



# Air Quality Technical Report

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STATE HIGHWAY 5 (SH 5)

FROM SOUTH OF FARM-TO-MARKET  
ROAD 1378 TO SOUTH OF MELISSA  
ROAD

January 2020

City of McKinney, Collin County  
CSJs: 0047-05-054, etc.

Texas Department of Transportation – Dallas District

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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## 1.0 Introduction

The Texas Department of Transportation (TxDOT) proposes improvements to State Highway (SH) 5 from south of FM 1378 (Country Club Road) to south of Melissa Road (**Figure 1**). The project is located in unincorporated Collin County, Texas and the Cities of McKinney, Melissa, and Fairview, and extends for approximately 9.7 miles. Please refer to ECOS WPD I for the complete project description.

The proposed project is needed because the facility capacity is inadequate to meet future traffic volumes, and it does not meet current design/safety standards due to:

- At-grade crossings at SS 399 and SH 121
- Lack of continuous sidewalks and bike facilities
- Lack of raised medians

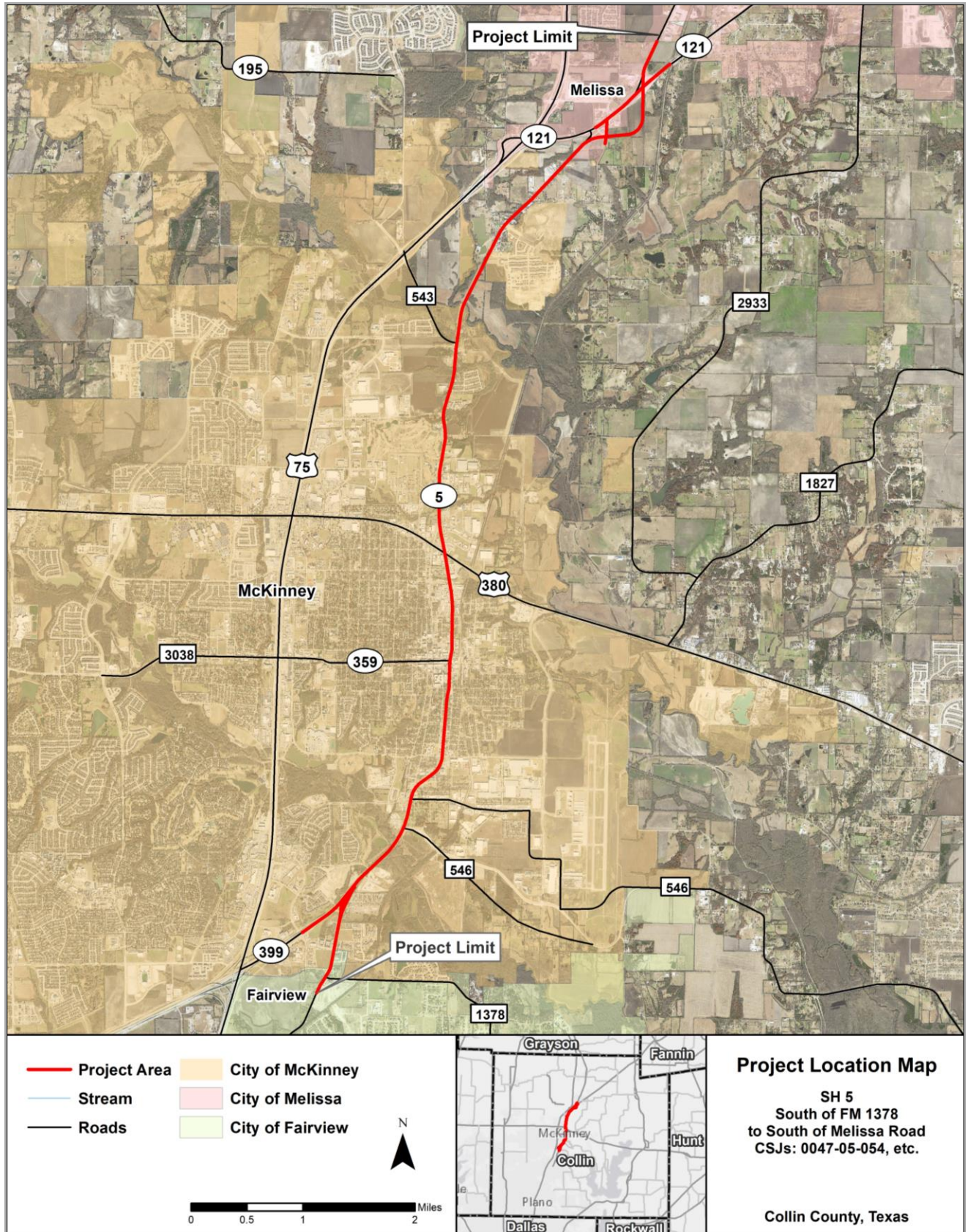
Crash data indicates that there has been an overall increase in crashes between 2012 and 2017 in the project limits and that portions of the project have crash rates that exceed the statewide average. The purpose of the proposed project is to improve safety and mobility.

