Draft - Traffic Noise Analysis Report

US 75 Peak Hour Technology Lanes Project; Dallas District

Project Limits: From Bethany Drive to SH 121

CSJ: 0047-06-163

Collin County, Texas

March 2023

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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Project Information

The Texas Department of Transportation (TxDOT) Dallas District is proposing the implementation of interim freeway operational improvements to address localized congestion for an approximately 18-mile section of United States Highway (US) 75 from Interstate Highway (IH) 635 to State Highway (SH) 121 traversing through the cities of Dallas, Richardson, Plano, Allen, and Town of Fairview, in Dallas and Collin Counties, Texas. The project proposes to convert the use of the existing Managed High Occupancy Vehicle (HOV) lanes to Technology Lanes in areas along US 75 from IH 635 to Bethany Drive in Allen, Texas and would add technology lanes from Bethany Drive to the Sam Rayburn Tollway (SRT)/SH 121.

This traffic noise analysis focuses on the section of the US 75 improvements between Bethany Drive and SH 121 where the existing roadway would be restriped to add one additional travel lane (the proposed technology lane) in each direction, resulting in a Type I change (see **Project Location on Aerial Photograph Map** and **Draft Design Schematic** in **Attachment A**). The proposed project would not be on new location, would not substantially alter either the horizontal or vertical alignment, and would be completed within the existing ROW.

The proposed typical section includes five to six 11-foot-wide main lanes in each direction with varying inside and outside shoulder widths. The corridor also includes two to three 12-foot-wide frontage road lanes in each direction.

Introduction

This analysis was accomplished in accordance with TxDOT's Traffic Noise Policy (2019), which has been approved for use by the Federal Highway Administration (FHWA).

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. FHWA Noise Abatement Criteria (NAC)

Activity Category	FHWA (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.
G	--	Undeveloped lands that are not permitted.

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

Absolute criterion - The predicted noise level at a modeled noise 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 noise 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.

Analysis

The FHWA traffic noise modeling software (TNM 2.5) 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.

Traffic data utilized in this analysis were developed and approved by the Dallas District, after coordination with the Texas A&M Transportation Institute (TTI), in accordance with Option C of the TxDOT Transportation Planning and Programming – Traffic Analysis Section's *Corridor Analysis Standard Operating Procedures* and is currently awaiting approval (see **Traffic Data** in **Attachment B**).

Assumptions

- Existing scenario year: 2020
- Existing facility configuration:
  - 4 to 5 main lanes in either direction
  - 2 to 3 discontinuous frontage roads in either direction
- Predicted modeling year: 2045
- Predicted facility configuration:
  - 5 to 6 main lanes in either direction (including one technology lane in either direction)
  - 2 to 3 discontinuous frontage roads in either direction
- Traffic noise analysis parameters:
  - K-factor: 8.0%;
  - Vehicle distribution:
    - Main Lanes (From Ramps South of Legacy Drive to SH 121)
      - 96% light, 1.4% medium, 2.6% heavy
    - Frontage Lanes (From Legacy Drive to SH 121)
      - 98.2% light, 1.3% medium, 0.5% heavy
  - Speeds: main lanes 70 miles per hour (mph); frontage roads 45 - 55 mph; off ramps 45 mph

Validation

A validation study was performed to ensure that traffic noise is the main source of noise and to verify that the existing model accurately predicts existing traffic noise based on current conditions. Model validation compares field-collected sound level measurements to traffic noise levels calculated in an existing condition model that used field-collected traffic parameters. Differences between the measured and calculated levels for this project were within the +/- 3 dB(A) tolerance

allowed by FHWA. Therefore, the existing noise model is considered validated for this project. Additional information on the validation study is included in **Attachment C.**

Results

Existing and predicted traffic noise levels were modeled at 85 receiver locations 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. Each receiver location in the model identifies the specific location of an outdoor area where frequent human activity occurs. Default placement for single-family residences was within the backyard outdoor activity area. Front yards, side yards, or porches were considered when those areas were closer to or within the line of sight of the roadway and had evidence of frequent outdoor human activity as observed in the field and through online photographic resources. After all modeled noise receiver locations were analyzed, the number of receivers was pared down to 43 representative receivers for mapping and reporting purposes (see **Table 2** and **Traffic Noise Receiver Location Maps** in **Attachment A**). The pared-down set of receivers was determined based on receivers with similar noise levels, NAC activity category, and geographic location. To condense the length of **Table 2** the "Outside Seating Area" receiver location description is abbreviated after the first listing.

Table 2. Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Predicted Traffic Noise Level [dB(A) Leq]			Noise Impact (Yes/No)
			Existing (2020)	Predicted (2045)	Change (+/-)	
R1: Fish City Grill - Outside Seating Area ("OSA")	E	72	68	70	2	No
R2: Cheesecake Factory - OSA	E	72	68	69	1	No
R3: P.F. Changs - OSA	E	72	65	66	1	No
R4: Starbucks - OSA	**E**	**72**	**71**	**73**	**2**	**Yes**
R5: Two Rows Classic Grill - OSA	**E**	**72**	**72**	**73**	**1**	**Yes**
R6: Hilton Garden Inn - Swimming Pool	**E**	**72**	**72**	**73**	**1**	**Yes**
R7: Waters Creek Business Park - Bench	**C**	**67**	**71**	**72**	**1**	**Yes**
R8: Waters Creek Business Park - Bench	**C**	**67**	**66**	**68**	**2**	**Yes**
R9: JC's Burger House - OSA	**E**	**72**	**71**	**73**	**2**	**Yes**
R10: Layne's Chicken Fingers - OSA	E	72	67	69	2	No
R11: Chipotle - OSA	E	72	67	68	1	No
R12: On the Border - OSA	**E**	**72**	**73**	**74**	**1**	**Yes**
R13: Peppersmash Sports Bar and Kitchen - OSA	**E**	**72**	**71**	**73**	**2**	**Yes**
R14: Residential - Back Patio[1]	**B**	**67**	**66**	**67**	**1**	**Yes**

Table 2. Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Predicted Traffic Noise Level [dB(A) Leq]			Noise Impact (Yes/No)
			Existing (2020)	Predicted (2045)	Change (+/-)	
R15: Residential - Back Patio[1]	**B**	**67**	**66**	**68**	**2**	**Yes**
R16: Residential - Back Patio[1]	**B**	**67**	**66**	**67**	**1**	**Yes**
R17: Residential - Back Patio[1]	**B**	**67**	**65**	**67**	**2**	**Yes**
R18: Residential - Back Patio[1]	**B**	**67**	**65**	**67**	**2**	**Yes**
R19: Residential - Side Patio[1]	**B**	**67**	**68**	**70**	**2**	**Yes**
R20: Hyatt Place - Swimming Pool	E	72	67	69	2	No
R21: City of Allen Trail - Bench	**C**	**67**	**72**	**73**	**1**	**Yes**
R22: City of Allen Trail - Trailhead	**C**	**67**	**65**	**67**	**2**	**Yes**
R23: Residential - Back Patio	B	67	61	63	2	No
R24: Residential - Swimming Pool[1]	B	67	63	64	1	No
R25: Rolling Hills Park - Sport Court[1]	**C**	**67**	**67**	**70**	**3**	**Yes**
R26: Rolling Hills Park - Playground[1]	**C**	**67**	**67**	**69**	**2**	**Yes**
R27: Rolling Hills Park – Seating Area[1]	**C**	**67**	**69**	**71**	**2**	**Yes**
R28: Residential - Back Patio[1]	**B**	**67**	**67**	**68**	**1**	**Yes**
R29: Texas Health Presbyterian Hospital Allen - Healing Garden	C	67	59	61	2	No
R30: Wal-Mart Property Trail - Picnic Tables	**C**	**67**	**67**	**69**	**2**	**Yes**
R31: Tru by Hilton - Swimming Pool	E	72	67	68	1	No
R32: Rudy's BBQ - OSA	E	72	68	70	2	No
R33: Lazy Dog - OSA	**E**	**72**	**72**	**73**	**1**	**Yes**
R34: Lupe Tortilla - OSA	**E**	**72**	**72**	**73**	**1**	**Yes**
R35: Starbucks - OSA	**E**	**72**	**69**	**71**	**2**	**Yes**
R36: BJ's Restaurant & Brewhouse - OSA	E	72	67	68	1	No
R37: Bonefish Grill - OSA	E	72	66	68	2	No
R38: Hawaiian Bros Island Grill - OSA	E	72	69	70	1	No
R39: Cimbalo Music Studio - OSA	**C**	**67**	**67**	**68**	**1**	**Yes**
R40: Ridgeview Cemetery - Mausoleum	**C**	**67**	**71**	**71**	**0**	**Yes**
R41: Ridgeview Cemetery - Bench	**C**	**67**	**66**	**66**	**0**	**Yes**
R42: Ridgeview Cemetery - Bench	C	67	65	65	0	No
R43: Portillo's Hot Dogs - OSA	**E**	**72**	**72**	**73**	**1**	**Yes**

Table 2. Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Cat-egory	NAC Level	Predicted Traffic Noise Level [dB(A) Leq]			Noise Impact (Yes/No)
			Existing (2020)	Predicted (2045)	Change (+/-)	

Note: Bold receiver number indicates an absolute or relative criterion potential noise impact. Abbreviations: NAC, Noise Abatement Criteria; dB(A), A-weighted decibel; Leq, average/equivalent sound level.
[1] – Receiver located behind existing noise barriers.

As indicated in **Table 2**, the proposed project would result in a traffic noise impact for 29 out of the 43 representative receiver locations. The modeled traffic noise increase between the existing (2020) and predicted (2045) traffic noise levels are a result of increased traffic volumes in the predicted condition and the addition of a travel lane as part of the proposed project design.

Abatement Analysis

Before any abatement measure can be proposed for incorporation into the project, it must be both feasible and reasonable. Feasibility and reasonableness considerations include constructability, the predicted acoustic reductions provided by an abatement measure, a cost allowance, and whether the property owners of adjacent receivers desire abatement. Receivers associated with an abatement measure that achieve a noise reduction of 5 dB(A) or greater are defined as “benefited receivers.”

In order to be "feasible," the abatement measure must benefit a minimum of two impacted receivers AND reduce the predicted noise level by at least 5 dB(A) at greater than 50% of first-row impacted receivers.

In order to be "reasonable," the abatement measure must also reduce the predicted noise level by at least 7 dB(A) for at least one benefited receiver (noise reduction design goal) and not exceed the Standard Barrier Cost to construct 1,500 square feet of barrier per benefited receiver. In addition, an abatement measure may not be reasonable if the construction costs are unreasonably high due to site constraints, as determined through an alternate barrier cost assessment.

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.

Traffic management – Control devices could be used to reduce the speed of the traffic; however, the minor benefit of one dB(A) per 5 mph 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 or 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 – Noise barriers in the form of noise walls are the most commonly used noise abatement measures and were considered for this project.

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

R4, R5, R9, R12, R13 and R35 (Restaurants) – These receivers represent the outdoor activity area (outdoor seating) associated with various restaurant establishments, within the line-of-sight and adjacent to project roadways (see **Traffic Noise Receiver Location Map Sheets 2, 3, 5, 6 and 13** in **Attachment A**). These receivers are single, isolated impacted receivers not associated with a larger group of impacted receivers. Because a noise abatement measure must potentially benefit a minimum of two impacted receivers, noise abatement for these receiver locations is not feasible.

R6 (Hilton Garden Inn) – This receiver represents a hotel's swimming pool (R6), associated with 75 representative receivers within the line-of-sight and adjacent to project roadways (see **Traffic Noise Receiver Location Map Sheet 3 in Attachment A**). This business is unshielded by any existing noise barriers or developer walls and is located between commercial properties to the south and north. A traffic noise barrier located along the ROW was analyzed.

Results indicated a continuous traffic noise barrier 296 feet in length and up to 20 feet in height placed along the ROW, in front of the hotel with openings for driveways, would not achieve either the minimum feasible reduction of 5 dB(A) for a majority of impacted first-row receivers or the noise reduction design goal of 7 dB(A).

R7 & R8 (Waters Creek Business Park) – These receivers represent the outdoor activity area (benches), associated with greenspace adjacent to a business park, within the line-of-sight and adjacent to project roadways (see **Traffic Noise Receiver Location Map Sheet 3 in Attachment A**). The impacted area of the park is predicted to be approximately 2.3 acres and is equivalent to 12 residential receptors, based on a 0.2-acre average residential lot size in the project area. This park is unshielded by any existing noise barriers or developer walls and is located between commercial properties to the south and north. A traffic noise barrier located along the ROW was analyzed.

Results indicated a continuous traffic noise barrier 249 feet in length and up to 20 feet in height placed along the ROW, in front of the park, would not achieve either the minimum feasible reduction of 5 dB(A) for a majority of impacted first-row receivers or the noise reduction design goal of 7 dB(A).

R14 – R19 (Single-family residences) – These receivers represent the backyard outdoor activity area for six single-family residences within the line-of-sight and adjacent to project

roadways (see **Traffic Noise Receiver Location Map Sheets 6 and 7** in **Attachment A**). TxDOT-constructed noise barriers, approximately 695 feet in length and 11 feet in height, and 2,097 feet in length and 12 feet in height, were constructed along the northbound side of US 75 between McDermott Drive and Ola Lane as part of the US 75 Collin County Project (CSJ: 0047-06-139). All first-row receivers behind the noise barrier have noise impacts under the current proposed project.

In accordance with FHWA guidance FHWA-HEP-12-051, these noise barriers were analyzed to see if they would still meet the acoustic feasibility and reasonableness criteria for abatement. When modeled without the existing noise barriers, 19 first-row receivers would be considered impacted in the future condition. Under these conditions, the existing noise barriers were predicted to reduce noise levels by 5 dB(A) for all 19 first-row receivers and meet the noise reduction design goal of 7 dB(A) for 16 of those receivers. This modeling indicates that the performance of the existing noise barriers remains acoustically feasible and reasonable. Therefore, no changes to the existing noise barriers are proposed for this location.

R21 – R22 (City of Allen Park/Trail) – These receivers represent outdoor activity areas, bench (R21) and trailhead (R22) associated with a City of Allen Park, within the line-of-sight and adjacent to project roadways (see **Traffic Noise Receiver Location Map Sheet 7 in Attachment A**). The impacted area of the park is predicted to be approximately 5.8 acres and is equivalent to 29 residential receptors, based on a 0.2-acre average residential lot size in the project area. This park is unshielded by any existing noise barriers or developer walls and is located between a commercial property (Home Zone) under development to the south and a commercial property to the north. A traffic noise barrier located along the ROW was analyzed.

Results indicated a continuous traffic noise barrier 375 feet in length and up to 20 feet in height placed along the ROW, in front of the park, would not achieve either the minimum feasible reduction of 5 dB(A) for a majority of impacted first-row receivers or the noise reduction design goal of 7 dB(A).

R24 – R28 (Rolling Hills Park and Single-family residences) – These receivers represent a sports court (R25), playground (R26) and seating area (R27) outdoor activity areas associated with Rolling Hills Park, and two single-family residences (R24 and R28), within the line-of-sight of project roadways (see **Traffic Noise Receiver Location Map Sheets 8 and 9** in **Attachment A**). TxDOT-constructed noise barriers, approximately 582 feet in length and 11 feet in height, 533 feet in length and 11 feet in height, and 694 feet in length and 12 feet in height, were constructed along the northbound side of US 75 between Allen Drive and Exchange Parkway in 2017 as part of the US 75 Collin County Project (CSJ: 0047-06-139). Receivers R25 through R28 were predicted to have noise impacts under the current project; however, other locations behind the noise barrier (represented by R24) did not have noise impacts.

In accordance with FHWA guidance FHWA-HEP-12-051, these barriers were analyzed to see if the existing barriers still meet the acoustic feasibility and reasonableness criteria for abatement. When modeled without the existing noise barrier, all seven first-row receivers would be considered impacted in the future condition. Under these conditions, the existing

barriers tested as described above, were predicted to reduce noise levels by 5 dB(A) for four first-row receptors and meet the noise reduction design goal of 7 dB(A) for one of those receptors. This modeling indicates that the performance of the existing noise barrier remains acoustically feasible and reasonable. Therefore, no changes to the existing noise barrier are proposed for this location.

R30 (Wal-Mart Trail) – This receiver represents an outdoor activity area, bench (R30) associated with a trail within the Wal-Mart property, within the line-of-sight and adjacent to project roadways (see **Traffic Noise Receiver Location Map Sheet 10 in Attachment A**). The impacted area of the park is predicted to be approximately 4.4 acres and is equivalent to 15 residential receptors, based on a 0.3-acre average residential lot size in the project area. This park is unshielded by any existing noise barriers or developer walls and is located between commercial properties to the south and north. A traffic noise barrier located along the ROW was analyzed.

Results indicated a continuous traffic noise barrier 148 feet in length and up to 20 feet in height placed along the ROW, in front of the park, would not achieve either the minimum feasible reduction of 5 dB(A) for a majority of impacted first-row receivers or the noise reduction design goal of 7 dB(A).

R33 – R34 & R43 (Lupe Tortilla, Lazy Dog, and Portillo's Hot Dogs) – These receivers represent the outdoor activity areas (outside seating) for three adjacent impacted restaurant businesses, within the line-of-sight and adjacent to project roadways (see **Traffic Noise Receiver Location Map Sheet 12 in Attachment A**). These businesses are unshielded by any existing noise barriers or developer walls and are located between commercial properties to the south and north. Two traffic noise barriers located along the ROW were analyzed.

Results indicated a discontinuous traffic noise barrier 693 feet in total length and up to 20 feet in height placed along the ROW, in front of the businesses with a driveway opening, would not achieve either the minimum feasible reduction of 5 dB(A) for a majority of impacted first-row receivers or the noise reduction design goal of 7 dB(A).

R39 (Cimbalo Music Studio) – This receiver represents the outdoor activity area (outdoor seating) associated with a music studio, within the line-of-sight and adjacent to project roadways (see **Traffic Noise Receiver Location Map Sheets 15** in **Attachment A**). This receiver is a single, isolated impacted receiver not associated with a larger group of impacted receivers. Because a noise abatement measure must potentially benefit a minimum of two impacted receivers, noise abatement for these receiver locations is not feasible.

R40 – R41 (Ridgeview Cemetery) – These receivers represent a mausoleum (R40) and bench (R41) outdoor activity areas associated with Ridgeview Cemetery, within the line-of-sight and adjacent to project roadways (see **Traffic Noise Receiver Location Map Sheet 17 in Attachment A**). The impacted area of the cemetery is predicted to be approximately 8.2 acres and is equivalent to 27 residential receptors, based on a 0.3-acre average residential lot size in the project area. This cemetery is unshielded by any existing noise barriers or developer walls and is located between undeveloped properties to the north and south. Three traffic noise barriers located along the ROW were analyzed.

Results indicated a discontinuous traffic noise barrier 1,201 feet in total length and up to 20 feet in height placed along the ROW, directly in front of the cemetery, with openings for the driveways, would not achieve either the minimum feasible reduction of 5 dB(A) for a majority of impacted first-row receivers or the noise reduction design goal of 7 dB(A).

Noise Contours for Land Use Planning

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, that no new activities are planned or constructed along or within the following predicted (2045) noise impact contours (see **Table 4**).

Table 4. Traffic Noise Contours dB(A) Leq

Location (From Southern to Northern Project Termini)	**Land Use NAC Category**	**Impact Contour[1]**	**Distance from Edge of ROW**
Northbound (NB) US 75 Approximately 800 feet north of Millennium Drive	B or C	66 dB(A)	425 feet
	E	71 dB(A)	250 feet
NB US 75 Approximately 670 feet north of McDermott Drive	B or C	66 dB(A)	250 feet
	E	71 dB(A)	25 feet
NB 75 Approximately 840 feet south of Allen Drive	B or C	66 dB(A)	315 feet
	E	71 dB(A)	175 feet
SB US 75 South of Allen Drive	B or C	66 dB(A)	200 feet
	E	71 dB(A)	25 feet
NB US 75 Approximately 420 feet north of Exchange Parkway	B or C	66 dB(A)	425 feet
	E	71 dB(A)	225 feet
NB US 75 Approximately 1,465 feet north of Exchange Parkway	B or C	66 dB(A)	250 feet
	E	71 dB(A)	50 feet
Southbound (SB) US 75 Approximately 1,770 feet north of Exchange Parkway	B or C	66 dB(A)	400 feet
	E	71 dB(A)	175 feet
SB US 75 South of Chelsea Boulevard	B or C	66 dB(A)	375 feet
	E	71 dB(A)	250 feet
SB US 75 Approximately 635 feet north of Allen Commerce Parkway	B or C	66 dB(A)	325 feet
	E	71 dB(A)	150 feet
NB US 75 Approximately 1,030 feet south of Ridgeview Drive	B or C	66 dB(A)	375 feet
	E	71 dB(A)	200 feet

Notes:
1. Impact contours are one dB(A) lower than the NAC per category to reflect impacts that would occur as a result of approaching the NAC for the respective contours. The undeveloped areas identified above were based on aerial review and field verification conducted in June 2022. Permit research was conducted using the best

Location (From Southern to Northern Project Termini)	Land Use NAC Category	Impact Contour[1]	Distance from Edge of ROW
available online data from the City of Allen as of March 2023. This research was based on available online permit search and address information from the Collin County Central Appraisal District.			

Construction Noise

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 is 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.

Local Official Notification and Date of Public Knowledge Statement

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

List of Attachments

A. Map Figures and US 75 Design Plans

B. Traffic Data

C. Existing Model Validation Study

ATTACHMENT A

MAPS AND DESIGN PLANS

Legend

Project Limits

Railroad

Source / Year of Aerial: Nearmap / 2022

PROJECT LOCATION ON AERIAL PHOTOGRAPH MAP

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

N

0 4,000 8,000

SCALE IN FEET

Texas Department of Transportation

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	STP ( )MM		US 75
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	DAL	COLLIN, ETC.	1
CONTROL	SECTION	JOB	
0047	06	158, ETC.	

FINAL PLANS

NAME OF CONTRACTOR: _____

DATE OF LETTING: _____

DATE WORK BEGAN: _____

DATE WORK COMPLETED: _____

DATE WORK ACCEPTED: _____

SUMMARY OF CHANGE ORDERS:

This attachment includes the relevant pages from the full design plan set for the traffic noise analysis. The full set is provided in the supplemental files.

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT
FEDERAL AID PROJECT

STP ( )MM

CCSJ: 0047-06-158, ETC.

US 75
COLLIN COUNTY, ETC.

LIMITS: FROM IH 635 TO SH 121

DESIGN SPEEDS = 55 MPH
A.D.T. (2020) = 304,300
A.D.T. (2040) = 418,500

FUNCTIONAL CLASSIFICATION = URBAN PRINCIPAL ARTERIAL (FREEWAY)

NOTE:

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014, AND THE CONTRACT PROVISIONS LISTED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL AID PROJECT CONSTRUCTION CONTRACTS (FORM FHWA 1273, MAY 1, 2012)

CSJ 0047-07-232 LENGTH =	ROADWAY	= 20,415.94 FT.	= 3.867MI.
	BRIDGE	= 1,325.25 FT.	= 0.251MI.
	TOTAL	= 21,741.19 FT.	= 4.118MI.
CSJ 0047-06-158 LENGTH =	ROADWAY	= 36,494.28 FT.	= 6.912MI.
	BRIDGE	= 1,124.03 FT.	= 0.213MI.
	TOTAL	= 37,618.31 FT.	= 7.125MI.
CSJ 0047-06-163 LENGTH =	ROADWAY	= 29,449.64 FT.	= 4.959MI.
	BRIDGE	= 1,420.36 FT.	= 0.269MI.
	TOTAL	= 30,870.00 FT.	= 5.847MI.
TOTAL LENGTH OF PROJECT =	ROADWAY	= 86,359.86 FT.	= 16.356MI.
	BRIDGE	= 3,869.64 FT.	= 0.733MI.
	TOTAL	= 90,229.50 FT.	= 17.089MI.

