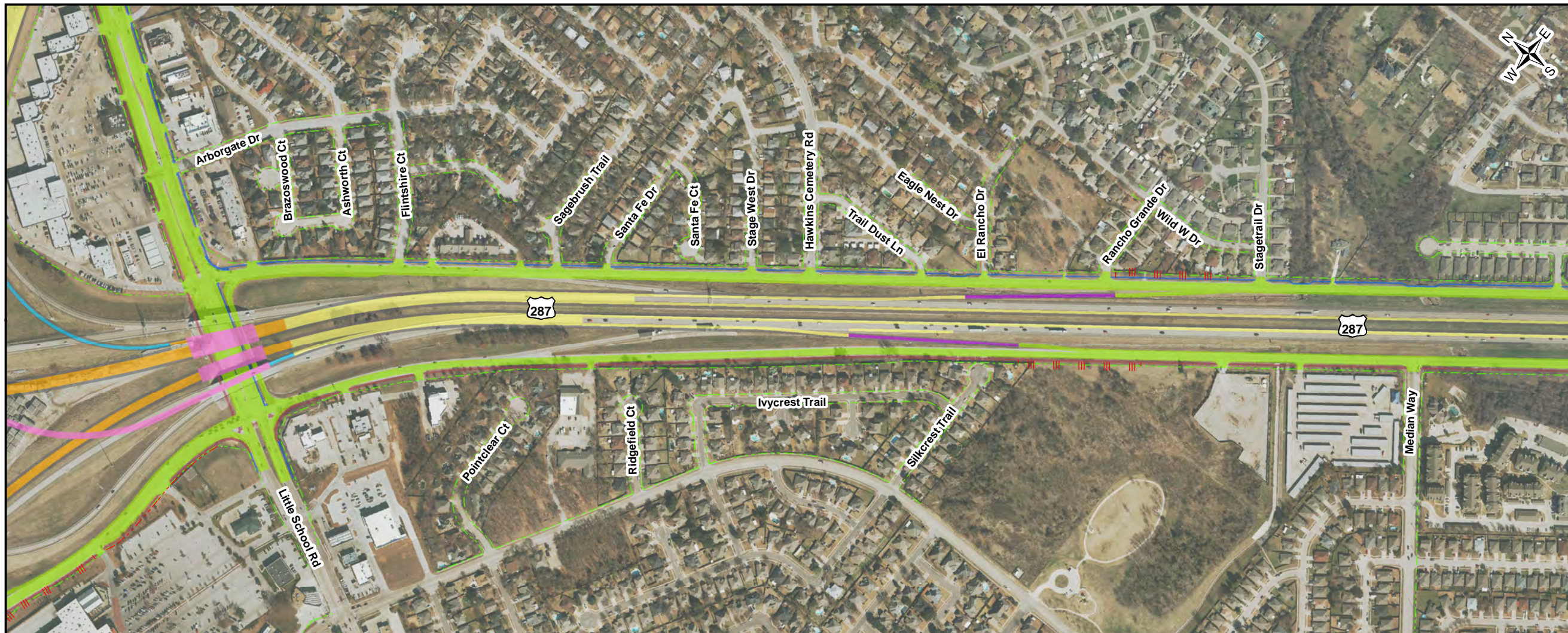
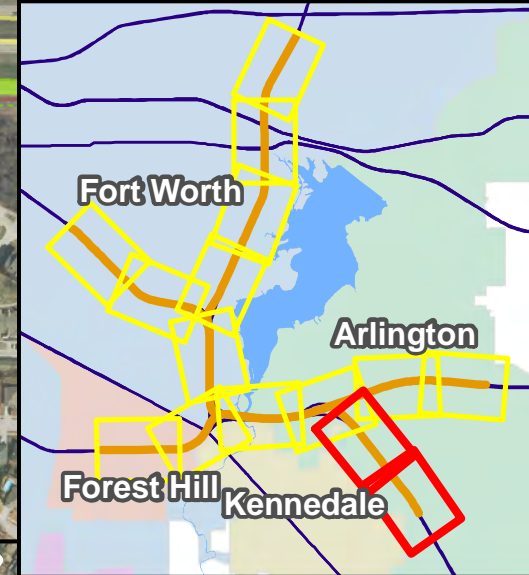
SCHEMATIC DESIGN MAP

SOUTHEAST CONNECTOR












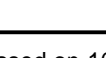
I-20/I-820/US 287 Interchanges
 I-20 from Forest Hill Drive to
 Park Springs Boulevard
 I-820 from I-20 to
 Brentwood Stair Road
 US 287 from Bishop Street
 to Sublett Road

CSJ: 0008-13-125, ect.

Page 5 of 8



LEGEND

-  General Purpose Lanes (GP Lanes)
-  Frontage Roads/ U-Turns/City Streets
-  Ramps
-  Collector/Distributors (C-D)
-  Direct Connectors (DC)
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-  Proposed Denial-of-Access
-  Potential Displacement

0 250 500
 Feet

Based on 100% Design Submitted March 2020

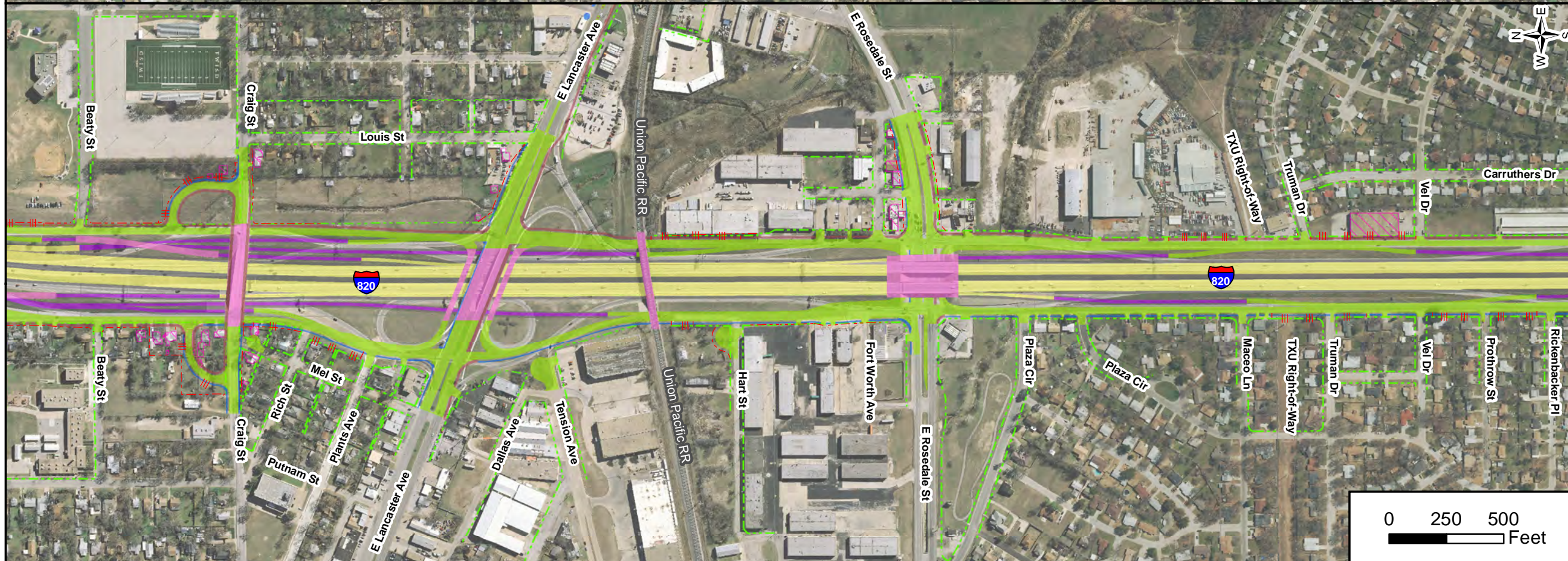
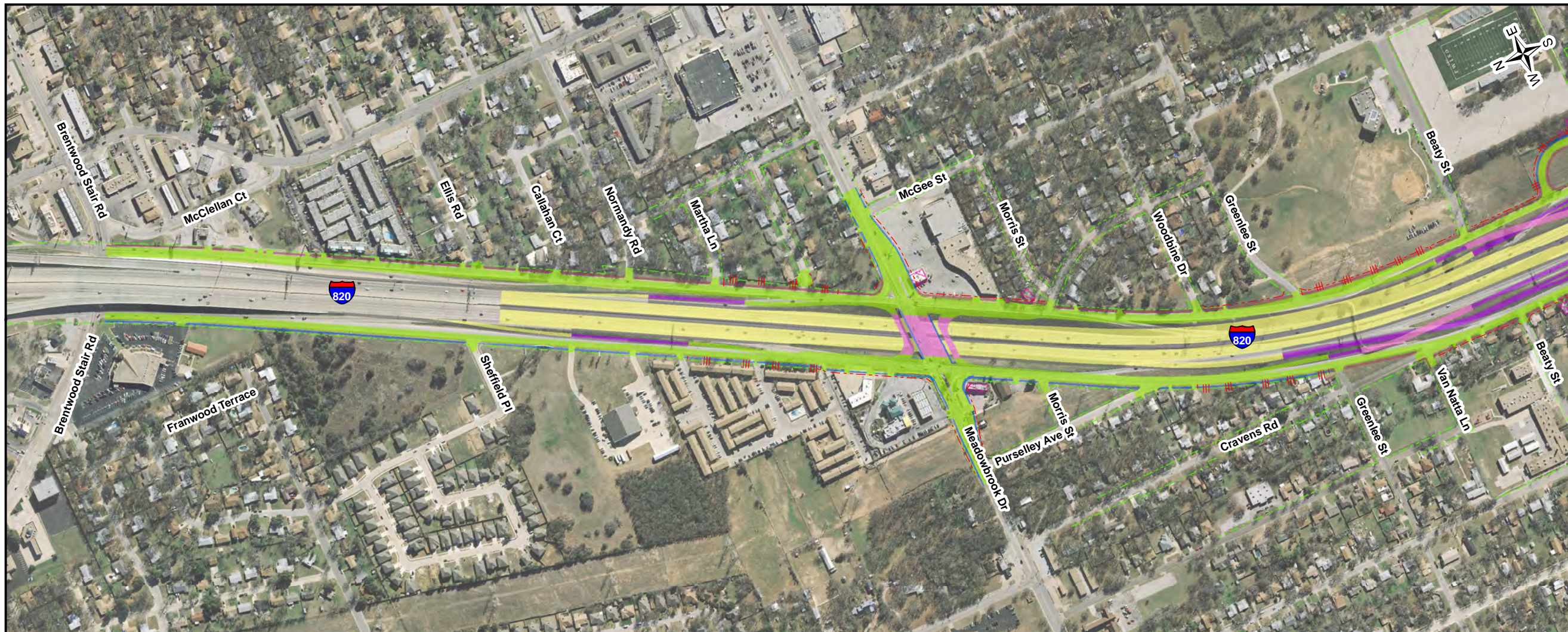
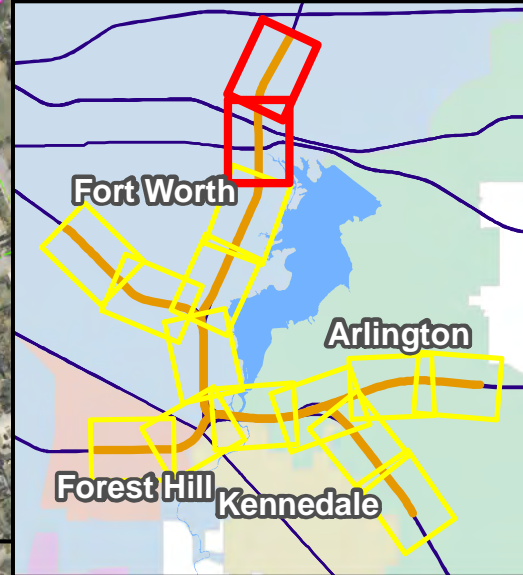
SCHEMATIC DESIGN MAP

SOUTHEAST CONNECTOR

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

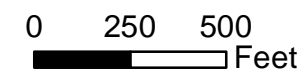
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Page 6 of 8



LEGEND

- General Purpose Lanes (GP Lanes)
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- ||| Proposed Denial-of-Access
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Based on 100% Design Submitted March 2020

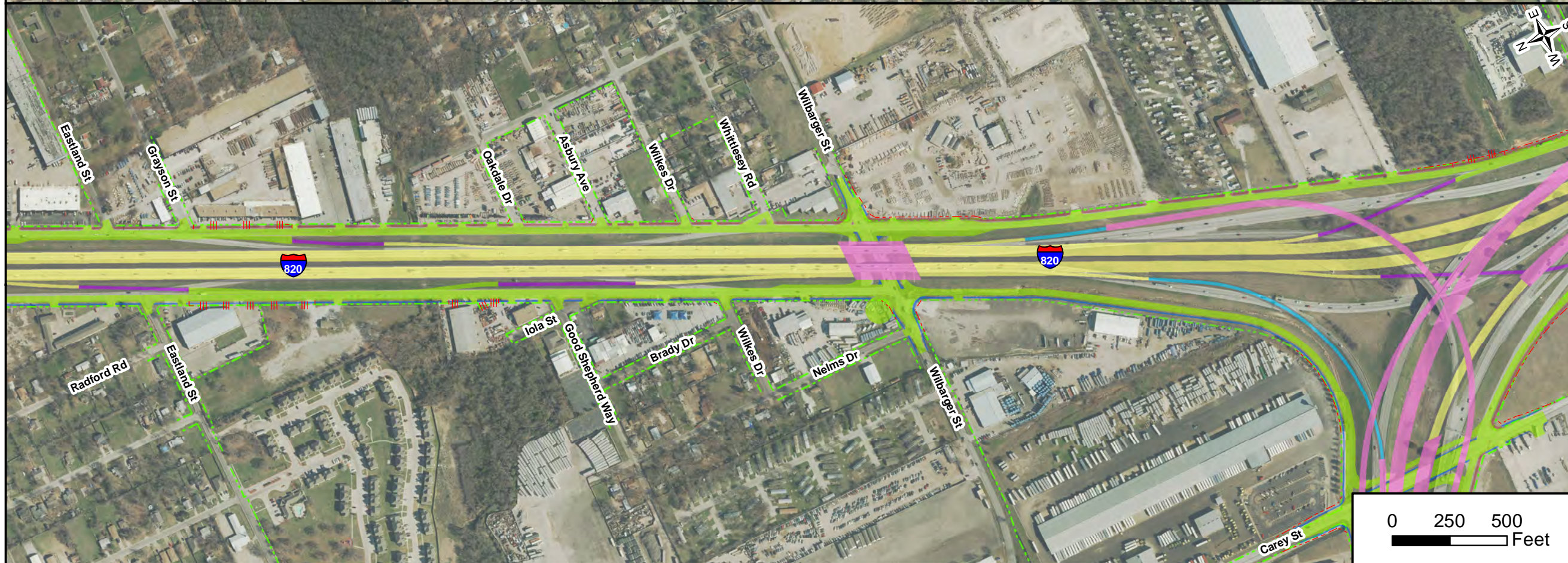
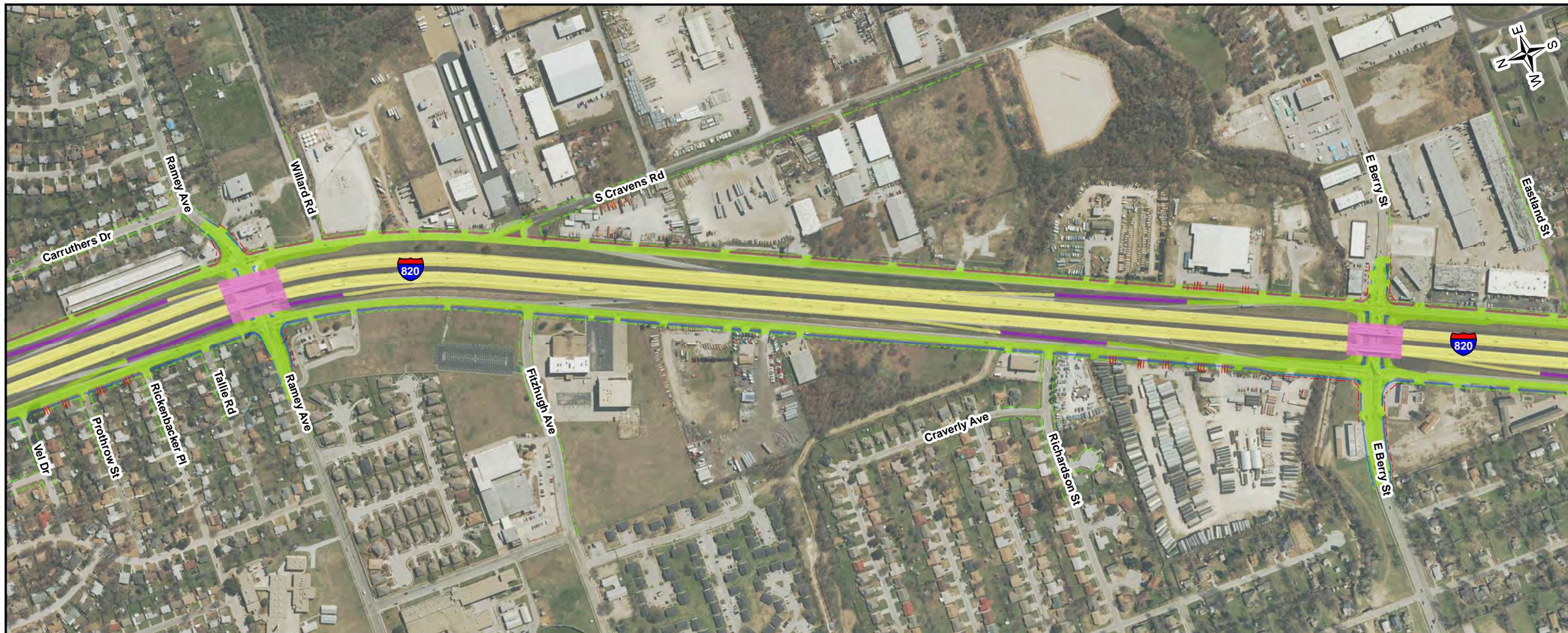
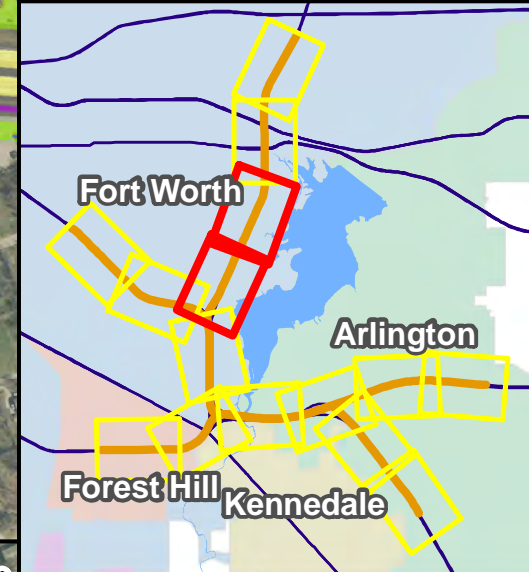
SCHEMATIC DESIGN MAP

SOUTHEAST CONNECTOR

I-20/I-820/US 287 Interchanges
 I-20 from Forest Hill Drive to
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 US 287 from Bishop Street to
 Sublett Road

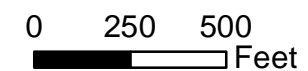
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Page 7 of 8



LEGEND

- General Purpose Lanes (GP Lanes)
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Based on 100% Design Submitted March 2020

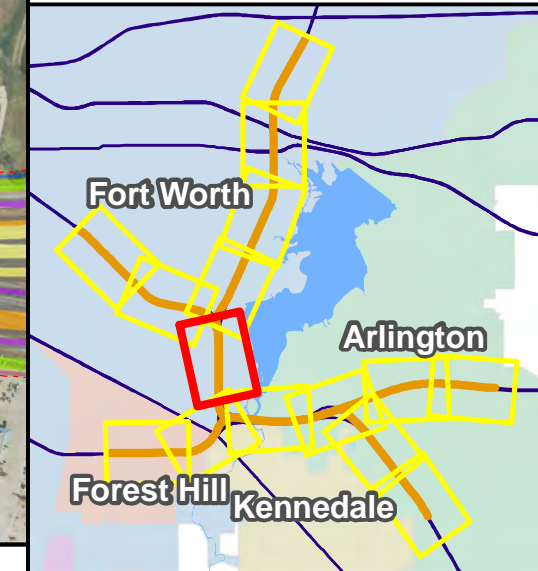
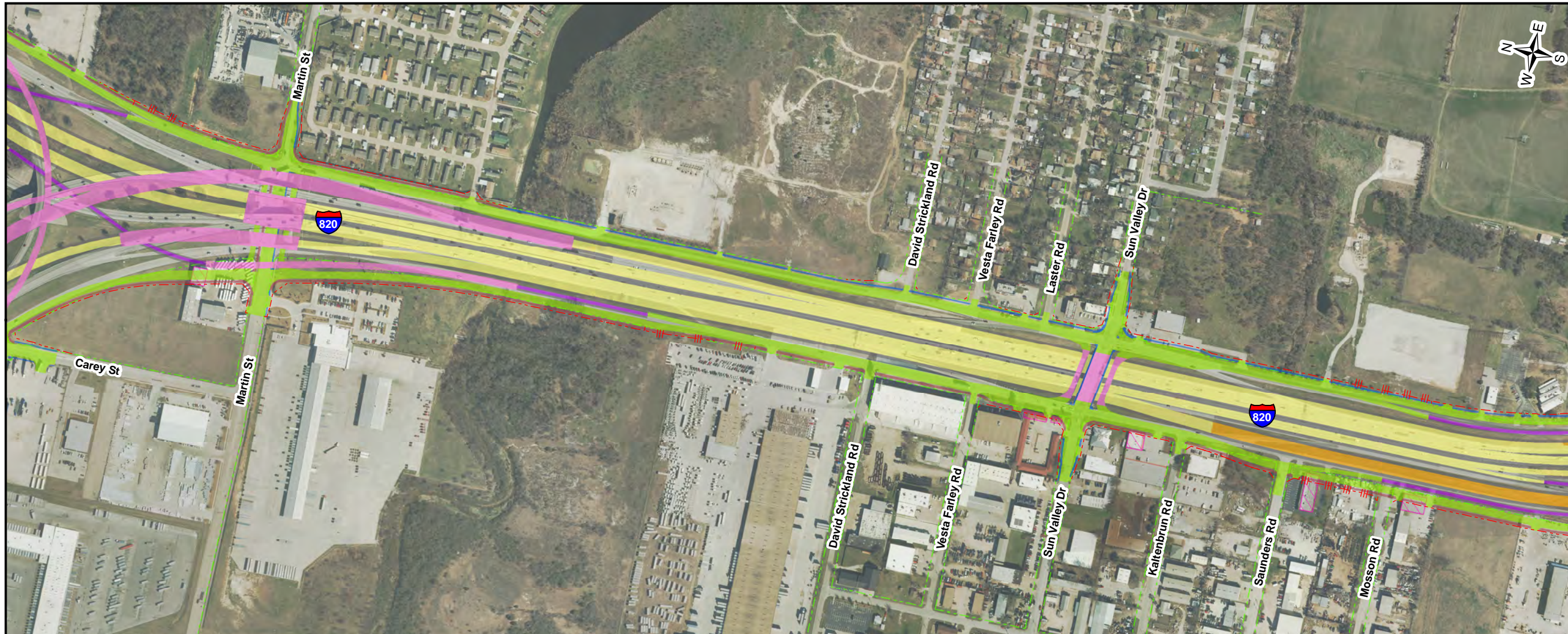
SCHEMATIC DESIGN MAP

SOUTHEAST CONNECTOR

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
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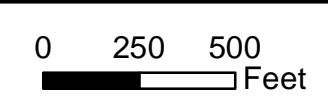
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Page 8 of 8



LEGEND

- General Purpose Lanes (GP Lanes)
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Based on 100% Design Submitted March 2020



MEMO

August 20, 2019

To: Loyl C. Bussell, P.E., District Engineer
Attention: Ricardo Gonzalez, P.E., Director of TPD

Through: William E. Knowles, P.E.
Traffic Analysis Section Director, TPP

From: Gabe Contreras
Planner, TPP

Subject: Traffic Data
CSJ: 0008-13-125
I-820:
From I-20 to Brentwood Stair Rd.

CSJ: 2374-05-066
I-20:
From I-20/I-820 Interchange
To Park Springs Blvd.

CSJ: 0008-13-206
I-20:
From I-20/I-820 Interchange
To Forest Hill Dr.

CSJ: 0172-06-080
US 287:
From I-820
To Bishop St.

CSJ: 0172-09-028
US 287:
From I-20
To Sublett Rd.

Tarrant County

Attached are consultant provided diagrams depicting 2025, 2045 and 2055 average daily traffic volumes and turning movements on the Southeast Connector along I-820, I-20, and US 287 for no build and build conditions. Also attached are tabulations showing traffic analysis for highway design for the 2025 to 2045 twenty year period and 2025 to 2055 thirty year period for the described limits of the route. Also included are tabulations showing data for use in air and noise analysis.

Please refer to your original request dated January 16, 2019.

If you have any questions or need additional information, please contact Gabe Contreras at (512) 486-5180.