The air quality analysis was performed following the TxDOT Air Quality Handbook and TxDOT Air Quality Toolkit guidance manuals.<sup>1</sup>

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<sup>1</sup> <http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/air-quality.html>

Figure 1. Project Location





## ***1.1 Project Level Conformity***

The project is located in Collin County, which is within an area that has been designated by EPA as a serious and marginal nonattainment area for the 2008 and 2015 ozone NAAQS, respectively; therefore, transportation conformity rules apply. Conformity for older standards is satisfied by conformity to the more stringent 2008 and 2015 ozone NAAQS.

Both the Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP) were found to conform to the TCEQ State Implementation Plan (SIP) by FHWA and FTA on November 21, 2018; however, the proposed project is not consistent with this conformity determination. The proposed project is consistent with the current North Central Texas Council of Governments (NCTCOG) financially constrained Mobility 2045, but is not currently listed in the 2019-2022 TIP. This project has been submitted for inclusion in the November 2019 State Transportation Improvement Program (STIP) revision cycle. TxDOT will not take final action on this environmental document until the proposed project is consistent with a currently conforming MTP and TIP. Copies of the MTP and NCTCOG Appendix D pages are included in **Appendix A**. All projects in the NCTCOG TIP that are proposed for federal or state funds were initiated in a manner consistent with federal guidelines in Section 450, of Title 23 CFR and Section 613.200, Subpart B, of Title 49 CFR.

This project is located within the portion of Collin County that has been designated by EPA as a maintenance area for the 2008 Lead National Ambient Air Quality Standard (NAAQS), effective December 31, 2010. Transportation conformity is required under CAA Section 176(c) (42 U.S.C. 7506(c)) to ensure that federally supported highway and transit project activities are consistent with the purpose of the SIP for transportation-related criteria pollutants. However, in light of the elimination of lead additives from gasoline, transportation conformity does not apply to the Lead NAAQS (2008 Final Lead NAAQS Rule, preamble page (73 FR 67043), November 12, 2008).

## ***1.2 Carbon Monoxide (CO)/Particulate Matter (PM) Hot Spot Analysis/TAQA***

Traffic data for the estimated time of completion (ETC) year 2025 and design year 2045 is 35,800 vehicles per day and 47,950 vehicles per day, respectively. A prior TxDOT modeling study and previous analyses of similar projects demonstrated that it is unlikely that the carbon monoxide standard would ever be exceeded as a result of any project with an average annual daily traffic (AADT) below 140,000. The AADT projections for the project do not exceed 140,000 vehicles per day; therefore a Traffic Air Quality Analysis was not required.

## ***1.3 Mobile Source Air Toxics (MSAT)***

### ***1.3.1 Background***

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental

Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS)<sup>2</sup>. In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (NATA)<sup>3</sup>. These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

### ***Motor Vehicle Emissions Simulator (MOVES)***

According to EPA, MOVES2014 is a major revision to MOVES2010 and improves upon it in many respects. MOVES2014 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2010. These new emissions data are for light- and heavy-duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES2014 also adds updated vehicle sales, population, age distribution, and vehicle miles travelled (VMT) data. MOVES2014 incorporates the effects of three new Federal emissions standard rules not included in MOVES2010. These new standards are all expected to impact MSAT emissions and include Tier 3 emissions and fuel standards starting in 2017 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014-2018 (79 FR 60344), and the second phase of light duty greenhouse gas regulations that phase in during model years 2017-2025 (79 FR 60344). Since the release of MOVES2014, EPA has released MOVES2014a. In the November 2015 MOVES2014a Questions and Answers Guide<sup>4</sup>, EPA states that for on-road emissions, MOVES2014a adds new options requested by users for the input of local VMT, includes minor updates to the default fuel tables, and corrects an error in MOVES2014 brake wear emissions. The change in brake wear emissions results in small decreases in PM emissions, while emissions for other criteria pollutants remain essentially the same as MOVES2014.