FOR THE CONSTRUCTION OF FREEWAY OPERATIONAL AND HIGHWAY IMPROVEMENTS
CONSISTING OF: REMOVE HOV LANES AND ADD TECHNOLOGY LANES

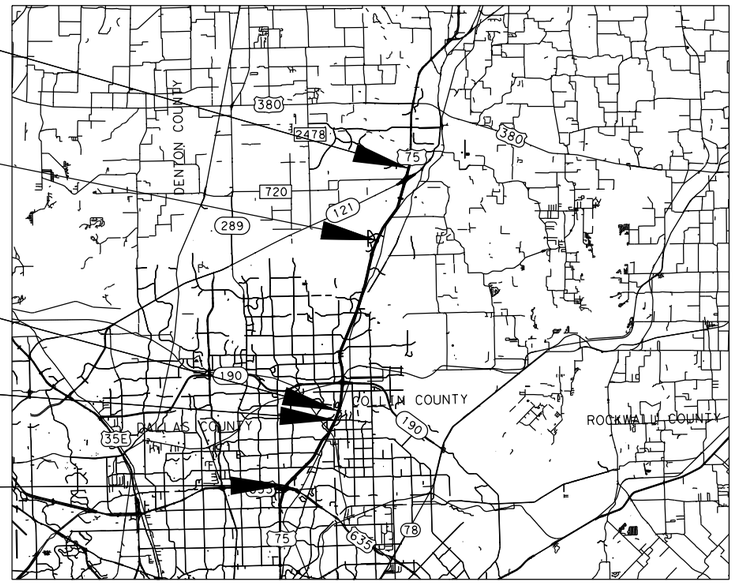
END PROJECT
CSJ: 0047-06-158, ETC.
END CSJ: 0047-06-163
STA 816+70.00
TRM 246+2.01

BEGIN CSJ: 0047-06-163
STA: 508+00.00
END CSJ: 0047-06-158
TRM 242+0.151

BEGIN CSJ: 0047-06-158
STA: 131+81.69
END CSJ: 0047-07-232
TRM 254+0.404

STA 126+70.24 (AH) =
STA 310+41.19 (BK)

BEGIN PROJECT
CSJ: 0047-06-158, ETC.
BEGIN CSJ: 0047-07-232
STA: 93+00.00
TRM 256+0.192



NOT TO SCALE

EXCEPTIONS-NONE
EQUATIONS: STA. 310+41.19 (BK) = STA. 126+70.24 (AH) - CSJ: 0047-07-232
RAILROAD CROSSINGS: KCS & DART/COTTON BELT - CSJ: 0047-06-158

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

SUBMITTED FOR LETTING 09/26/2022

_____, P.E.
PROJECT MANAGER

TEXAS DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR LETTING _____
_____, P.E.
DESIGN ENGINEER

RECOMMENDED FOR LETTING _____
_____, P.E.
DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

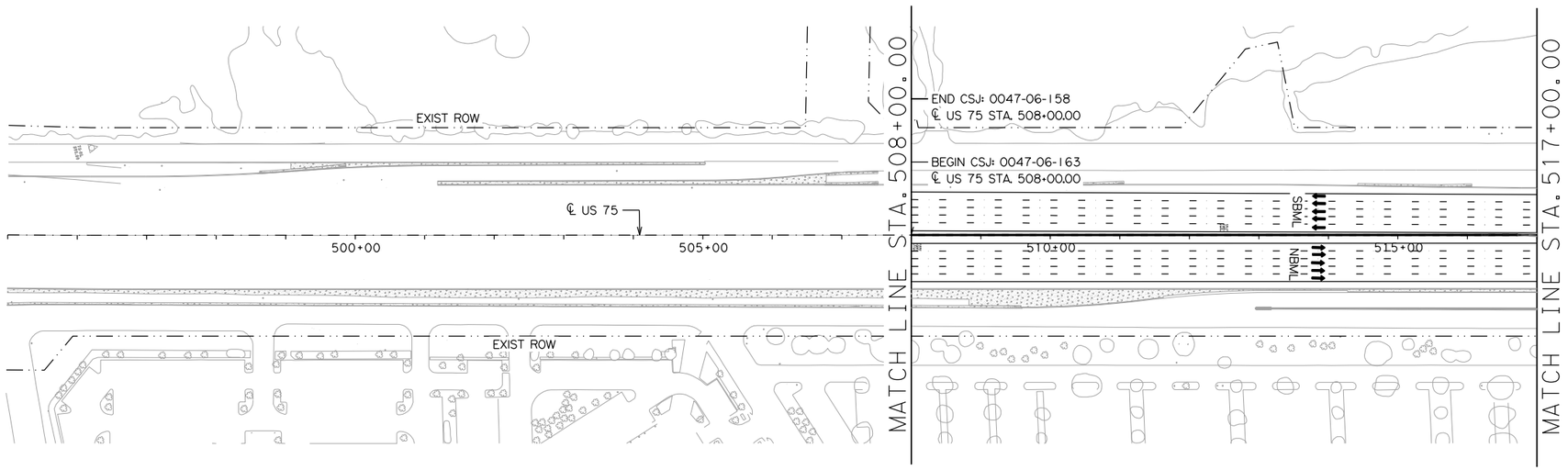
RECOMMENDED FOR LETTING _____
_____, P.E.
AREA ENGINEER

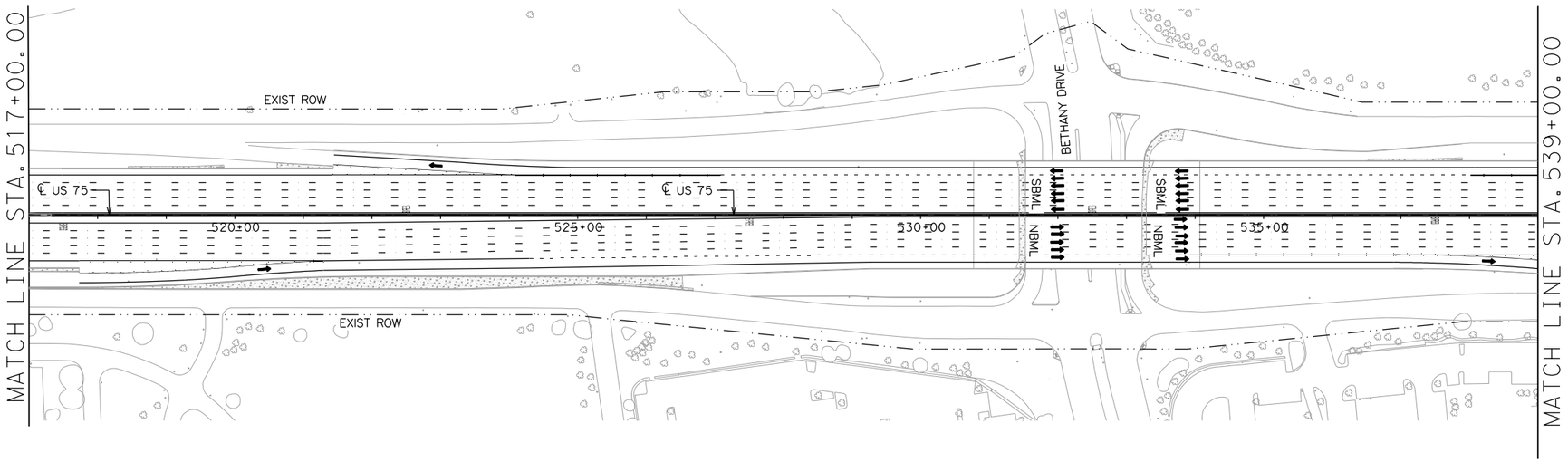
APPROVED FOR LETTING: _____
_____, P.E.
DISTRICT ENGINEER

WORK WAS COMPLETED ACCORDING TO THE PLANS AND CONTRACT.

_____, P.E.
Signature of Registrant & Date

PLOT DRIVER: $PLTDRVS$ PENTABLE: $PENTBLS$
USER: $USER$ DATE: 9/26/2022 TIME: 10:29:47 AM SCALE: $SCALESHORT$
FILE: $PWVARVAULTPATHDESC$





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LEGEND

PROP ROW

EXIST ROW

NOTES:
1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR ADDITIONAL INFORMATION
2. CALLOUTS REFERENCE US 75 CENTERLINE, UNLESS OTHERWISE NOTED.

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 9/13/22
Signature of Registrant & Date

Texas Department of Transportation

US 75
TECHNOLOGY LANES

PROJECT LAYOUT

SCALE: 1"=200' SHEET 10 OF 17

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		US 75
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN, ETC.	13
CHECK	CONTROL	SECTION	JOB	
	0047	06	158, ETC.	

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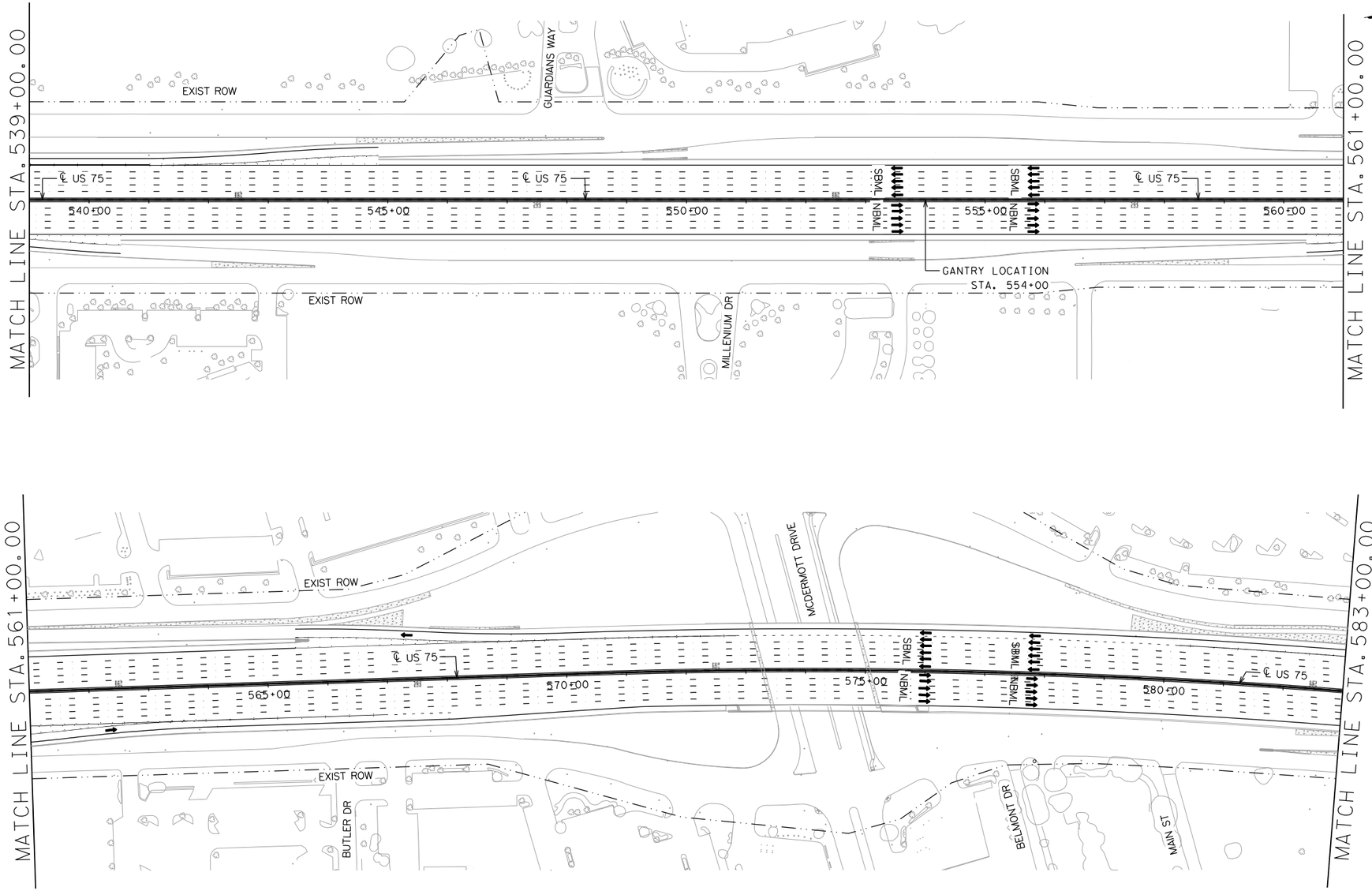

0 100 200

LEGEND

PROP ROW

EXIST ROW

NOTES:
1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR ADDITIONAL INFORMATION
2. CALLOUTS REFERENCE US 75 CENTERLINE, UNLESS OTHERWISE NOTED.

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 9/13/22
Signature of Registrant & Date

Texas Department of Transportation

US 75
TECHNOLOGY LANES

PROJECT LAYOUT

SCALE: 1"=200' SHEET 11 OF 17

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		US 75
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN, ETC.	14
CHECK	CONTROL	SECTION	JOB	
	0047	06	158, ETC.	

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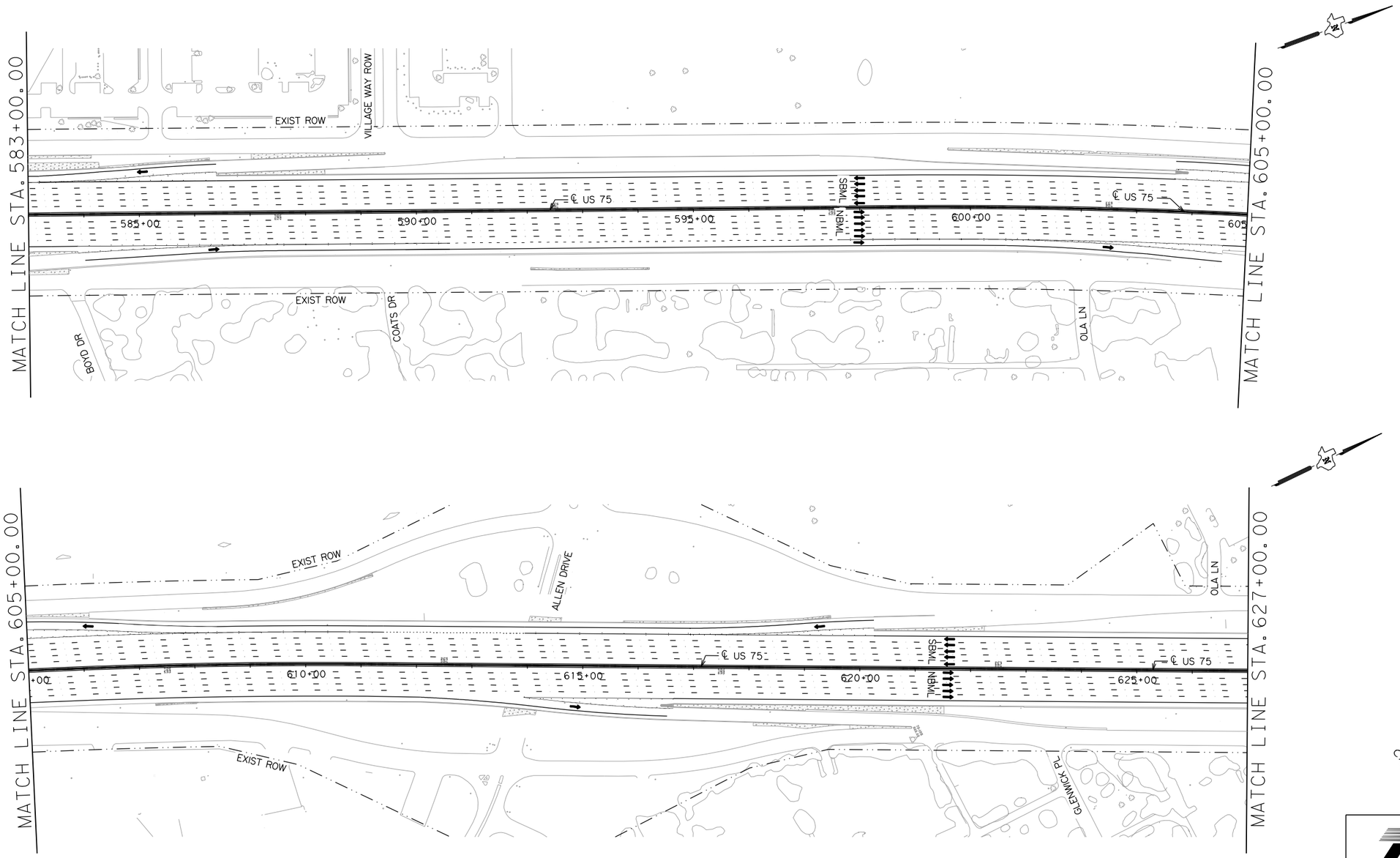

0 100 200

LEGEND

PROP ROW

EXIST ROW

NOTES:

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR ADDITIONAL INFORMATION
2. CALLOUTS REFERENCE US 75 CENTERLINE, UNLESS OTHERWISE NOTED.

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 9/13/22
Signature of Registrant & Date

Texas Department of Transportation

US 75
TECHNOLOGY LANES

PROJECT LAYOUT

SCALE: 1"=200' SHEET 12 OF 17

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		US 75
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN, ETC.	15
CHECK	CONTROL	SECTION	JOB	
	0047	06	158, ETC.	

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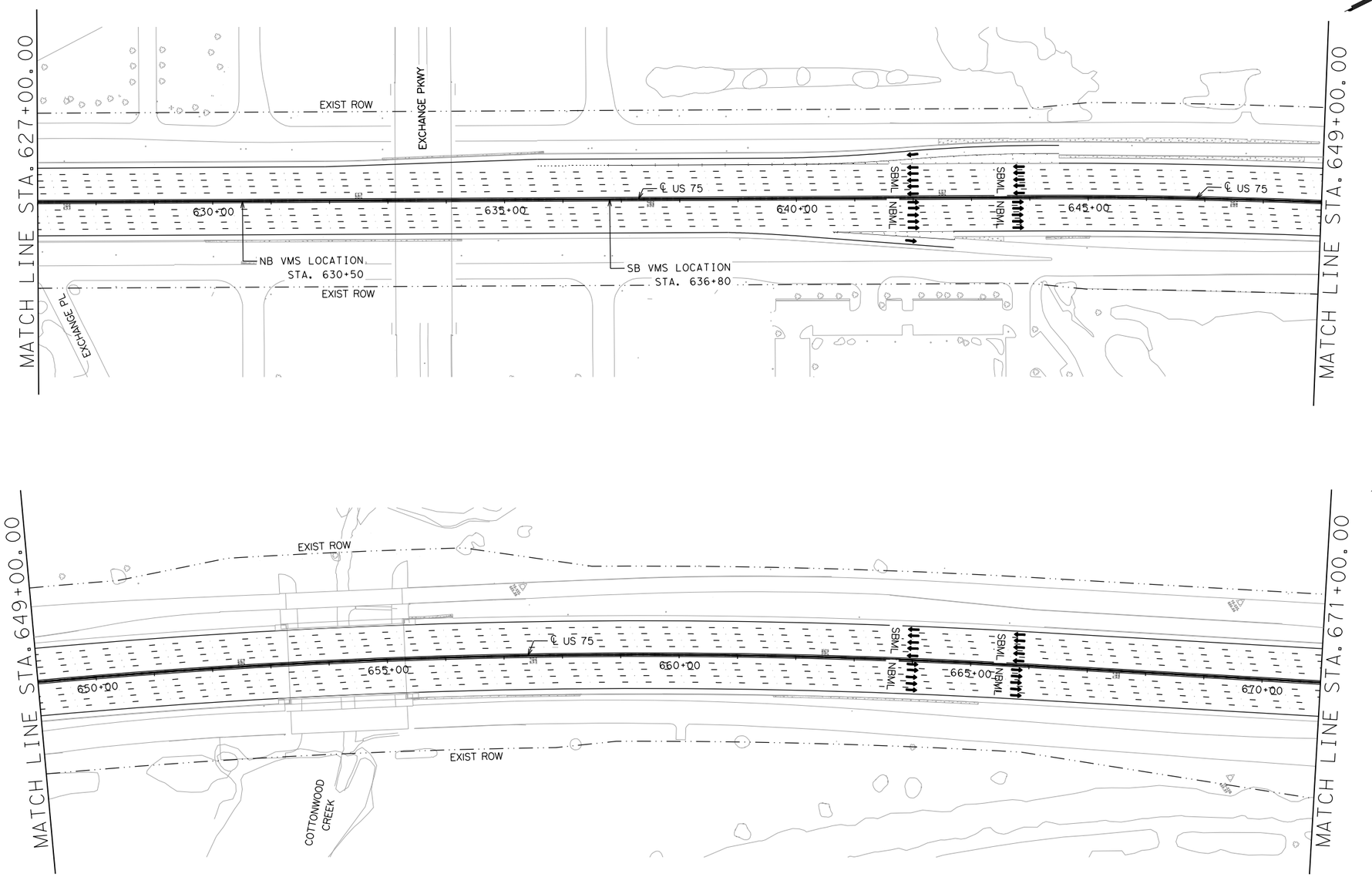

NOTES:
1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR ADDITIONAL INFORMATION
2. CALLOUTS REFERENCE US 75 CENTERLINE, UNLESS OTHERWISE NOTED.

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad P.E. 9/13/22
Signature of Registrant & Date

Texas Department of Transportation

US 75
TECHNOLOGY LANES

PROJECT LAYOUT

SCALE: 1"=200' SHEET 13 OF 17

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		US 75
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN, ETC.	16
CHECK	CONTROL	SECTION	JOB	
	0047	06	158, ETC.	