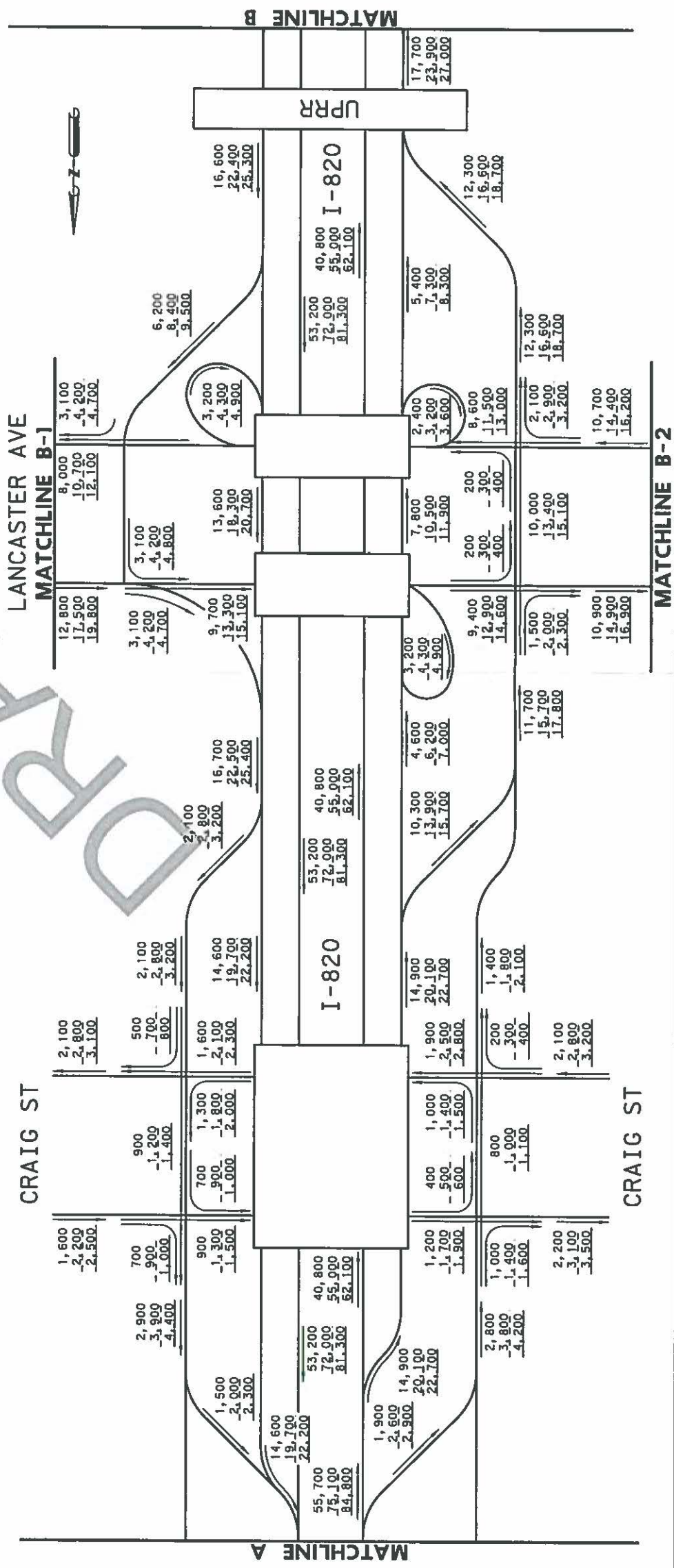
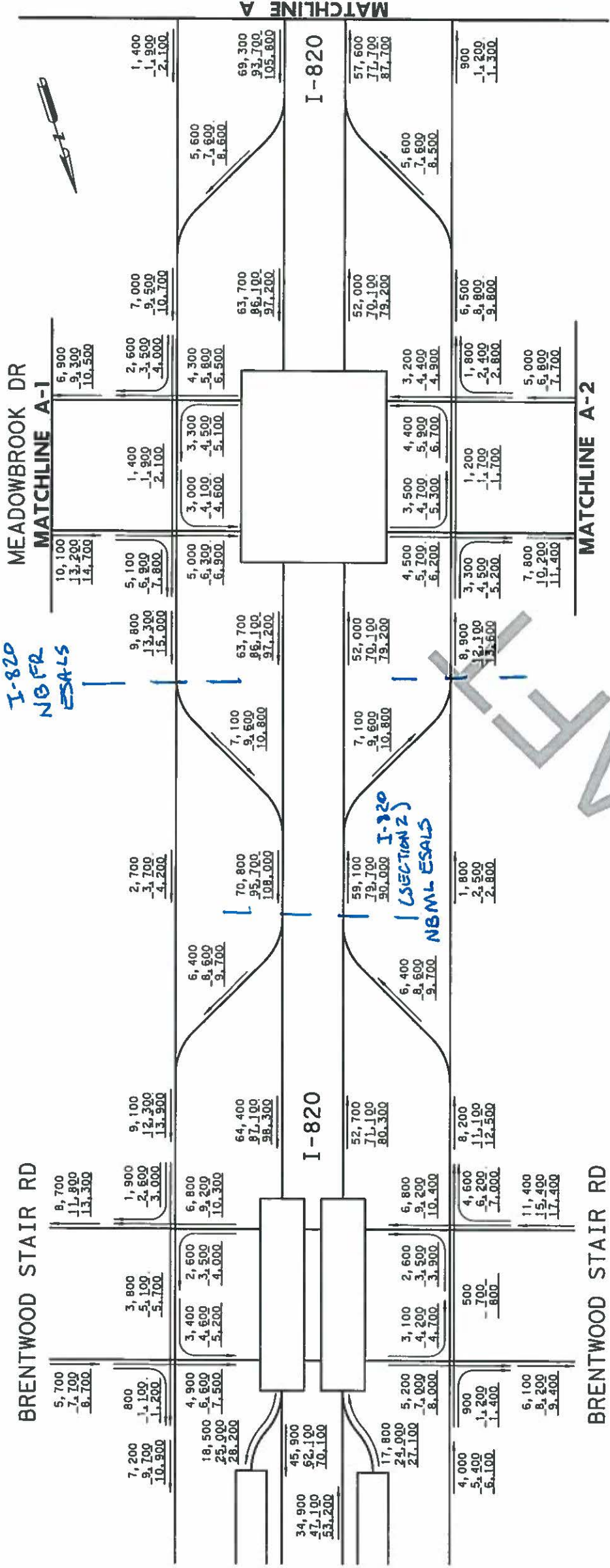
Attachments

CC: Curtis Loftis, P.E., Transportation Engineer, Fort Worth District
Design Division

OUR VALUES: People • Accountability • Trust • Honesty

OUR MISSION: Through collaboration and leadership, we deliver a safe, reliable, and integrated transportation system that enables the movement of people and goods.

An Equal Opportunity Employer



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TR&P APPROVAL

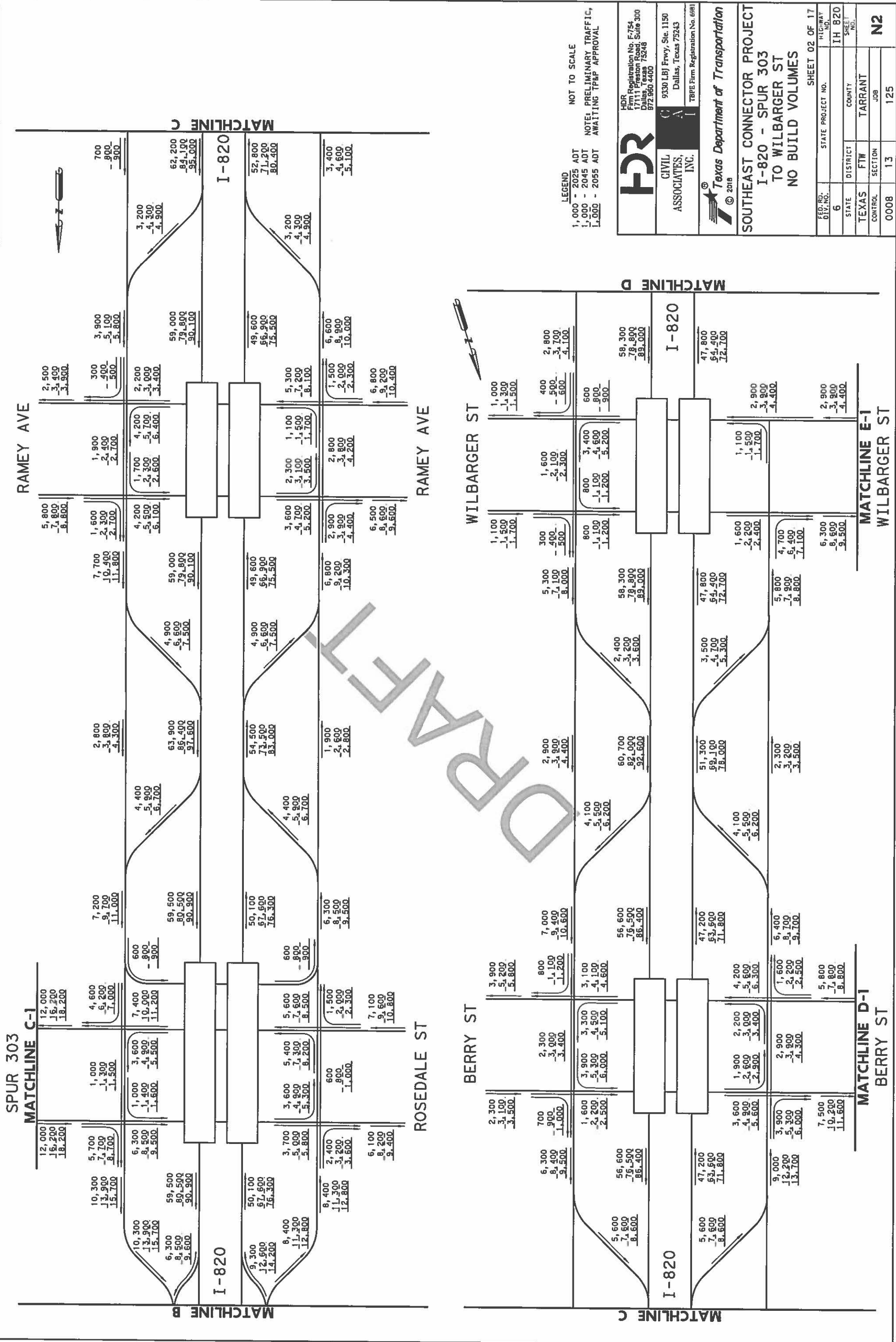
HDR
 HDR
 Firm Registration No. F-754
 17111 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

CIVIL ASSOCIATES, INC.
 CIVIL ASSOCIATES, INC.
 9330 LBJ Frwy, Ste. 1150
 Dallas, Texas 75243
 TBPE Firm Registration No. 6981

Texas Department of Transportation
 © 2016
 SOUTHEAST CONNECTOR PROJECT
 TO LANCASTER AVE
 NO BUILD VOLUMES

FED. RD. DIV. NO.	6	STATE PROJECT NO.	IH 820
HIGHWAY NO.		SHEET NO.	125
STATE	TEXAS	DISTRICT	FTW
COUNTY	TARRANT	SECTION	
JOB CONTROL	0008		

NOT INTENDED FOR CONSTRUCTION,
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number 84704



NOT TO SCALE
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TP&P APPROVAL

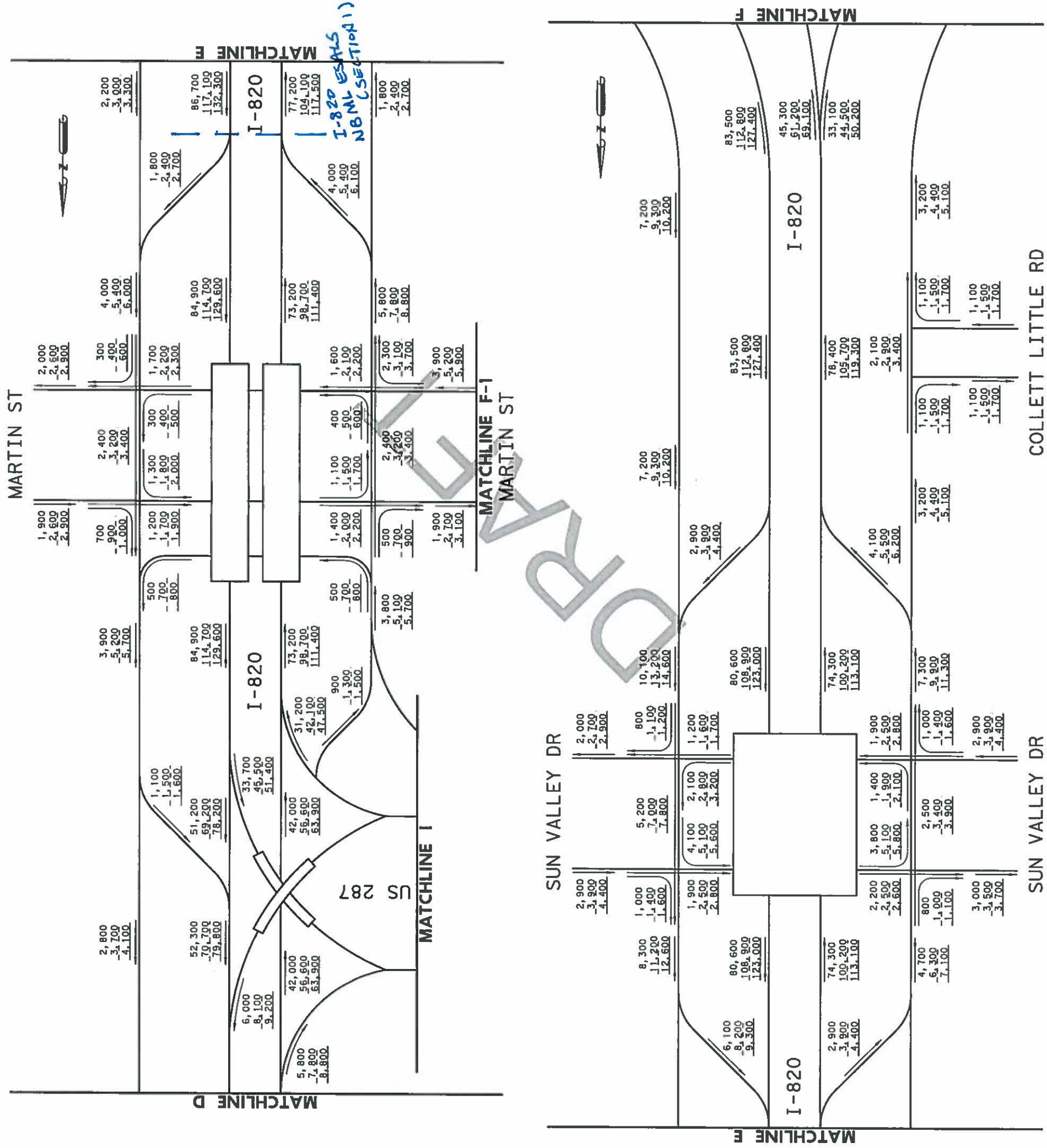
F2R
 HDR
 CIVIL ASSOCIATES, INC.
 9330 LBJ Frwy, Ste. 1150
 Dallas, Texas 75243
 TBPE Firm Registration No. 6981

Texas Department of Transportation
 SOUTHEAST CONNECTOR PROJECT
 I-820 - SPUR 303
 TO WILBARGER ST
 NO BUILD VOLUMES

FED. RD. DIV. NO.	STATE PROJECT NO.	HIGHWAY
6		IH 820
STATE	DISTRICT	COUNTY
TEXAS	FTW	TARRANT
CONTROL	SECTION	JOB
0008	13	125

NOT INTENDED FOR CONSTRUCTION
 RIDING OR PERMIT PURPOSES
 William Erick Knowles, P.E
 Serial Number RA77A

NOT INTENDED FOR CONSTRUCTION
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number RA704



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTES: PRELIMINARY TRAFFIC,
 AWAITING TPEP APPROVAL

HDR
 HDR
 Firm Registration No. F-754
 1711 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

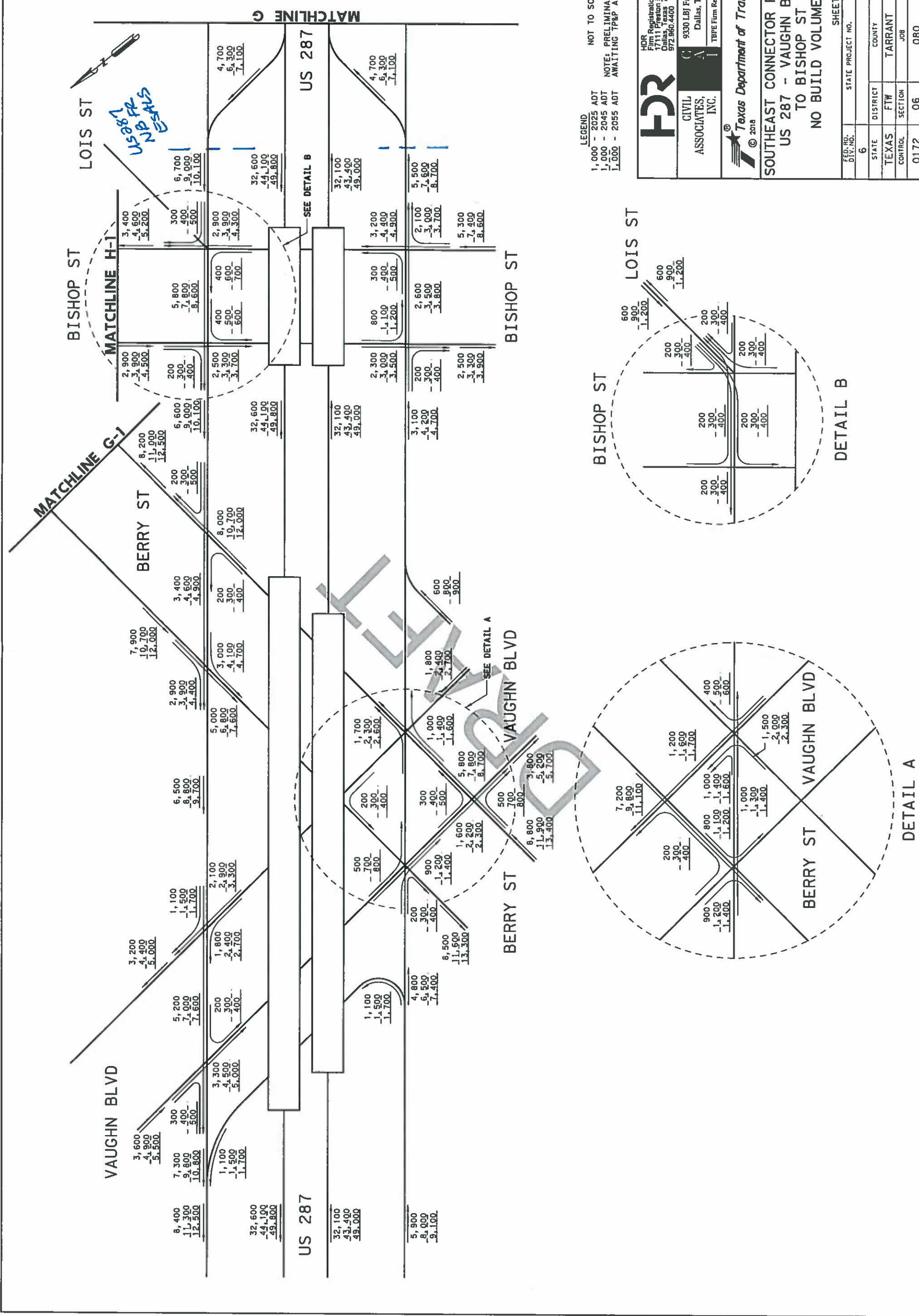
CIVIL ASSOCIATES, INC.
 CIVIL ASSOCIATES, INC.
 9330 LBJ Fwy, Ste. 1150
 Dallas, Texas 75243
 TPEP Firm Registration No. 6981

Texas Department of Transportation
 TEXAS DEPARTMENT OF TRANSPORTATION

SOUTHEAST CONNECTOR PROJECT
 I-820 - US 287 TO
 TO I-20
 NO BUILD VOLUMES

SHEET 03 OF 17

STATE PROJECT NO.	1H 820
STATE DIV. NO.	6
STATE	TEXAS
DISTRICT	FTW
COUNTY	TARRANT
SECTION	13
JOB	125
CONTROL	0008
SHEET NO.	N3



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE

NOTES: PRELIMINARY TRAFFIC,
 AWAITING TP&P APPROVAL

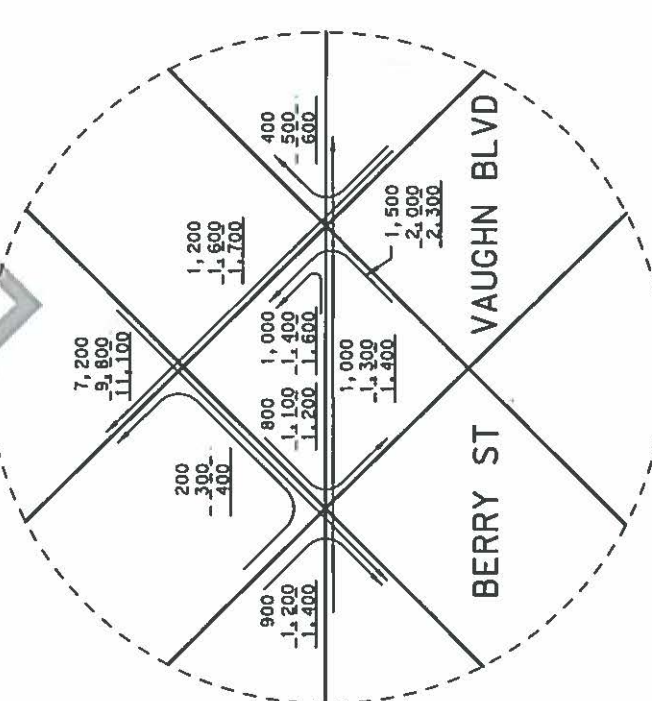
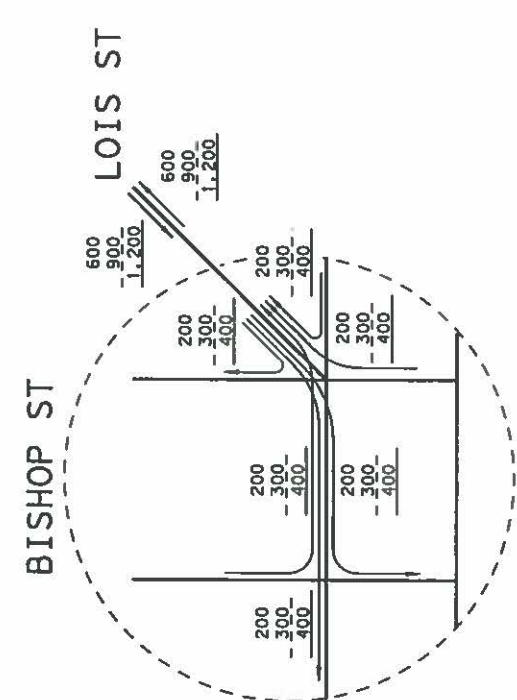
HDR
 HDR
 Firm Registration No. F-754
 1711 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

CIVIL ASSOCIATES, INC.
 CIVIL ASSOCIATES, INC.
 9330 LBJ Frwy, Ste. 1150
 Dallas, Texas 75243
 TBPE Firm Registration No. 6981

Texas Department of Transportation

SOUTHEAST CONNECTOR PROJECT
US 287 - VAUGHN BLVD
TO BISHOP ST
NO BUILD VOLUMES

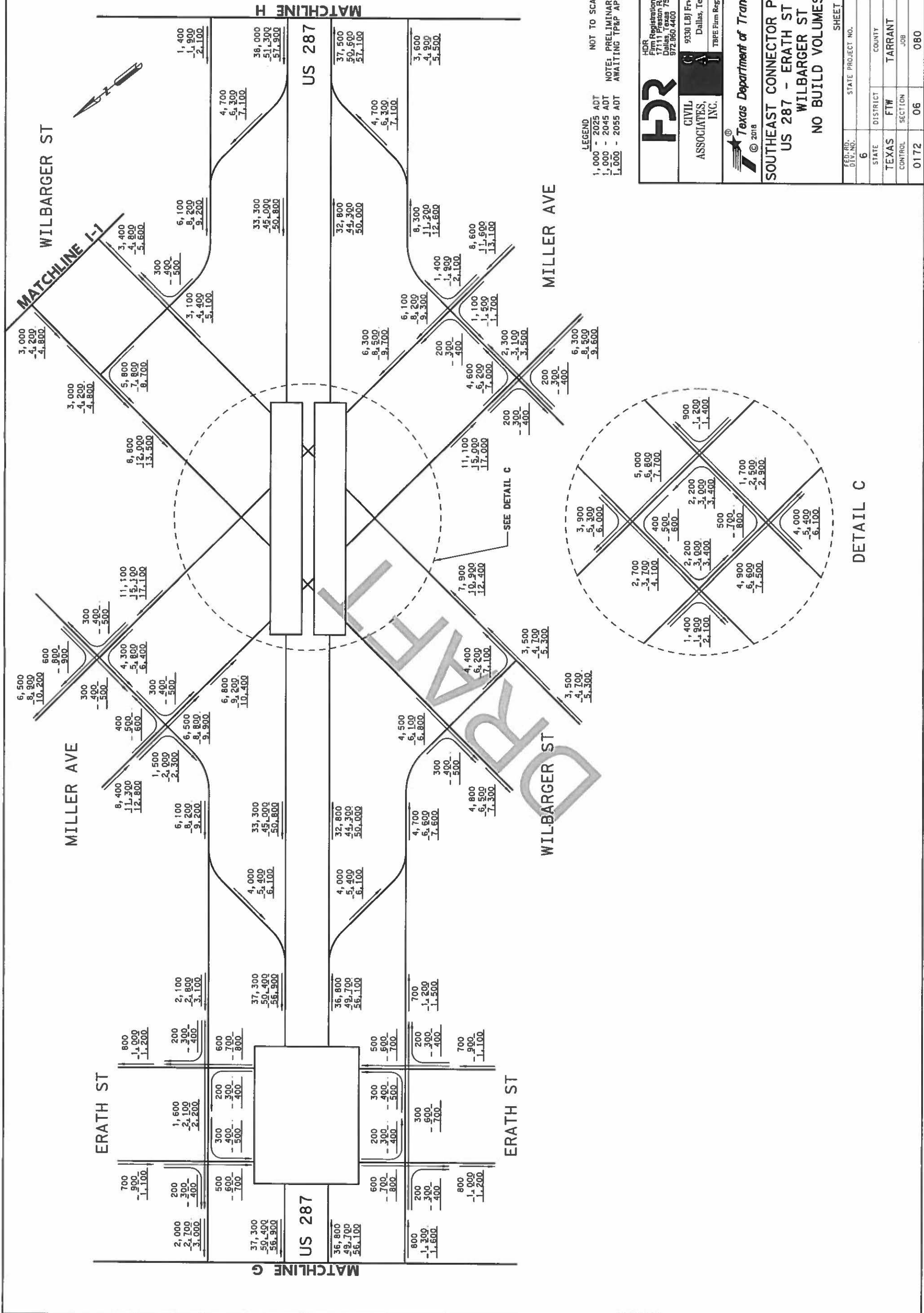
FED. RD. DIV. NO.	STATE PROJECT NO.	HIGHWAY NO.	SHEET NO.
6	US 287		US 287
STATE	DISTRICT	COUNTY	
TEXAS	FTW	TARRANT	
CONTROL	SECTION	JOB	
0172	06	080	