Using EPA's MOVES2014a model, as shown in **Figure 2**, FHWA estimates that even if VMT increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for the same time period.

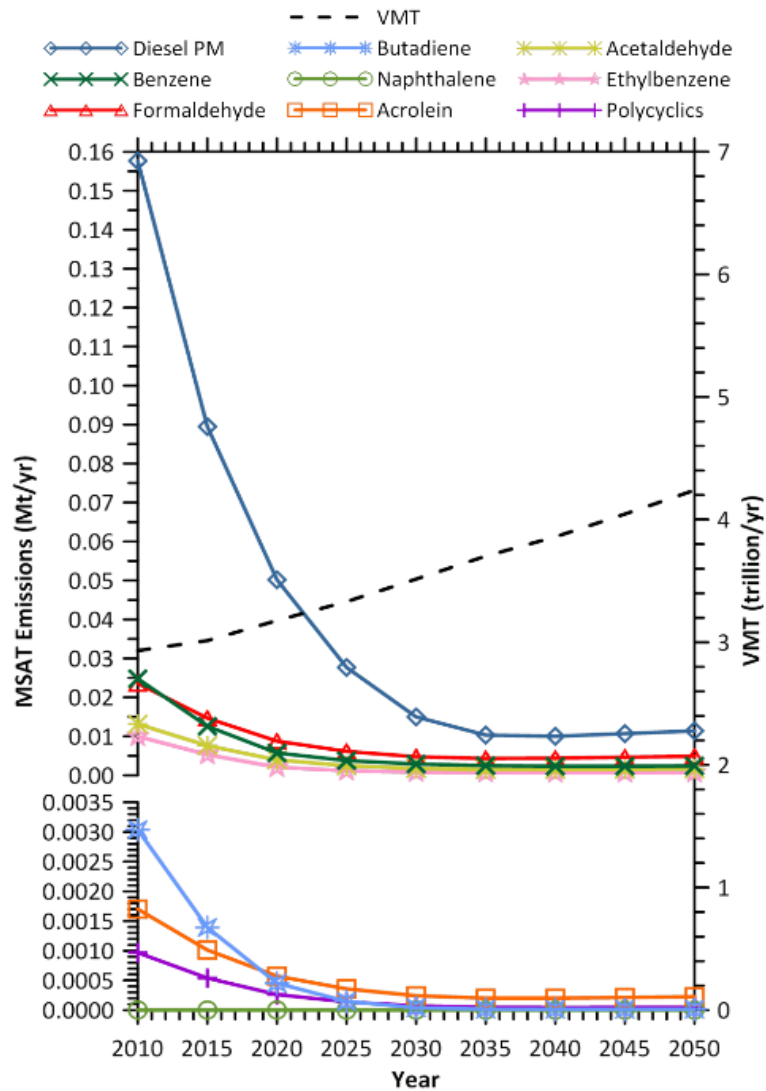
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<sup>2</sup> <http://www.epa.gov/iris/>

<sup>3</sup> <https://www.epa.gov/national-air-toxics-assessment>

<sup>4</sup> <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100NNR0.txt>

Figure 2. FHWA Projected National MSAT Emission Trends 2010 – 2050  
for Vehicles Operating on Roadways Using EPA's MOVES2014a Model



Source: EPA MOVES2014a model runs conducted by FHWA, September 2016.

Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors.

Diesel PM is the dominant component of MSAT emissions, making up 50 to 70 percent of all priority MSAT pollutants by mass, depending on calendar year. Users of MOVES2014a will notice some differences in emissions compared with MOVES2010b. MOVES2014a is based on updated data on some emissions and pollutant processes compared to MOVES2010b, and also reflects the latest Federal emissions standards in place at the time of its release. In addition, MOVES2014a emissions forecasts are based on lower VMT projections than MOVES2010b, consistent with recent trends suggesting reduced nationwide VMT growth compared to historical trends.

### *MSAT Research*

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how potential public health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this field.

### **1.3.2 Project-Specific MSAT Information**

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*<sup>5</sup>.