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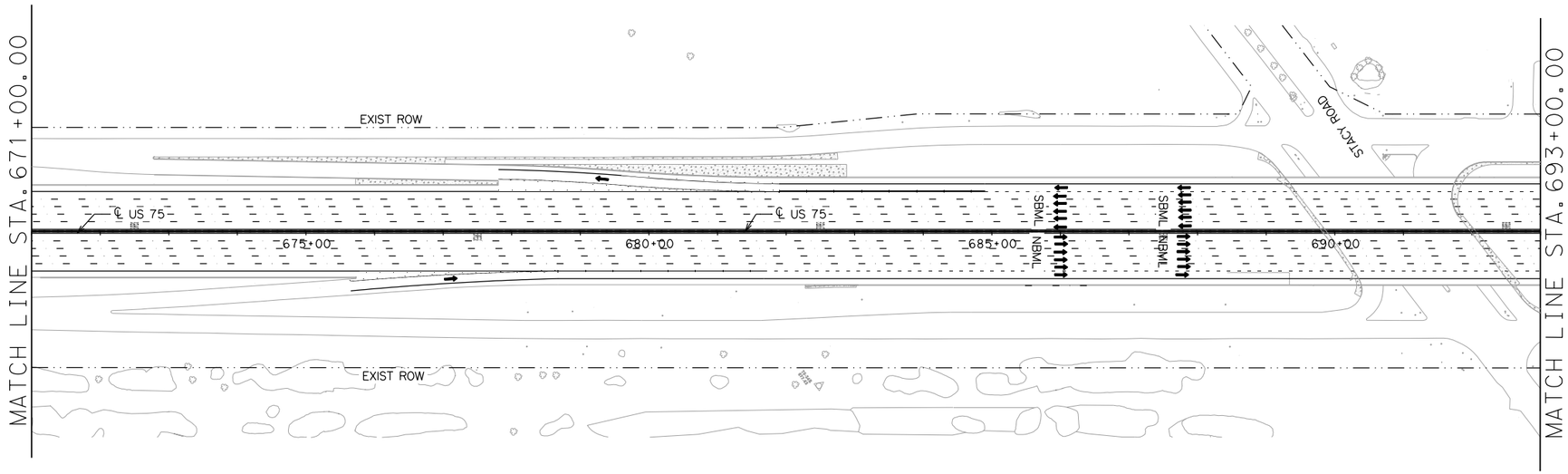

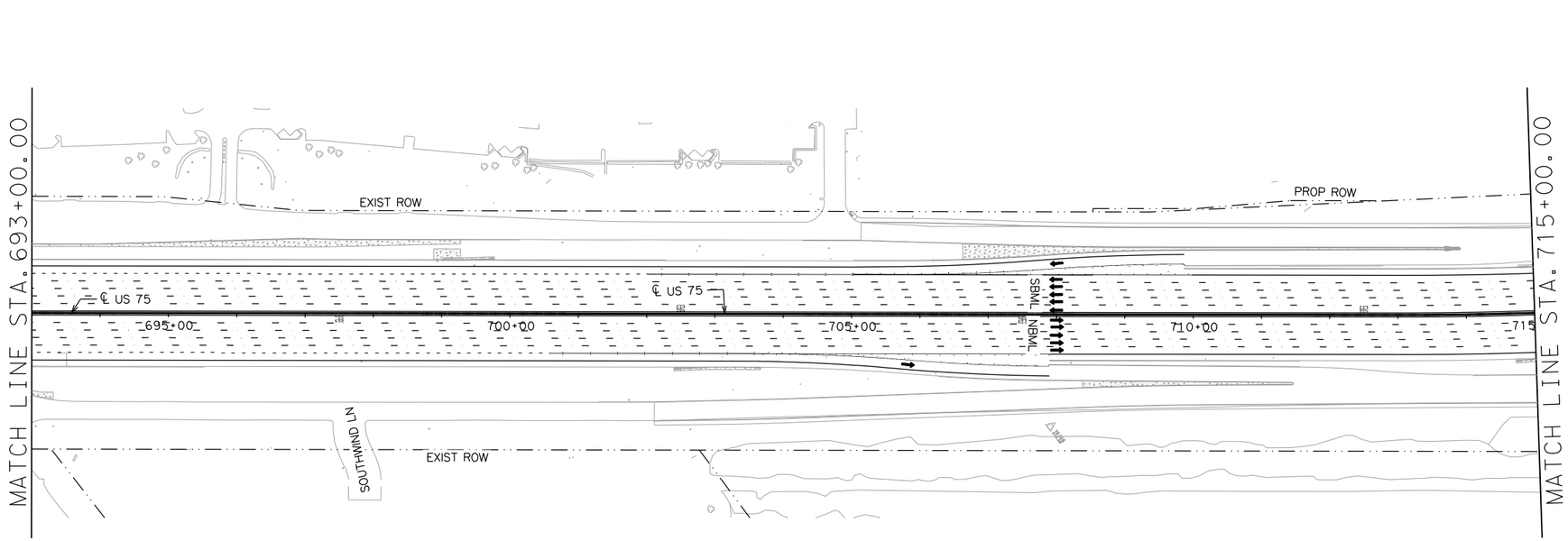

0 100 200

LEGEND

PROP ROW

EXIST ROW

NOTES:
1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR ADDITIONAL INFORMATION
2. CALLOUTS REFERENCE US 75 CENTERLINE, UNLESS OTHERWISE NOTED.

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad P.E. 9/13/22
Signature of Registrant & Date

Texas Department of Transportation

US 75
TECHNOLOGY LANES

PROJECT LAYOUT

SCALE: 1"=200' SHEET 14 OF 17

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		US 75
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN, ETC.	17
CHECK	CONTROL	SECTION	JOB	
	0047	06	158, ETC.	

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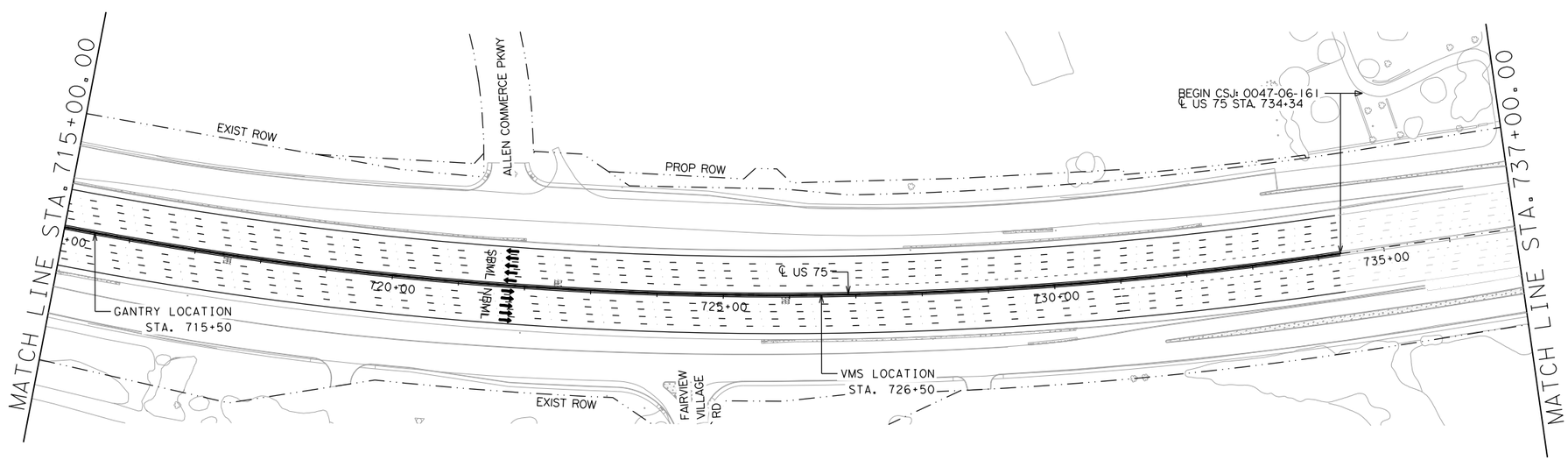

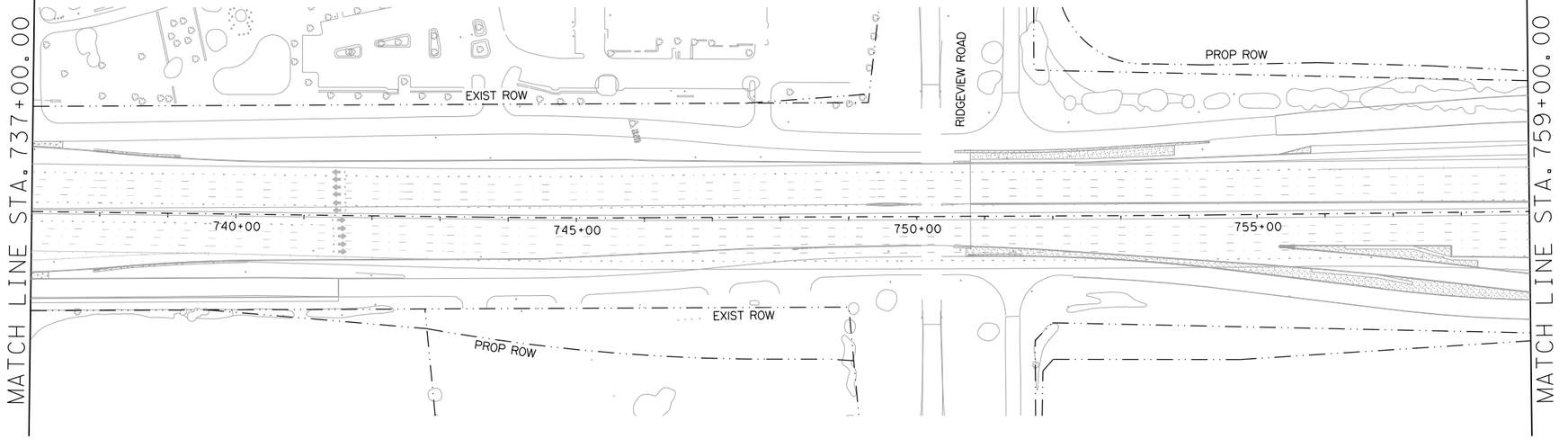

0 100 200

LEGEND

PROP ROW

EXIST ROW

NOTES:
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2. CALLOUTS REFERENCE US 75 CENTERLINE, UNLESS OTHERWISE NOTED.

STATE OF TEXAS
IBRAHIM I. EL SAAD
142049
LICENSED
PROFESSIONAL ENGINEER

Ibrahim El Saad, P.E. 9/13/22
Signature of Registrant & Date

Texas Department of Transportation

US 75
TECHNOLOGY LANES

PROJECT LAYOUT

SCALE: 1"=200' SHEET 15 OF 17

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
IIE	6	SEE TITLE SHEET		US 75
GRAPHICS IIE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	COLLIN, ETC.	18
CHECK	CONTROL	SECTION	JOB	
	0047	06	158, ETC.	

DATE: 9/13/2022 TIME: 8:59:56 AM FILE: c:\txdot\pw*online\txdot5\ibrahim.elsaad\d0344988\004706163 Project Layout Sheet1.dgn

Legend

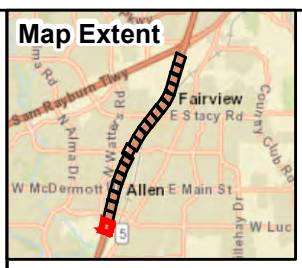
- Non-Impacted Receiver
- Impacted Receiver
- Existing Noise Barrier
- Modeled Roadways
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 1 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



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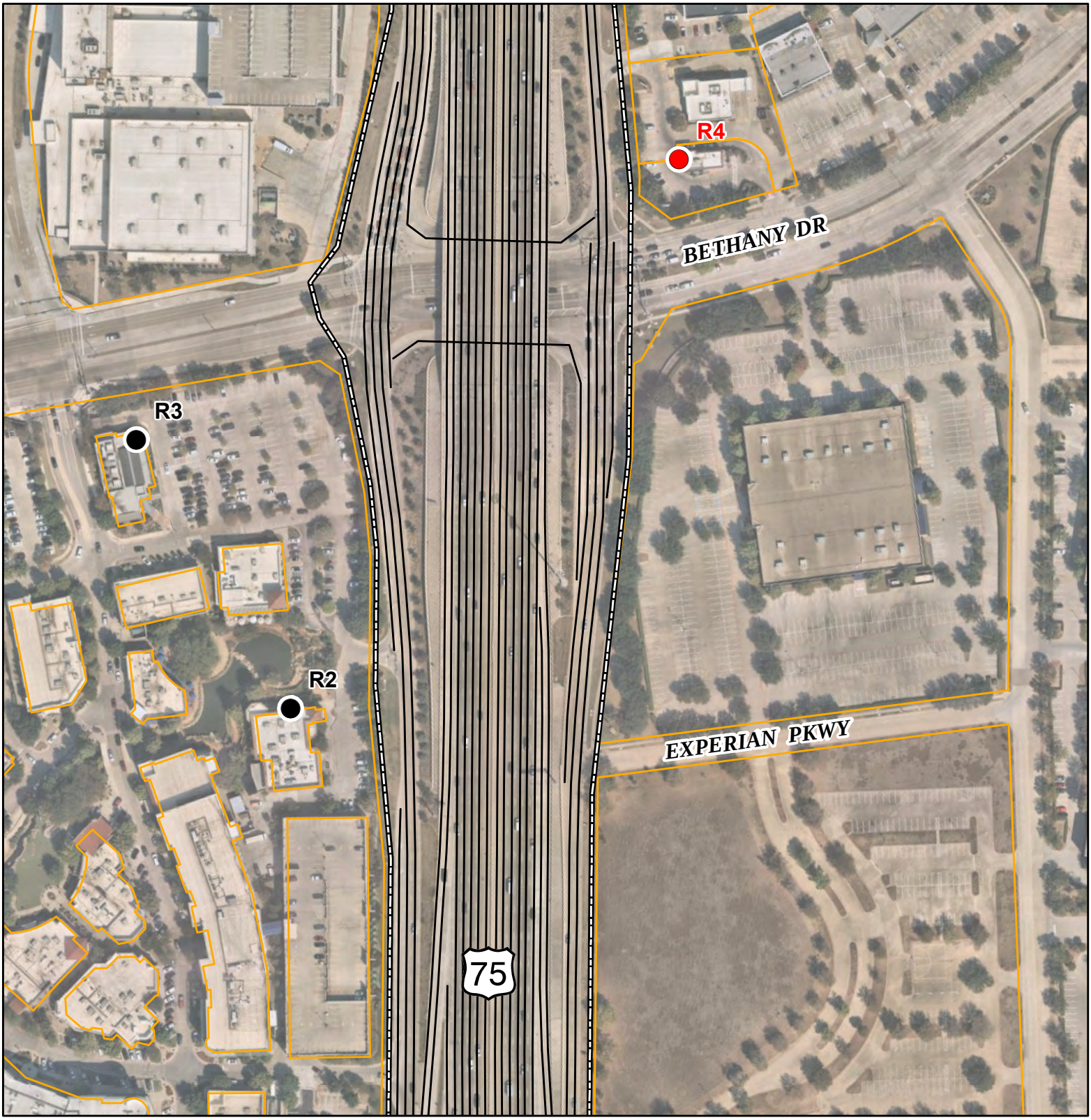
SCALE IN FEET



Legend

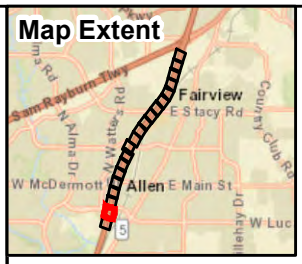
- Non-Impacted Receiver
- Impacted Receiver
- Existing Noise Barrier
- Modeled Roadways
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 2 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



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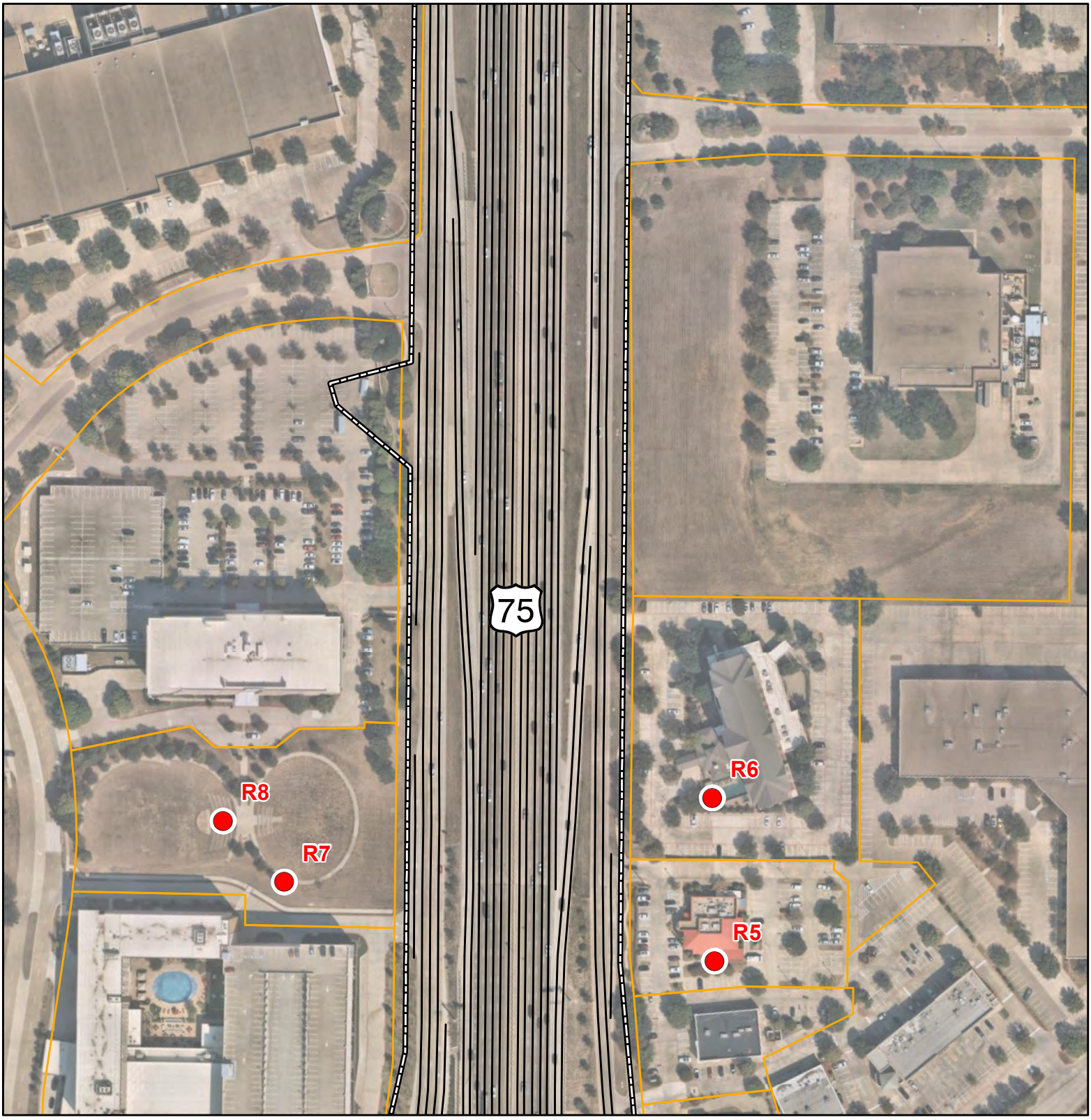


Legend

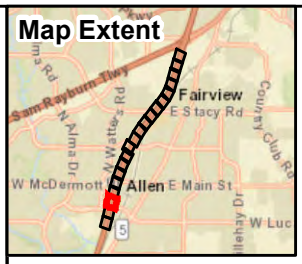
- Non-Impacted Receiver
- Impacted Receiver
- Existing Noise Barrier
- Modeled Roadways
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 3 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



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0 200 400

SCALE IN FEET

Legend

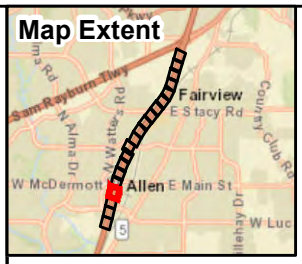
- Non-Impacted Receiver
- Impacted Receiver
- Existing Noise Barrier
- Modeled Roadways
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 4 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



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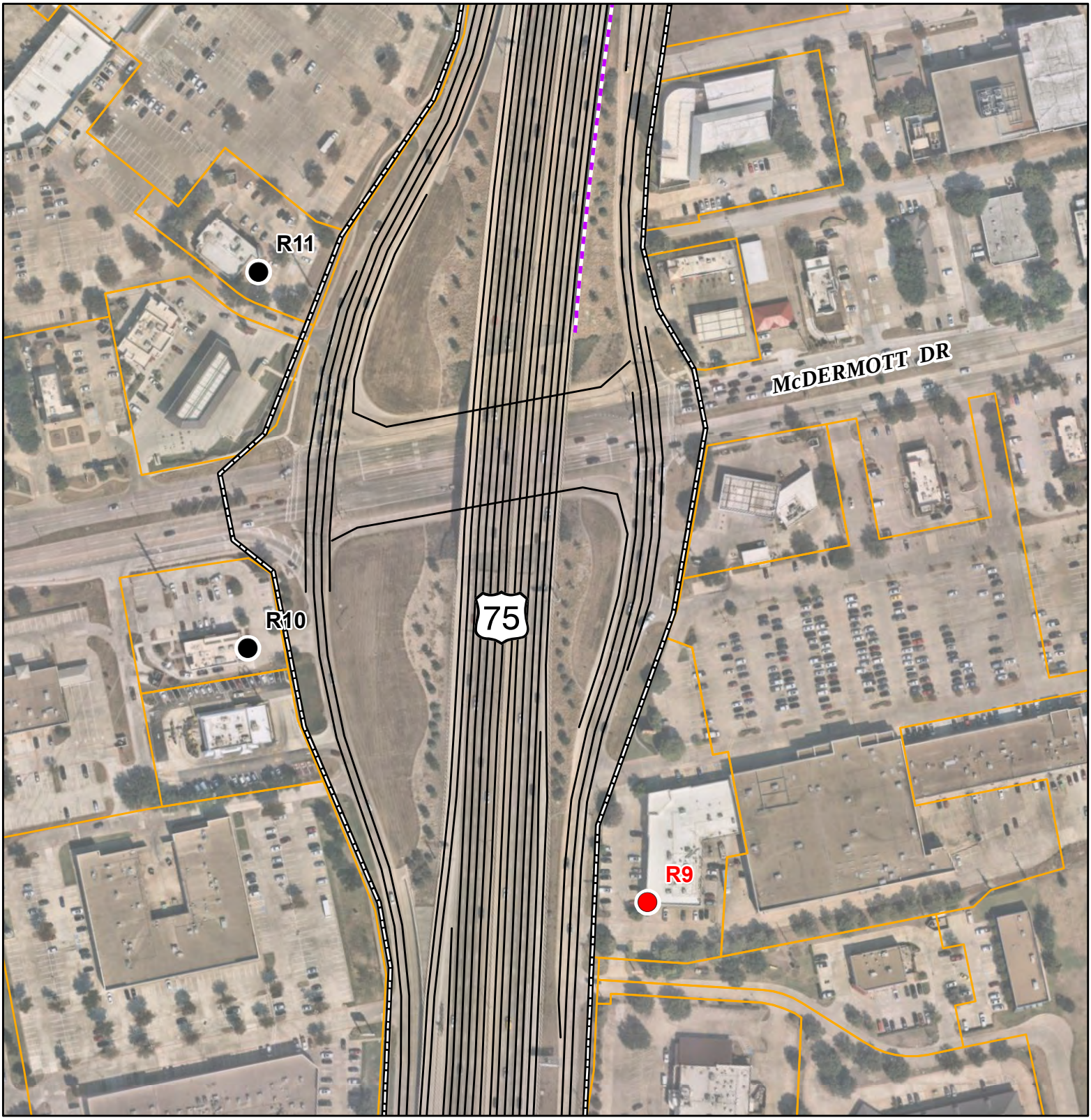


Legend

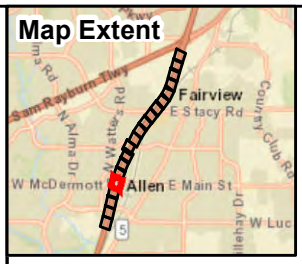
- Non-Impacted Receiver
- Impacted Receiver
- Existing Noise Barrier
- Modeled Roadways
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 5 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