NOT INTENDED FOR CONSTRUCTION,
 BIDDING OR PERMIT PURPOSES

William Erick Knowles, P.E

Serial Number RA707



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TPEP APPROVAL

HDR
 HDR
 Firm Registration No. F-754
 17111 Preston Road, Suite 300
 Dallas, Texas 75248
 972.860.4400

CIVIL ASSOCIATES, INC.
 CIVIL ASSOCIATES, INC.
 9330 LBJ Frwy, Ste. 1150
 Dallas, Texas 75243
 TBPE Firm Registration No. 6981

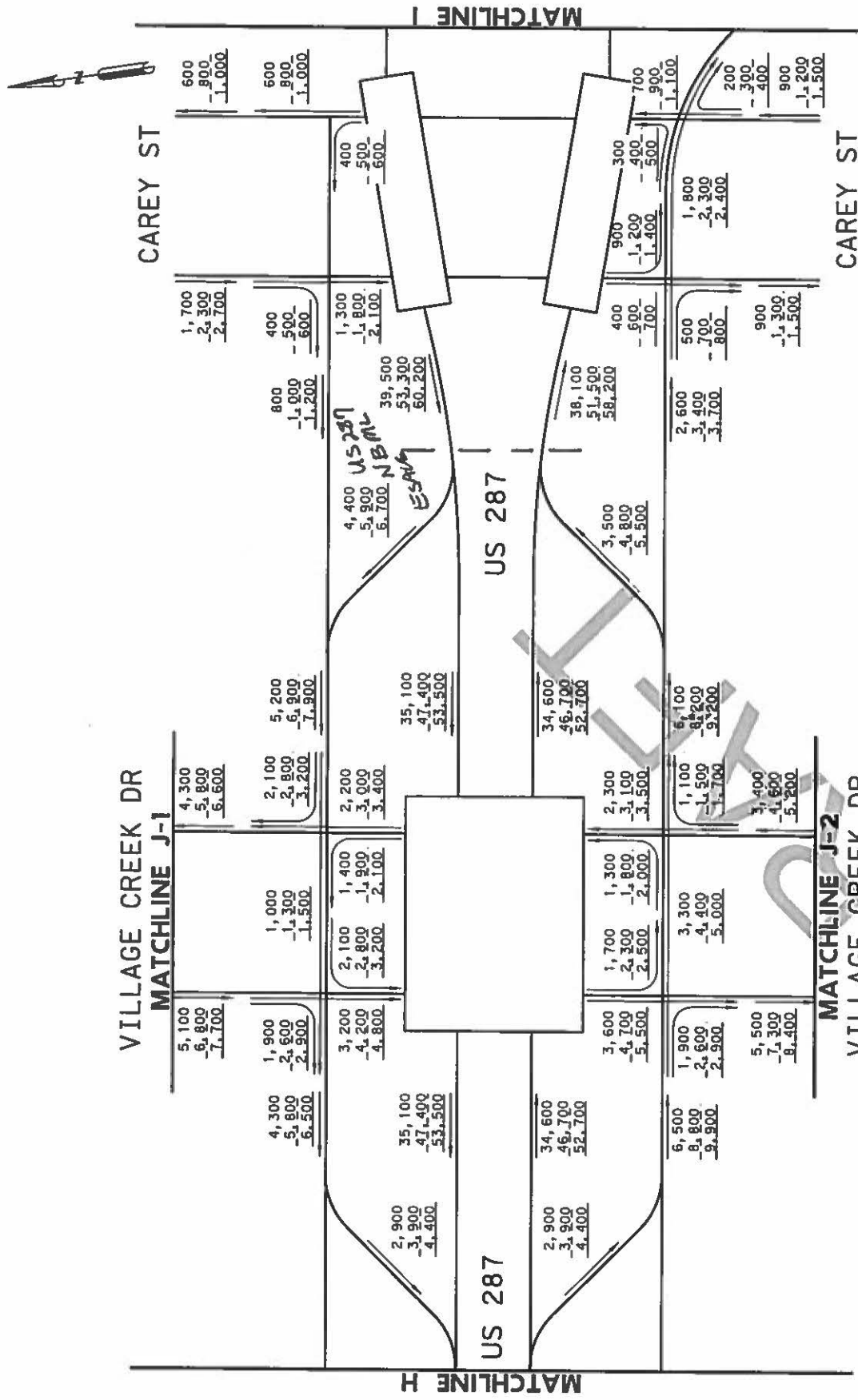
Texas Department of Transportation
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SOUTHEAST CONNECTOR PROJECT
 US 287 - ERATH ST TO
 WILBARGER ST
 NO BUILD VOLUMES

SHEET 05 OF 17

STATE PROJECT NO.	6
ROUTE NO.	US 287
STATE	TEXAS
DISTRICT	FTW
COUNTY	TARRANT
SECTION	06
JOB	080
SHEET NO.	N5

NOT INTENDED FOR CONSTRUCTION
 RIDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number RA701



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TP&P APPROVAL

HDR
 HDR
 Firm Registration No. F-754
 1711 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

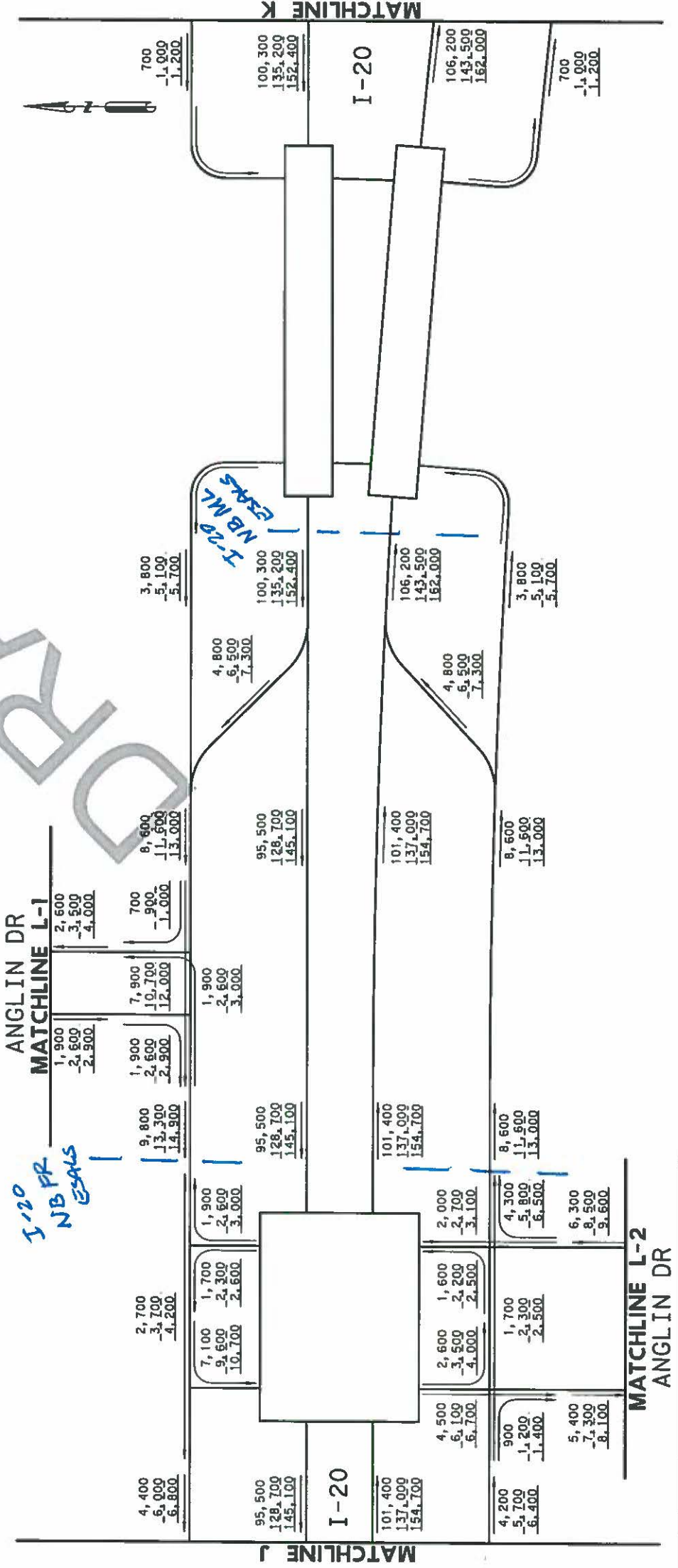
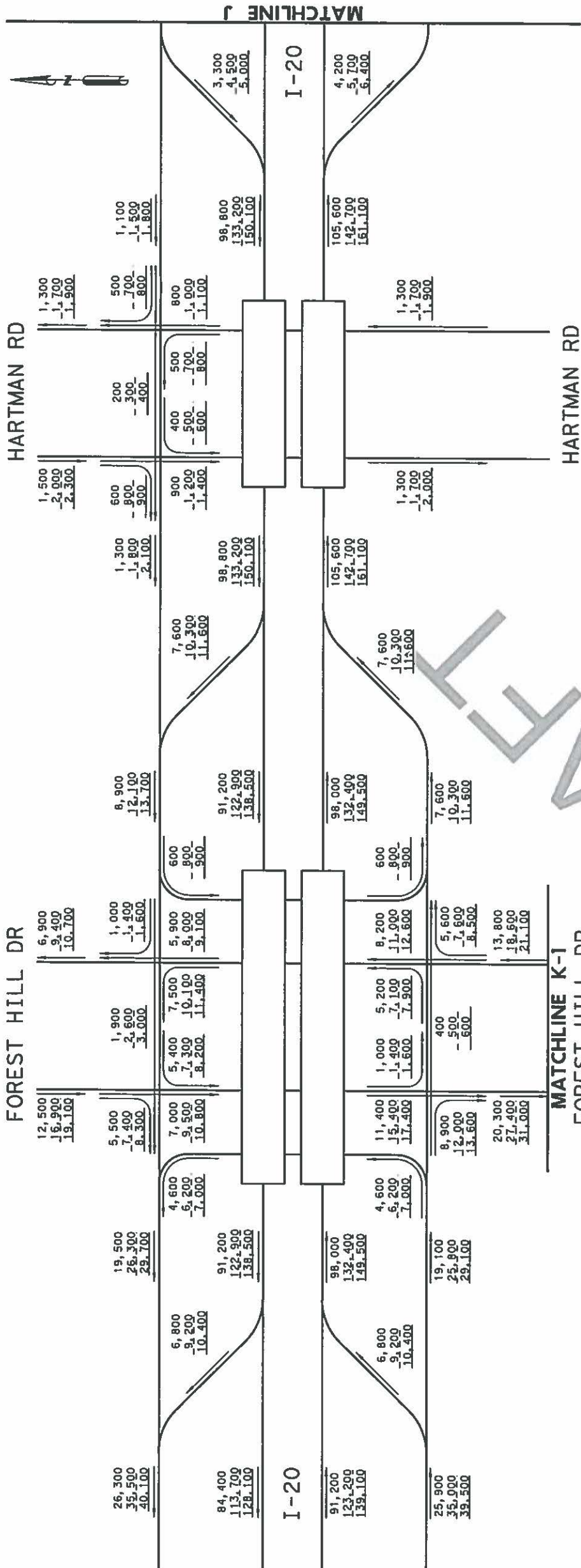
CIVIL ASSOCIATES, INC.
 CIVIL ASSOCIATES, INC.
 9330 LBJ Fwy, Ste. 1150
 Dallas, Texas 75243
 TBPE Firm Registration No. 6981

Texas Department of Transportation
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SOUTHEAST CONNECTOR PROJECT
 US 287 - VILLAGE CREEK DR
 TO CAREY ST
 NO BUILD VOLUMES

FED. RD. DIV. NO.	STATE PROJECT NO.	HIGHWAY NO.	SHEET NO.
6	US 287	US 287	US 287
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	N6
CONTROL	SECTION	JOB	
0172	06	080	

NOT INTENDED FOR CONSTRUCTION,
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number BA702



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TP&P APPROVAL

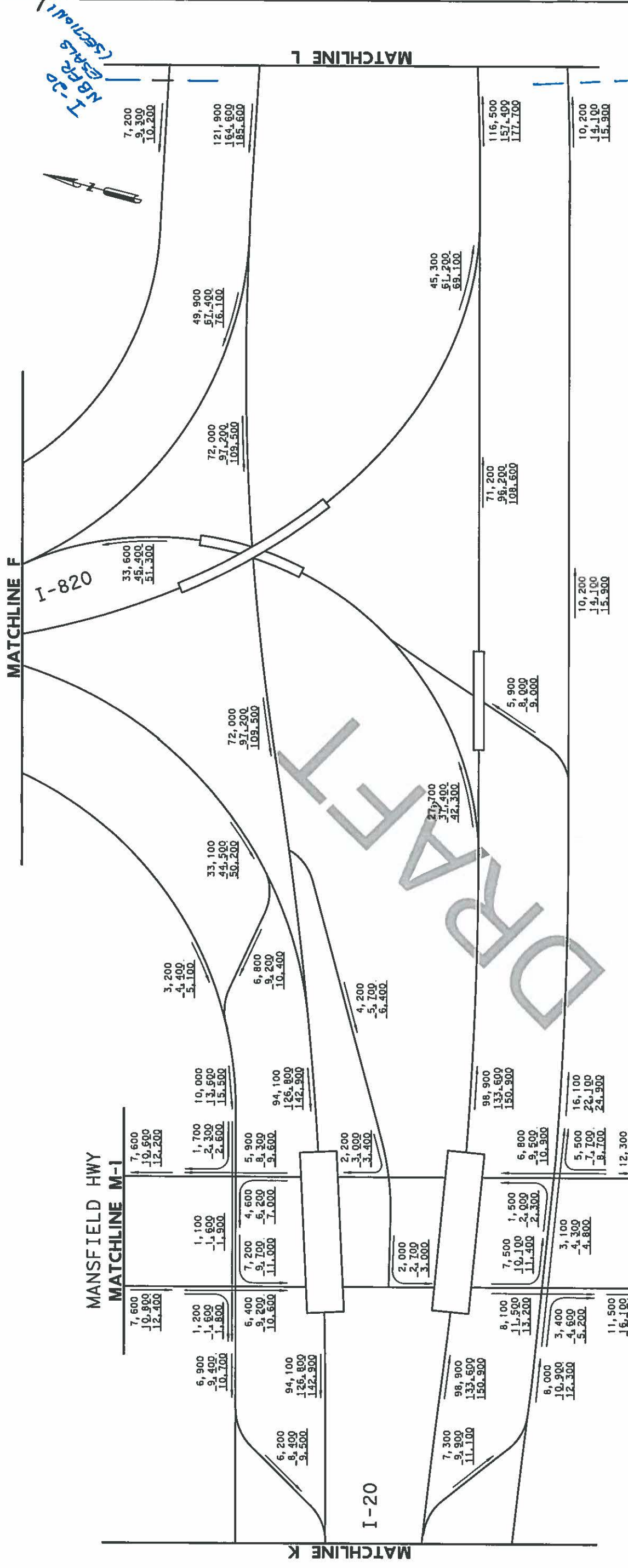
FDR
 HDR
 Firm Registration No. F-754
 1711 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

CIVIL ASSOCIATES, INC.
 9330 LBJ Fwy, Ste. 1150
 Dallas, Texas 75243
 TBPE Firm Registration No. 6981

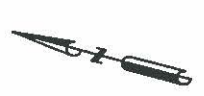
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 SOUTHEAST CONNECTOR PROJECT
 I-20 - FOREST HILL DR
 TO ANGLIN DR
 NO BUILD VOLUMES

FED. RD. DIST. NO.	6	STATE	TEXAS	DISTRICT	FTW	SECTION	13	CONTROL	0008
HIGHWAY NO.	IH 20	COUNTY	TARRANT	JOB					206
SHEET NO.									N7

NOT INTENDED FOR CONSTRUCTION
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number R4704



I-20
NBR
EASLS
(SECTION 1)



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HDR Registration No. F-754
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Dallas, Texas 75243

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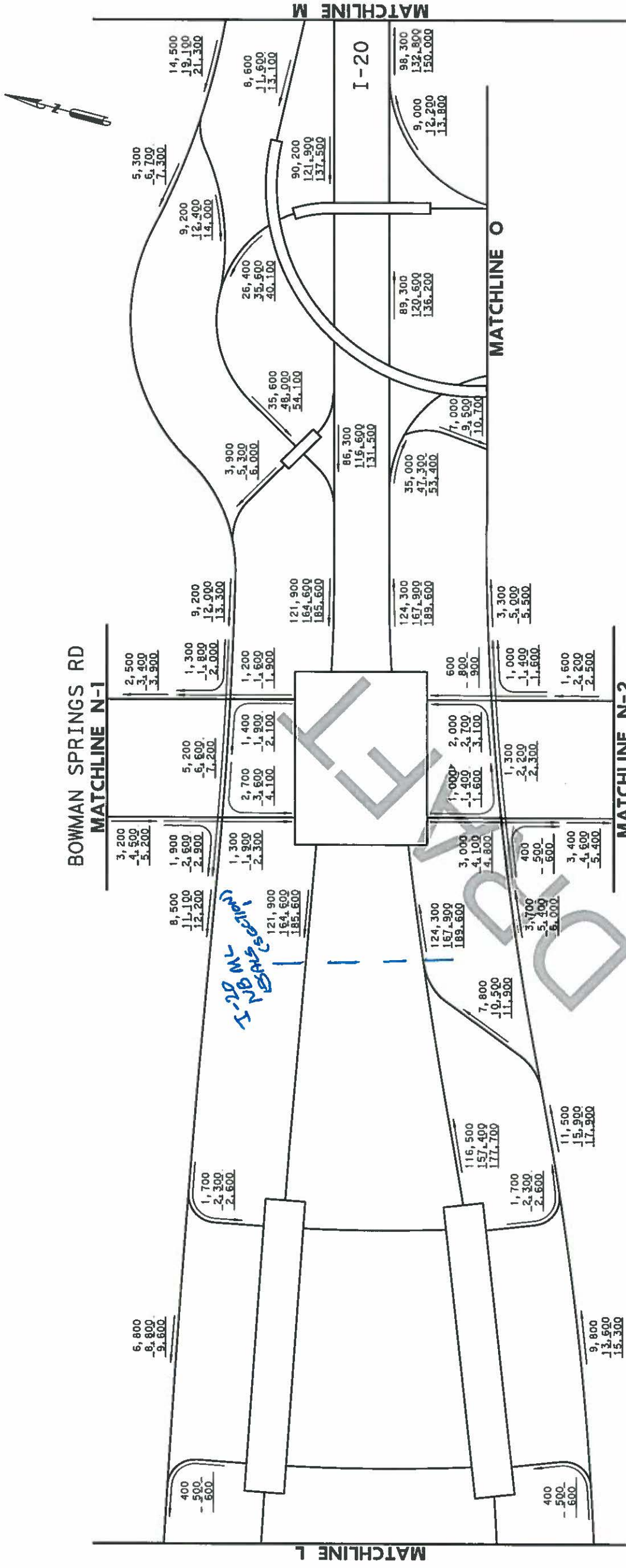
**SOUTHEAST CONNECTOR PROJECT
I-20 - MANSFIELD HWY
TO I-820
NO BUILD VOLUMES**

FED. RD. DIV. NO.	STATE PROJECT NO.	SHEET NO.	HIGHWAY NO.
6		IH 20	
STATE	DISTRICT	COUNTY	
TEXAS	FTW	TARRANT	
CONTROL	SECTION	JOB	
0008	13	206	

SHEET 08 OF 17

LEGEND
1,000 - 2025 ADT
1,000 - 2045 ADT
1,000 - 2055 ADT

NOT TO SCALE
NOTE: PRELIMINARY TRAFFIC, AWAITING TRIP APPROVAL



HDR
 HDR Registration No. F-754
 1711 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