#### *1) Widening Projects*

The VMT estimated for each of the Build Alternatives is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. The additional travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain Build Alternatives than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the added capacity sections: from Country Club Road to Spur 399, where the road will be expanded from two to four lanes; from Spur 399 to Industrial Boulevard (FM 546), where it will be expanded from four to six lanes; and from south of N Tennessee St to south of Melissa Road, where it will be expanded from

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<sup>5</sup>[https://www.fhwa.dot.gov/environment/air\\_quality/air\\_toxics/research\\_and\\_analysis/mobile\\_source\\_air\\_toxics/msatemi ssions.cfm](https://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemi ssions.cfm)



two to four lanes. However, the magnitude and the duration of these potential increases compared to the No Build alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region- wide MSAT levels to be significantly lower than today.

### **1.3.3 Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis**

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action. Consistent with 40 CFR 1502.22 (regarding incomplete and unavailable information) FHWA does not conduct MSAT health impacts for the reasons described below.

The U.S. Environmental Protection Agency (EPA) is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, <http://www.epa.gov/iris/>). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA's Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents<sup>6</sup>. Among the adverse health effects linked to MSAT compounds at high exposures are; cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human

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<sup>6</sup> [http://www.fhwa.dot.gov/environment/air\\_quality/air\\_toxics/policy\\_and\\_guidance/msat/index.cfm](http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/index.cfm)

health effects of MSAT compounds at current environmental concentrations<sup>7</sup> or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI<sup>8</sup>. As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA states that with respect to diesel engine exhaust, “[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk<sup>9</sup>.”

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million

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<sup>7</sup> HEI Special Report 16, <https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects>

<sup>8</sup> <https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects>

<sup>9</sup> EPA IRIS database, Diesel Engine Exhaust, Section II.C.

[https://cfpub.epa.gov/ncea/iris/iris\\_documents/documents/subst/0642\\_summary.pdf](https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0642_summary.pdf)

due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable<sup>10</sup>.

#### **1.4 Congestion Management Process (CMP)**

The congestion management process is a systematic process for managing congestion that provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs. The project was developed from the NCTCOG's CMP, which meets all requirements of 23 CFR 450.320 and 500.109, as applicable. The CMP was adopted by NCTCOG January 2014.

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

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

Committed congestion reduction strategies and operational improvements within the study boundary will consist of access management (turn lanes), addition of new lanes, signal timing, intersection improvements, and pedestrian facilities. Individual projects are listed in **Table 1**.

*Table 1. Congestion Management Process Strategies*

Operational Improvements in Travel Corridor		
Location	Type	Implementation Date
FM 546 from SH 5 in McKinney to Airport Rd	Addition of lanes	2010
SS 399 at SH 5	Grade separation	2028

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<sup>10</sup> [https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/\\$file/07-1053-1120274.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf)

SH 5 from South of FM 1378 to Spur 399	Addition of lanes, reconstruction	2023
SH 5 from Spur 399 to South of CR 275	Addition of lanes, reconstruction	2023
E Louisiana Street from SH 5 to Throckmorton	Bike/Ped, Intersection Improvement/Reconstruction	2023

In an effort to reduce congestion and the need for SOV lanes in the region, TxDOT and NCTCOG will continue to promote appropriate congestion reduction strategies through the Congestion Mitigation and Air Quality Improvement (CMAQ) program, the CMP, and the MTP. The congestion reduction strategies considered for this project would help alleviate congestion in the SOV study boundary, but would not eliminate it.

Therefore, the proposed project is justified. The CMP analysis for added SOV capacity projects in the TMA is on file and available for review at NCTCOG.

### ***1.5 Construction Emissions Analysis***

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

The potential impacts of particulate matter emissions will be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. The Texas Emissions Reduction Plan (TERP) provides financial incentives to reduce emissions from vehicles and equipment. TxDOT encourages construction contractors to use this and other local and federal incentive programs to the fullest extent possible to minimize diesel emissions. Information about the TERP program on TCEQ's TERP website<sup>11</sup>.