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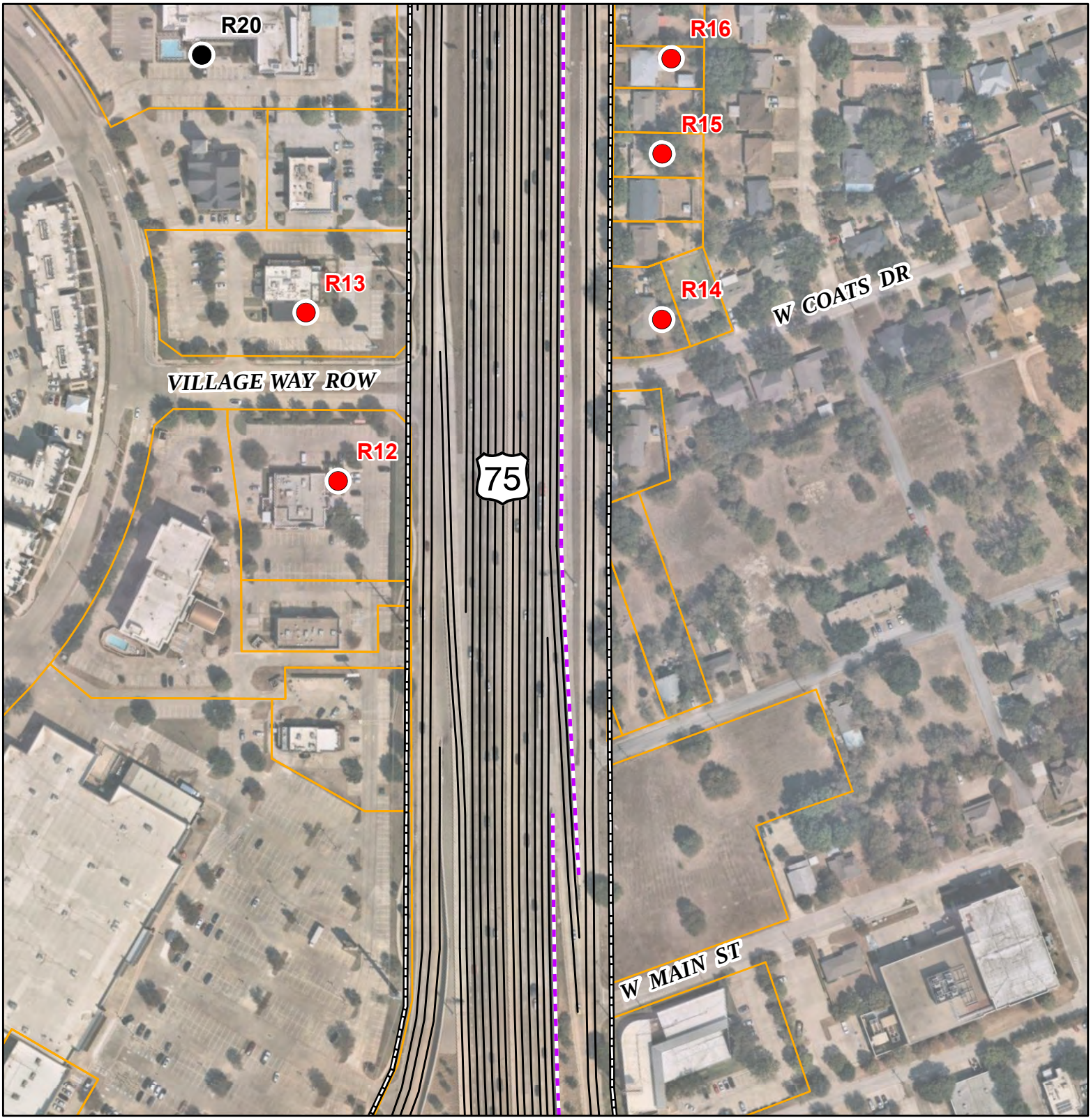


Legend

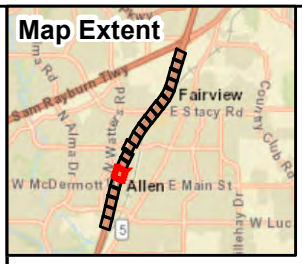
- Non-Impacted Receiver
- Impacted Receiver
- Existing Noise Barrier
- Modeled Roadways
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 6 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



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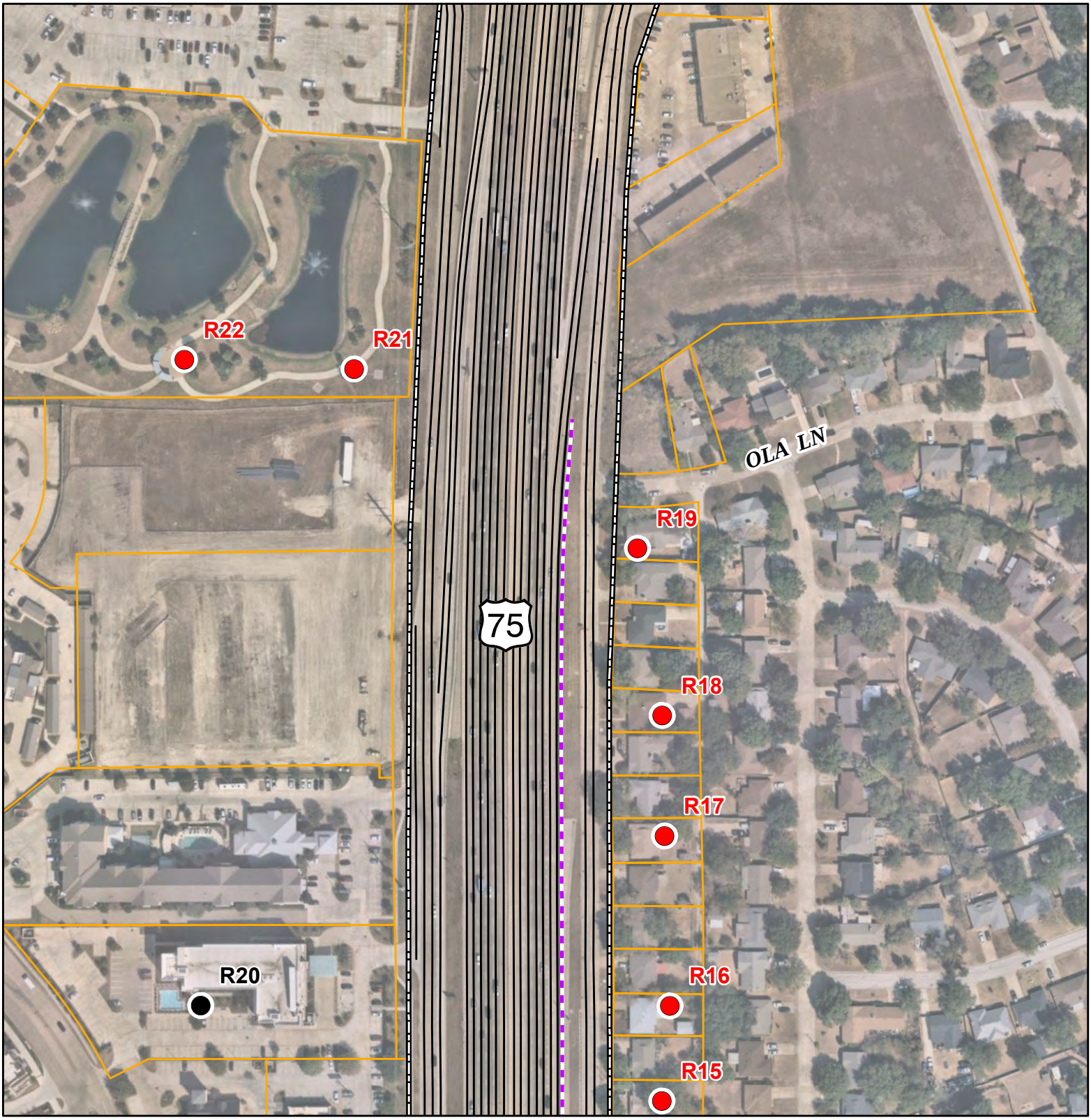


Legend

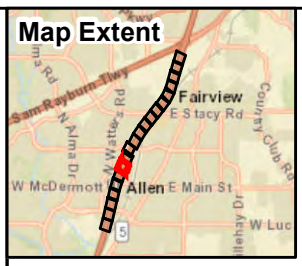
- Non-Impacted Receiver
- Impacted Receiver
- Existing Noise Barrier
- Modeled Roadways
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 7 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



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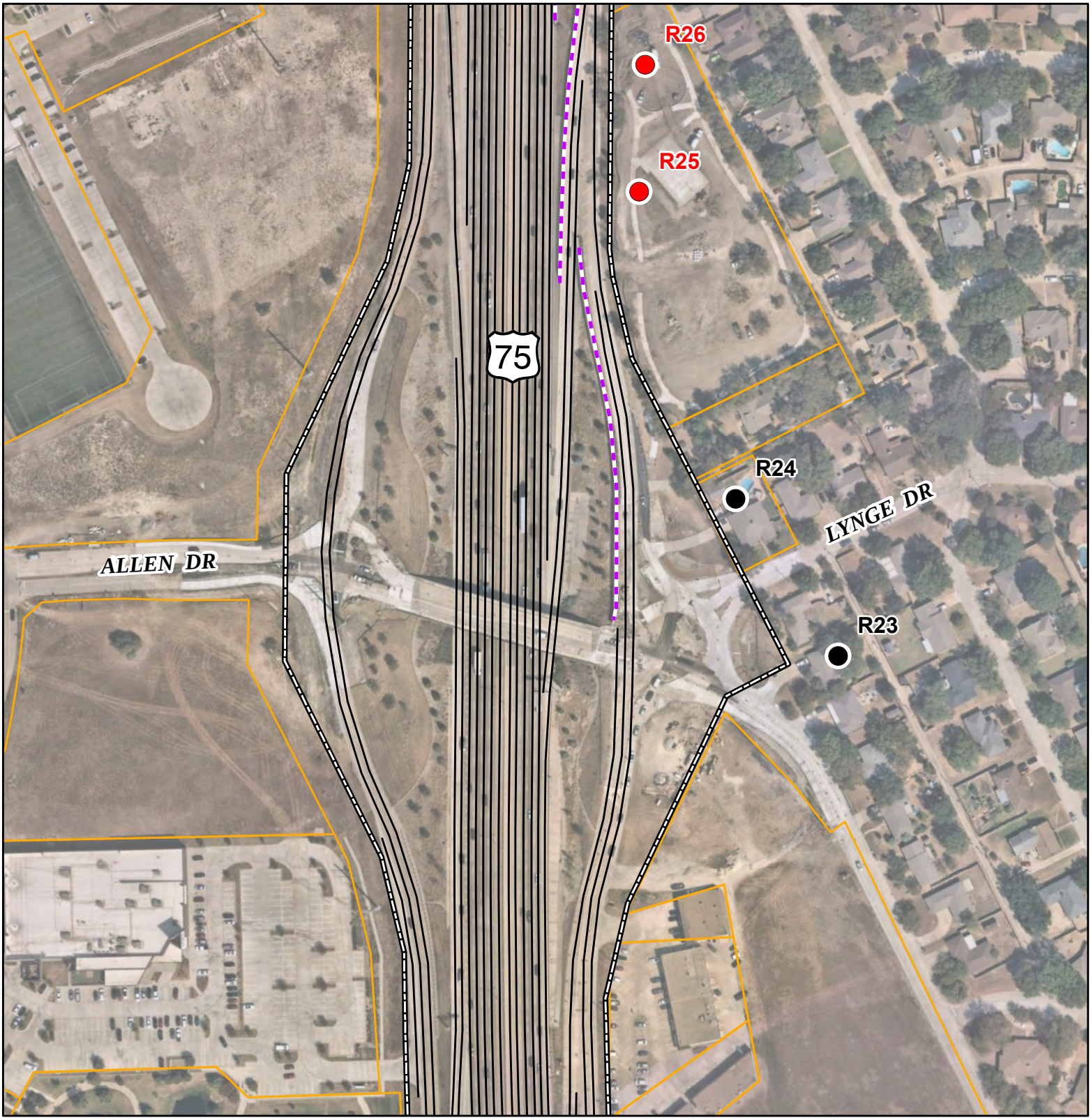


Legend

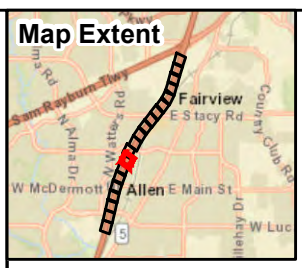
- Non-Impacted Receiver
- Impacted Receiver
- Existing Noise Barrier
- Modeled Roadways
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 8 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



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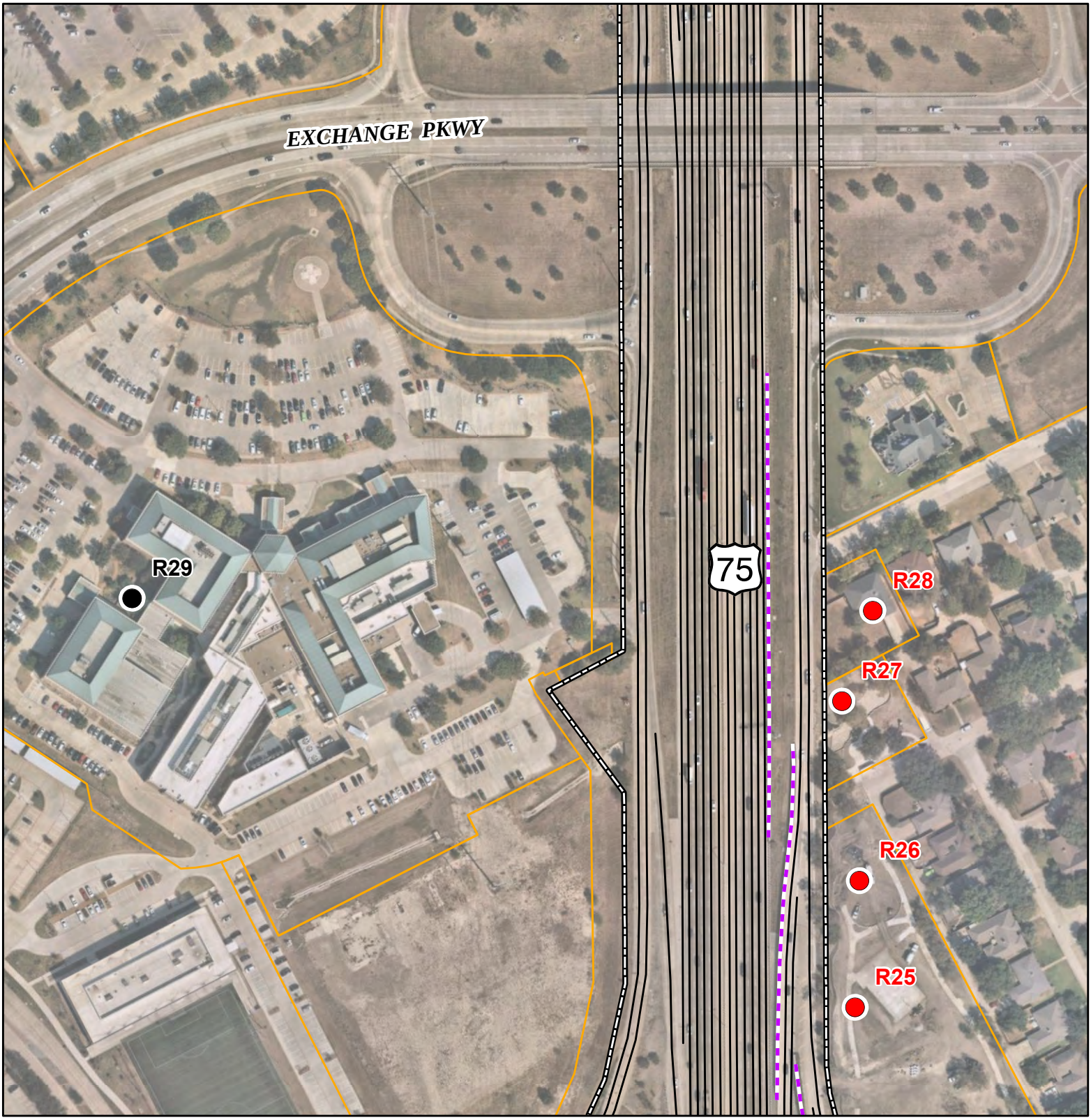
SCALE IN FEET



Legend

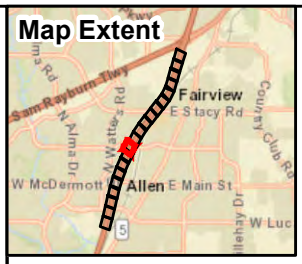
- Non-Impacted Receiver
- Impacted Receiver
- Existing Noise Barrier
- Modeled Roadways
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 9 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



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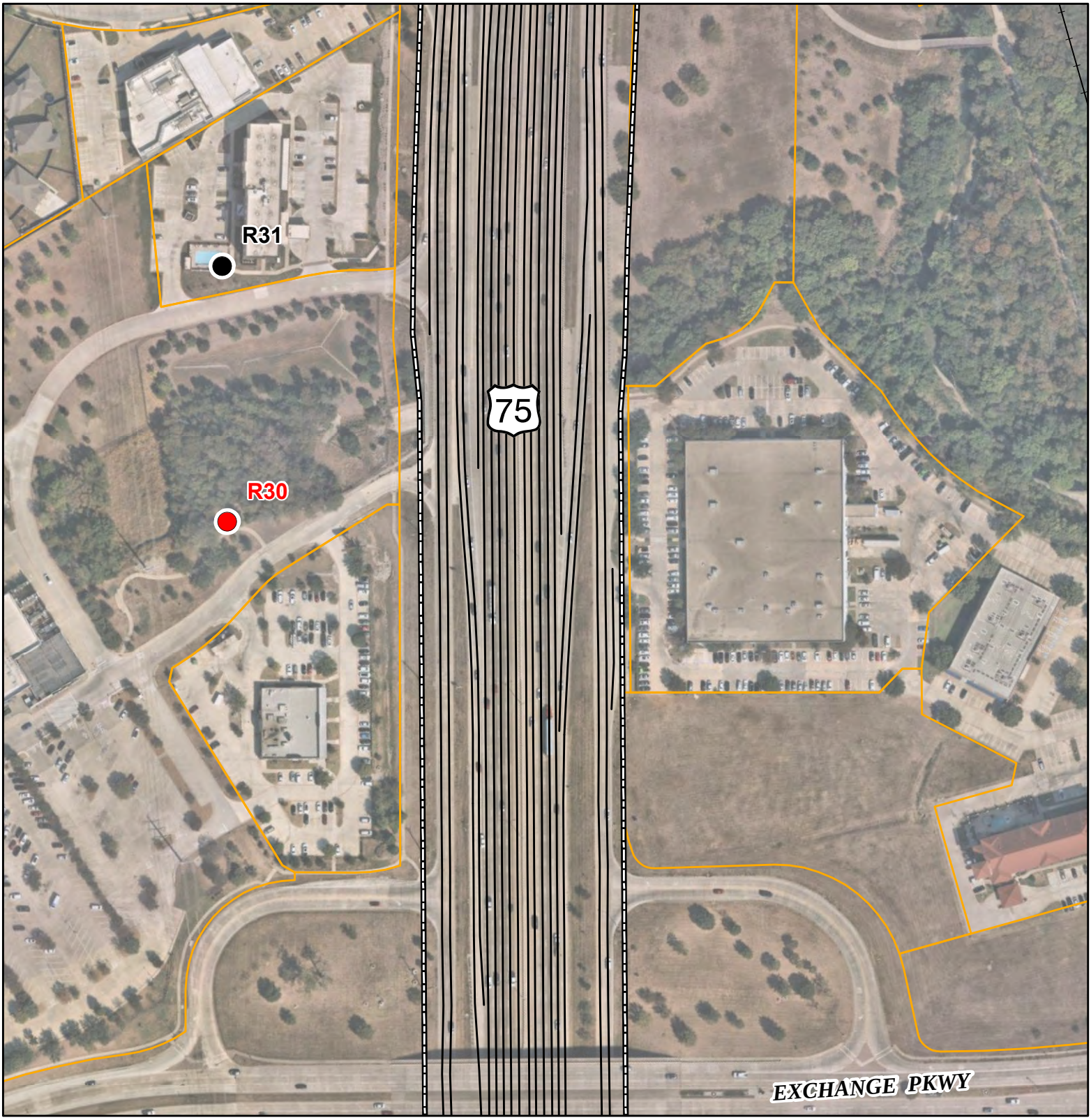
0 200 400

SCALE IN FEET



Legend

- Non-Impacted Receiver
- Impacted Receiver
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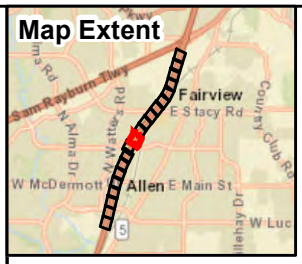
- Modeled Roadways
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 10 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



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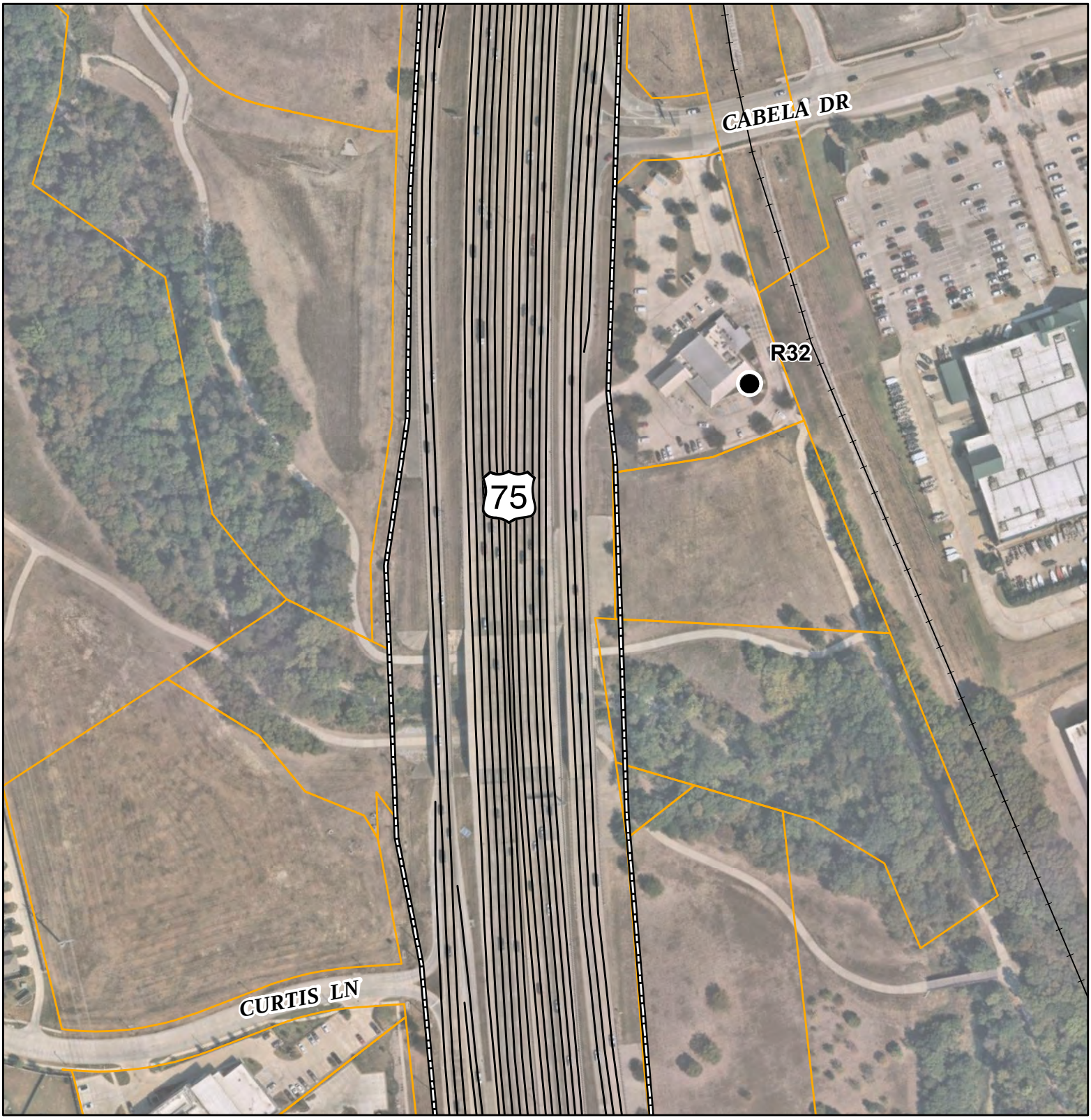
SCALE IN FEET