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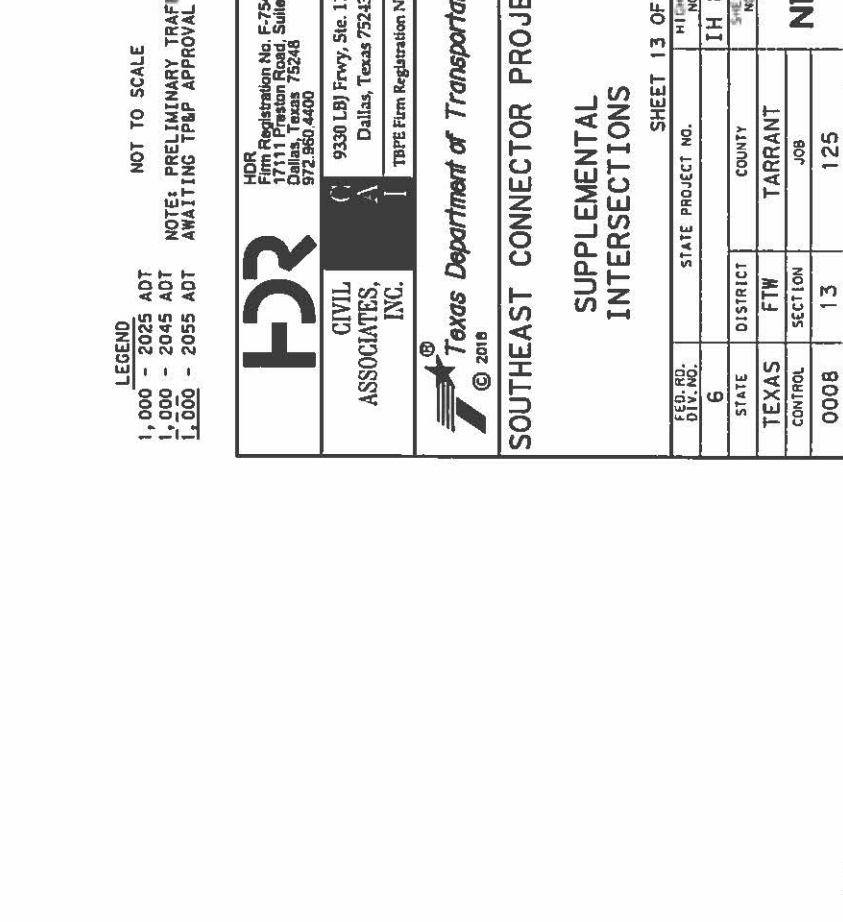
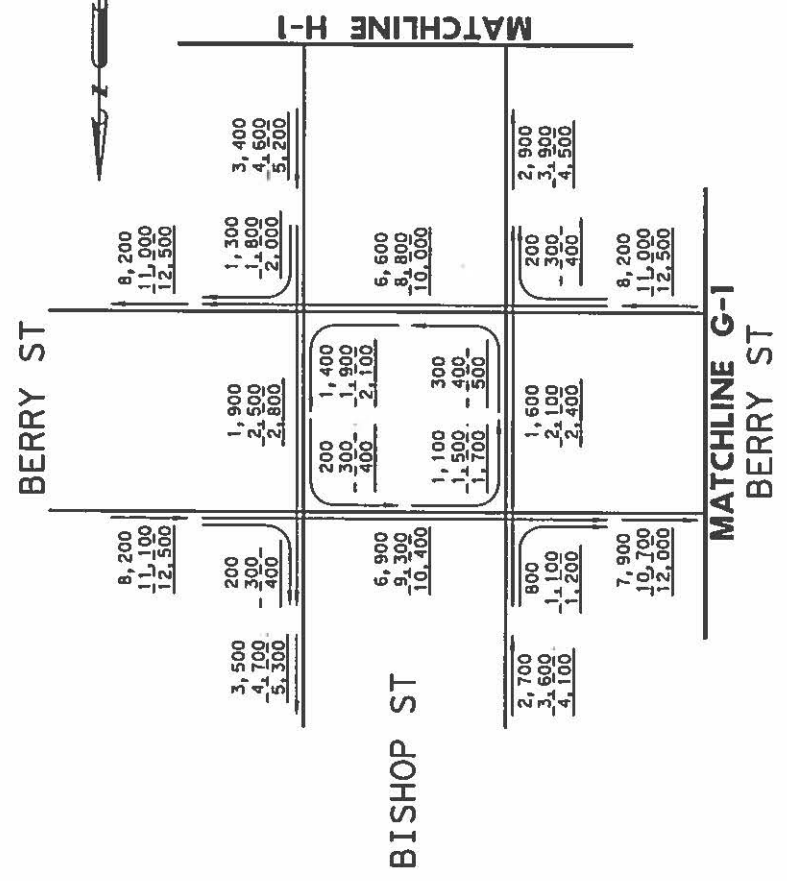
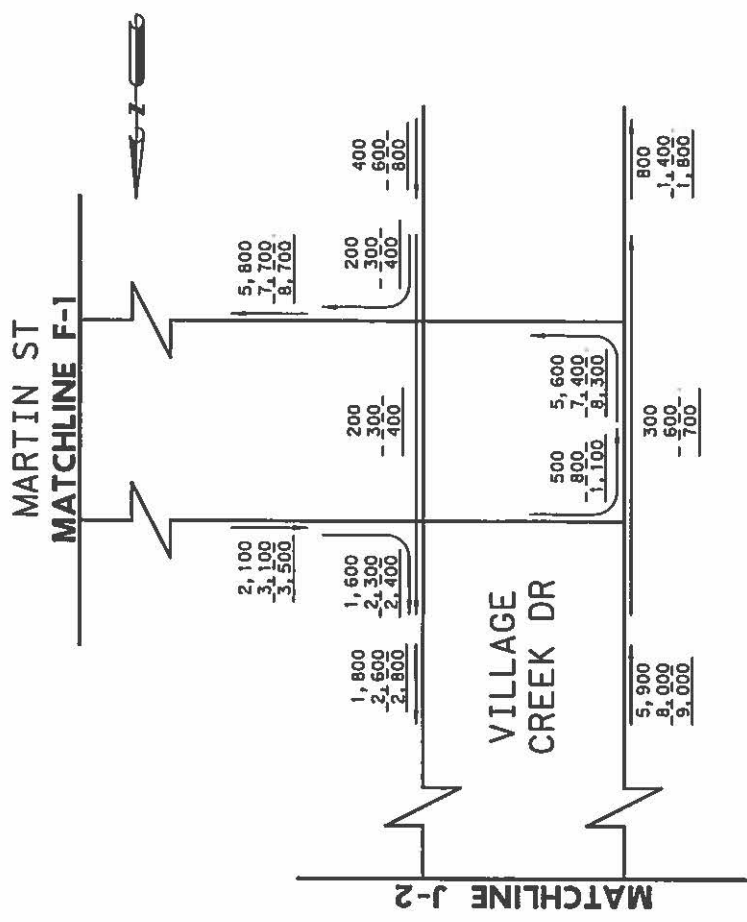
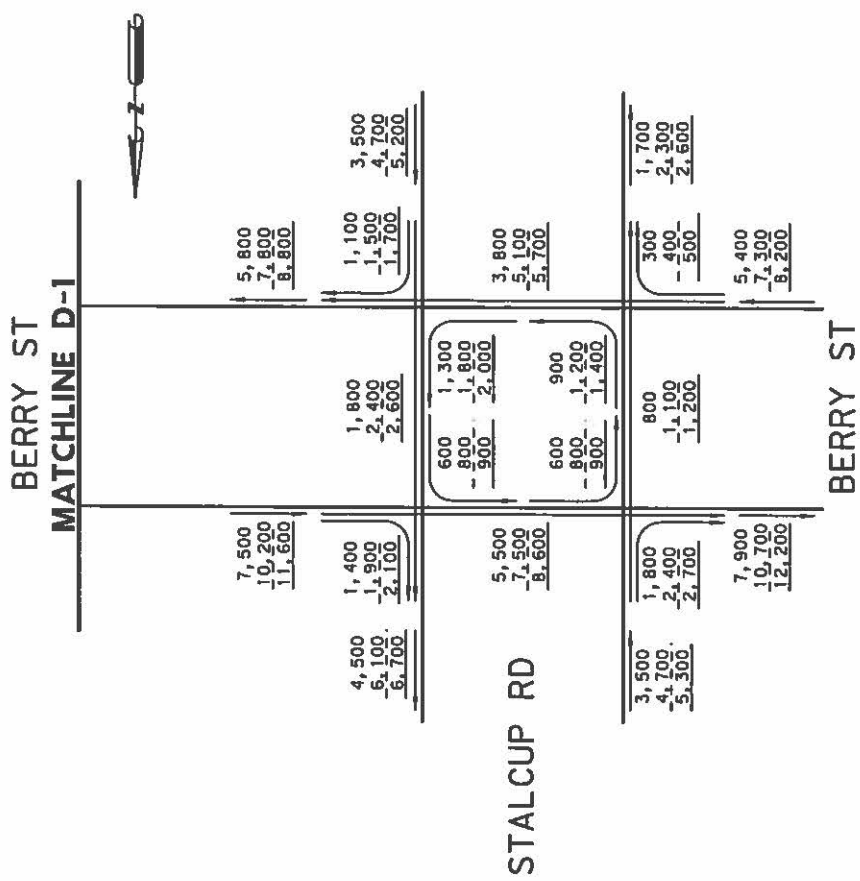
SOUTHEAST CONNECTOR PROJECT
 I-20 - I-820 TO
 US 287
 NO BUILD VOLUMES

SHEET 09 OF 17	
FED. RD. DIV. NO. 6	STATE PROJECT NO. IH 20
STATE TEXAS	COUNTY TARRANT
DISTRICT CONTROL 2374	SECTION JOB 05 066
SHEET NO. N9	

LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TRIP APPROVAL

NOT INTENDED FOR CONSTRUCTION
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number RA70A



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TP&P APPROVAL

HR
 HDR
 1701 Registration No. F-754
 1701 West Loop, Suite 300
 Dallas, Texas 75248
 972.960.4400

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 Dallas, Texas 75243

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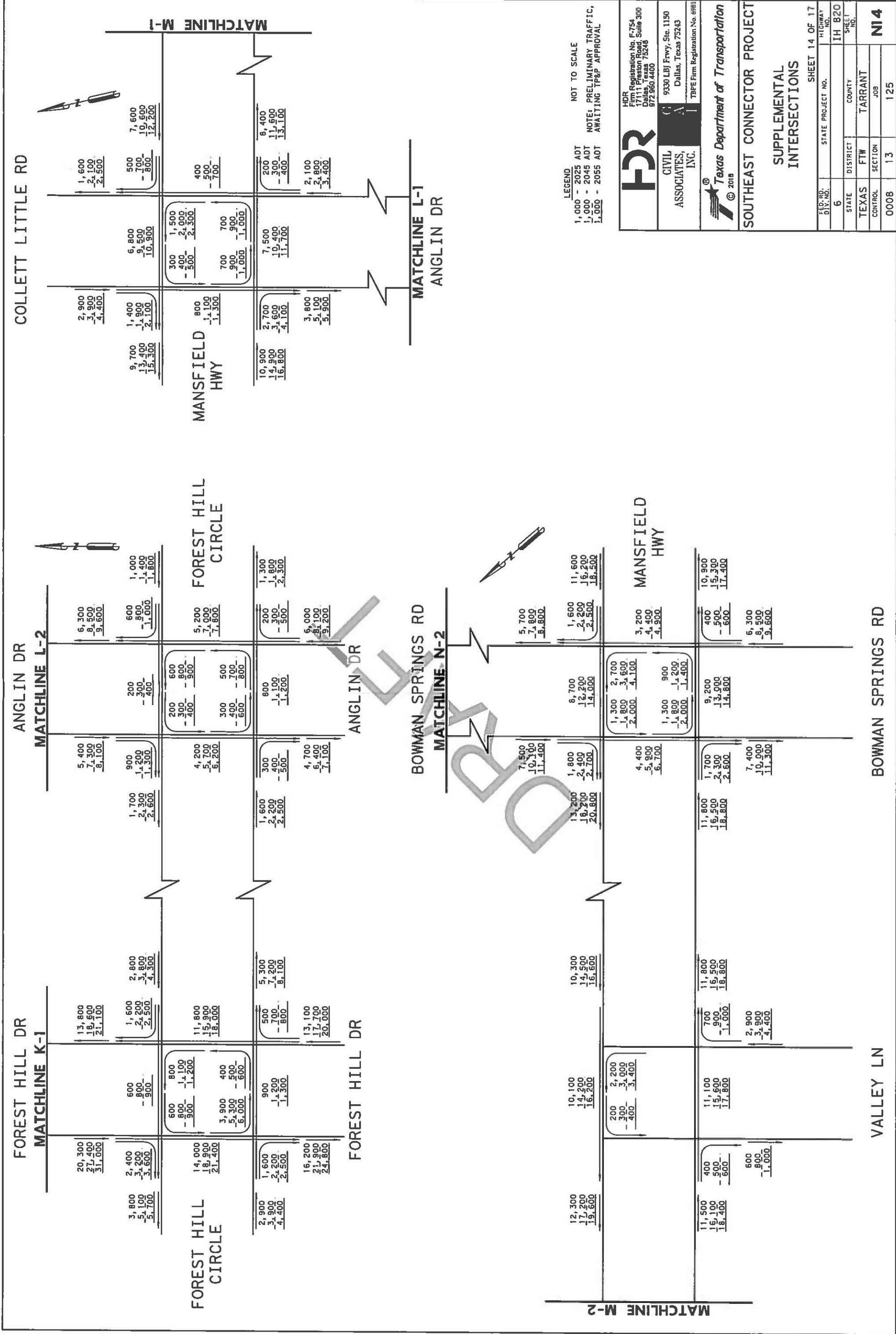
SOUTHEAST CONNECTOR PROJECT

SUPPLEMENTAL INTERSECTIONS

FED. RD. DIV. NO.	STATE PROJECT NO.	HIGHWAY NO.
6	6	IH 820
STATE	DISTRICT	COUNTY
TEXAS	FTW	TARRANT
CONTROL	SECTION	JOB
0008	13	125

SHEET 13 OF 17

N13



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TR&P APPROVAL

HDR
 HDR
 Firm Registration No. F-754
 17111 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

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 CIVIL ASSOCIATES, INC.
 9330 LBJ Frwy, Ste. 1150
 Dallas, Texas 75243
 TBPE Firm Registration No. 4981

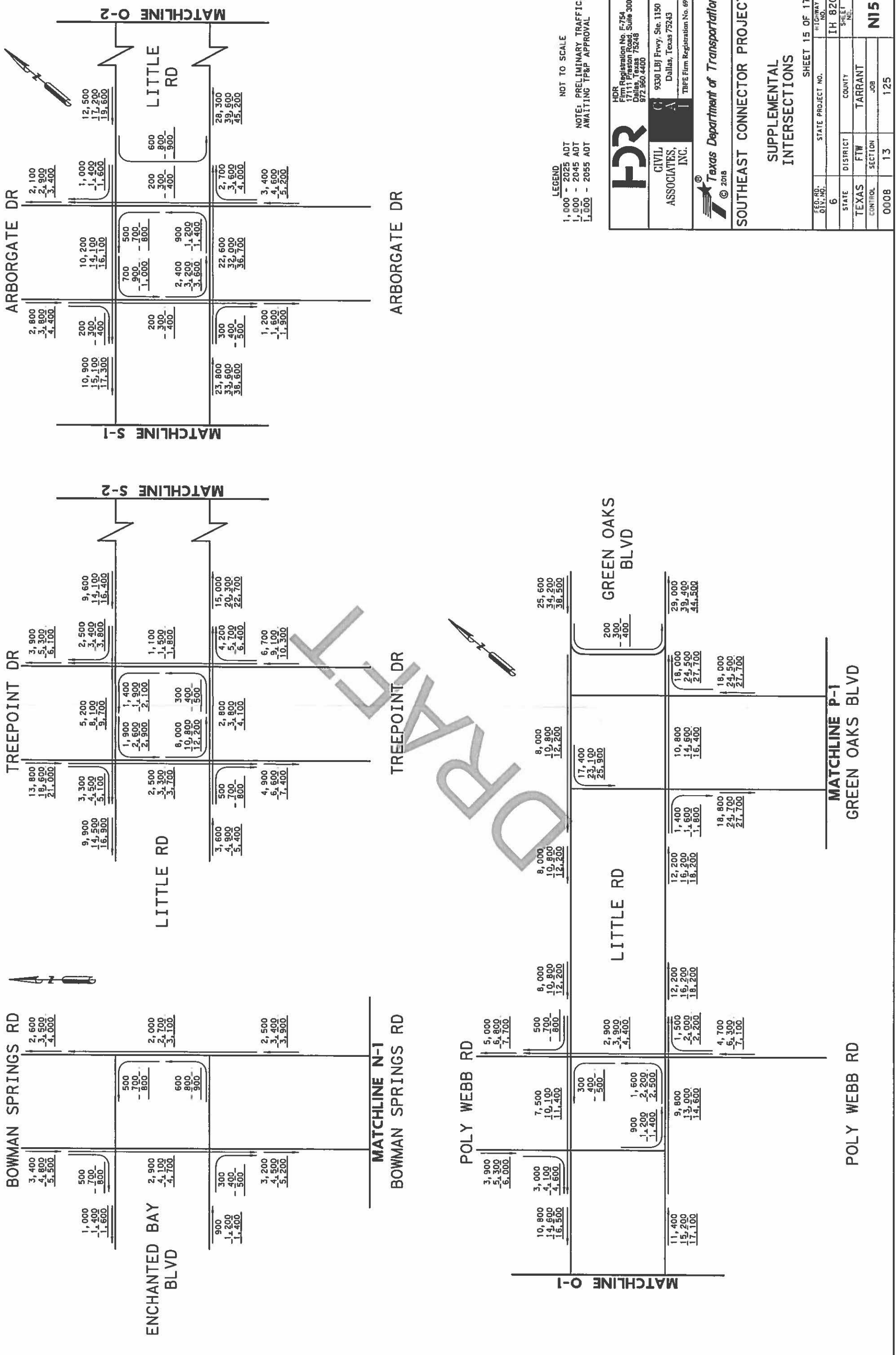
Texas Department of Transportation
 Texas Department of Transportation
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SOUTHEAST CONNECTOR PROJECT
 SUPPLEMENTAL INTERSECTIONS

STATE PROJECT NO.	STATE PROJECT NO.		
6	IH 820		
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	N14
CONTROL	SECTION	JOB	
0008	13	125	

SHEET 14 OF 17
 HIGHWAY NO.

NOT INTENDED FOR CONSTRUCTION
 RIDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Seal Number: 2172



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TP&P APPROVAL

HDR
 HDR
 Firm Registration No. F-754
 1711 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

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SOUTHEAST CONNECTOR PROJECT

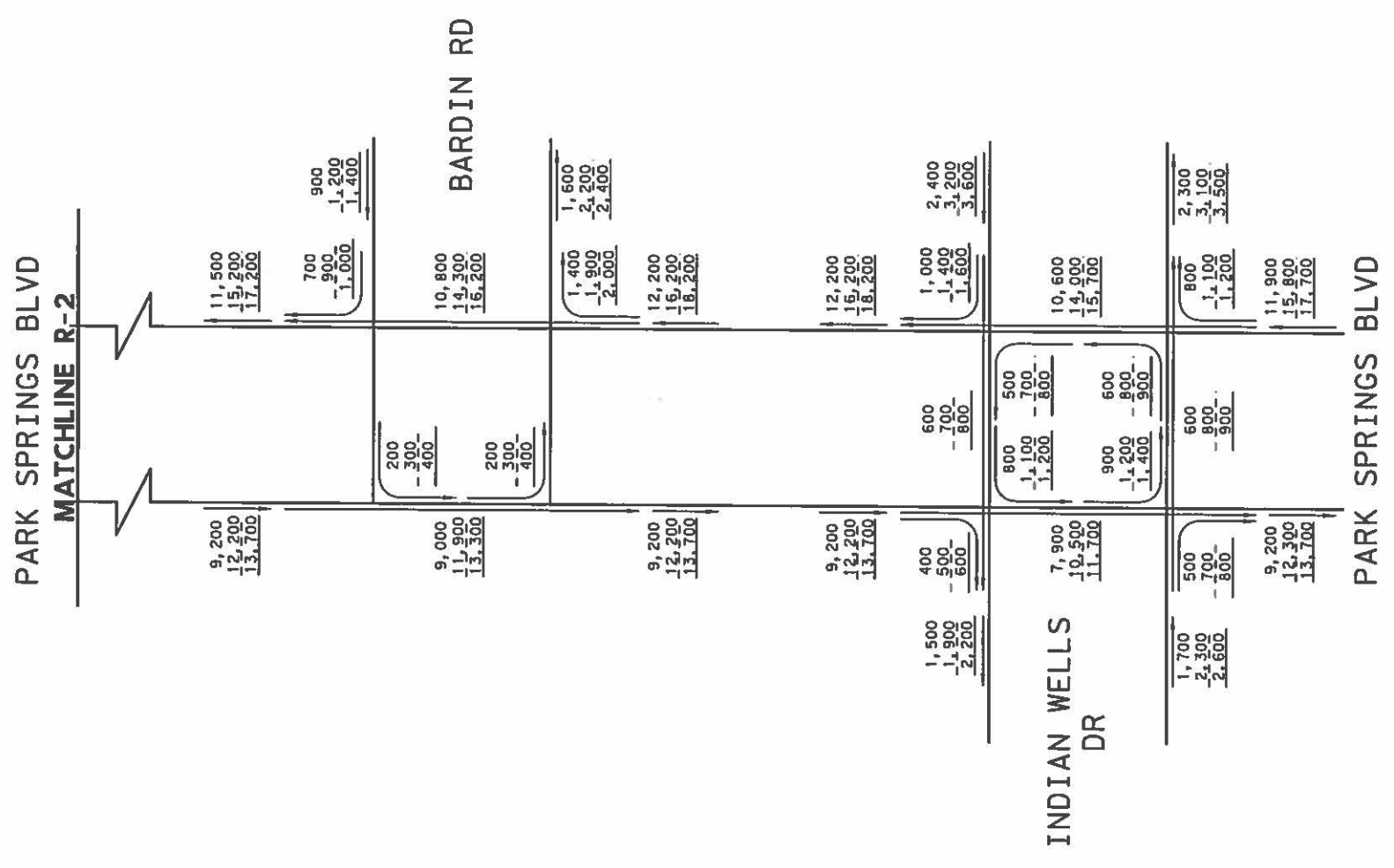
SUPPLEMENTAL INTERSECTIONS

FED. RD. DIV. NO.	STATE PROJECT NO.	ROUTE NO.
6	IH 820	
STATE	DISTRICT	COUNTY
TEXAS	FTW	TARRANT
CONTROL	SECTION	JOB
0008	13	125

SHEET 15 OF 17

NOT INTENDED FOR CONSTRUCTION,
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number R4764

DRAFT



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TP&P APPROVAL

HDR
 HDR
 Firm Registration No. F-754
 17111 Preston Road, Suite 300
 Dallas, Texas 75248
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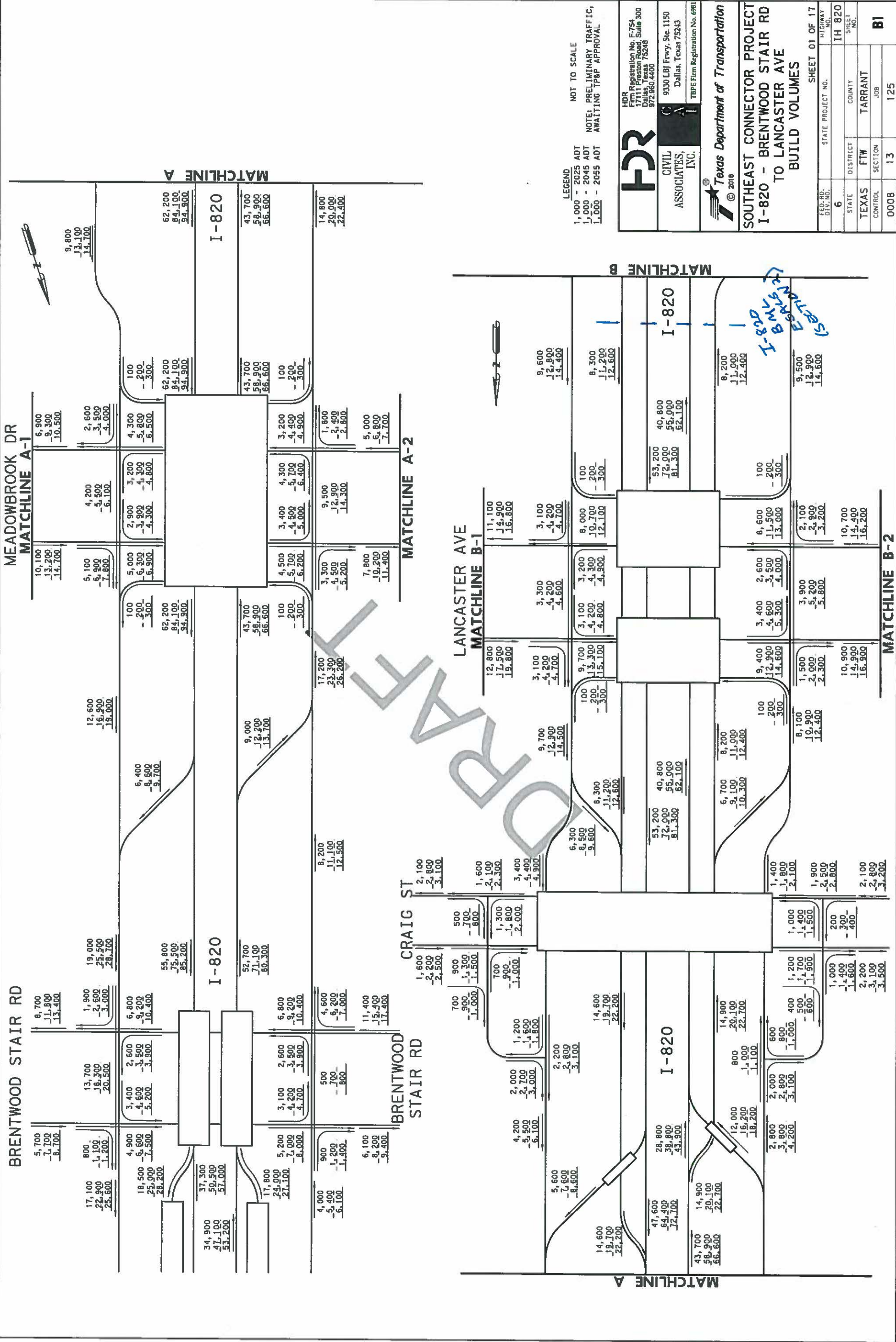
SOUTHEAST CONNECTOR PROJECT

SUPPLEMENTAL INTERSECTIONS

FED. RD. DIV. NO.	STATE PROJECT NO.	HIGHWAY NO.	SHEET NO.
6		IH 820	17 OF 17
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	
CONTROL	SECTION	JOB	
0008	13	125	

N17

NOT INTENDED FOR CONSTRUCTION
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number R4771d



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE

NOTE: PRELIMINARY TRAFFIC, AWAITING TP&P APPROVAL.