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

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<sup>11</sup> <http://www.tceq.state.tx.us/implementation/air/terp/>



## Appendix A:

### North Central Texas Council of Governments (NCTCOG) MTP and TIP Data

**Mobility 2045**  
**Regionally Significant Arterial Improvements**

Revised October 3, 2019

RSA ID	Agency	County	Facility	From	To	2018*	2020*	2028	2037	2045	YOE Cost
1.557.200	NTTA	Collin	Dallas North Parkway**	CR 60	FM 428	0	0	2	N/A	N/A	
1.557.250	NTTA	Collin	Dallas Parkway **	FM 428	North of US 380	2/2	2/2	N/A	N/A	N/A	
2.215.575	TxDOT Dallas	Collin	Eldorado Parkway	FM 2478 Custer Road	US 75	4	4	6	6	6	\$39,777,200
1.660.225	TxDOT Dallas	Collin	FM 1378 Country Club Road	North of Stacy Lane	FM 2786 Stacy Road	2	2	4	4	4	\$4,523,400
1.660.250	TxDOT Dallas	Collin	FM 1378 Country Club Road	FM 2786 Stacy Rd	Rock Ridge Road	2	2	6	6	6	\$6,423,000
1.660.275	TxDOT Dallas	Collin	FM 1378 Country Club Road	Rock Ridge Road	FM 2514 Parker Road	2	2	6	6	6	\$86,160,000
1.660.300	TxDOT Dallas	Collin	FM 1378 Country Club Road	Brown Street	FM 544	6	6	6	6	6	\$2,000,000
1.660.325	TxDOT Dallas	Collin	FM 1378 Country Club Road	FM 2514 Parker Road	Brown Street	6	6	6	6	6	\$4,264,281
2.130.360	TxDOT Dallas	Collin	FM 455 Anna Weston Road	CR 286	US 75	2	4	4	4	4	\$2,300,000
2.130.375	TxDOT Dallas	Collin	FM 455 Anna Weston Road	US 75	SH 5	4	4	4	4	6	\$13,000,000
1.660.400	TxDOT Dallas	Collin	Merritt Rd	Sachse Rd	PGBT	2	2	4	4	4	\$5,529,037
2.150.600	TxDOT Dallas	Collin	Outer Loop **	FM 428	West Of Dallas North Tollway	0	0	2	3/3	N/A	
2.150.610	TxDOT Dallas	Collin	Outer Loop **	West Of Dallas North Tollway	Dallas North Tollway	0	0	1/1	3/3	N/A	
2.150.650	TxDOT Dallas	Collin	Outer Loop **	Dallas North Tollway	US 75	0	0	2/2	N/A	N/A	
2.150.700	TxDOT Dallas	Collin	Outer Loop **	US 75	West Of SH 121	2	2	2/2	N/A	N/A	
1.742.100	TxDOT Dallas	Collin	Outer Loop	FM 981	CR 637	0	0	2	2	2/2	\$271,978,400
1.742.200	TxDOT Dallas	Collin	Outer Loop	CR 637	FM 2755	0	0	2	2	2/2	\$50,978,000
2.150.710	TxDOT Dallas	Collin	Outer Loop	West Of SH 121	SH 121	2	2	2/2	2/2	2/2	\$8,400,600
2.150.715	TxDOT Dallas	Collin	Outer Loop	SH 121	East Of SH 121	0	0	1/1	1/1	2/2	\$3,733,600
2.150.720	TxDOT Dallas	Collin	Outer Loop	East Of SH 121	FM 981	0	0	2	2	2/2	\$164,709,200
1.745.200	TxDOT Dallas	Collin	SH 121	Fannin County Line	SH 160	2	2	2/2	2/2	2/2	\$10,000,000
1.745.250	TxDOT Dallas	Collin	SH 121	SH 160	FM 2862	2	2	2/2	2/2	2/2	\$20,000,000
1.745.260	TxDOT Dallas	Collin	SH 121	FM 2862	FM 455	2	2	2/2	2/2	2/2	\$65,000,000
1.745.280	TxDOT Dallas	Collin	SH 121	FM 455	Outer Loop	2	2	2/2	2/2	2/2	\$75,000,000
1.745.300	TxDOT Dallas	Collin	SH 121	Outer Loop	Berry Road	2/2	2/2	2/2	2/2	2/2	\$38,180,000
1.745.325	TxDOT Dallas	Collin	SH 121	Berry Road	East Of SH 5	2/2	2/2	2/2	2/2	2/2	\$3,949,000
1.745.350	TxDOT Dallas	Collin	SH 121	East Of SH 5	SH 5	2/2	2/2	2/2	2/2	2/2	\$2,225,800
1.715.200	TxDOT Dallas	Collin	SH 205	SH 78	Jct. SH 205/John King Blvd. (N. Goliad)	2	2	4	6	6	\$44,228,800
1.605.200	TxDOT Dallas	Collin	SH 289 Preston Road	CR 107/CR 60	BU 289	2	2	4	6	6	\$40,000,000
1.605.225	TxDOT Dallas	Collin	SH 289 Preston Road	BU 289	FM 455	4	4	4	6	6	\$18,500,000