Legend

- Non-Impacted Receiver
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- Existing Noise Barrier
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- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

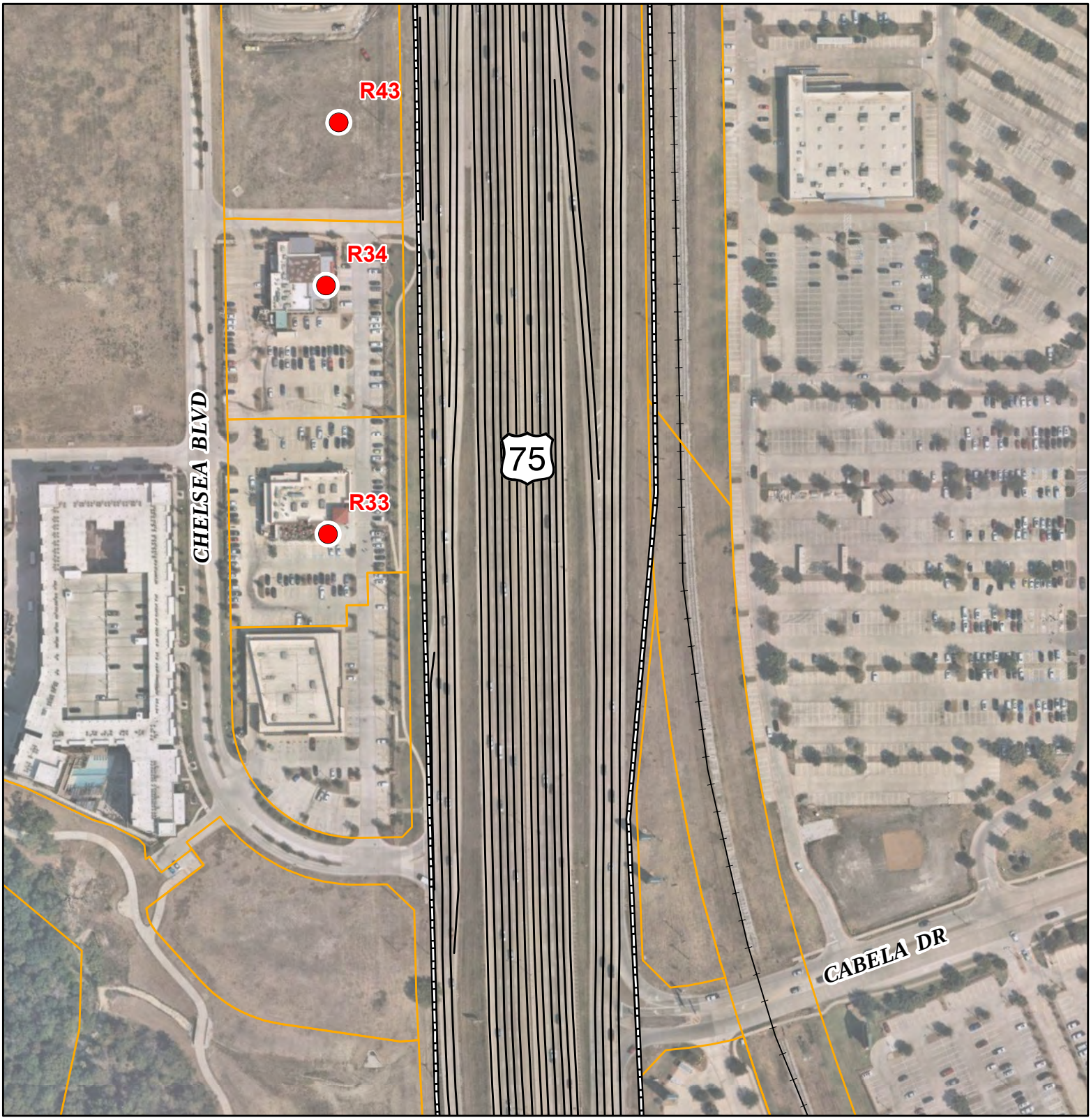
TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 11 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation

0 200 400

SCALE IN FEET



Legend

- Non-Impacted Receiver
- Impacted Receiver
- Existing Noise Barrier
- Modeled Roadways
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 12 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation

N

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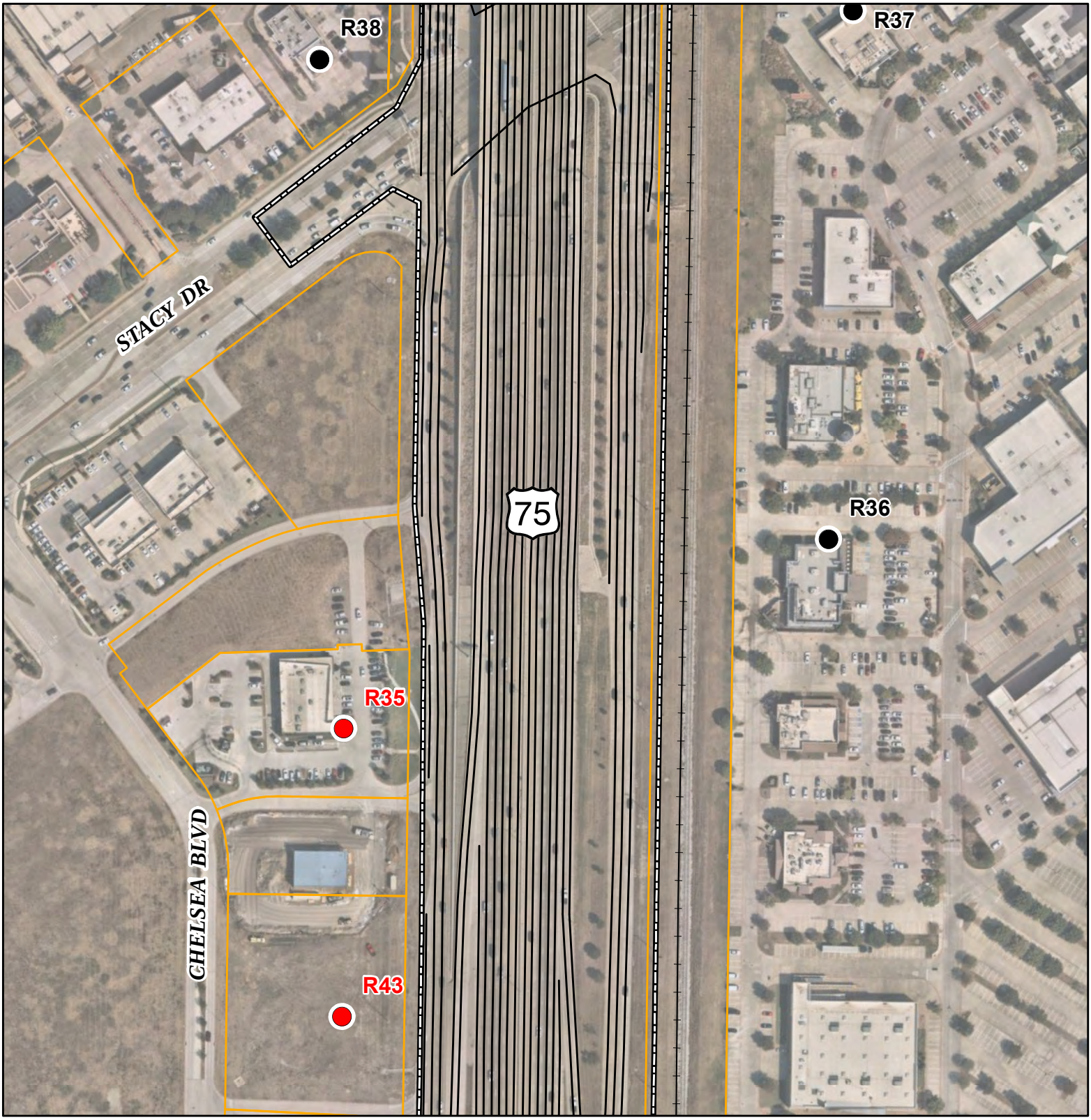
SCALE IN FEET



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Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 13 OF 20

US 75 Peak Hour
Technology Lanes Project
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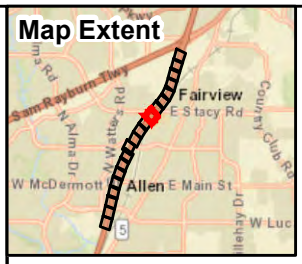
CSJ: 0047-06-163

Texas Department of Transportation



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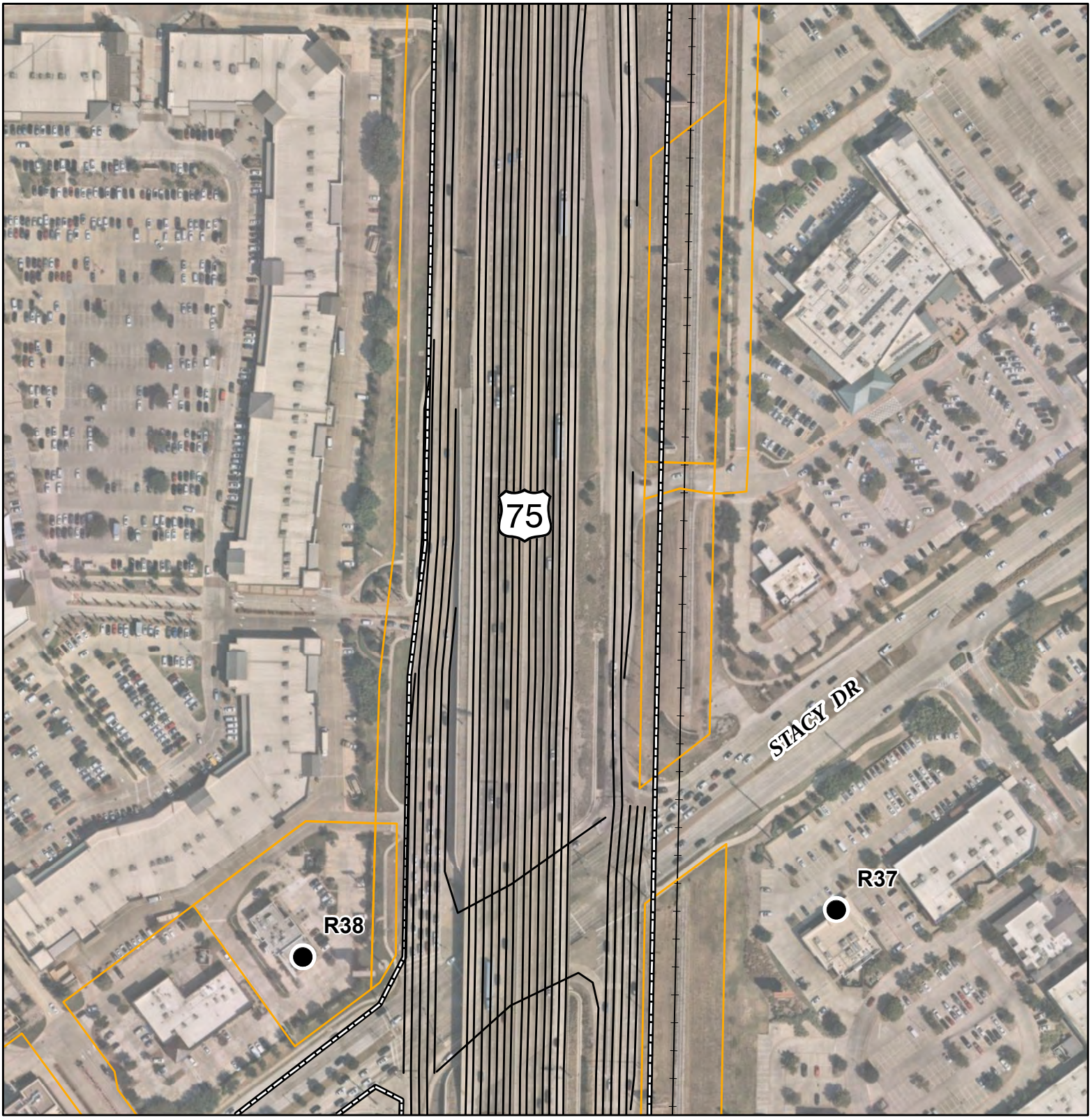

Legend

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Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 14 OF 20

US 75 Peak Hour
Technology Lanes Project
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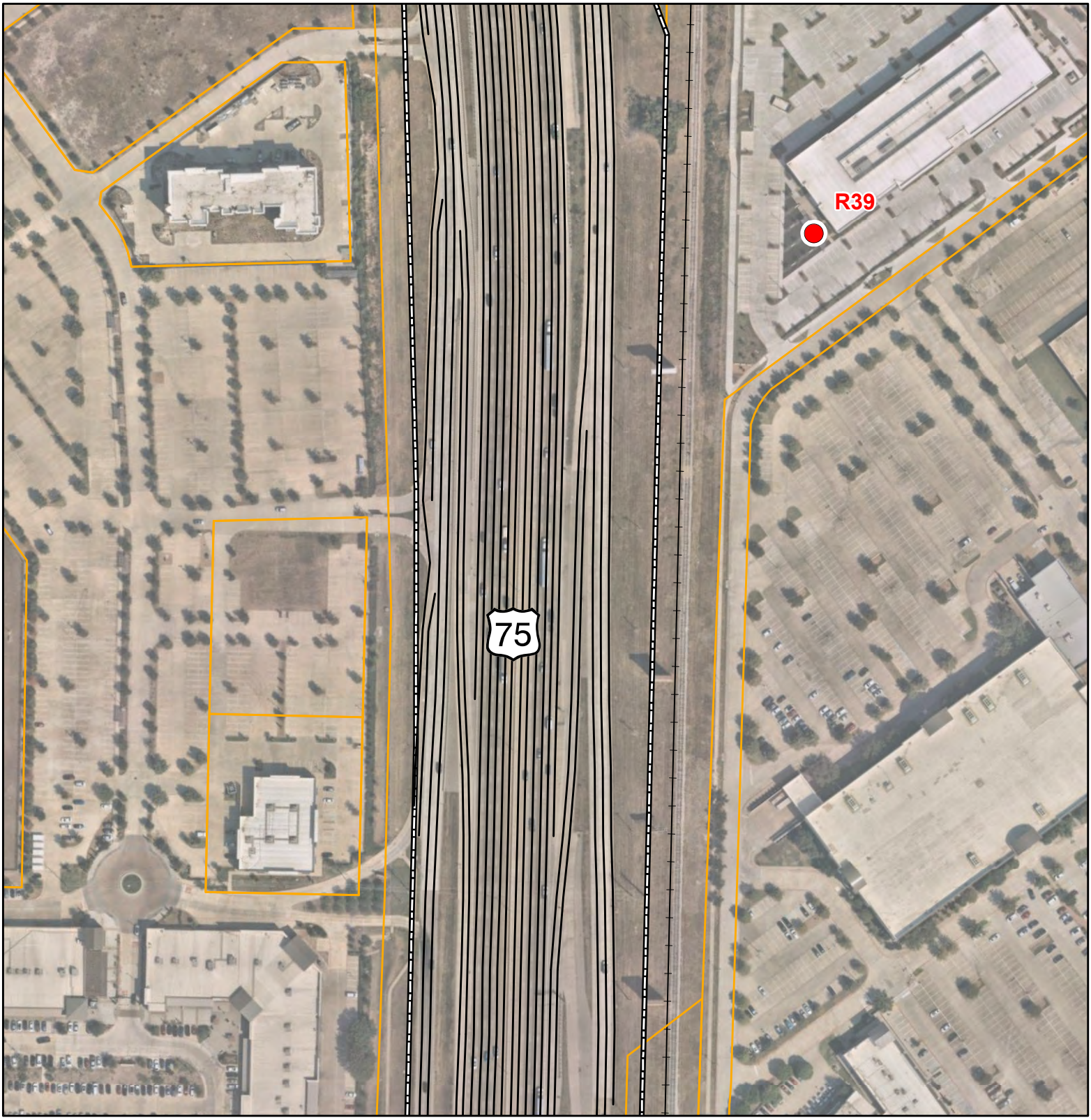
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation

0 200 400

SCALE IN FEET



Legend

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Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 15 OF 20

US 75 Peak Hour
Technology Lanes Project
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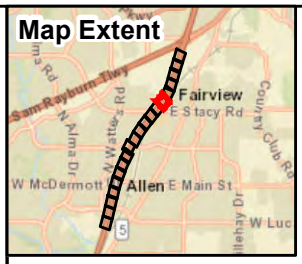
Texas Department of Transportation



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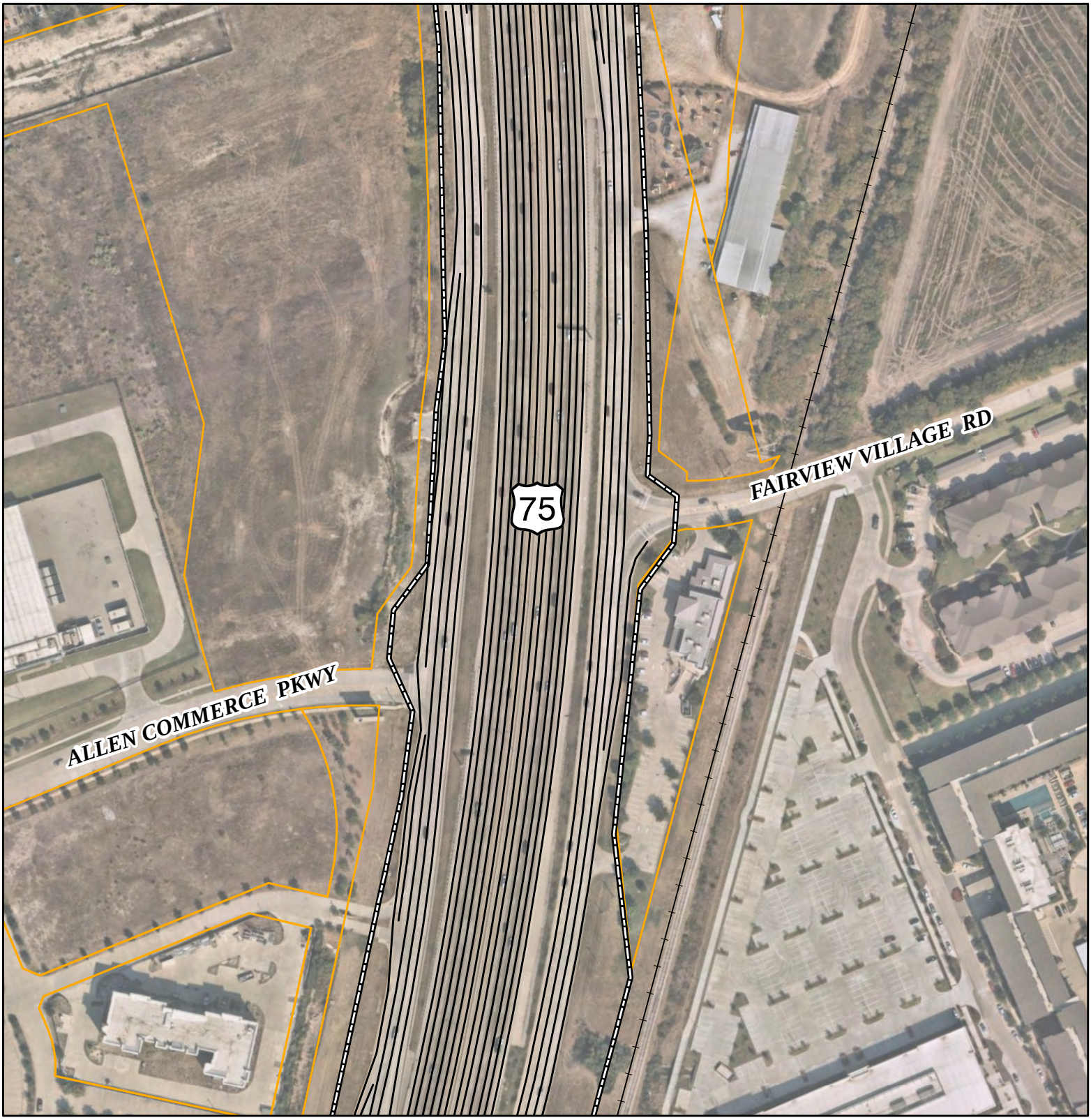

Legend

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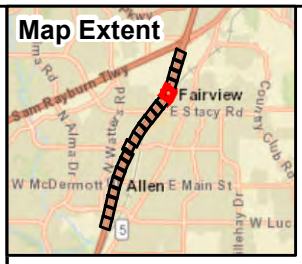
Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 16 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