HDR
 HDR
 Firm Registration No. F-754
 17111 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

CIVIL ASSOCIATES, INC.
 CIVIL ASSOCIATES, INC.
 9330 LBJ Fwy, Ste. 1150
 Dallas, Texas 75243

TBPE Firm Registration No. 6981
 Texas Department of Transportation

SOUTHEAST CONNECTOR PROJECT
I-820 - BRENTWOOD STAIR RD TO LANCASTER AVE
BUILD VOLUMES

SHEET 01 OF 17

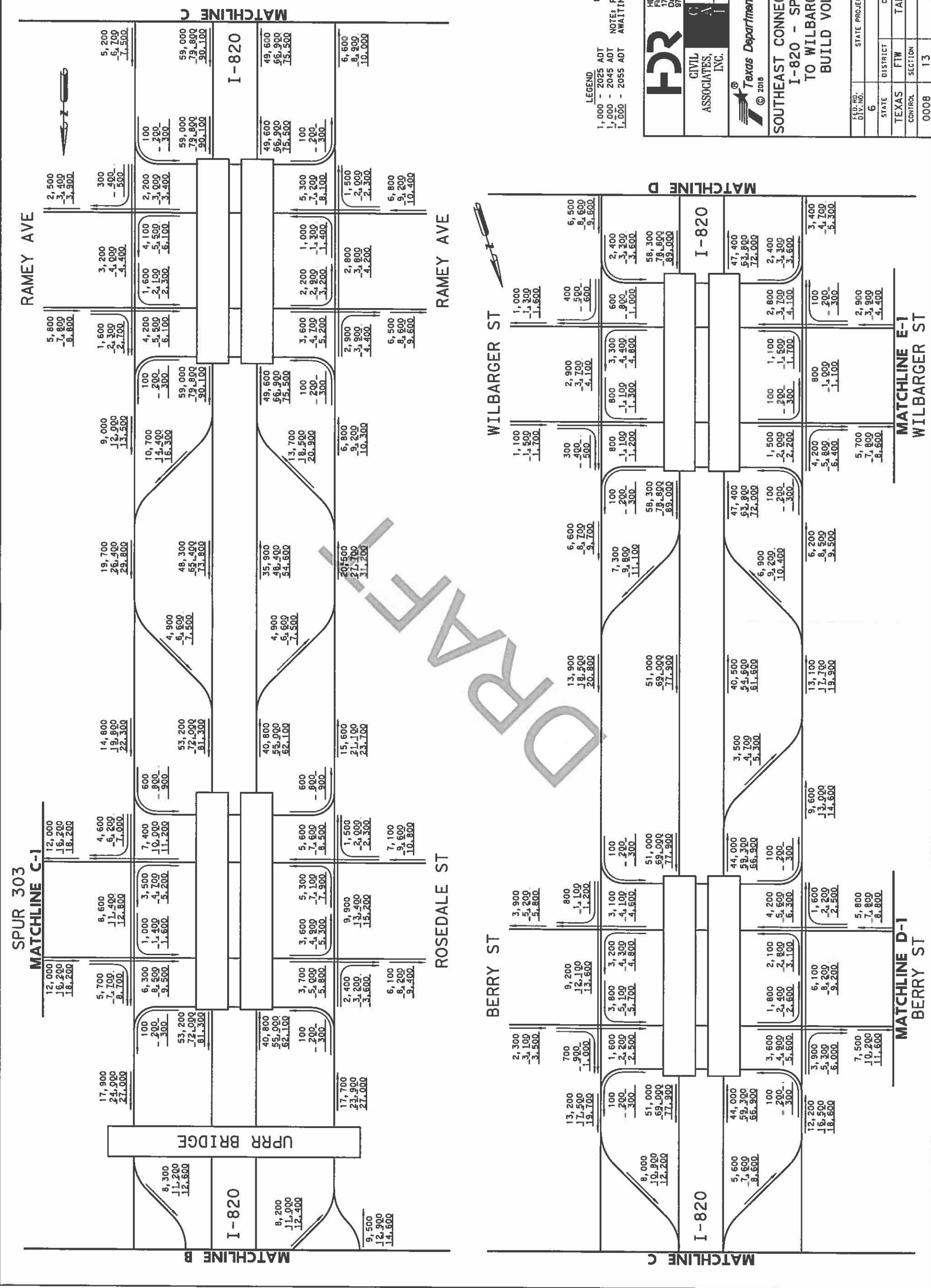
FED. RD. DIV. NO.	STATE PROJECT NO.	PICWAY NO.
6		IH 820
STATE	DISTRICT	COUNTY
TEXAS	FTW	TARRANT
CONTROL	SECTION	JOB
0008	13	125

BI

NOT INTENDED FOR CONSTRUCTION
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number 94704

NOT INTENDED FOR CONSTRUCTION,
BIDDING OR PERMIT PURPOSES
William Erick Knowles, P.E

Serial Number 94707



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTES: PRELIMINARY TRAFFIC,
 AWAITING TP&P APPROVAL

HDR
 HDR
 Firm Registration No. F-754
 17111 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

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 9330 LBJ Fwy, Ste. 1150
 Dallas, Texas 75243

TXBE Firm Registration No. 6981

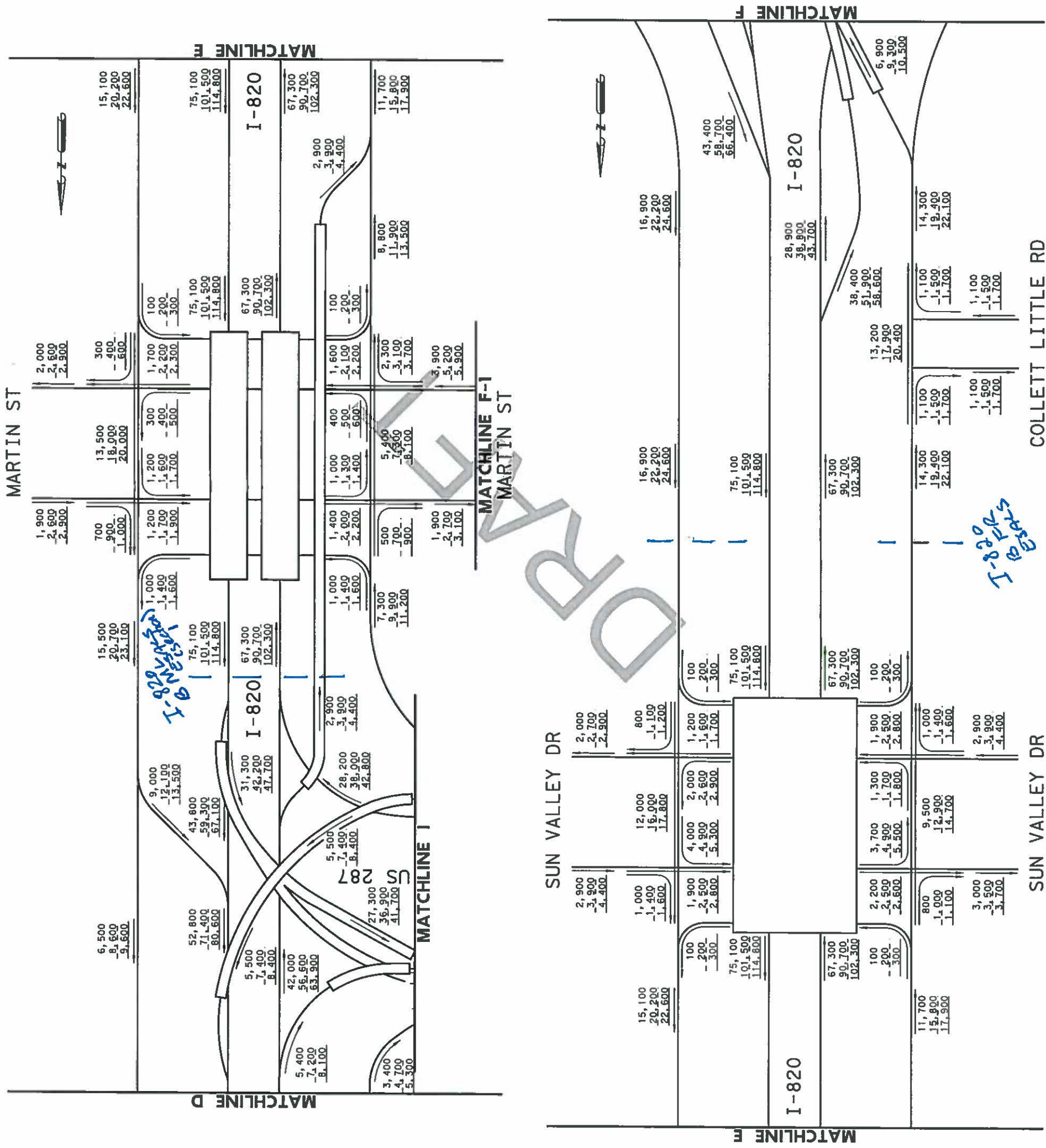
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SOUTHEAST CONNECTOR PROJECT
 I-820 - SPUR 303
 TO WILBARGER ST
 BUILD VOLUMES

FED. RD. DIV. NO.	STATE PROJECT NO.	HIGHWAY NO.
6		IH 820
STATE	DISTRICT	COUNTY
TEXAS	FTW	TARRANT
CONTROL	SECTION	JOB
0008	13	125

SHEET 02 OF 17

B2



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TR&P APPROVAL

HDR
 HDR
 Firm Registration No. F-754
 1711 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

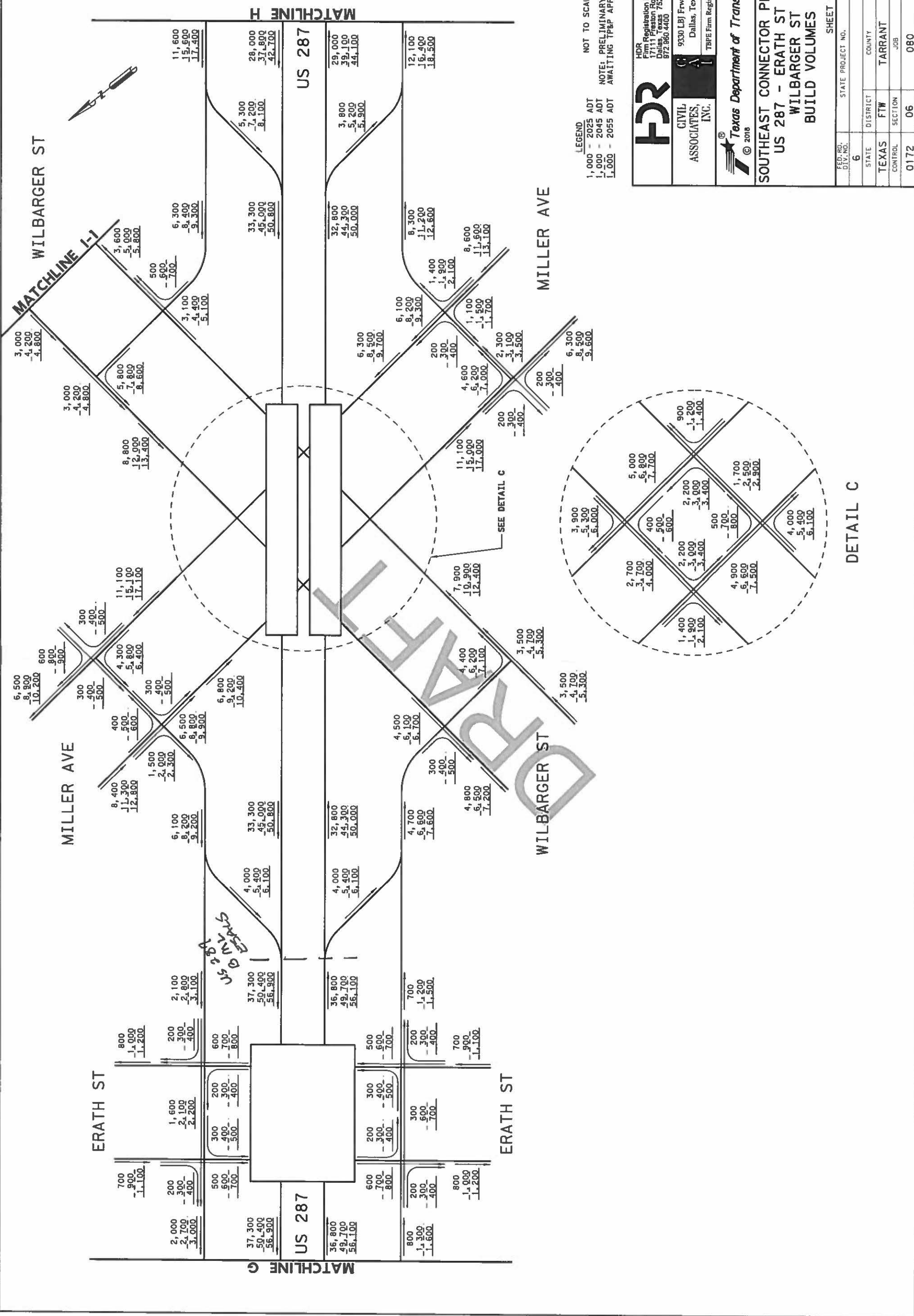
CIVIL ASSOCIATES, INC.
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 Dallas, Texas 75243
 TBPB Firm Registration No. 6961

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SOUTHEAST CONNECTOR PROJECT
 I-820 - US 287 TO I-20
 BUILD VOLUMES

STATE PROJECT NO.	I-820		
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	B3
CONTROL	SECTION	JOB	
0008	13	125	

NOT INTENDED FOR CONSTRUCTION,
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number 04704



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTES: PRELIMINARY TRAFFIC,
 AWAITING TP&P APPROVAL

HDR
 HDR Registration No. F-754
 17111 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

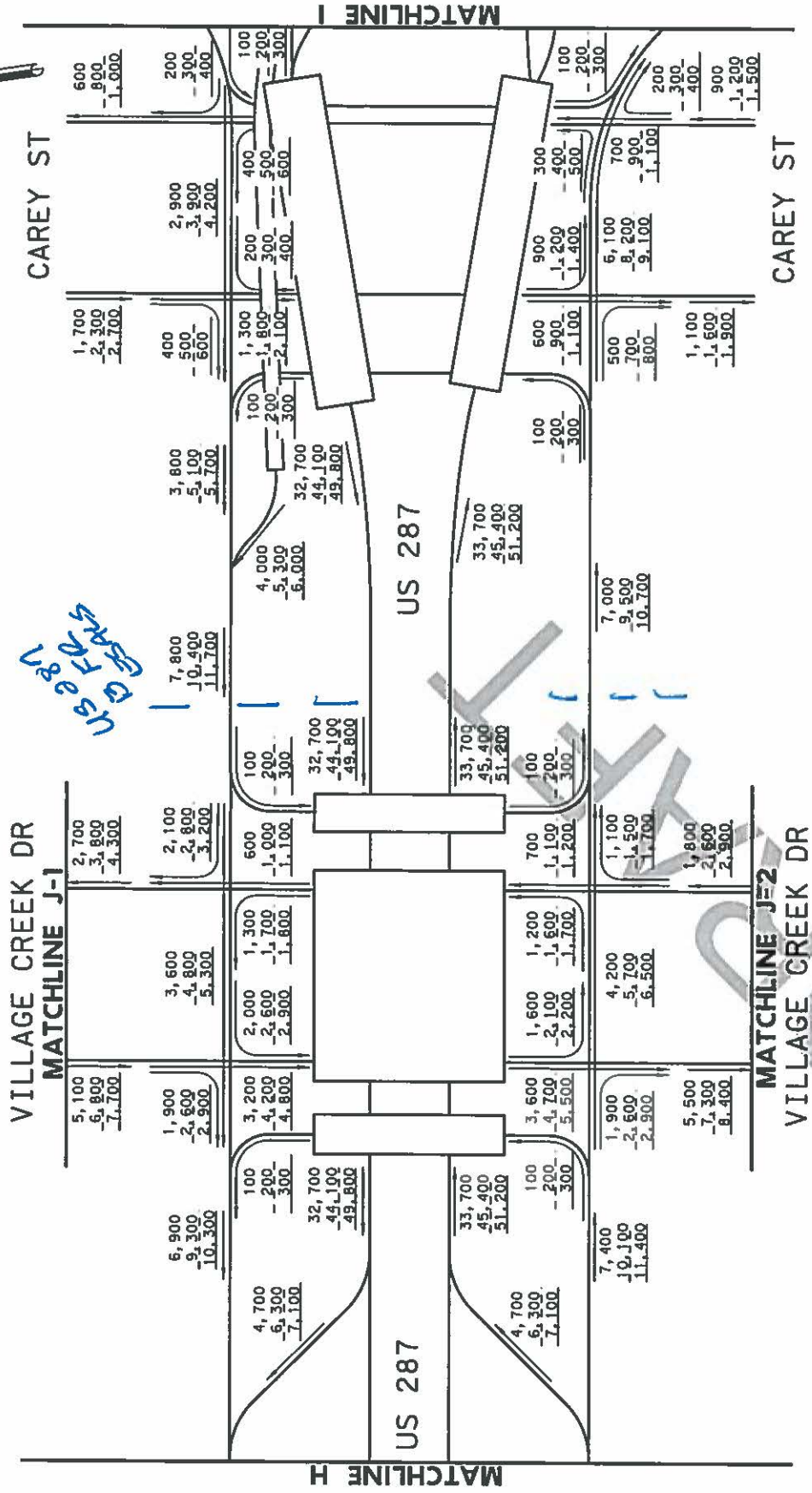
CIVIL ASSOCIATES, INC.
 9330 LBJ Frwy, Ste. 1150
 Dallas, Texas 75243
 TBPE Firm Registration No. 6981

Texas Department of Transportation
 SOUTHEAST CONNECTOR PROJECT
 US 287 - ERATH ST TO
 WILBARGER ST
 BUILD VOLUMES

SHEET 05 OF 17

FED. RD. DIV. NO.	STATE PROJECT NO.	HIGHWAY NO.
6	US 287	US 287
STATE	DISTRICT	COUNTY
TEXAS	FTW	TARRANT
CONTROL	SECTION	JOB
0172	06	080
SHEET NO.		B5

NOT INTENDED FOR CONSTRUCTION
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number R47M



US 287
10/20/25

LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING T&P APPROVAL.

HDR
 HDR
 Firm Registration No. F-754
 17111 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

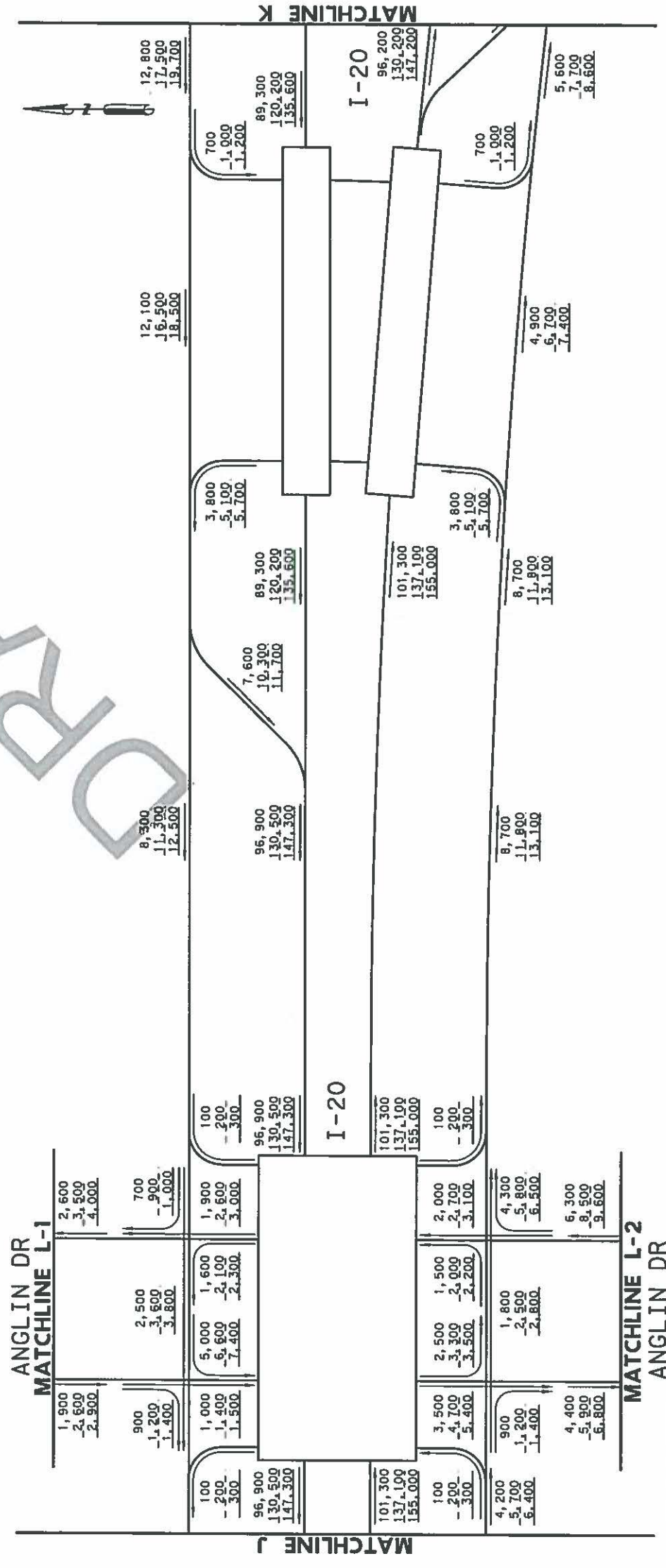
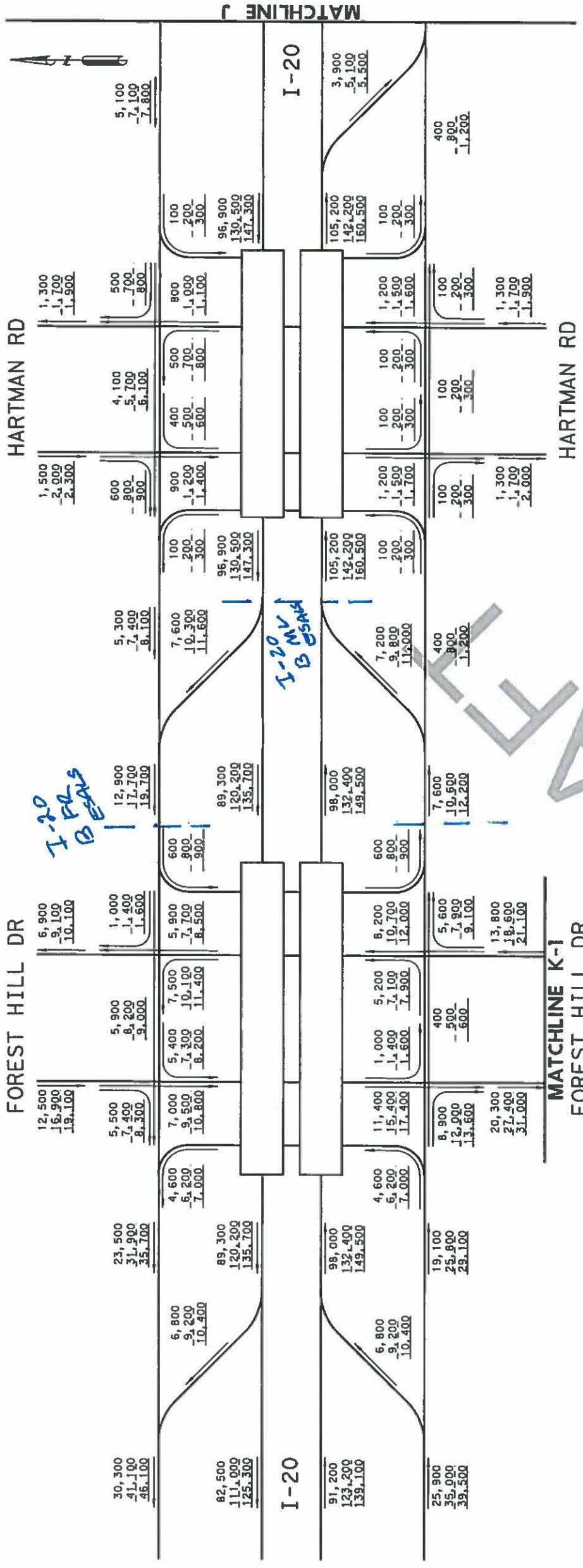
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 Dallas, Texas 75243
 TBPE Firm Registration No. 6961

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**SOUTHEAST CONNECTOR PROJECT
 US 287 - VILLAGE CREEK DR
 TO CAREY ST
 BUILD VOLUMES**

FED. RD. DIV. NO.	STATE PROJECT NO.	HIGHWAY NO.	SHEET NO.
6	US 287	US 287	US 287
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	B6
CONTROL	SECTION	JOB	
0172	06	080	

NOT INTENDED FOR CONSTRUCTION
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number RA7704



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE

NOTE: PRELIMINARY TRAFFIC,
 AWAITING TR&P APPROVAL

HDR
 HDR
 Firm Registration No. F-754
 1711 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

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SOUTHEAST CONNECTOR PROJECT
 I-20 - FOREST HILL DR
 TO ANGLIN DR
 BUILD VOLUMES

FED. RD. DIV. NO.	6	STATE PROJECT NO.	1H 20
HIGHWAY NO.		SHEET NO.	B7
STATE	TEXAS	COUNTY	TARRANT
DISTRICT	FTW	SECTION	
CONTROL	0008	JOB	206
	13		

NOT INTENDED FOR CONSTRUCTION
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number 04704

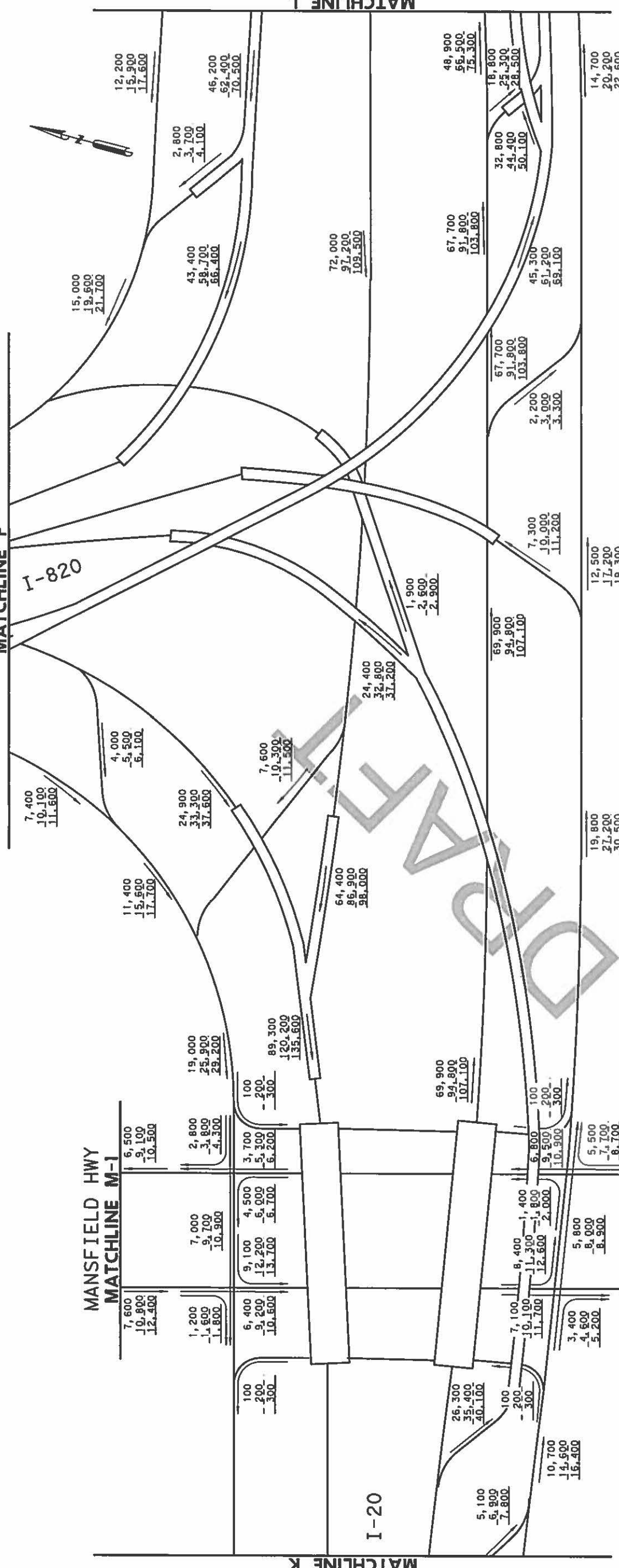
MATCHLINE L

MATCHLINE F

MANSFIELD HWY
MATCHLINE M-1

MATCHLINE M-2
MANSFIELD HWY

MATCHLINE K



HDR
HDR
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

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Dallas, Texas 75243
TBPE Firm Registration No. 6981