1.605.240	TxDOT Dallas	Collin	SH 289 Preston Road	FM 455	FM 1461	4	4	4	6	6	\$29,937,000
1.605.425	TxDOT Dallas	Collin	SH 289 Preston Road	Plano Parkway	President George Bush Turnpike	6	6	6	8	8	\$1,651,400
1.605.475	TxDOT Dallas	Collin	SH 289 Preston Road	Mapleshade Drive	Frankford Road	6	6	8	8	8	\$5,385,000
1.680.200	TxDOT Dallas	Collin	SH 5	CR 375 (Grayson County)	FM 455	2	2	4	4	4	\$30,000,000
1.680.210	TxDOT Dallas	Collin	SH 5	FM 455	SH 121	2	4	4	4	6	\$70,000,000
1.680.225	TxDOT Dallas	Collin	SH 5	SH 121	North of Tennessee Street	2	2	4	4	6	\$46,102,308
1.680.250	TxDOT Dallas	Collin	SH 5	North of Industrial Blvd/Eldorado Pkwy	North of Industrial Blvd/Eldorado Pkwy	4	4	4	4	4	\$29,186,216
1.680.275	TxDOT Dallas	Collin	SH 5	North of Industrial Blvd/Eldorado Pkwy	Industrial Blvd/Eldorado Pkwy	2/2	2/2	4	4	4	\$2,501,676
1.680.300	TxDOT Dallas	Collin	SH 5	Industrial Blvd/Eldorado Pkwy	SP 399	4	4	6	6	6	\$39,000,000
1.680.310	TxDOT Dallas	Collin	SH 5	SP 399	Frisco Road	2	2	4	4	6	\$9,000,000
1.680.350	TxDOT Dallas	Collin	SH 5	Indian Springs Rd	FM 2786 Stacy Road	2	2	6	6	6	\$1,436,000
1.740.200	TxDOT Dallas	Collin	SH 78	East of SH 160	SH 160	2	2	4	4	4	\$5,815,800
1.740.300	TxDOT Dallas	Collin	SH 78	SH 160	FM 6	2	2	6	6	6	\$174,904,800
1.645.200	TxDOT Dallas	Collin	Shiloh Road	Spring Creek Parkway	FM 544 14th Street	2	2	4	4	4	\$14,934,400
1.645.210	TxDOT Dallas	Collin	Shiloh Road	FM 544 14th Street	Renner Road	6	6	6	6	4	\$8,826,963
2.218.300	TxDOT Dallas	Collin	Stacy Road	Angel Parkway	FM 1378	2	2	4	4	6	\$14,503,600
2.225.525	TxDOT Dallas	Collin	US 380	East of Dallas North Tollway	West of SH 289	3/3	3/3	3/3	3/3	3/3	\$2,584,800
2.225.550	TxDOT Dallas	Collin	US 380	Lovers Lane	Coit Road	3/3	3/3	3/3	3/3	3/3	\$62,784,000
2.225.660	TxDOT Dallas	Collin	US 380	Airport Drive	CR 458/Boorman Lane	4	4	6	6	6	\$50,000,000
2.225.675	TxDOT Dallas	Collin	US 380	CR 458/Boorman Lane	Calm Water Cove	4	4	6	6	6	\$23,429,609
2.225.690	TxDOT Dallas	Collin	US 380	Calm Water Cove	Floyd Street	4	4	4	6	6	\$3,159,888
2.225.700	TxDOT Dallas	Collin	US 380	Floyd Street	CR 698	4	4	4	6	6	\$17,567,000
1.660.350	TxDOT Dallas	Collin	Woodbridge Pkwy	FM 544	SH 78	4	4	4	4	4	\$5,918,138
1.660.375	TxDOT Dallas	Collin	Woodbridge Pkwy	SH 78	Sachse Rd	4	4	4	4	4	\$2,000,000
2.515.400	TxDOT Dallas	Dallas	Commerce Street/Elm Street	Erway Street	Cesar Chavez Blvd	3/4	3/4	5/5	5/5	5/5	\$1,220,600
1.595.225	TxDOT Dallas	Dallas	Corinth Street Viaduct	Riverfront Blvd	8th Street	4	4	6	6	6	\$5,672,200
2.625.275	TxDOT Dallas	Dallas	Danieldale Road	East of Cockrell Hill Road	Westmoreland Road	2	2	6	6	6	\$7,467,200
2.625.290	TxDOT Dallas	Dallas	Danieldale Road	Westmoreland Road	Old Hickory Trail	2	2	6	6	6	\$7,180,000
2.625.300	TxDOT Dallas	Dallas	Danieldale Road	Old Hickory Trail	Hampton Road	2	2	4	4	4	\$3,590,000
2.625.325	TxDOT Dallas	Dallas	Danieldale Road	Hampton Road	Polk Street	2	2	4	4	4	\$7,036,400
2.625.350	TxDOT Dallas	Dallas	Danieldale Road	Polk Street	IH 35E	2	2	4	4	4	\$6,821,000
1.740.625	TxDOT Dallas	Dallas	East Grand Avenue	East Grand Ave	Winslow Avenue	5	5	6	6	6	\$1,077,000
1.740.650	TxDOT Dallas	Dallas	East Grand Avenue	Beacon Street	IH 30	4	4	6	6	6	\$1,364,200