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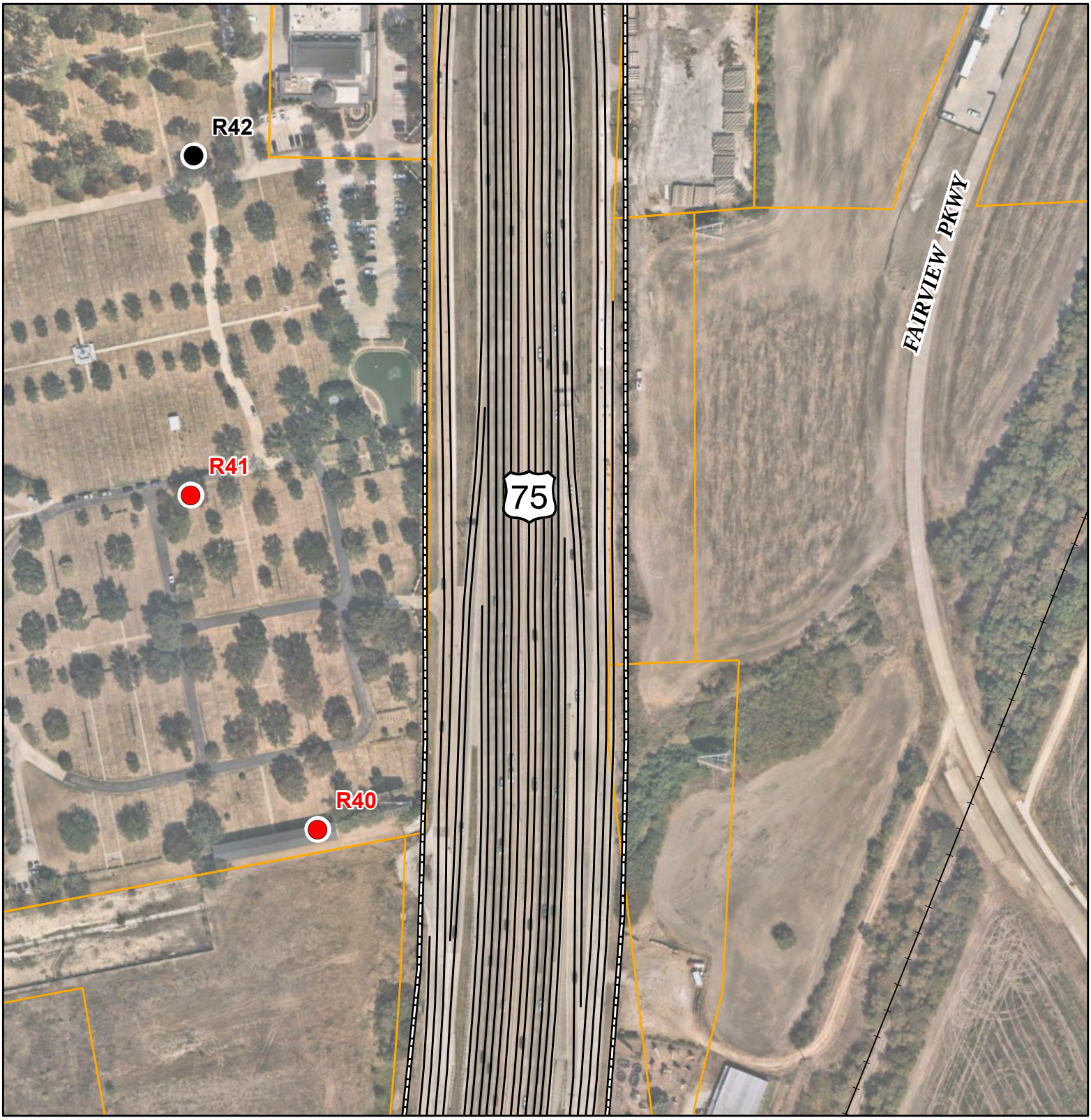

Legend

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Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 17 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
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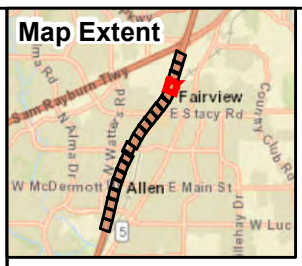
CSJ: 0047-06-163

Texas Department of Transportation



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SCALE IN FEET

Legend

- Non-Impacted Receiver
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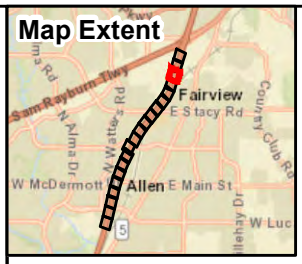
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 18 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



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0 200 400

SCALE IN FEET

Legend

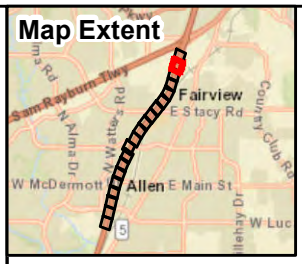
- Non-Impacted Receiver
- Impacted Receiver
- Existing Noise Barrier
- Modeled Roadways
- Existing ROW/Project Area
- Property Boundary
- Railroad

Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 19 OF 20

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

Texas Department of Transportation



N

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SCALE IN FEET

Legend

- Non-Impacted Receiver
- Impacted Receiver
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Source / Year of Aerial: Nearmap / 2023

TRAFFIC NOISE RECEIVER LOCATION MAP
PAGE 20 OF 20

US 75 Peak Hour
Technology Lanes Project
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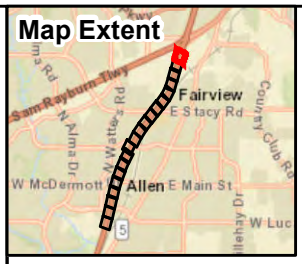
Texas Department of Transportation



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0 200 400

SCALE IN FEET

ATTACHMENT B

TRAFFIC DATA

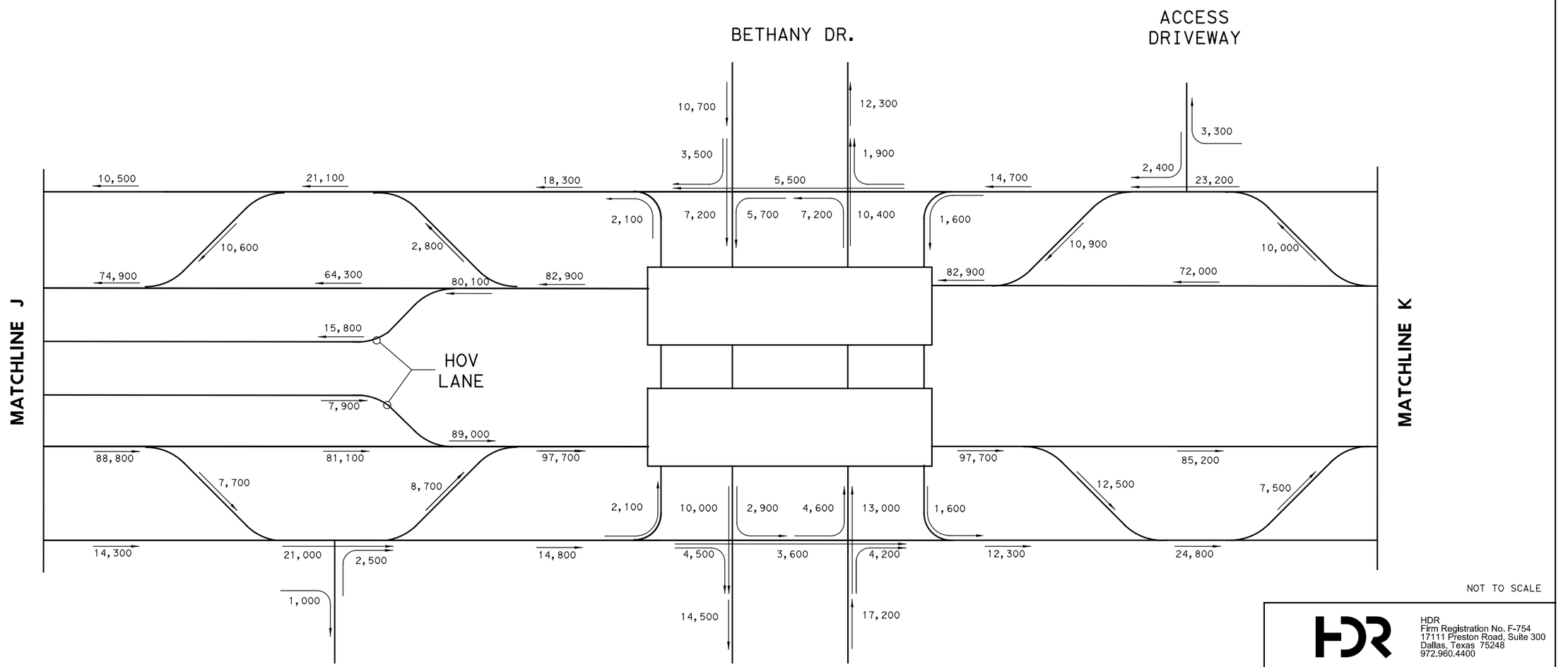
This attachment includes the average daily traffic line diagrams for the 2020 no-build and 2045 no-build scenarios and TAHD sheets. These excerpts are from the larger report which can be viewed in the supplemental files.

Appendix F

Traffic Volume Projections

Existing Year 2020 ADT

2020 No-Build Scenario



NOT TO SCALE

LEGEND

- ADT VOLUME

[###] - TCDS STARS II (2019)

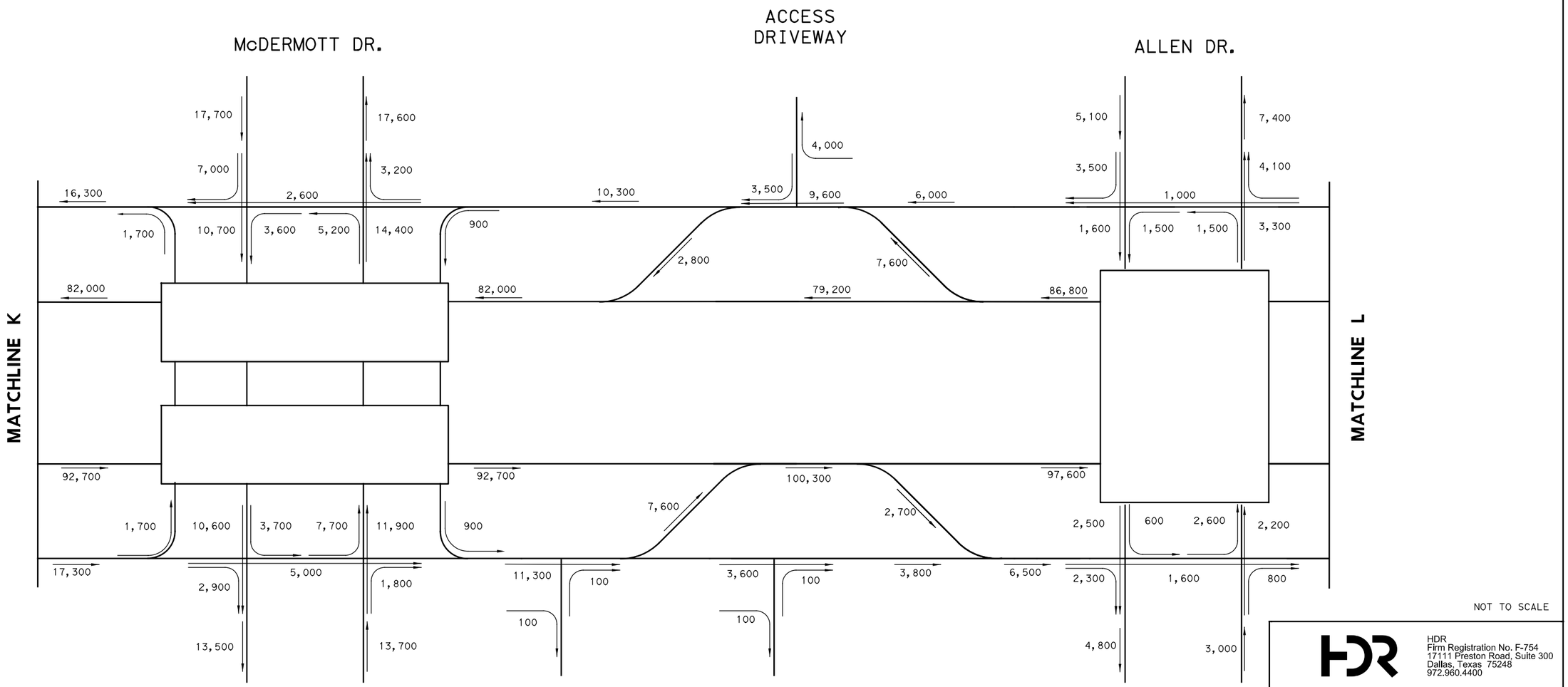
HDR
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 75 TRAFFIC LINE DIAGRAM
EXISTING ADT
YEAR 2020

SHEET 11 OF 15

FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
6			US 75
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	DALLAS	DALLAS AND COLLIN	
CONTROL	SECTION	JOB	
0047	06, 07	167, 240	



NOT TO SCALE

LEGEND

- ADT VOLUME

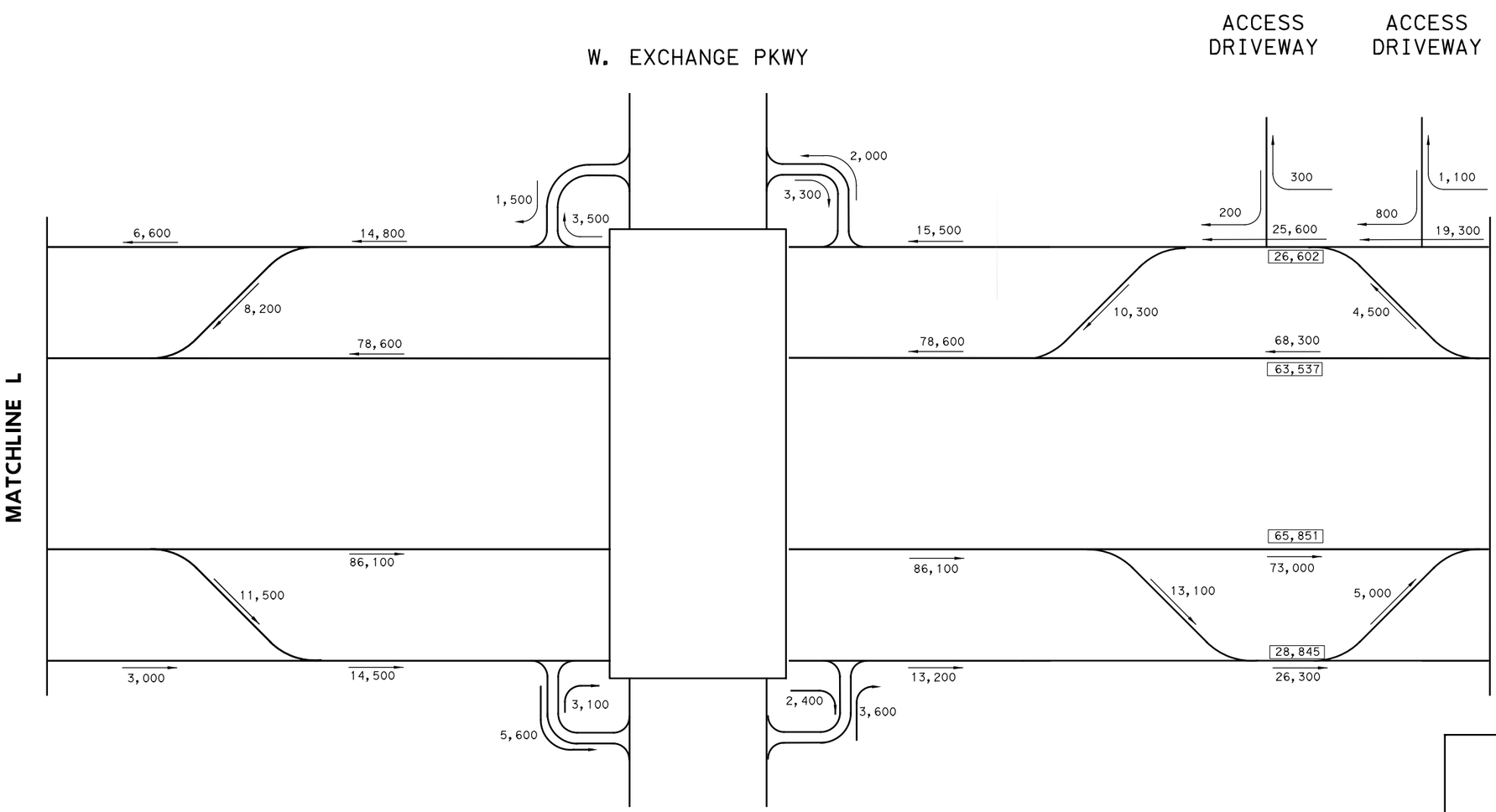
[###] - TCDS STARS II (2019)

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

US 75 TRAFFIC LINE DIAGRAM EXISTING ADT YEAR 2020

SHEET 12 OF 15

FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
6			US 75
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	DALLAS	DALLAS AND COLLIN	
CONTROL	SECTION	JOB	
0047	06, 07	167, 240	



NOT TO SCALE

LEGEND

- ADT VOLUME

[###] - TCDS STARS II (2019)

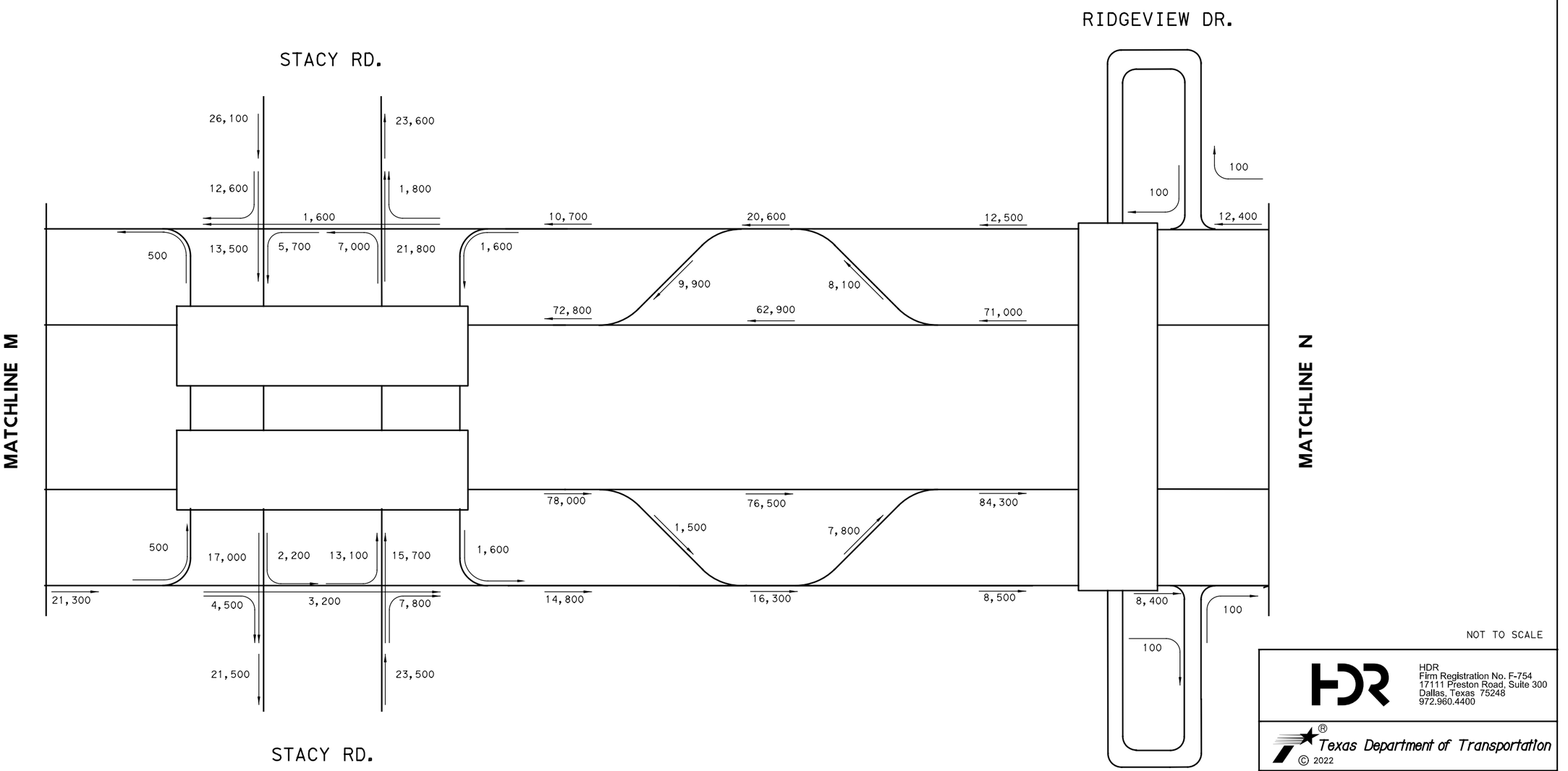
HDR
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 75 TRAFFIC LINE DIAGRAM
EXISTING ADT
YEAR 2020

SHEET 13 OF 15

FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
6			US 75
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	DALLAS	DALLAS AND COLLIN	
CONTROL	SECTION	JOB	
0047	06, 07	167, 240	



NOT TO SCALE

LEGEND

- ADT VOLUME
[###] - TCDS STARS II (2019)

HDR
Firm Registration No. F-754
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Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 75 TRAFFIC LINE DIAGRAM EXISTING ADT YEAR 2020

SHEET 14 OF 15

FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
6			US 75
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	DALLAS	DALLAS AND COLLIN	
CONTROL	SECTION	JOB	
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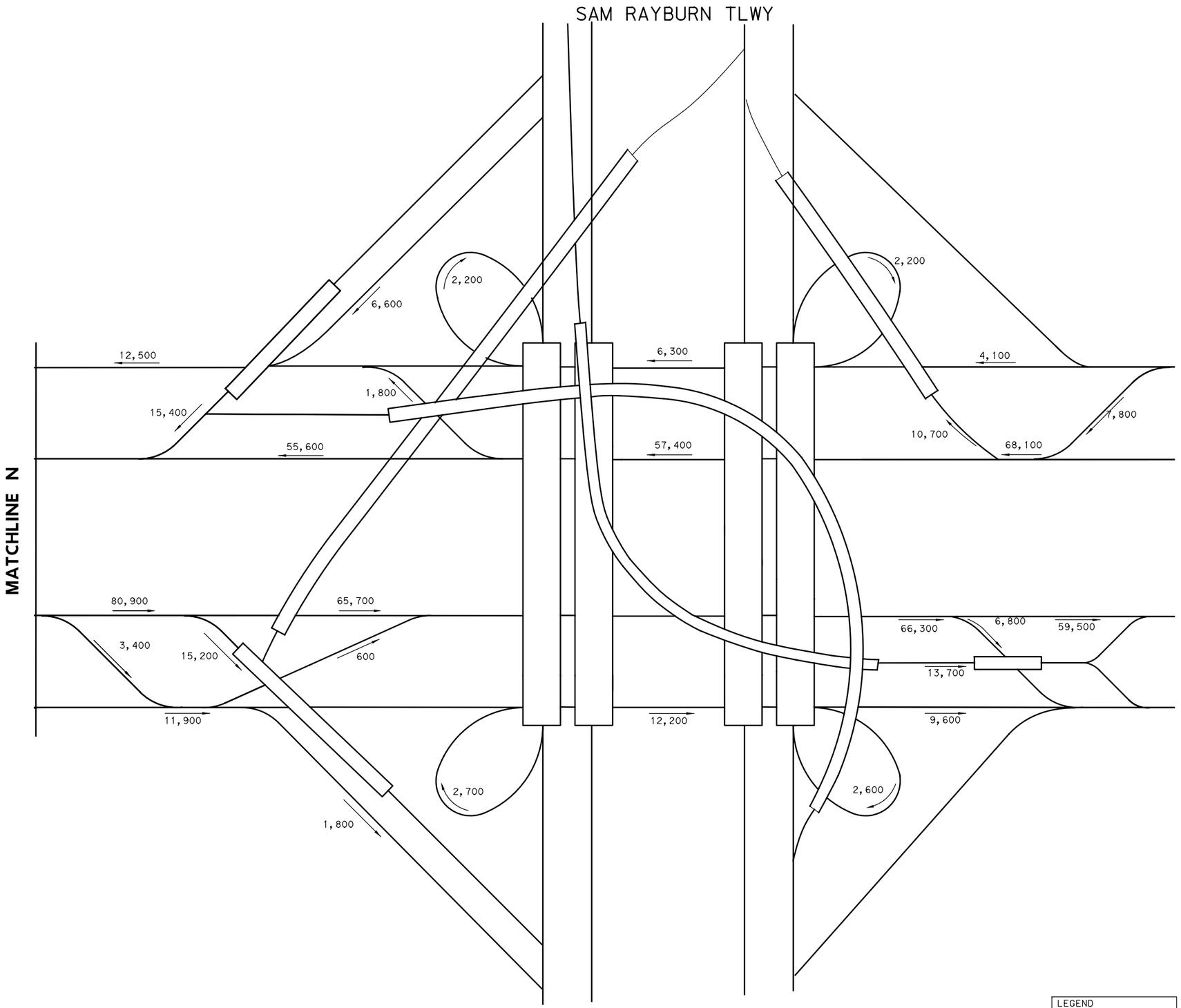