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**SOUTHEAST CONNECTOR PROJECT
I-20 - MANSFIELD HWY
TO I-820
BUILD VOLUMES**

STATE PROJECT NO.		HIGHWAY NO.	
6		IH 20	
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	
CONTROL	SECTION	JOB	
0008	13	206	

LEGEND
1,000 - 2025 ADT
1,000 - 2045 ADT
1,000 - 2055 ADT

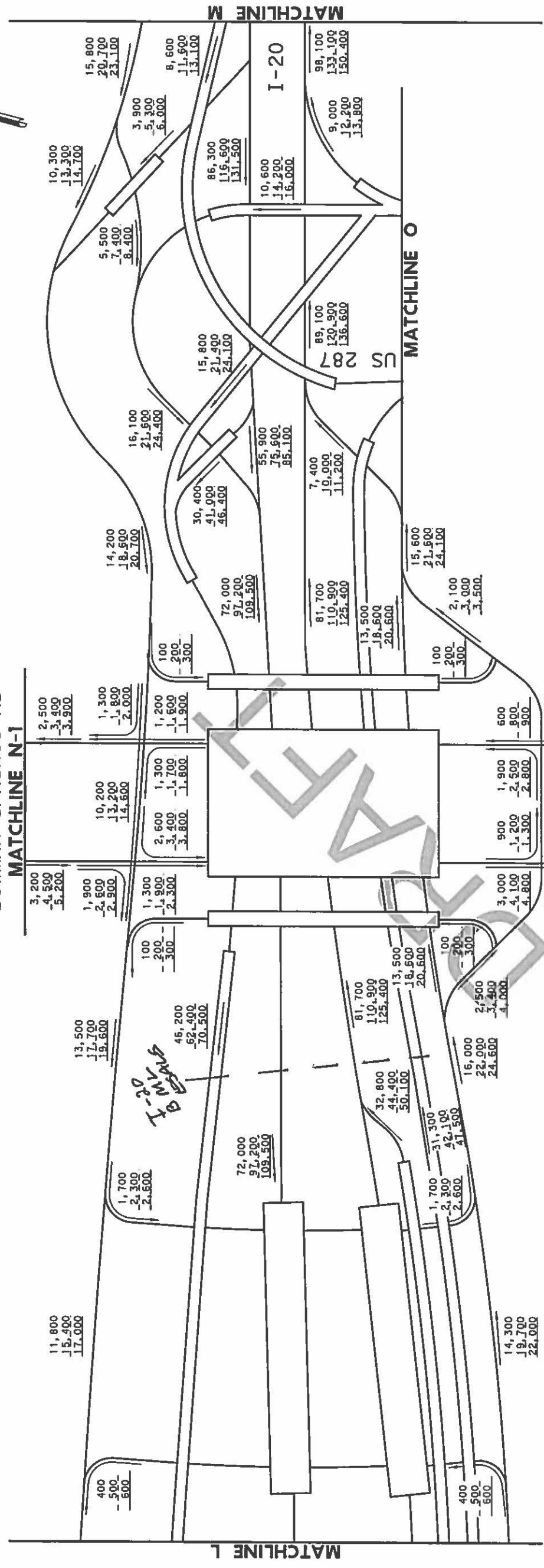
NOT TO SCALE
NOTE: PRELIMINARY TRAFFIC,
AWAITING TR&P APPROVAL

NOT INTENDED FOR CONSTRUCTION
BIDDING OR PERMIT PURPOSES
William Erick Knowles, P.E.
Serial Number R4704



BOWMAN SPRINGS RD
MATCHLINE N-1

MATCHLINE N-2
BOWMAN SPRINGS RD



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HDR
Firm Registration No. F-754
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Dallas, Texas 75243
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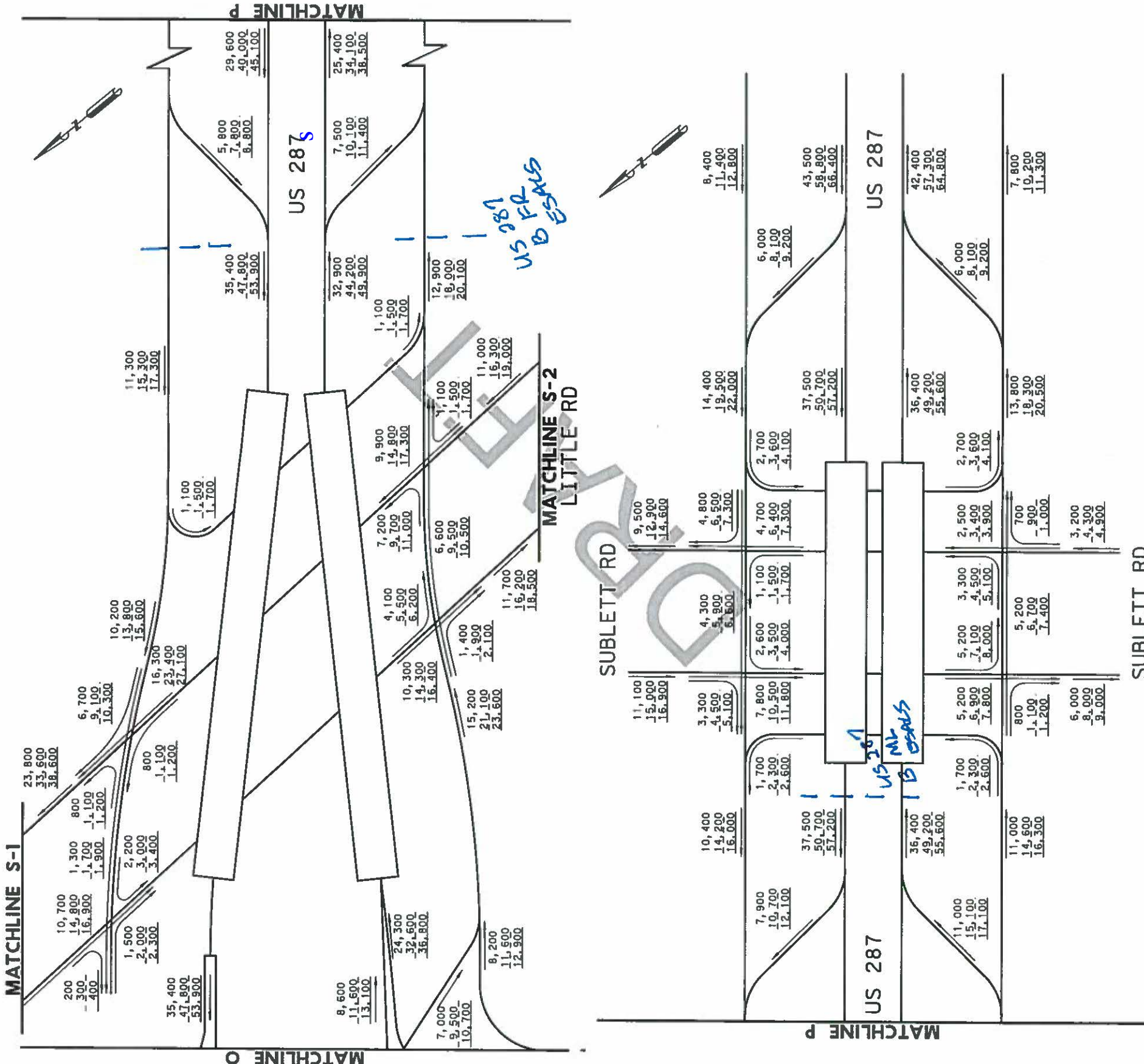
SOUTHEAST CONNECTOR PROJECT
I-20 - I-820 TO
US 287
BUILD VOLUMES

FED. RD. DIST. NO.	STATE PROJECT NO.	HIGHWAY NO.	SHEET NO.
6		IH 20	1H 20
STATE	DISTRICT	COUNTY	
TEXAS		TARRANT	
CONTROL	SECTION	JOB	
2374	05	066	

LEGEND
1,000 - 2025 ADT
1,000 - 2045 ADT
1,000 - 2055 ADT

NOT TO SCALE
NOTE: PRELIMINARY TRAFFIC,
AWAITING TR&P APPROVAL.

NOT INTENDED FOR CONSTRUCTION
RIDING OR PERMIT PURPOSES
William Erick Knowles, P.E
Serial Number RA704



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TP&P APPROVAL

HDR
 HDR
 Firm Registration No. F-754
 1711 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

CIVIL ASSOCIATES, INC.
 CIVIL ASSOCIATES, INC.
 9330 LBJ Fwy, Ste. 1150
 Dallas, Texas 75243
 TBPE Firm Registration No. 6981

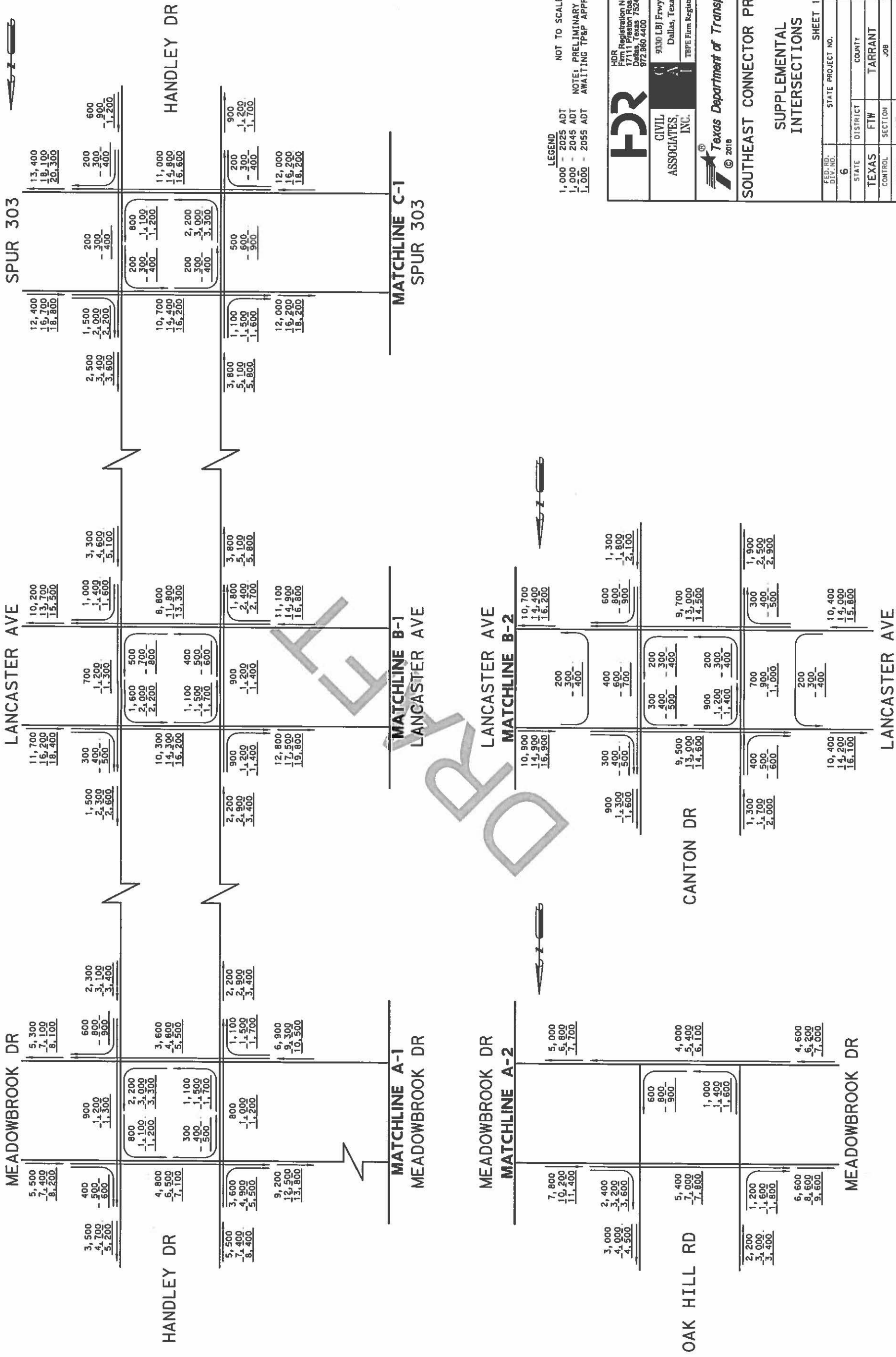
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SOUTHEAST CONNECTOR PROJECT
 US 287 - FROM I-20
 TO SUBLETT RD
 BUILD VOLUMES

SHEET 11 OF 17

FED. RD. DIST. NO.	STATE PROJECT NO.	ROUTE NO.
6	US 287	US 287
STATE	DISTRICT	COUNTY
TEXAS	FTW	TARRANT
CONTROL	SECTION	JOB
0172	09	028

NOT INTENDED FOR CONSTRUCTION
 RIDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number RA704



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TP&P APPROVAL

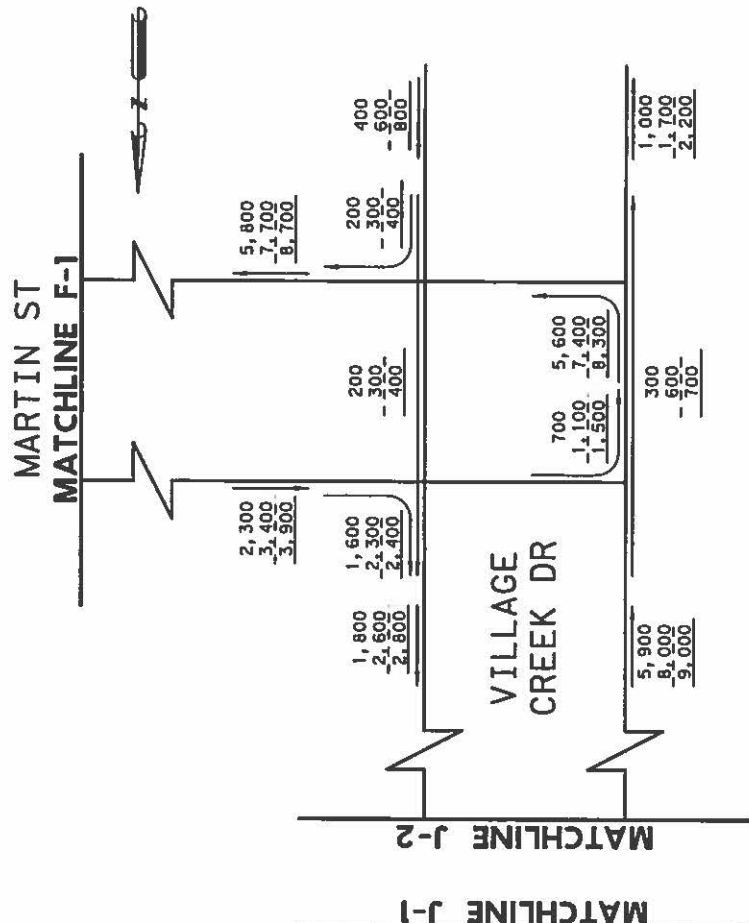
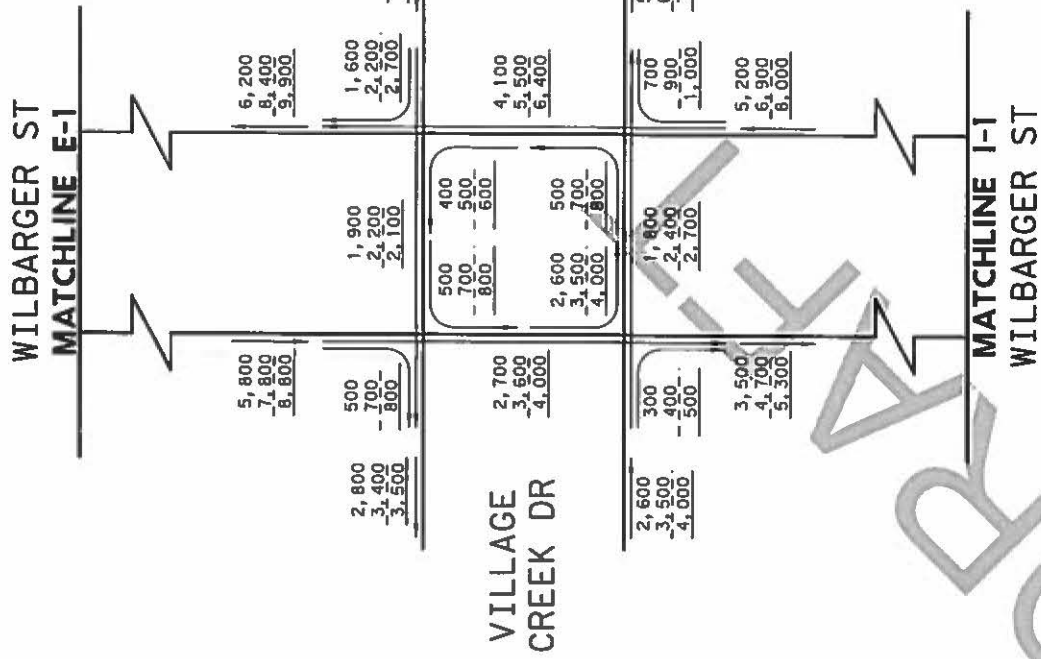
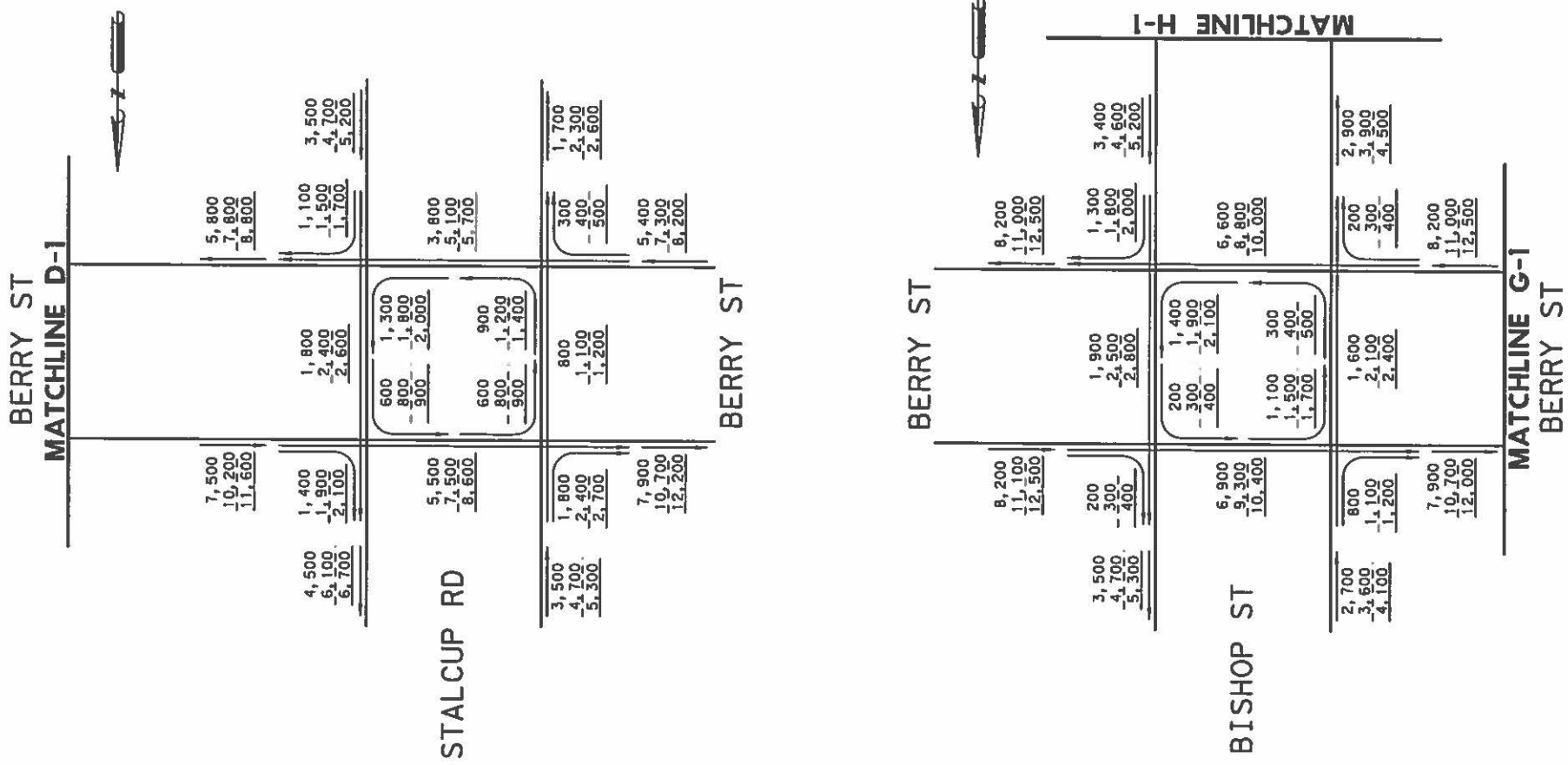
HDR
 HDR
 Firm Registration No. F-754
 17111 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

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SOUTHEAST CONNECTOR PROJECT
SUPPLEMENTAL INTERSECTIONS

STATE PROJECT NO.	SHEET 12 OF 17		
STATE	DISTRICT	COUNTY	HIGHWAY NO.
TEXAS	FTW	TARRANT	IH 820
CONTROL	SECTION	JOB	SHEET NO.
0008	13	125	



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TRIP APPROVAL

HDR
 HDR
 Firm Registration No. F-754
 17111 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

CIVIL ASSOCIATES, INC.
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 9330 LBJ Frwy, Ste. 1150
 Dallas, Texas 75243
 TBPE Firm Registration No. 6981

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SOUTHEAST CONNECTOR PROJECT

SUPPLEMENTAL INTERSECTIONS

SHEET 13 OF 17

FED. H.W. DIST. NO.	STATE PROJECT NO.	HIGHWAY NO.	SHEET NO.
6		IH 820	
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	
CONTROL	SECTION	JOB	
0008	13	125	

B13

NOT INTENDED FOR CONSTRUCTION,
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number R470A

COLLETT LITTLE RD

ANGLIN DR

FOREST HILL DR

MATCHLINE L-2

MATCHLINE K-1

MATCHLINE M-1

MANSFIELD HWY

FOREST HILL CIRCLE

FOREST HILL CIRCLE

ANGLIN DR

FOREST HILL DR

MATCHLINE L-1
ANGLIN DR

BOWMAN SPRINGS RD
MATCHLINE N-2

MATCHLINE M-2

MANSFIELD HWY

BOWMAN SPRINGS RD

VALLEY LN



LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT

NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING T&P APPROVAL

HDR
 HDR
 Firm Registration No. F-754
 17111 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

CIVIL ASSOCIATES, INC.
 CIVIL ASSOCIATES, INC.
 9330 LBJ Frwy, Ste. 1150
 Dallas, Texas 75243
 TBPE Firm Registration No. 6981

Texas Department of Transportation
 TEXAS DEPARTMENT OF TRANSPORTATION

SOUTHEAST CONNECTOR PROJECT
 SUPPLEMENTAL INTERSECTIONS

SHEET 14 OF 17

FED. RD. DIST. NO.	STATE PROJECT NO.	HIGHWAY NO.
6		IH 820
STATE	DISTRICT	COUNTY
TEXAS	FTW	TARRANT
CONTROL	SECTION	JOB
0008	13	125

NOT INTENDED FOR CONSTRUCTION,
 RIDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number R4704

BOWMAN SPRINGS RD

TREEPOINT DR

ARBORGATE DR

ARBORGATE DR

ENCHANTED BAY BLVD

LITTLE RD

LITTLE RD

MATCHLINE N-1

BOWMAN SPRINGS RD

TREEPOINT DR

ARBORGATE DR

POLY WEBB RD

LITTLE RD

GREEN OAKS BLVD

POLY WEBB RD

MATCHLINE P-1
GREEN OAKS BLVD

MATCHLINE O-2

MATCHLINE S-1

MATCHLINE S-2

MATCHLINE O-1

LEGEND
1,000 - 2025 ADT
1,000 - 2045 ADT
1,000 - 2055 ADT
NOT TO SCALE
NOTE: PRELIMINARY TRAFFIC,
AWAITING TPMP APPROVAL

HDR
HDR
Firm Registration No. F-754
1711 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

CIVIL ASSOCIATES, INC.
9330 LBJ Frwy, Ste. 1150
Dallas, Texas 75243
TBPE Firm Registration No. 6981

Texas Department of Transportation
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SOUTHEAST CONNECTOR PROJECT
SUPPLEMENTAL INTERSECTIONS

FED. RD. DIV. NO.	STATE PROJECT NO.	HIGHWAY NO.
6		IH 820
STATE	DISTRICT	COUNTY
TEXAS	FTW	TARRANT
CONTROL	SECTION	JOB
0008	13	125

SHEET 15 OF 17

B15

NOT INTENDED FOR CONSTRUCTION
BIDDING OR PERMIT PURPOSES
William Erick Knowles, P.E.
Serial Number 84704

GREEN OAKS BLVD

MATCHLINE P-2

KELLY ELLIOT RD

FOREST BEND DR

PLEASANT RIDGE RD

PLEASANT RIDGE RD

GREEN OAKS BLVD

MATCHLINE Q-1

MATCHLINE R-1

PARK SPRINGS BLVD

KELLY ELLIOT RD

MATCHLINE Q-2

BARDIN RD

KELLY ELLIOT RD

12,800
16,500
18,500

2,100
2,900
3,300

300
400
500

400
500
600

3,400
4,600
5,200

1,800
2,400
2,700

13,100
17,000
19,000

11,500
13,500
17,400

1,100
1,500
2,200

9,000
12,100
13,600

200
300
400

800
1,100
1,400

9,700
13,100
14,800

6,200
8,300
9,400

1,000
1,400
1,600

400
500
600

1,600
2,200
2,500

3,100
4,100
4,600

5,900
7,900
9,000

4,200
5,100
6,500

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1,400
1,600

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500
600

1,100
1,500
1,700

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4,100
4,600

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8,200

5,400
7,300
8,200

LEGEND
1,000 - 2025 ADT
1,000 - 2045 ADT
1,000 - 2055 ADT

NOT TO SCALE

NOTE: PRELIMINARY TRAFFIC,
AWAITING TPEP APPROVAL

HDR
HDR
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

CIVIL ASSOCIATES, INC.
9330 LBJ Frwy, Ste. 1150
Dallas, Texas 75243
TDBPE Firm Registration No. 6981