\* Attainment Years

\*\*Stage facilities reported as 'N/A' indicate project is no longer classified as an arterial and will be reported in Freeway/Tollway Recommendations listing instead.

Note: '2/2' indicates facility operates as couplet.

DISTRICT	COUNTY	CSJ	HWY	PHASE	CITY	PROJECT SPONSOR	YOE COST
DALLAS	COLLIN	0047-05-054	SH 5	E,R	MCKINNEY	TXDOT-DALLAS	\$18,300,000
LIMITS FROM:	SPUR 399					REV DATE: 08/2019	
LIMITS TO:	SOUTH OF CR 275					MPO PROJECT ID: 13026	
TIP	RECONSTRUCT AND WIDEN 2/4 LANE UNDIVIDED ROADWAY TO 4/6 LANE DIVIDED URBAN					FUNDING CATEGORY: S102,SBPE	
DESCRIPTION:	ROADWAY					MTP REFERENCE: RSA1-1.680.225, RSA1-1.680.250, RSA1-1.680.275, RSA1-1.680.300	
REMARKS:	REVISE LIMITS; PROJECT SPLIT INTO TWO PROJECTS; RELATED PROJECT IS TIP 13026.2/CSJ 0047-04-030						

Project History: 10-YEAR PLAN PROJECT

Total Project Cost Information:		Cost of Approved Phases:	Authorized Funding by Category/Share:					Funding By Category
			Federal	State	Regional	Local	Local Contribution	
Preliminary Engineering:	\$4,300,000							
Right Of Way:	\$14,000,000							
Construction:	\$75,900,000	\$18,300,000	\$0	\$4,300,000	\$0	\$0	\$0	\$4,300,000
Construction Engineering:	\$4,319,091		\$11,200,000	\$1,400,000	\$0	\$1,400,000	\$0	\$14,000,000
Contingencies:	\$1,732,861							
Indirects:	\$0							
Bond Financing:	\$0							
Total Project Cost:	\$100,251,952							
			Funding by Share:					
			\$11,200,000	\$5,700,000	\$0	\$1,400,000	\$0	\$18,300,000

DALLAS	COLLIN	0047-06-158	US 75	C	VARIOUS	TXDOT-DALLAS	\$15,000,000
LIMITS FROM:	DALLAS COUNTY LINE					REV DATE: 07/2018	
LIMITS TO:	BETHANY DRIVE					MPO PROJECT ID: 30006	
TIP	REMOVE HOV LANES AND ADD PEAK HOUR TRAVEL LANES					FUNDING CATEGORY: 7	
DESCRIPTION:						MTP REFERENCE: AO1-23.50.1, AO1-23.40.3, AO1-23.40.4, AO1-23.40.5	

REMARKS:  
PENDING FHWA APPROVAL

Project History: PART OF THE EASTERN SUBREGION SUPPLEMENTAL PROJECT COMMITMENTS FOR THE TXDOT CONGESTION RELIEF PROGRAM APPROVED BY THE RTC JANUARY 20, 2016