LEGEND

- ADT VOLUME
[###] - TCDS STARS II (2019)

NOT TO SCALE

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

Texas Department of Transportation

US 75 TRAFFIC LINE DIAGRAM EXISTING ADT YEAR 2020

SHEET 15 OF 15

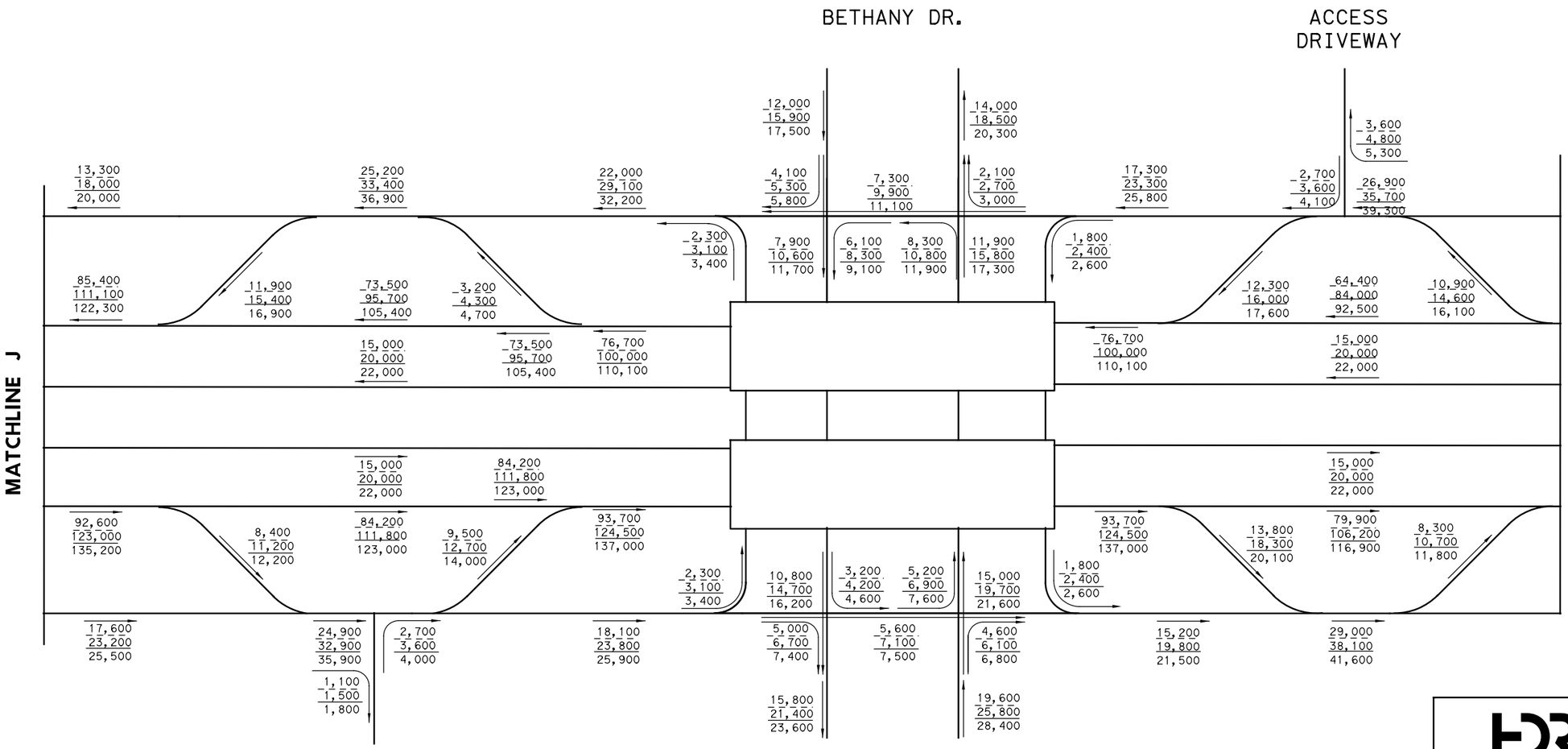
FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
6			US 75
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	DALLAS	DALLAS AND COLLIN	
CONTROL	SECTION	JOB	
0047	06, 07	167, 240	

Appendix G

Traffic Volume Projections

Future Year 2025, 2045, 2045 ADT

2045 No-Build Scenario



NOT TO SCALE

LEGEND

- ### - 2025 ADT
- ### - 2045 ADT
- ### - 2055 ADT

HDR
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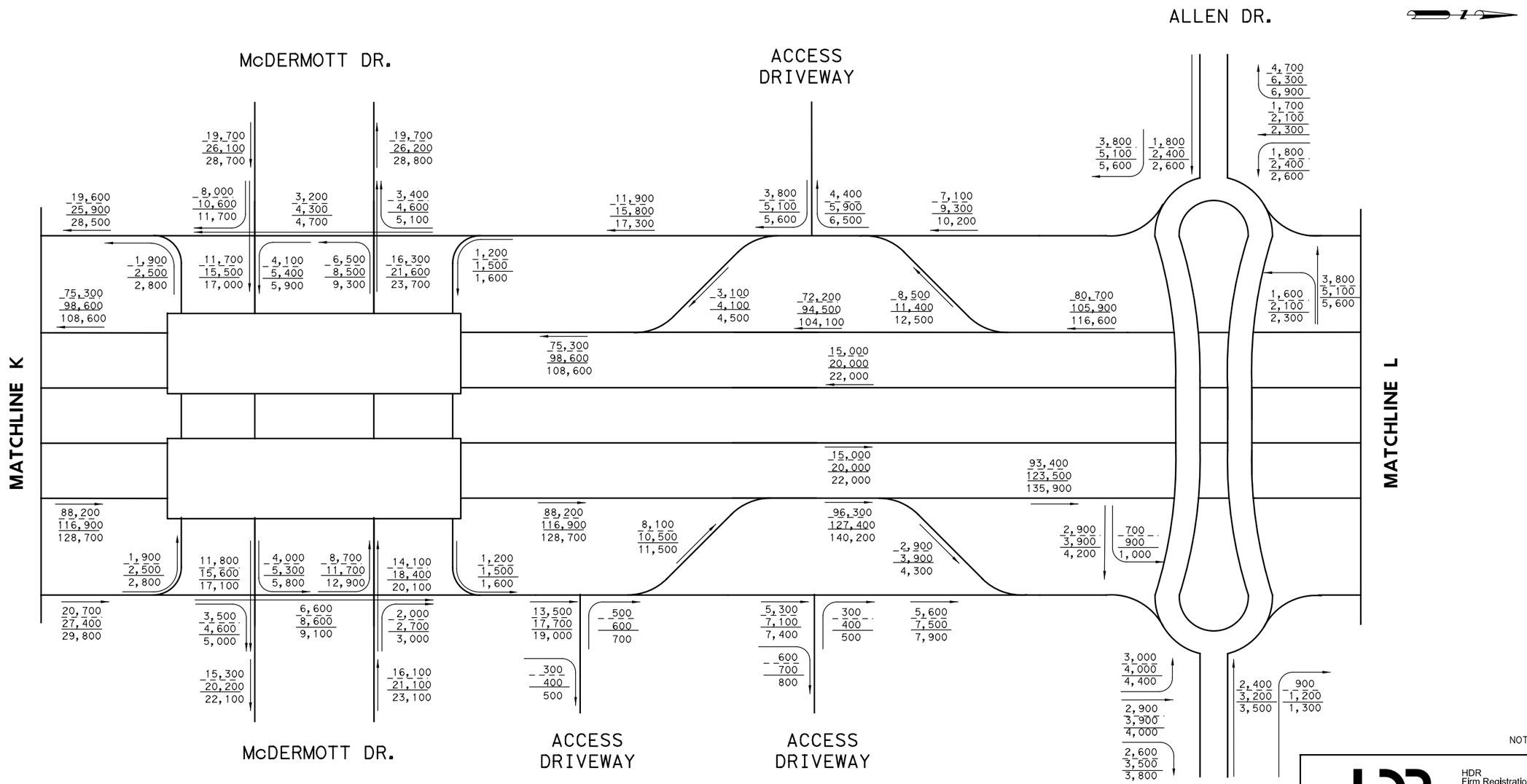
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 75 TRAFFIC LINE DIAGRAM NO-BUILD ADT 2025, 2045, AND 2055

FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
6			US 75
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	DALLAS	DALLAS AND COLLIN	
CONTROL	SECTION	JOB	
0047	06, 07	167, 240	



NOT TO SCALE

LEGEND

###	2025 ADT
###	2045 ADT
###	2055 ADT

HDR
Firm Registration No. F-754
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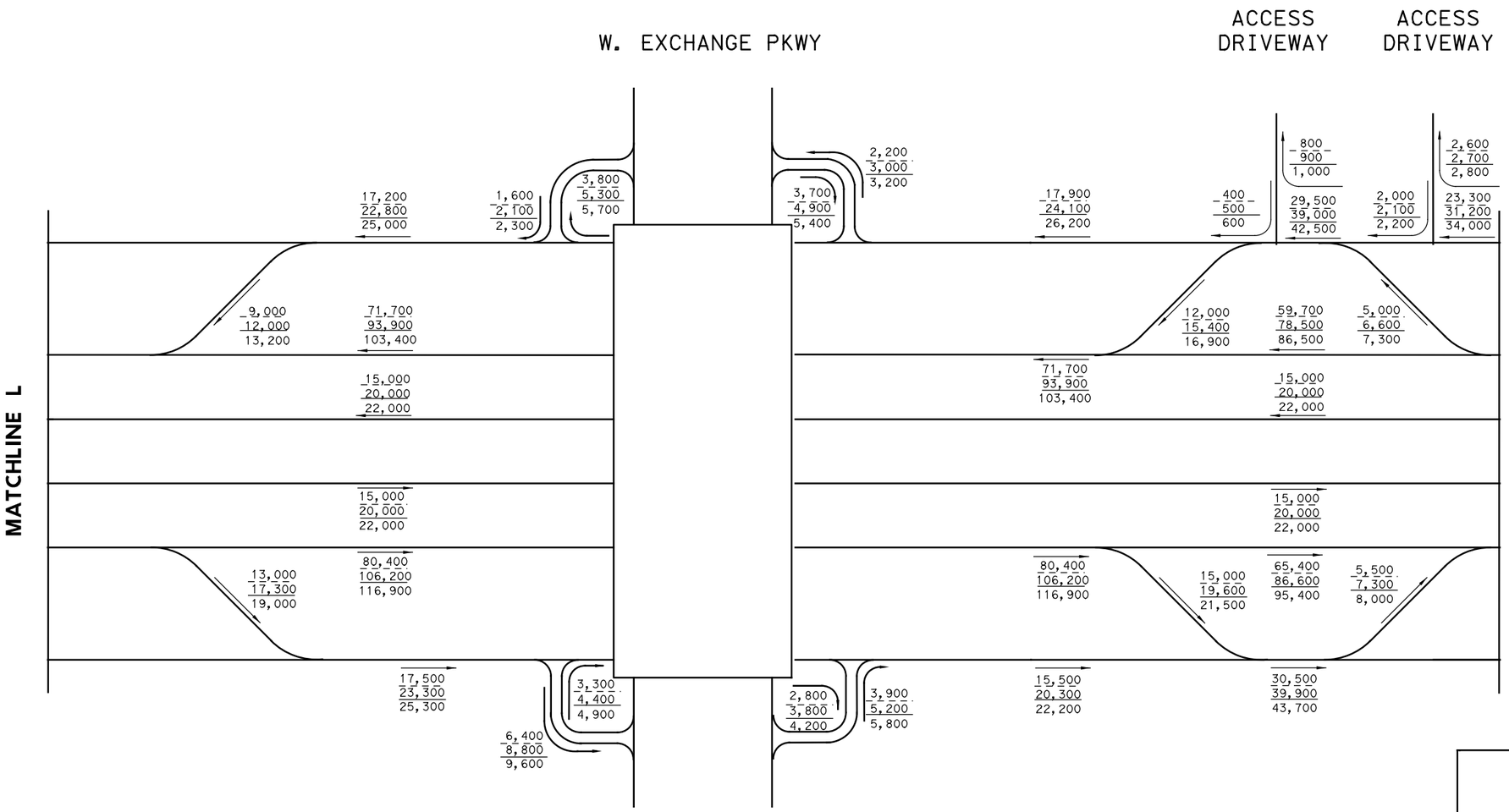
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 75 TRAFFIC LINE DIAGRAM NO-BUILD ADT 2025, 2045, AND 2055

SHEET 12 OF 15

FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
6			US 75
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	DALLAS	DALLAS AND COLLIN	
CONTROL	SECTION	JOB	
0047	06, 07	167, 240	



E. EXCHANGE PKWY

LEGEND

- 2025 ADT
- 2045 ADT
- 2055 ADT

NOT TO SCALE

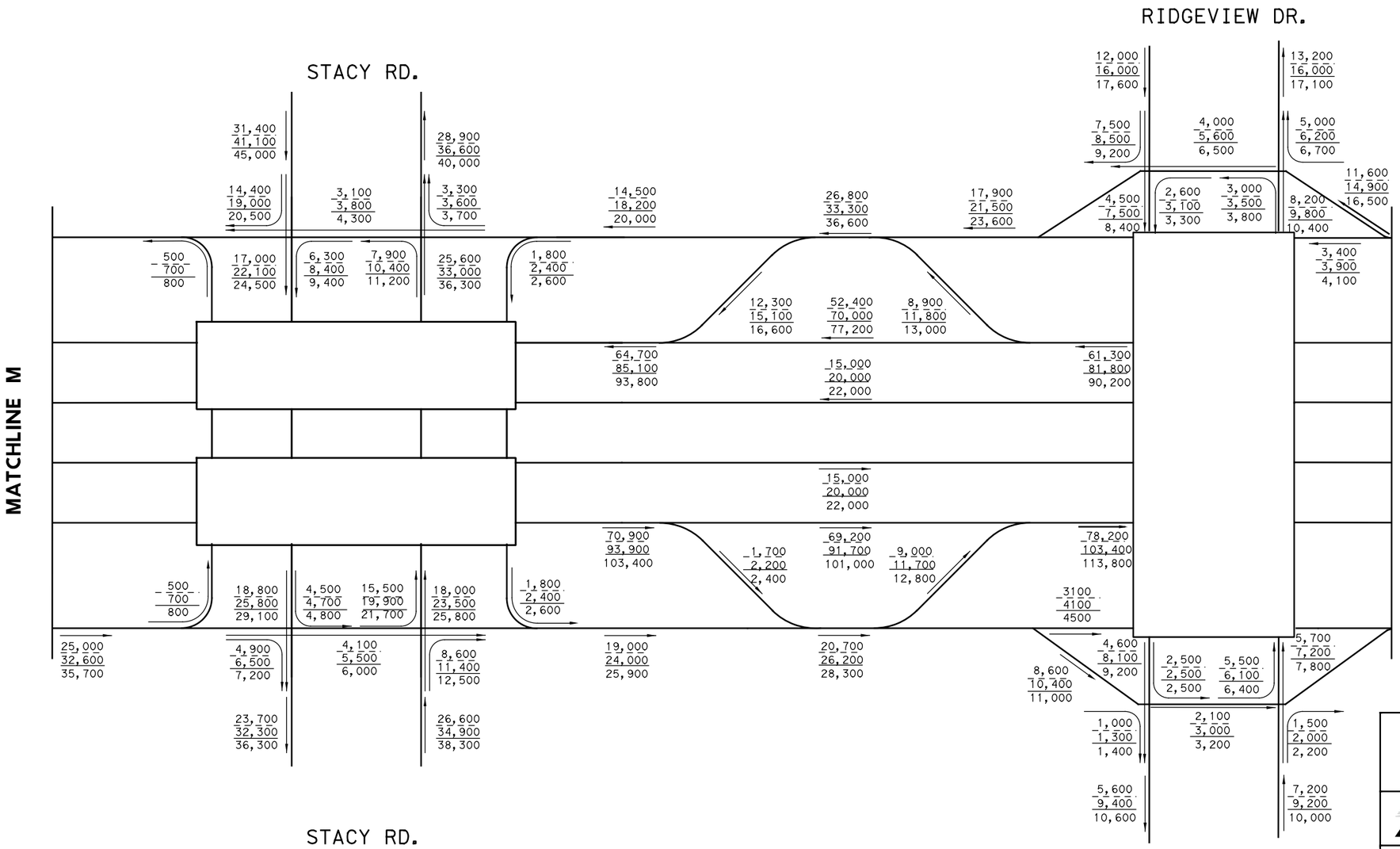
HDR
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 75 TRAFFIC LINE DIAGRAM
NO-BUILD ADT
2025, 2045, AND 2055

SHEET 13 OF 15

FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
6			US 75
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	DALLAS	DALLAS AND COLLIN	
CONTROL	SECTION	JOB	
0047	06, 07	167, 240	



NOT TO SCALE

LEGEND

###	-	2025 ADT
###	-	2045 ADT
###	-	2055 ADT

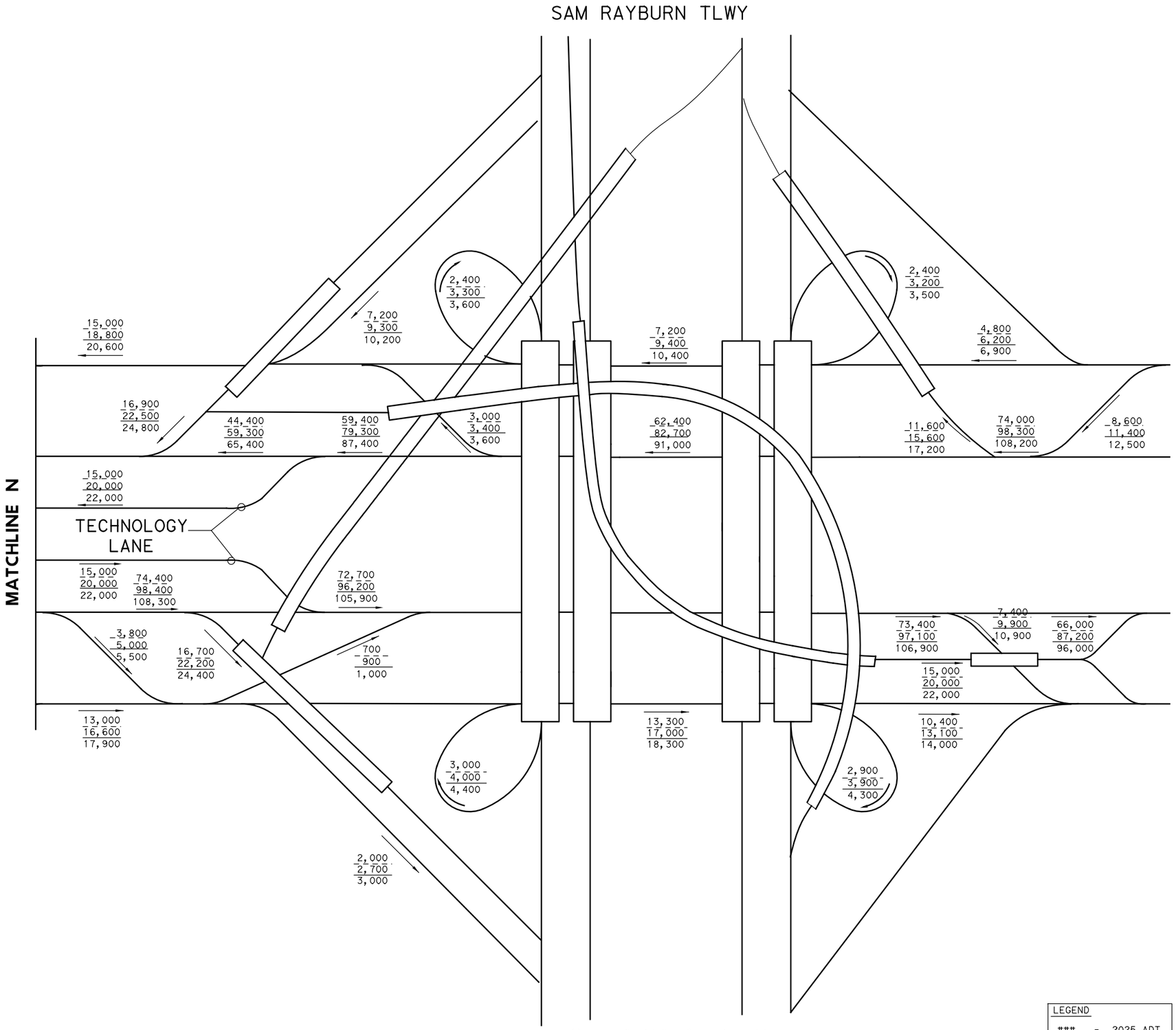
HDR
Firm Registration No. F-754
17111 Preston Road, Suite 300
Dallas, Texas 75248
972.960.4400

Texas Department of Transportation

US 75 TRAFFIC LINE DIAGRAM NO-BUILD ADT 2025, 2045, AND 2055

SHEET 14 OF 15

FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
6			US 75
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	DALLAS	DALLAS AND COLLIN	
CONTROL	SECTION	JOB	
0047	06, 07	167, 240	



NOT TO SCALE

LEGEND

###/###/### - 2025 ADT / 2045 ADT / 2055 ADT

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

Texas Department of Transportation

US 75 TRAFFIC LINE DIAGRAM NO-BUILD ADT 2025, 2045, AND 2055

SHEET 15 OF 15

FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
6			US 75
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	DALLAS	DALLAS AND COLLIN	
CONTROL	SECTION	JOB	
0047	06, 07	167, 240	

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 28, 2022**

Description of Location	Average Daily Traffic 2025	Average Daily Traffic 2045	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	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) Flexible Pavement	S N	Rigid Pavement	SLAB
US 75 Frontage Roads Section 2 From Legacy Dr To SH 121 Dallas and Collin County	60,800	79,800	58 - 42	8.0	2.4	1.8	11,600	20	3,620,000	3	4,068,500	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	97.6	98.2
Medium Duty	1.7	1.3
Heavy Duty	0.7	0.5

Description of Location	Average Daily Traffic 2025	Average Daily Traffic 2055	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	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) Flexible Pavement	S N	Rigid Pavement	SLAB
US 75 Frontage Roads Section 2 From Legacy Dr To SH 121 Dallas and Collin County	60,800	87,200	58 - 42	8.0	2.4	1.8	11,600	20	5,716,000	3	6,424,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN (OPTION C)

Dallas District **October 28, 2022**

Description of Location	Average Daily Traffic 2025	Average Daily Traffic 2045	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	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) Flexible Pavement	S N	Rigid Pavement	SLAB
US 75 Mainlanes and Tech Lanes Section 2 From Ramps South of Legacy Dr To SH 121 Dallas and Collin County	208,000	274,100	58 - 42	8.0	6.6	4.0	13,300	20	51,788,000	3	70,598,500	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	93.4	96.0
Medium Duty	2.3	1.4
Heavy Duty	4.3	2.6

Description of Location	Average Daily Traffic 2025	Average Daily Traffic 2055	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	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) Flexible Pavement	S N	Rigid Pavement	SLAB
US 75 Mainlanes and Tech Lanes Section 2 From Ramps South of Legacy Dr To SH 121 Dallas and Collin County	208,000	301,500	58 - 42	8.0	6.6	4.0	13,300	20	82,097,000	3	111,916,000	8"

ATTACHMENT C

EXISTING MODEL VALIDATION STUDY

Existing Traffic Noise Model Validation Study

US 75 Peak Hour Technology Lanes Project; Dallas District

Project Limits: From Bethany Drive to SH 121

CSJ: 0047-06-163

Collin County, Texas

December 2022

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.