Texas Department of Transportation
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SOUTHEAST CONNECTOR PROJECT

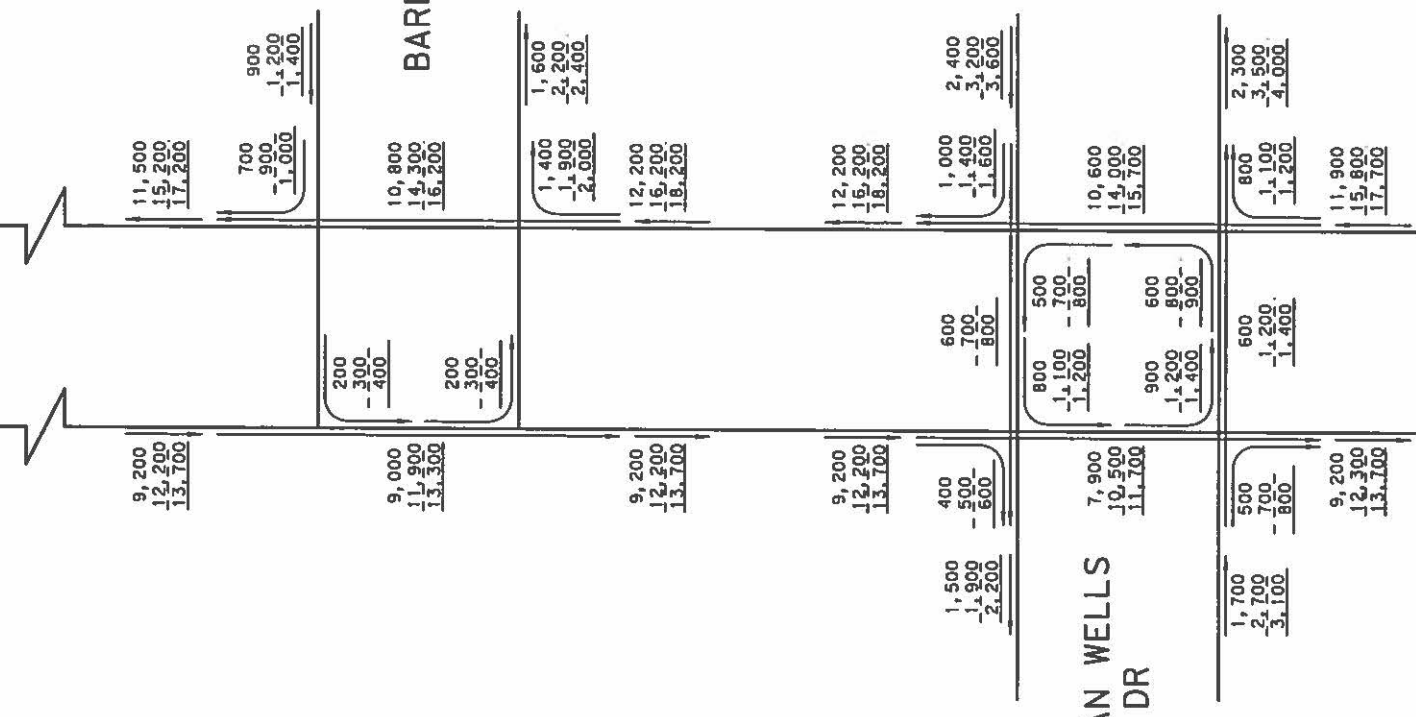
SUPPLEMENTAL INTERSECTIONS

FED. RD. DIST. NO.	STATE PROJECT NO.	HIGHWAY NO.	SHEET NO.
6		IH 820	
STATE	DISTRICT	COUNTY	
TEXAS	FTW	TARRANT	
CONTROL	SECTION	JOB	
0008	13	125	

B16

NOT INTENDED FOR CONSTRUCTION
BIDDING OR PERMIT PURPOSES
William Erick Knowles, P.E.
Serial Number RA770A

PARK SPRINGS BLVD
MATCHLINE R-2



BARDIN RD

INDIAN WELLS
DR

PARK SPRINGS BLVD

DRAFT

LEGEND
 1,000 - 2025 ADT
 1,000 - 2045 ADT
 1,000 - 2055 ADT
 NOT TO SCALE
 NOTE: PRELIMINARY TRAFFIC,
 AWAITING TP&P APPROVAL

FCR HDR
 Firm Registration No. F-754
 17111 Preston Road, Suite 300
 Dallas, Texas 75248
 972.960.4400

CIVIL ASSOCIATES, INC.
 9330 LBJ Frwy, Ste. 1150
 Dallas, Texas 75243
 TBPE Firm Registration No. 6993

Texas Department of Transportation
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SOUTHEAST CONNECTOR PROJECT
 SUPPLEMENTAL INTERSECTIONS

FED. RD. DIV. NO.	STATE PROJECT NO.	SHEET 17 OF 17	
6	6	HIGHWAY NO.	IH 820
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	FTW	TARRANT	
CONTROL	SECTION	JOB	
0008	13	125	B17

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 13, 2019

Description of Location	Base Year				Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)													
	Average Daily Traffic		ADT	DHV			Flexible Pavement	S			N	Rigid Pavement	SLAB											
	2025	2045																						
	% of ADT	% of DHV																						
<p><u>I-820 (No Build-Mainlanes Only)</u></p> <p>Section 1</p> <p>From I-20 To US 287</p> <p>Tarrant County</p>													163,900	221,200	52 - 48	9.9	5.3	2.4	13,100	20	30,563,000	3	39,861,000	8"
<p>Data for Use in Air & Noise Analysis</p>																								
<p>Vehicle Class</p>																								
<p>Light Duty</p>													94.7	97.6										
<p>Medium Duty</p>													2.2	1.0										
<p>Heavy Duty</p>													3.1	1.4										
Description of Location	Base Year				Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)													
	Average Daily Traffic		ADT	DHV			Flexible Pavement	S			N	Rigid Pavement	SLAB											
	2025	2055																						
	% of ADT	% of DHV																						
<p><u>I-820 (No Build-Mainlanes Only)</u></p> <p>Section 1</p> <p>From I-20 To US 287</p> <p>Tarrant County</p>													163,900	249,800	52 - 48	9.9	5.3	2.4	13,100	20	49,249,000	3	64,232,000	8"

NOT INTENDED FOR CONSTRUCTION
 ADDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 13, 2019

Description of Location	Average Daily Traffic				Dir Dist %	Base Year				ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)				
	2025		2045			K Factor	Percent Trucks	ADT	DHV			Flexible Pavement	Rigid Pavement	S	N	SLAB
	Data for Use in Air & Noise Analysis															
	% of ADT		% of DHV													
I-820 (No Build-Frontage Roads Only) From I-20 To Brentwood Stair Rd. Tarrant County	18,700	25,400	52 - 48	9.9	10.7	8.0	12,000	40	7,717,000	3	10,103,000	8"				
Data for Use in Air & Noise Analysis																
Vehicle Class	% of ADT		% of DHV													
Light Duty	89.3	92.0														
Medium Duty	3.2	2.4														
Heavy Duty	7.5	5.6														
Description of Location	Average Daily Traffic				Dir Dist %	Base Year				ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)				
	2025		2055			K Factor	Percent Trucks	ADT	DHV			Flexible Pavement	Rigid Pavement	S	N	SLAB
	Data for Use in Air & Noise Analysis															
	% of ADT		% of DHV													
I-820 (No Build-Frontage Roads Only) From I-20 To Brentwood Stair Rd. Tarrant County	18,700	28,600	52 - 48	9.9	10.7	8.0	12,000	30	12,416,000	3	16,256,000	8"				

NOT INTENDED FOR CONSTRUCTION,
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number RA704

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)						
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement		Rigid Pavement		
	2025	2045			ADT	DHV			S	N	S	N	
Section 1 From I-20/I-820 Interchange To US 287 Tarrant County													
246,200	332,500	53 - 47	7.2	7.9	3.6	13,700	20	76,963,000	3	105,102,000	8"		
Data for Use in Air & Noise Analysis													
Vehicle Class		Base Year		% of DHV									
		% of ADT		% of DHV									
Light Duty		92.1		96.4									
Medium Duty		2.3		1.0									
Heavy Duty		5.6		2.6									
Section 1 From I-20/I-820 Interchange To US 287 Tarrant County													
246,200	375,200	53 - 47	7.2	7.9	3.6	13,700	20	123,966,000	3	169,290,000	8"		
Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)													

NOT INTENDED FOR CONSTRUCTION
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Civil Number: 04701

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year				Dir Dist %	K Factor	Percent Trucks ADT	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)		
	Average Daily Traffic		S	N						Rigid Pavement		
	2025	2045										
	2025	2045	Flexible Pavement	N						Pavement	SLAB	
<u>I-20 (No Build-Mainlanes Only)</u>												
<u>Section 2</u>												
From US 287 To Park Springs Blvd. Tarrant County	218,900	295,700	53 - 47	7.2	8.3	3.7	13,600	20	71,870,000	3	98,168,000	8"
Data for Use in Air & Noise Analysis												
Vehicle Class	Base Year											
	% of ADT											
	% of DHV											
Light Duty	91.7	96.3										
Medium Duty	2.4	1.1										
Heavy Duty	5.9	2.6										
<u>I-20 (No Build-Mainlanes Only)</u>												
<u>Section 2</u>												
From US 287 To Park Springs Blvd. Tarrant County	218,900	333,800	53 - 47	7.2	8.3	3.7	13,700	20	115,794,000	3	158,164,000	8"

NOT INTENDED FOR CONSTRUCTION BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number 84707

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year				Dir Dist %	K Factor	Percent Trucks	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)		
	Average Daily Traffic		Flexible Pavement	S						Rigid Pavement	N	SLAB
	2025	2045										
<p>I-20 (No Build-Frontage Roads Only)</p> <p><u>Section 1</u></p> <p>From I-20/I-820 Interchange To US 287</p> <p>Tarrant County</p>												
	17,400	23,400	53 - 47	7.2	1.2	0.9	10,100	30	504,000	3	523,000	8"
<p>Data for Use in Air & Noise Analysis</p>												
Vehicle Class	Base Year		% of DHV									
Light Duty	% of ADT		99.1									
Medium Duty	1.0		0.8									
Heavy Duty	0.2		0.1									
<p>I-20 (No Build-Frontage Roads Only)</p> <p><u>Section 1</u></p> <p>From I-20/I-820 Interchange To US 287</p> <p>Tarrant County</p>												
	17,400	26,100	53 - 47	7.2	1.2	0.9	10,200	30	807,000	3	836,000	8"
<p>Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)</p>												

07 IN I N E N D E D F O R C O N S T R U C T I O N
 P E N D I N G O R P E R M I T P U R P O S E
 William Erick Knowles, P.F.
 Serial Number 21771

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)					
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	Rigid Pavement		
	2025	2045			ADT	DHV				S	N	
	2025	2045	% of ADT	% of DHV	ADT	DHV	Flexible Pavement	S	N	SLAB		
I-20 (No Build-Frontage Roads Only)												
<u>Section 2</u>												
From US 287 To Park Springs Blvd. Tarrant County	28,400	38,600	53 - 47	7.2	1.1	0.8	10,400	30	766,000	3	791,000	8"
Data for Use in Air & Noise Analysis												
Vehicle Class	Base Year											
	% of ADT		% of DHV									
	98.9		99.2									
Light Duty	0.9		0.7									
Medium Duty	0.2		0.1									
Heavy Duty												
I-20 (No Build-Frontage Roads Only)												
<u>Section 2</u>												
From US 287 To Park Springs Blvd. Tarrant County	28,400	43,600	53 - 47	7.2	1.1	0.8	10,500	30	1,234,000	3	1,276,000	8"

UNINCORPORATED CONSTRUCTION

PENDING PERMIT PURPOSES:

William Erick Knowles, P.E.

Serial Number RA704

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year				ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)		SLAB	
	Average Daily Traffic		Dir Dist %	K Factor			Percent Trucks	Flexible Pavement		Rigid Pavement
	2025	2045								
<u>I-20 (No Build-Mainlanes Only)</u> From I-20/I-820 Interchange To Forest Hill Drive Tarrant County	206,500	278,700	53 - 47	7.2	13,600	20	70,194,000	3	95,892,000	8"
Data for Use in Air & Noise Analysis										
Vehicle Class	Base Year			% of DHV						
	% of ADT	ADT	% of DHV							
Light Duty	91.4		96.1							
Medium Duty	2.5		1.1							
Heavy Duty	6.1		2.8							
Description of Location	Base Year				ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)		SLAB	
	Average Daily Traffic		Dir Dist %	K Factor			Percent Trucks	Flexible Pavement		Rigid Pavement
	2025	2055								
<u>I-20 (No Build-Mainlanes Only)</u> From I-20/I-820 Interchange To Forest Hill Drive Tarrant County	206,500	314,400	53 - 47	7.2	13,700	20	113,043,000	3	154,429,000	8"

OIL INDUSTRY CONSTRUCTION
 BIDDING PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number 84704

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)						
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement		Rigid Pavement		
	2025	2045			ADT	DHV			S	N	S	N	
	Data for Use in Air & Noise Analysis												
I-20 (No Build-Frontage Roads Only) From I-20/I-820 Interchange To Forest Hill Drive Tarrant County	18,400		24,900	53 - 47	7.2	1.2	0.9	10,200	30	535,000	3	555,000	8"
	Vehicle Class												
	Light Duty		98.8		99.1								
	Medium Duty		1.0		0.8								
Heavy Duty		0.2		0.1									
Description of Location	Base Year						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)						
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement		Rigid Pavement		
	2025	2055			ADT	DHV			S	N	S	N	
	Data for Use in Air & Noise Analysis												
I-20 (No Build-Frontage Roads Only) From I-20/I-820 Interchange To Forest Hill Drive Tarrant County	18,400		27,900	53 - 47	7.2	1.2	0.9	10,200	30	859,000	3	890,000	8"
	Vehicle Class												
	Light Duty		98.8		99.1								
	Medium Duty		1.0		0.8								
Heavy Duty		0.2		0.1									

NOT INTENDED FOR CONSTRUCTION
 ADDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number 84704

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year						Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)			
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks			Flexible Pavement	S	Rigid Pavement	SLAB
	2025	2045			ADT	DHV					
US 287 (No Build-Mainlanes Only) From I-820 To Bishop Street Tarrant County	77,600	104,800	54 - 46	9.7	7.1	4.3	21,187,000	3	28,914,000	8"	
Data for Use in Air & Noise Analysis											
Vehicle Class	Base Year		Base Year		Base Year						
	% of ADT		% of DHV		% of DHV						
	92.9		95.7		95.7						
	2.2		1.3		1.3						
Description of Location	Base Year		Base Year		Base Year						
	% of ADT		% of DHV		% of DHV						
	4.9		3.0		3.0						
US 287 (No Build-Mainlanes Only) From I-820 To Bishop Street Tarrant County	77,600	118,400	54 - 46	9.7	7.1	4.3	34,150,000	3	46,606,000	8"	

NOT INTENDED FOR CONSTRUCTION
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number 84704

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year						ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)			
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks				Flexible Pavement	S	Rigid Pavement	SLAB
	2025	2045			ADT	DHV						
US 287 (No Build-Mainlanes Only) From I-20 To Sublett Road Tarrant County	73,900	99,900	54 - 46	9.7	10.0	6.0	12,900	40	31,374,000	3	44,291,000	8"
Data for Use in Air & Noise Analysis												
Vehicle Class												
Base Year												
Light Duty	% of ADT		% of DHV									
Medium Duty	90.0		94.0									
Heavy Duty	2.3		1.4									
	7.7		4.6									
Description of Location	Base Year						ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)			
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks				Flexible Pavement	S	Rigid Pavement	SLAB
	2025	2055			ADT	DHV						

US 287 (No Build-Mainlanes Only)
From I-20 To Sublett Road
Tarrant County

73,900 112,800 54 - 46 9.7 10.0 6.0 12,900 40 50,557,000 3 71,371,000 8"

NOT INTENDED FOR CONSTRUCTION
 BIDDING OR PERMIT PURPOSES
 William Erick Knowles, P.F.
 Serial Number 84704

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year						Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)		SLAB	
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks			Flexible Pavement	S		Rigid Pavement
	2025	2045			ADT	DHV					
									N		
US 287 (No Build-Frontage Roads Only) From I-20 To Sublett Road Tarrant County	20,200	27,400	54 - 46	9.7	5.4	4.1	40	3,671,000	3	4,787,000	8"
Data for Use in Air & Noise Analysis											
Vehicle Class		Base Year									
		% of ADT	% of DHV								
Light Duty		94.6	95.9								
Medium Duty		1.2	0.9								
Heavy Duty		4.2	3.2								
Description of Location	Base Year						Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)		SLAB	
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks			Flexible Pavement	S		Rigid Pavement
	2025	2055			ADT	DHV					
									N		
US 287 (No Build-Frontage Roads Only) From I-20 To Sublett Road Tarrant County	20,200	30,800	54 - 46	9.7	5.4	4.1	40	5,900,000	3	7,694,000	8"

NOT INTENDED FOR CONSTRUCTION
 ADDING OR PERMIT PURPOSES
 William Erick Knowles, P.E.
 Serial Number 84704

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year				Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)		
	Average Daily Traffic		ADT	DHW			Flexible Pavement	S			N	Rigid Pavement	SLAB
	2025	2045											
	% of ADT	% of DHV											
Data for Use in Air & Noise Analysis													
Vehicle Class													
Light Duty													
Medium Duty													
Heavy Duty													
Section 1 From I-20 To US 287 Tarrant County I-820 (Build-Mainlanes Only)													
Section 1 From I-20 To US 287 Tarrant County I-820 (Build-Mainlanes Only)													

NOT INTENDED FOR CONSTRUCTION
 ADDITIONAL PERMIT PURPOSES
 William Erick Knowles, P.E.

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District	August 14, 2019														
	Description of Location	Average Daily Traffic				Dir Dist %	Base Year			ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)			
		2025		2045			K Factor	Percent Trucks ADT	DHV			Flexible Pavement	S	Rigid Pavement	SLAB
		2025	2045	2025	2045										
I-820 (Build-Frontage Roads Only) From I-20 To Brentwood Stair Rd. Tarrant County	31,200	41,600	52 - 48	9.9	10.1	7.6	12,300	30	12,030,000	3	15,747,000	8"			
Data for Use in Air & Noise Analysis															
Vehicle Class	Base Year		Base Year		Base Year		Base Year		Base Year		Base Year				
	% of ADT	% of DHV	% of ADT	% of DHV	% of ADT	% of DHV	% of ADT	% of DHV	% of ADT	% of DHV	% of ADT	% of DHV			
Light Duty	89.9	92.4	89.9	92.4	89.9	92.4	89.9	92.4	89.9	92.4	89.9	92.4			
Medium Duty	3.0	2.3	3.0	2.3	3.0	2.3	3.0	2.3	3.0	2.3	3.0	2.3			
Heavy Duty	7.1	5.3	7.1	5.3	7.1	5.3	7.1	5.3	7.1	5.3	7.1	5.3			
Description of Location	Average Daily Traffic				Dir Dist %	Base Year			ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)				
	2025		2055			K Factor	Percent Trucks ADT	DHV			Flexible Pavement	S	Rigid Pavement	SLAB	
	2025	2055	2025	2055											
	2025	2055	2025	2055											

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TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)					
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement		Rigid Pavement	
	2025	2045			ADT	DHV			S	N	S	N
	2025	2055	Dir Dist %	K Factor	ADT	DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S	N	SLAB
<u>I-20 (Build-Mainlanes Only)</u>												
From I-20/I-820 Interchange To Park Springs Blvd. Tarrant County	231,200	312,600	53 - 47	7.2	8.1	3.6	20	74,132,000	3	101,247,000	8"	
Data for Use in Air & Noise Analysis												
Vehicle Class	Base Year											
	% of ADT											
	% of DHV											
Light Duty	91.9	96.4										
Medium Duty	2.4	1.1										
Heavy Duty	5.7	2.5										
<u>I-20 (Build-Mainlanes Only)</u>												
From I-20/I-820 Interchange To Park Springs Blvd. Tarrant County	231,200	352,900	53 - 47	7.2	8.1	3.6	20	119,449,000	3	163,138,000	8"	

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TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year				Dir Dist %	K Factor	Percent Trucks ADT	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)		
	Average Daily Traffic		S	N						Rigid Pavement	SLAB	
	2025	2045										Flexible Pavement
I-20 (Build-Frontage Roads Only) From I-20/I-820 Interchange To Park Springs Blvd. Tarrant County	37,700	50,800	53 - 47	7.2	1.1	0.8	10,700	20	1,011,000	3	1,045,000	8"
Data for Use in Air & Noise Analysis												
Vehicle Class	Base Year											
	% of ADT											
	% of DHV											
Light Duty	98.9											
Medium Duty	0.9											
Heavy Duty	0.2											
Description of Location	Base Year				Dir Dist %	K Factor	Percent Trucks ADT	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)		
	Average Daily Traffic		S	N						Rigid Pavement	SLAB	
	2025	2055										Flexible Pavement
I-20 (Build-Frontage Roads Only) From I-20/I-820 Interchange To Park Springs Blvd. Tarrant County	37,700	57,400	53 - 47	7.2	1.1	0.8	10,800	20	1,630,000	3	1,685,000	8"

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TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)					
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement		Rigid Pavement	
	2025	2045			ADT	DHV			Flexible Pavement	N	S	N
<u>I-20 (Build-Mainlanes Only)</u> From I-20/I-820 Interchange To Forest Hill Drive Tarrant County	202,100	272,700	53 - 47	7.2	8.7	3.9	13,600	20	69,485,000	3	94,928,000	8"
Data for Use in Air & Noise Analysis												
Vehicle Class	Base Year											
	% of ADT		% of DHV									
Light Duty	91.3		96.1									
Medium Duty	2.5		1.1									
Heavy Duty	6.2		2.8									
Description of Location	Base Year						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)					
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement		Rigid Pavement	
	2025	2055			ADT	DHV			Flexible Pavement	N	S	N
<u>I-20 (Build-Mainlanes Only)</u> From I-20/I-820 Interchange To Forest Hill Drive Tarrant County	202,100	307,800	53 - 47	7.2	8.7	3.9	13,600	20	111,924,000	3	152,907,000	8"

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TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District August 14, 2019

Description of Location	Base Year						Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)		
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks			Flexible Pavement	S	Rigid Pavement
	2025	2045			ADT	DHV				
									N	
Data for Use in Air & Noise Analysis										
Vehicle Class	Base Year									
	% of ADT		% of DHV							
	Light Duty	98.8	99.1							
Medium Duty	1.0	0.8								
Heavy Duty	0.2	0.1								
Description of Location	Base Year						Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)		
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks			Flexible Pavement	S	Rigid Pavement
	2025	2055			ADT	DHV				
									N	
Data for Use in Air & Noise Analysis										
Vehicle Class										
Light Duty	98.8	99.1								
Medium Duty	1.0	0.8								
Heavy Duty	0.2	0.1								
Data for Use in Air & Noise Analysis										
Vehicle Class										
Light Duty	98.8	99.1								
Medium Duty	1.0	0.8								
Heavy Duty	0.2	0.1								

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TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year						Percent Tandem Axles in ATHWLD	Flexible Pavement	Rigid Pavement	SLAB
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks					
	2025	2045			ADT	DHV				
	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)									
US 287 (Build-Mainlanes Only) From I-820 To Bishop Street Tarrant County	74,100	100,100	54 - 46	9.7	7.2	4.3	20,515,000	3	28,000,000	8"
Data for Use in Air & Noise Analysis										
Vehicle Class	Base Year		Base Year		Base Year					
	% of ADT		% of DHV		% of DHV					
	92.8		95.7		95.7					
	2.2		1.3		1.3					
Description of Location	Base Year		Dir Dist %	K Factor	Percent Trucks		Percent Tandem Axles in ATHWLD	Flexible Pavement	Rigid Pavement	SLAB
	2025	2055			ADT	DHV				
	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)									
	US 287 (Build-Mainlanes Only) From I-820 To Bishop Street Tarrant County	74,100	113,000	54 - 46	9.7	7.2				

UNINTENDED CONSTRUCTION
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TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)					
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	Rigid Pavement		
	2025	2045			ADT	DHV				S	N	
	2025	2045	%	Factor	ADT	DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S	N	
US 287 (Build-Frontage Roads Only) From I-820 To Bishop Street Tarrant County	14,800	19,900	54 - 46	9.7	6.1	4.6	11,200	40	2,693,000	3	3,357,000	8"
Data for Use in Air & Noise Analysis												
Vehicle Class	Base Year											
	% of ADT											
	% of DHV											
Light Duty	93.9		95.4									
Medium Duty	1.9		1.4									
Heavy Duty	4.2		3.2									
Description of Location	Base Year						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)					
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	Rigid Pavement		
	2025	2055			ADT	DHV				S	N	
	2025	2055	%	Factor	ADT	DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S	N	
US 287 (Build-Frontage Roads Only) From I-820 To Bishop Street Tarrant County	14,800	22,400	54 - 46	9.7	6.1	4.6	11,200	50	4,951,000	3	6,746,000	8"



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TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Fort Worth District

August 14, 2019

Description of Location	Base Year						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)					
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement		Rigid Pavement	
	2025	2045			ADT	DHV			S	N	S	N
	2025	2045	%	Factor	ADT	DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S	N	SLAB
US 287 (Build-Mainlanes Only) From I-20 To Sublett Road Tarrant County	73,900	99,900	54 - 46	9.7	10.0	6.0	12,900	40	31,374,000	3	44,291,000	8"
Data for Use in Air & Noise Analysis												
Vehicle Class	Base Year											
	% of ADT		% of DHV									
	Light Duty	90.0	94.0									
	Medium Duty	2.3	1.4									
Heavy Duty	7.7	4.6										
Description of Location	Base Year						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)					
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement		Rigid Pavement	
	2025	2055			ADT	DHV			S	N	S	N
	2025	2055	%	Factor	ADT	DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S	N	SLAB
US 287 (Build-Mainlanes Only) From I-20 To Sublett Road Tarrant County	73,900	112,800	54 - 46	9.7	10.0	6.0	12,900	40	50,557,000	3	71,371,000	8"

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TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Description of Location		Base Year						Percent Tandem Axles in ATHWLD		Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)					
		Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks						ATHWLD	Flexible Pavement	Rigid Pavement	SLAB
		2025	2045			ADT	DHV								
US 287 (Build-Frontage Roads Only) From I-20 To Sublett Road Tarrant County		24,200	33,300	54 - 46	9.7	4.5	3.4	40	3,707,000	3	4,826,000	8"			
Data for Use in Air & Noise Analysis															
Vehicle Class		Base Year		Base Year		Base Year		Base Year		Base Year		Base Year			
		% of ADT		% of DHV		% of ADT		% of DHV		% of ADT		% of DHV			
Light Duty		95.5		96.6		95.5		96.6		95.5		96.6			
Medium Duty		1.0		0.8		1.0		0.8		1.0		0.8			
Heavy Duty		3.5		2.6		3.5		2.6		3.5		2.6			
Description of Location		Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ATHWLD	Flexible Pavement	Rigid Pavement	SLAB				
		2025	2055			ADT	DHV								
		US 287 (Build-Frontage Roads Only) From I-20 To Sublett Road Tarrant County		24,200	37,400	54 - 46	9.7	4.5	3.4	40	5,956,000	3	7,756,000	8"	

Fort Worth District

August 14, 2019

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TXDOT

Cost Averaging for Common Noise Environments

4/19/2013

Cost Averaging of Common Noise Environments

The following explains an alternate methodology to that described in the TxDOT Guidelines for Analysis and Abatement of Roadway Traffic Noise (2011) for determining the reasonableness of abatement proposed for corridor projects.