Table of Contents

Noise Model Validation Requirement

A validation study was performed to determine whether the Traffic Noise Model (TNM) software, existing model, accurately predicts existing traffic noise based on current conditions within the United States Highway (US) 75 corridor for the proposed project. An additional purpose for the study is to ensure that measured sound levels within the corridor reflect traffic noise as the main source of the noise levels recorded. Model validation compares field-collected sound level measurements to traffic noise levels calculated in an existing condition model that uses field-collected traffic parameters.

TNM Validation Site Selection

Two validation sites were selected along the project right-of-way (ROW) (see the **Noise Validation Overview Map and Noise Validation Site Maps**) after consultation with Texas Department of Transportation (TxDOT) Dallas District noise subject matter expert. The sites are representative of the existing conditions and proposed design plans, and is ideally suited in terms of safety, a minimum of nearby intersections (i.e., sources of background noise that would not be modeled), relatively level elevations and/or grading with minor obstructions to interfere with the line of sight sound wave travel between the passing vehicles and the sound meter.

Field Measurement and TNM Validation Methodology

The field portion of the TNM validation study was conducted at the validation site on June 20, 2022 between 10:00 AM and 12:00 PM. This date was chosen because it was a non-holiday weekday with weather forecasted to be dry with calm to light winds. A safety meeting was held prior to the site visit to discuss location situations, ensure that the Safety Action Plan was in place, and to verify that the study team was appropriately attired for the field with personal protection equipment and appropriate equipment to make field observations and sound recordings. Prior to departing for the validation sites, weather conditions were gathered from the Weather Underground website for the closest weather stations (Star Creek – Meadows 2 – KTZALLEN220 and Lynn's Wunderground – KTXALLEN341 for Site1 and Site 2, respectively). Fresh batteries were put into the equipment; all equipment was fully charged and then calibrated to meet appropriate criteria for field use. Noise measurements were conducted using an Extech SDL600 Type 2 sound meter (calibrated to 94 dB(A)) which meets the standards of the American National Standards Institute.

At the validation sites, the study team and a licensed pilot used drone technology to record a time-stamped, unobstructed view of northbound and southbound traffic along the US 75 main lanes, ramps and frontage roads. Prior to the validation, the team confirmed there would not be any air space interference issues. The sound meter was placed approximately 6 (Site 2) to 13 (Site 1) feet off the edge of existing pavement and 5 feet above the ground surface, as this is considered the average height of the human ear. Noise readings were collected for 15 minutes two times at each validation site (see **Noise Measurement Data Sheets**). Simultaneous with noise recording sequences, drone-based video recordings were also taken to document the numbers and types of vehicles traveling in both north and south directions (see **Screenshots of Video Drone Views**). Additionally, average vehicle speeds were collected by a study team member repeatedly driving the corridor and making audio notes of the average speed of vehicles. The study team also made note of any exceptions that would impact noise measurements, such as an emergency vehicle siren or a semi-trailer truck with unusually loud engine brake or exhaust.

Analysis of the data collected in the field included calculating representative one-hour sampling data from each of the two 15-minute sampling sequences at each validation site. Accurate traffic counts for each of these sequences were made by reviewing the drone video and counting the vehicle mix lane by lane type. Each video was played in slow-motion format to ensure that all the traffic counts were captured accurately. Traffic counts were then adjusted arithmetically to reflect one-hour data, making the data comparable to modeled output (see **Traffic Counts and Speeds Data**). The FHWA-approved TNM 2.5 software was used to predict existing noise levels based on site geometry and the field-recorded data for traffic counts by vehicle class. **Table 1** summarizes the field-recorded and TNM-predicted noise levels for each of two sampling sequences at each validation site.

Table 1: Field-recorded and TNM-predicted Noise Levels

Site	Location	15-Minute Sequence Number	Field-recorded Noise Levels [dB(A) Leq]	TNM-predicted Noise Levels [dB(A) Leq]	Difference (+/-) [dB(A) Leq]
1	Southbound (SB) US 75 Station 717+00, approximately 13 feet off SB edge of pavement	1	79.7	77.1	-2.6
		2	79.4	77.2	-2.2
2	Northbound (NB) US 75 Station 545 +00, approximately 6 feet off NB edge of pavement	1	79.7	79.2	-0.5
		2	79.6	79.3	-0.3
Leq = Equivalent Continuous Sound Level (one-hour average)					

Conclusion

The study team performed a TNM existing model validation study for the proposed project using data obtained at a site selected within the project corridor. Comparing field-recorded traffic noise data from two 15-minute sample periods with predicted TNM results for the sites showed a maximum difference of 2.6 dB(A) Leq. The difference between the field recordings and the average noise levels predicted by TNM was less than 3 dB(A) Leq, indicating that the existing model has been validated per TxDOT and FHWA guidance. Accordingly, the TNM may be used to reliably predict both existing and future levels of traffic noise along the project corridor.

List of Attachments

1. Noise Validation Overview Map and Noise Validation Site Map
2. Noise Measurement Data Sheet
3. Screenshots of Video Drone and Sound Meter Set Up
4. Traffic Counts and Speeds Data

Legend

- Validation Sites
- Project Limits
- Railroad

Source / Year of Aerial: Nearmap / 2022

NOISE VALIDATION SITES OVERVIEW MAP

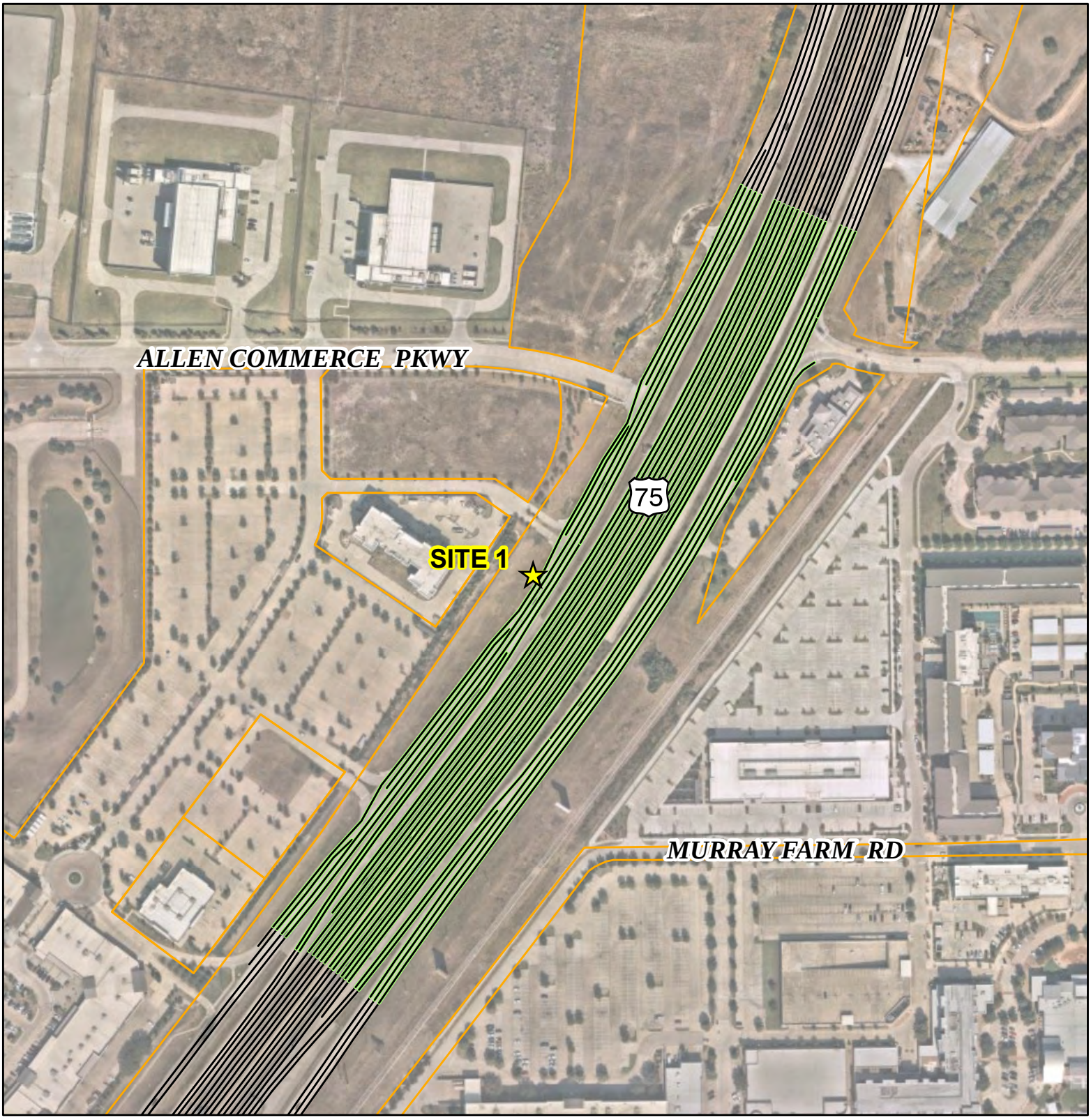
US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

N

0 4,000 8,000

SCALE IN FEET

Texas Department of Transportation



Legend

- Validation Site
- Existing Lanes (~1,000') Past Validation Site
- Existing Lanes
- Property Boundary

Source / Year of Aerial: Nearmap / 2022

NOISE VALIDATION SITE 1 MAP

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

N

0 300 600

SCALE IN FEET

Texas Department of Transportation

Legend

- Validation Site
- Existing Lanes (~1,000') Past Validation Site
- Existing Lanes
- Property Boundary

Source / Year of Aerial: Nearmap / 2022

NOISE VALIDATION SITE 2 MAP

US 75 Peak Hour
Technology Lanes Project
From Bethany Drive to SH 121
Collin County, Texas
CSJ: 0047-06-163

N

0 300 600

SCALE IN FEET

Texas Department of Transportation

Noise Measurements Data Sheet

Site 1: South of Allen Commerce Pkwy along SB US 75 Frontage Rd			Date 6/20/2022	
Sound Meter Extech Sound Level Meter Model SDL600	Response Fast ☒ Slow ☐	Weighting A ☒ C ☐	Sampling Rate 2 Seconds	Battery* 100% *replace if below 50%

Calibrator	Calibration Check
Extech Sound Level Calibrator Model 40776 Date of Last Traceable Calibration: 06/08/2017	Calibrator @ 94 dB(A) Pre-Test: 93.6 dB(A) Post-Test: 94 dB(A)

Weather Data
Temp: 83 - 86°F Humidity: 63 - 66% Wind Speed: 0.5 - 1 mph Notes: Sunny and clear

Acoustical Measurement Data

Sequence	Begin Time	End Time	L_{eq} (dB(A))	L_{min} (dB(A))	L_{max} (dB(A))
1	10:05 AM	10:20 AM	79.7	75.3	83.5
2	10:29 AM	10:44 AM	79.4	74.1	83.1

Average Hourly Traffic Data Count

Event	Direction/ Roadway	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
Total Average Hourly Count	Northbound US 75 Mainlanes	3,106	204	164	0	2
Total Average Hourly Count	Northbound US 75 Frontage Road	488	24	0	0	2
Total Average Hourly Count	Northbound US 75 Off Ramp	64	2	0	0	0
Total Average Hourly Count	Southbound US 75 On Ramp	294	2	2	0	0
Total Average Hourly Count	Southbound US 75 Mainlanes	3,080	178	174	0	8
Total Average Hourly Count	Southbound US 75 Frontage Road	534	18	2	0	2

Note: For traffic data and average speeds by sequence, see attached Traffic Count and Speeds Data Spreadsheet.

Notes (Major Sources, background noise, unusual events):
Seq. 1 – 18-wheeler engine break, unusually loud car engine, motorcycle, car/truck honks, 10:05, 10:07, 10:13, 10:15, 10:18, 10:19 AM
Seq. 2 – motorcycle, 18-wheeler engine break, unusually loud car engine, helicopter; 10:29, 10:32, 10:33, 10:34, 10:36, 10:41, 10:42, 10:43 AM

Noise Measurements Data Sheet

Site 2: South of Millennium Dr along NB US 75 Frontage Rd			Date 6/20/2022	
Sound Meter Extech Sound Level Meter Model SDL600	Response Fast ☒ Slow ☐	Weighting A ☒ C ☐	Sampling Rate 2 Seconds	Battery* 100% *replace if below 50%

Calibrator	Calibration Check
Extech Sound Level Calibrator Model 40776 Date of Last Traceable Calibration: 06/08/2017	Calibrator @ 94 dB(A) Pre-Test: 93.6 dB(A) Post-Test: 94 dB(A)

Weather Data
Temp: 85 - 88°F Humidity: 59 - 62% Wind Speed: 0.5 - 2 mph Notes: Sunny and clear

Acoustical Measurement Data

Sequence	Begin Time	End Time	L_{eq} (dB(A))	L_{min} (dB(A))	L_{max} (dB(A))
1	11:22 AM	11:37 AM	79.7	71.7	82.9
2	11:42 AM	11:57 AM	79.6	72.1	84.1

Average Hourly Traffic Data Count

Event	Direction/ Roadway	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
Total Average Hourly Count	Northbound US 75 Mainlanes	3,710	258	192	4	12
Total Average Hourly Count	Northbound US 75 Frontage Road	650	14	4	0	6
Total Average Hourly Count	Northbound US 75 On Ramp	684	16	0	0	0
Total Average Hourly Count	Southbound US 75 Off Ramp	730	16	0	0	2
Total Average Hourly Count	Southbound US 75 Mainlanes	4,252	220	188	2	2
Total Average Hourly Count	Southbound US 75 Frontage Road	776	24	2	0	2

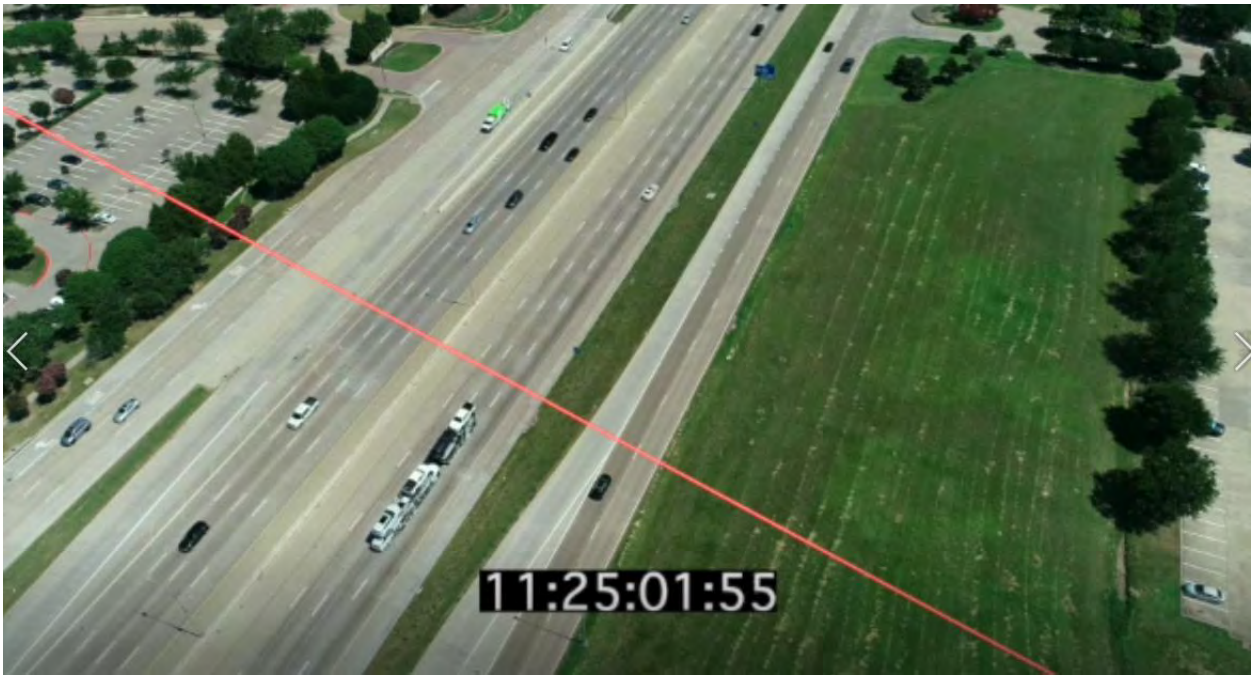
Note: For traffic data and average speeds by sequence, see attached Traffic Count and Speeds Data Spreadsheet.

Notes (Major Sources, background noise, unusual events):
Seq. 1 – ambulance, 18-wheeler engine break, unusually loud car engine, motorcycle; 11:22, 11:24, 11:27, 11:30, 11:32, 11:33, 11:34, 11:35 AM
Seq. 2 – motorcycle, 18-wheeler engine break, unusually loud car engine; 11:42, 11:44, 11:45, 11:46, 11:48, 11:50, 11:52, 11:53, 11:54, 11:55 AM

Site 1 - Screenshot of Video Drone View

Site 1 - View of Sound Meter Set Up

Site 2 - Screenshot of Video Drone View



Site 2 - View of Sound Meter Set Up

Traffic Counts and Speeds Data

Site 1 - Sequence 1: Raw Traffic Data						
Vehicle Class	NB Mainlane	NB Frontage Road	NB Off Ramp	SB On Ramp	SB Mainlane	SB Frontage Road
Autos	821	129	12	65	773	118
Medium	47	8	0	0	49	2
Heavy	45	0	0	0	48	0
Buses	0	0	0	0	0	0
Motorcycle	0	0	0	0	3	0

Site 1 – Sequence 1: Traffic Data Converted to Hourly Volumes						
Vehicle Class	NB Mainlane	NB Frontage Road	NB Off Ramp	SB On Ramp	SB Mainlane	SB Frontage Road
Autos	3,284	516	48	260	3,092	472
Medium	188	32	0	0	196	8
Heavy	180	0	0	0	192	0
Buses	0	0	0	0	0	0
Motorcycle	0	0	0	0	12	0
Speed	75 mph	55 mph	45 mph	55 mph	75 mph	55 mph

Site 1 - Sequence 2: Raw Traffic Data						
Vehicle Class	NB Mainlane	NB Frontage Road	NB Off Ramp	SB On Ramp	SB Mainlane	SB Frontage Road
Autos	732	115	20	82	787	149
Medium	55	4	1	1	40	7
Heavy	37	0	0	1	39	1
Buses	0	0	0	0	0	0
Motorcycle	1	1	0	0	1	1

Site 1 – Sequence 2: Traffic Data Converted to Hourly Volumes						
Vehicle Class	NB Mainlane	NB Frontage Road	NB Off Ramp	SB On Ramp	SB Mainlane	SB Frontage Road
Autos	2,928	460	80	328	3,068	596
Medium	220	16	4	4	160	28
Heavy	148	0	0	4	156	4
Buses	0	0	0	0	0	0
Motorcycle	4	4	0	0	4	4
Speed	75 mph	55 mph	45 mph	55 mph	75 mph	55 mph

Site 1, Average Hourly Traffic Data

Average of All Sequence Hourly Volumes						
Vehicle Class	NB Mainlane	NB Frontage Road	NB Off Ramp	SB On Ramp	SB Mainlane	SB Frontage Road
Autos	3,106	488	64	294	3,080	534
Medium	204	24	2	2	178	18
Heavy	164	0	0	2	174	2
Buses	0	0	0	0	0	0
Motorcycle	2	2	0	0	8	2
Speed	75 mph	55 mph	45 mph	55 mph	75 mph	55 mph

Traffic Counts and Speeds Data

Site 2 - Sequence 1: Raw Traffic Data						
Vehicle Class	NB Mainlane	NB Frontage Road	NB On Ramp	SB Off Ramp	SB Mainlane	SB Frontage Road
Autos	930	146	167	185	1,053	185
Medium	76	3	3	4	53	3
Heavy	49	1	0	0	44	0
Buses	0	0	0	0	1	0
Motorcycle	2	1	0	0	0	0
Site 2 – Sequence 1: Traffic Data Converted to Hourly Volumes						
Vehicle Class	NB Mainlane	NB Frontage Road	NB On Ramp	SB Off Ramp	SB Mainlane	SB Frontage Road
Autos	3,720	584	668	740	4,212	740
Medium	304	12	12	16	212	12
Heavy	196	4	0	0	176	0
Buses	0	0	0	0	4	0
Motorcycle	8	4	0	0	0	0
Speed	75 mph	55 mph	55 mph	45 mph	75 mph	55 mph

Site 2 - Sequence 2: Raw Traffic Data						
Vehicle Class	NB Mainlane	NB Frontage Road	NB On Ramp	SB Off Ramp	SB Mainlane	SB Frontage Road
Autos	925	179	175	180	1,073	203
Medium	53	4	5	4	57	9
Heavy	47	1	0	0	50	0
Buses	2	0	0	0	0	0
Motorcycle	4	2	0	1	1	1
Site 2 – Sequence 2: Traffic Data Converted to Hourly Volumes						
Vehicle Class	NB Mainlane	NB Frontage Road	NB On Ramp	SB Off Ramp	SB Mainlane	SB Frontage Road
Autos	3,700	716	700	720	4,292	812
Medium	212	16	20	16	228	36
Heavy	188	4	0	0	200	0
Buses	8	0	0	0	0	0
Motorcycle	16	8	0	4	4	4
Speed	75 mph	55 mph	55 mph	45 mph	75 mph	55 mph

Site 2, Average Hourly Traffic Data

Average of All Sequence Hourly Volumes						
Vehicle Class	NB Mainlane	NB Frontage Road	NB On Ramp	SB Off Ramp	SB Mainlane	SB Frontage Road
Autos	3,710	650	684	730	4,252	776
Medium	258	14	16	16	220	24
Heavy	192	4	0	0	188	2
Buses	4	0	0	0	2	0
Motorcycle	12	6	0	2	2	2
Speed	75 mph	55 mph	55 mph	45 mph	75 mph	55 mph