This methodology provides a cost averaging strategy that may be employed when there are numerous traffic noise impacts throughout a corridor that can be abated by the reasonable and feasible criteria provided for in the TxDOT Noise Guidelines; however there are a few areas where the cost per benefiting receiver is over the criteria.

In this method, cost averaging of noise abatement among **Common Noise Environments (CNE)** is used when conducting the reasonableness evaluation. A CNE implies that a group of receptors of the same NAC activity category are exposed to similar noise sources and levels, traffic volumes, traffic mix, speed, and topographic features. For instance, a CNE could occur along a road segment between interchanges on a controlled access highway if the traffic speed is constant. The CNE may not include mixed activity categories such as having two residential subdivisions that are separated by a commercial land use. In this example, the residential subdivisions would be considered as two separate CNEs.



RECEPTOR SELECTION

Typically, under the evaluation of reasonableness provided for in the TxDOT Noise Guidelines, each CNE is evaluated separately. Utilizing this methodology, for a single noise abatement measure to be considered as part of a cost averaging evaluation, the estimated build cost of noise abatement per benefited receptor may not exceed two times the allowable noise abatement cost per benefited receptor. Noise abatement measures achieve the cost reasonableness criterion if the CNE collective average estimated build cost of noise abatement per benefited receptor is less than the collective average allowable cost per benefited receptor. If the cost allowable per benefiting receptor is \$25,000, then application of this methodology requires that no single CNE exceeds \$50,000/benefited receptor and that collectively all CNEs being averaged do not exceed \$25,000/benefited receptor.

After each CNE has been evaluated independently, the CNEs are ranked in order of increasing ratio of the estimated build cost per benefited receptor to the allowable cost per benefited receptor. This method ranks them in order of increasing cost effectiveness based on the ability to achieve the economic reasonability criterion. The CNEs with values greater than 2.0 are removed from the evaluation, as these will be the ones for which the estimated build cost is more than double the allowable cost per benefited receptor. Once the CNEs are in order of increasing ratio of the estimated build cost per benefited receptor to the allowable cost per benefited receptor, the cumulative cost per benefited receptor is calculated for both the estimated build cost and the allowable cost. In the scenario in the table below, based on the cumulative costs, noise walls for CNEs 2, 3, 5, and 1 would achieve the cost effective evaluation, as the cumulative estimated build cost per benefited receptor (\$24,906) is less than the cumulative allowable cost per benefited receptor (in this example, \$25,000). The build cost for the next noise walls (CNE 4) exceed the allowable cost and therefore would not be recommended for implementation as part of the proposed project.

CNE No.	No. Benefitting Receiver	Noise Wall Cost	Estimated Build Cost per Benefited Receiver (C/B)	Ratio of Build to Reasonable Cost (D/\$25,000)	Cumulative Estimated Build Cost/Benefited (Cumulative Sum of C/Cumulative Sum of B)	Result of Determination
2	6	\$100,000	\$16,667	0.67	\$16,666.67	Cost-effective Stand Alone
3	36	\$670,000	\$18,611	0.74	\$18,333.33	Cost-effective Stand Alone
5	2	\$73,000	\$36,500	1.46	\$19,159.09	Cost-effective Cumulative
1	20	\$751,000	\$37,550	1.50	\$24,906.25	Cost-effective Cumulative
6	1	\$48,000	\$48,000	1.92	\$25,261.54	Not Cost-effective Cumulative
4	8	\$510,000	\$63,750	2.55	Not part of evaluation as estimated cost is more than 2 times the allowable cost	Not Cost-effective

Noise walls for CNE areas 2 and 3 would be considered cost-effective when considered individually. The allowable cost per benefited receptor is less than the estimated build cost per benefited receptor for each of these areas. When the cost averaging approach is used, CNE area 5 and 1 would also be considered cost effective as the allowable cost per benefited receptor is less than the estimated build cost per benefited receptor based on the cumulative costs of CNE areas 2, 3, 5, and 1. The cost effectiveness of the CNE areas 2 and 3 allow for the consideration of other areas for noise wall implementation that do not achieve the cost effective criterion on an individual basis.

Proposed Barrier Numbers (Benefitted Receivers)	No Benefiting Receiver	Noise Wall Cost	Est Build Cost per Benefitted Receiver (C/B)	Ratio of Build to Reasonable Cost (d/52,500)	Cumulative Estimated Build Cost/Cumulative Sum Benefitted Receivers (Cumulative Sum of C/Cumulative Sum of B)	Result of Determination
R86	8	\$231,349	\$28,919	0.55	\$28,919	Cost-effective Stand Alone
R30 and R32 through R34	68	\$2,089,500	\$30,728	0.59	\$30,537	Cost-effective Stand Alone
R116 and R118	21	\$659,050	\$31,383	0.60	\$30,721	Cost-effective Stand Alone
R123 through R126	27	\$915,500	\$33,833	0.64	\$31,398	Cost-effective Stand Alone
R110	9	\$331,450	\$36,828	0.70	\$31,766	Cost-effective Stand Alone
R78	8	\$311,220	\$38,903	0.74	\$32,171	Cost-effective Stand Alone
R28 and R31	11	\$470,297	\$42,754	0.81	\$32,937	Cost-effective Stand Alone
R52 and R55	18	\$770,350	\$42,797	0.82	\$33,981	Cost-effective Stand Alone
R36 and R37	22	\$1,085,208	\$49,328	0.94	\$35,739	Cost-effective Stand Alone
R114, R115, and R117	18	\$900,130	\$50,007	0.95	\$36,962	Cost-effective Stand Alone
R1	6	\$310,100	\$51,683	0.98	\$37,371	Cost-effective Stand Alone
R2-R7, R9, R12, and R13	16	\$870,800	\$54,425	1.04	\$38,547	Cost Effective Cumulative
R121 and R122	13	\$715,037	\$55,003	1.05	\$39,420	Cost Effective Cumulative
R61	9	\$518,641	\$57,627	1.10	\$40,065	Cost Effective Cumulative
R45, R47 through R49	26	\$1,508,850	\$58,033	1.11	\$41,734	Cost Effective Cumulative
R105, R109, and R111	10	\$719,765	\$71,977	1.37	\$42,777	Cost Effective Cumulative
R90	2	\$147,290	\$73,645	1.40	\$42,988	Cost Effective Cumulative
R112	7	\$530,925	\$75,846	1.44	\$43,757	Cost Effective Cumulative
R98 and R100	11	\$959,982	\$87,271	1.66	\$45,301	Cost Effective Cumulative
R89 and R91	5	\$440,568	\$88,114	1.68	\$45,981	Cost Effective Cumulative
R23 and R25	17	\$1,532,984	\$90,176	1.72	\$48,244	Cost Effective Cumulative
R92, R95, R97, and R99	21	\$1,924,440	\$91,640	1.75	\$50,826	Cost Effective Cumulative
All barriers over 105,000/benefitted receiver	1	\$105,001	\$105,001	2.00	Not part of evaluation as estimated cost is more than 2 times the allowable cost.	Not Cost Effective



WorkSheet

Alternate Barrier Cost Assessment Worksheet

This worksheet is used for the Alternate Barrier Cost assessment to determine if projected costs directly associated with the construction of a proposed barrier would be unreasonably high, and therefore not cost reasonable.

TxDOT Environmental Affairs Division

Effective Date: June 2019

Document # 730.02.TEM

Is Cost Averaging

Used? Yes

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 1 - R1

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	886
Average Height of Proposed Barrier (ft)	10
Benefited Receivers	6
Standard Barrier Cost Total	\$310,100
Square Footage Per Benefiter	1476.666667
Cost Per Benefited Receiver	\$51,683
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

No utilities are estimated to be displaced.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$310,100
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$0
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$0
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$310,100
Benefited Receivers	6
Project Total Per Benefited Receiver	\$51,683
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 2 - R2-R7, R9, R12, and R13

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	3,110
Average Height of Proposed Barrier (ft)	8
Benefited Receivers	16
Standard Barrier Cost Total	\$870,800
Square Footage Per Benefiter	1555
Cost Per Benefited Receiver	\$54,425
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING.	
PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

No utilities are estimated to be displaced.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$870,800
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$0
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$0
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$870,800
Benefited Receivers	16
Project Total Per Benefited Receiver	\$54,425
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 3 - R23 and R25

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	2,150
Average Height of Proposed Barrier (ft)	16
Benefited Receivers	17
Standard Barrier Cost Total	\$1,204,000
Square Footage Per Benefiter	2023.529412
Cost Per Benefited Receiver	\$70,824
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

27 Dwelling Units, 17 Benefitted Receivers; however, the cost is below \$105,000. Therefore the barrier is considered for Project Cost Averaging.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$1,204,000
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$161,250
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$1,234
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$166,500
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$1,532,984
Benefited Receivers	17
Project Total Per Benefited Receiver	\$90,176
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

ASSUMED 5 FEET WIDTH OF ROW AND ANY UTILITIES WITHIN ADDITIONAL 5 FEET.
 EST LAND COST = \$15/SF
 EST ROW CLEARING COST = \$5,000/ACRE
 UTILITIES WITHIN ADDTL 5 FEET ROW = ONCOR O/H ELECTRIC AND ONCOR/CHARTER O/H

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 4 - R28 and R31

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	921
Average Height of Proposed Barrier (ft)	10
Benefited Receivers	11
Standard Barrier Cost Total	\$322,350
Square Footage Per Benefiter	837.2727273
Cost Per Benefited Receiver	\$29,305
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$322,350
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$126,975
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$972
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$20,000
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$470,297
Benefited Receivers	11
Project Total Per Benefited Receiver	\$42,754
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

ASSUMED 5 FEET WIDTH OF ROW AND ANY UTILITIES WITHIN ADDITIONAL 5 FEET.
 EST LAND COST = \$15/SF
 EST ROW CLEARING COST = \$5,000/ACRE
 UTILITIES WITHIN ADDTL 5 FEET ROW = NONE, ALL WITHIN CURRENT PROJECT ROW FOOTPRINT PARCEL 352
 DETACHED GARAGE ASSUMED \$20,000 ADDT'L COST

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 5 - R30 and R32 through R34

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	2,985
Average Height of Proposed Barrier (ft)	20
Benefited Receivers	68
Standard Barrier Cost Total	\$2,089,500
Square Footage Per Benefiter	877.9411765
Cost Per Benefited Receiver	\$30,728
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

No utilities are estimated to be displaced.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$2,089,500
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$0
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$0
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$2,089,500
Benefited Receivers	68
Project Total Per Benefited Receiver	\$30,728
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 6 -R36 and R37

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	2,409
Average Height of Proposed Barrier (ft)	10
Benefited Receivers	22
Standard Barrier Cost Total	\$843,150
Square Footage Per Benefiter	1095
Cost Per Benefited Receiver	\$38,325
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$843,150
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$180,675
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$1,383
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$60,000
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$1,085,208
Benefited Receivers	22
Project Total Per Benefited Receiver	\$49,328
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

ASSUMED 5 FEET WIDTH OF ROW AND ANY UTILITIES WITHIN ADDITIONAL 5 FEET.
 EST LAND COST = \$15/SF
 EST ROW CLEARING COST = \$5,000/ACRE
 UTILITIES WITHIN ADDTL 5 FEET ROW = NONE, ALL WITHIN CURRENT PROJECT ROW FOOTPRINT
 PARCEL 345 DETACHED GARAGE ASSUMED \$60,000 ADDT'L COST

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 7 - R45, R47 through R49

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	4,311
Average Height of Proposed Barrier (ft)	10
Benefited Receivers	26
Standard Barrier Cost Total	\$1,508,850
Square Footage Per Benefiter	1658.076923
Cost Per Benefited Receiver	\$58,033
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

No utilities are estimated to be displaced. Barrier works utilizing cost averaging.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$1,508,850
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$0
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$0
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$1,508,850
Benefited Receivers	26
Project Total Per Benefited Receiver	\$58,033
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 8 - R52 and R55

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	2,201
Average Height of Proposed Barrier (ft)	10
Benefited Receivers	18
Standard Barrier Cost Total	\$770,350
Square Footage Per Benefiter	1222.777778
Cost Per Benefited Receiver	\$42,797
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

No utilities are estimated to be displaced.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$770,350
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$0
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$0
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$770,350
Benefited Receivers	18
Project Total Per Benefited Receiver	\$42,797
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 9 - R61

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	942
Average Height of Proposed Barrier (ft)	14
Benefited Receivers	9
Standard Barrier Cost Total	\$461,580
Square Footage Per Benefiter	1465.333333
Cost Per Benefited Receiver	\$51,287
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$461,580
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$56,520
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$541
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$518,641
Benefited Receivers	9
Project Total Per Benefited Receiver	\$57,627
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

ASSUMED 5 FEET WIDTH OF ROW AND ANY UTILITIES WITHIN ADDITIONAL 5 FEET.
 EST LAND COST = \$12/SF
 EST ROW CLEARING COST = \$5,000/ACRE
 UTILITIES WITHIN ADDTL 5 FEET ROW = NONE, ALL WITHIN CURRENT PROJECT ROW FOOTPRINT

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 10 - R78

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	741
Average Height of Proposed Barrier (ft)	12
Benefited Receivers	8
Standard Barrier Cost Total	\$311,220
Square Footage Per Benefiter	1111.5
Cost Per Benefited Receiver	\$38,903
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

No utilities are estimated to be displaced.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$311,220
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$0
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$0
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$311,220
Benefited Receivers	8
Project Total Per Benefited Receiver	\$38,903
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 11 - R86

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	364
Average Height of Proposed Barrier (ft)	16
Benefited Receivers	8
Standard Barrier Cost Total	\$203,840
Square Footage Per Benefiter	728
Cost Per Benefited Receiver	\$25,480
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$203,840
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$27,300
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$209
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$231,349
Benefited Receivers	8
Project Total Per Benefited Receiver	\$28,919
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

ASSUMED 5 FEET WIDTH OF ROW AND ANY UTILITIES WITHIN ADDITIONAL 5 FEET.
 EST LAND COST = \$15/SF
 EST ROW CLEARING COST = \$5,000/ACRE
 UTILITIES WITHIN ADDTL 5 FEET ROW = NONE, ALL WITHIN CURRENT PROJECT ROW FOOTPRINT

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 12- R89 and R91

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	815
Average Height of Proposed Barrier (ft)	14
Benefited Receivers	5
Standard Barrier Cost Total	\$399,350
Square Footage Per Benefiter	2282
Cost Per Benefited Receiver	\$79,870
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

The barrier benefitted five receivers, but it requires 8 Benefitted Receivers; however, with cost averaging the barrier may work because it is under \$105,000.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$399,350
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$40,750
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$468
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$440,568
Benefited Receivers	5
Project Total Per Benefited Receiver	\$88,114
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

ASSUMED 5 FEET WIDTH OF ROW AND ANY UTILITIES WITHIN ADDITIONAL 5 FEET.
 EST LAND COST = \$10/SF
 EST ROW CLEARING COST = \$5,000/ACRE
 UTILITIES WITHIN ADDTL 5 FEET ROW = NONE, ALL WITHIN CURRENT PROJECT ROW FOOTPRINT

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 13 - R90

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	313
Average Height of Proposed Barrier (ft)	12
Benefitted Receivers	2
Standard Barrier Cost Total	\$131,460
Square Footage Per Benefiter	1878
Cost Per Benefitted Receiver	\$65,730
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefitted receiver	1500
Current FHWA-approved cost per benefitted receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

2 Benefitted Receivers
 Cost Averaging requires 3 Benefitted Receivers but it only benefits 2 receivers; however, cost averaging allows up to \$105,000.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$131,460
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$15,650
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$180
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$147,290
Benefitted Receivers	2
Project Total Per Benefitted Receiver	\$73,645
Current FHWA-approved Alternate Barrier Cost Per Benefitted Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

ASSUMED 5 FEET WIDTH OF ROW AND ANY UTILITIES WITHIN ADDITIONAL 5 FEET.
 EST LAND COST = \$10/SF
 EST ROW CLEARING COST = \$5,000/ACRE
 UTILITIES WITHIN ADDTL 5 FEET ROW = NONE, ALL WITHIN CURRENT PROJECT ROW FOOTPRINT

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 14 - R92, R95, R97, and R99

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	4,582
Average Height of Proposed Barrier (ft)	12
Benefited Receivers	21
Standard Barrier Cost Total	\$1,924,440
Square Footage Per Benefiter	2618.285714
Cost Per Benefited Receiver	\$91,640
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

No utilities are estimated to be displaced.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$1,924,440
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$0
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$0
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$1,924,440
Benefited Receivers	21
Project Total Per Benefited Receiver	\$91,640
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 15 - R98 and R100

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	2,498
Average Height of Proposed Barrier (ft)	10.98
Benefited Receivers	11
Standard Barrier Cost Total	\$959,981
Square Footage Per Benefiter	2493.458182
Cost Per Benefited Receiver	\$87,271
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

No utilities are estimated to be displaced.
 This barrier consists of three barriers ranging from 8 to 12 feet tall:
 One 555 foot long, 12 foot tall barrier,
 One 1,307 foot long, 12 foot barrier,
 One 636 foot long, 8 foot tall barrier.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$959,981
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$0
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$0
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$959,981
Benefited Receivers	11
Project Total Per Benefited Receiver	\$87,271
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 16 - R105, R109, and R111

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	1,438
Average Height of Proposed Barrier (ft)	12
Benefited Receivers	10
Standard Barrier Cost Total	\$603,960
Square Footage Per Benefiter	1725.6
Cost Per Benefited Receiver	\$60,396
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

The barrier would require 11 benefited receivers; however, cost averaging allows values up to \$105,000.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$603,960
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$86,280
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$825
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$27,500
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$1,200
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$719,765
Benefited Receivers	10
Project Total Per Benefited Receiver	\$71,977
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

ASSUMED 5 FEET WIDTH OF ROW AND ANY UTILITIES WITHIN ADDITIONAL 5 FEET.
 EST LAND COST = \$12/SF
 EST ROW CLEARING COST = \$5,000/ACRE
 UTILITIES WITHIN ADDTL 5 FEET ROW = ONCOR O/H ELECTRIC, CTV, FIBER OPTIC
 PARCEL 634 DETACHED SHED ASSUMED \$1,200 ADDT'L COST

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 17 - R110

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	947
Average Height of Proposed Barrier (ft)	10
Benefited Receivers	9
Standard Barrier Cost Total	\$331,450
Square Footage Per Benefiter	1052.222222
Cost Per Benefited Receiver	\$36,828
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

No utilities are estimated to be displaced.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$331,450
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$0
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$0
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$331,450
Benefited Receivers	9
Project Total Per Benefited Receiver	\$36,828
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 18 - R112

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	689
Average Height of Proposed Barrier (ft)	12
Benefited Receivers	7
Standard Barrier Cost Total	\$289,380
Square Footage Per Benefiter	1181.142857
Cost Per Benefited Receiver	\$41,340
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

NWALL LOCATION ALONG US-287S NBFR, STA 125+00 TO STA 129+50 (LITTLE RD INTERSECTION)
 PARCELS 203 THROUGH 210 SHOWN ON NEPA

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$289,380
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$51,675
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$395
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$172,250
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$17,225
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$530,925
Benefited Receivers	7
Project Total Per Benefited Receiver	\$75,846
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

ASSUMED 5 FEET WIDTH OF ROW AND ANY UTILITIES WITHIN ADDITIONAL 5 FEET.
 EST LAND COST = \$15/SF
 EST ROW CLEARING COST = \$5,000/ACRE
 UTILITIES WITHIN ADDTL 5 FEET ROW = COA 16-IN WATER LINE (EST \$250/LF CSTRN, 10% DESIGN)

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 19 - R114, R115, and R117

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	1,837
Average Height of Proposed Barrier (ft)	14
Benefited Receivers	18
Standard Barrier Cost Total	\$900,130
Square Footage Per Benefiter	1428.777778
Cost Per Benefited Receiver	\$50,007
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING.	
PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

No utilities are estimated to be displaced.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$900,130
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$0
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$0
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$900,130
Benefited Receivers	18
Project Total Per Benefited Receiver	\$50,007
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 20 - R116 and R118

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	1,883
Average Height of Proposed Barrier (ft)	10
Benefited Receivers	21
Standard Barrier Cost Total	\$659,050
Square Footage Per Benefiter	896.6666667
Cost Per Benefited Receiver	\$31,383
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING.	
PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

No utilities are estimated to be displaced.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$659,050
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$0
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$0
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$659,050
Benefited Receivers	21
Project Total Per Benefited Receiver	\$31,383
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 21 - R121 and R122

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	881
Average Height of Proposed Barrier (ft)	10
Benefited Receivers	13
Standard Barrier Cost Total	\$308,350
Square Footage Per Benefiter	677.6923077
Cost Per Benefited Receiver	\$23,719
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING.	
PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

NWALL LOCATION ALONG US-287S NBFR, STA 159+00 TO STA 169+00 (STAGETRAIL DR SIDESTREET) PARCELS 168 THROUGH 180 SHOWN ON NEPA

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$308,350
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$66,225
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$507
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$309,050
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$30,905
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$715,037
Benefited Receivers	13
Project Total Per Benefited Receiver	\$55,003
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes

ASSUMED 5 FEET WIDTH OF ROW AND ANY UTILITIES WITHIN ADDITIONAL 5 FEET.
 EST LAND COST = \$15/SF
 EST ROW CLEARING COST = \$5,000/ACRE
 UTILITIES WITHIN ADDTL 5 FEET ROW = COA 16-IN WATER LINE (EST \$350/LF CSTRN, 10% DESIGN)

Alternate Barrier Cost Assessment Worksheet

CSJs: 0008-13-125, etc
 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

Before utilizing the following worksheet, be certain that the barrier being proposed meets the acoustic feasibility and reasonableness criteria in the FHWA-approved TxDOT Noise Policy

Proposed Noise Barrier 22 - R123 through R126

Module 1: Standard Barrier Cost Assessment

Total Length of Proposed Barrier (ft)	2,175
Average Height of Proposed Barrier (ft)	12
Benefited Receivers	27
Standard Barrier Cost Total	\$913,500
Square Footage Per Benefiter	966.6666667
Cost Per Benefited Receiver	\$33,833
Current FHWA-approved cost	\$35
Current FHWA-approved square footage per benefited receiver	1500
Current FHWA-approved cost per benefited receiver	\$52,500
BARRIER IS COST REASONABLE WITH PROJECT AVERAGING. PROCEED WITH ALTERNATE COST ASSESSMENT	

Notes

No utilities are estimated to be displaced.

Module 2: Alternate Barrier Cost Assessment

Standard Barrier Cost Total (from Module 1)	\$913,500
Estimated costs of any additional ROW (including easements) needed to construct the THIS noise barrier.	\$0
Estimated costs for ROW clearing for permanent placement and construction access to THIS noise barrier.	\$0
Estimated costs of utility adjustments directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements necessary to accommodate unusual topographic features due to the construction of this barrier.	\$0
Estimated costs of drainage features directly associated with construction of THIS noise barrier.	\$0
Estimated costs of additional design elements directly associated with THIS noise barrier (describe below)	\$0
<i>Describe issues</i>	
Estimated costs of Alternate Barrier Cost	\$913,500
Benefited Receivers	27
Project Total Per Benefited Receiver	\$33,833
Current FHWA-approved Alternate Barrier Cost Per Benefited Receiver Cannot Exceed	\$105,000
BARRIER IS COST REASONABLE.	

When utilizing the Alternate Barrier Cost Methodology, but sure to describe and document these finding in a tech report or memo.

Notes