Total Project Cost Information:		Cost of Approved Phases:	Authorized Funding by Category/Share:					Funding By Category
			Federal	State	Regional	Local	Local Contribution	
Preliminary Engineering:	\$1,500,000							
Right Of Way:	\$0							
Construction:	\$15,000,000	\$15,000,000	\$12,000,000	\$3,000,000	\$0	\$0	\$0	\$15,000,000
Construction Engineering:	\$355,790							
Contingencies:	\$3,631							
Indirects:	\$0							
Bond Financing:	\$0							
Total Project Cost:	\$16,859,421							
			Funding by Share:					
			\$12,000,000	\$3,000,000	\$0	\$0	\$0	\$15,000,000

DISTRICT	COUNTY	CSJ	HWY	PHASE	CITY	PROJECT SPONSOR	YOE COST
DALLAS	DALLAS	0047-07-232	US 75	C	RICHARDSON	TXDOT-DALLAS	\$15,000,000
LIMITS FROM:	IH 635					REV DATE: 07/2018	
LIMITS TO:	COLLIN COUNTY LINE					MPO PROJECT ID: 30005	
TIP	REMOVE HOV LANES AND ADD PEAK HOUR TRAVEL LANES					FUNDING CATEGORY: 7	
DESCRIPTION:						MTP REFERENCE: AO1-23.50.1	

REMARKS:

**PENDING FHWA APPROVAL****Project History:** PLANNING CSJ 0047-07-990; PART OF THE EASTERN SUBREGION SUPPLEMENTAL PROJECT COMMITMENTS FOR THE TXDOT CONGESTION RELIEF PROGRAM APPROVED BY THE RTC JANUARY 20, 2016

Total Project Cost Information:		Cost of Approved Phases:	Authorized Funding by Category/Share:					Funding By Category
			Federal	State	Regional	Local	Local Contribution	
Preliminary Engineering:	\$1,000,000							
Right Of Way:	\$0							
Construction:	\$15,000,000	\$15,000,000	\$12,000,000	\$3,000,000	\$0	\$0	\$0	\$15,000,000
Construction Engineering:	\$240,097							
Contingencies:	\$10,051							
Indirects:	\$0							
Bond Financing:	\$0							
<b>Total Project Cost:</b>	<b>\$16,250,148</b>							
<b>Funding by Share:</b>			\$12,000,000	\$3,000,000	\$0	\$0	\$0	\$15,000,000

DALLAS	COLLIN	0047-09-034	SH 5	E,R	MCKINNEY	TXDOT-DALLAS	\$4,000,000
LIMITS FROM:	SOUTH OF FM 1378					REV DATE: 08/2019	
LIMITS TO:	SPUR 399					MPO PROJECT ID: 13010	
TIP	RECONSTRUCT AND WIDEN 2 LANE UNDIVIDED ROADWAY TO 4 LANE DIVIDED URBAN					FUNDING CATEGORY: S102,SBPE	
DESCRIPTION:	ROADWAY (ULTIMATE 6 LANES)					MTP REFERENCE: RSA1-1.680.310	
REMARKS:	CLARIFY LIMITS AND SCOPE						

**Project History:** REGIONAL 10 YEAR PLAN PROJECT

Total Project Cost Information:		Cost of Approved Phases:	Authorized Funding by Category/Share:					Funding By Category
			Federal	State	Regional	Local	Local Contribution	
Preliminary Engineering:	\$1,500,000							
Right Of Way:	\$2,500,000							
Construction:	\$10,000,000	\$4,000,000	\$0	\$1,500,000	\$0	\$0	\$0	\$1,500,000
Construction Engineering:	\$574,588		\$2,000,000	\$250,000	\$0	\$250,000	\$0	\$2,500,000
Contingencies:	\$230,530							
Indirects:	\$0							
Bond Financing:	\$0							
<b>Total Project Cost:</b>	<b>\$14,805,118</b>							
<b>Funding by Share:</b>			\$2,000,000	\$1,750,000	\$0	\$250,000	\$0	\$4,000,000

DALLAS	ELLIS	0048-04-094	IH 35E	R	WAXAHACHIE	TXDOT-DALLAS	\$17,000,000
LIMITS FROM:	AT FM 387 (BUTCHER ROAD)					REV DATE: 08/2019	
LIMITS TO:						MPO PROJECT ID: 13042	
TIP	RECONSTRUCT INTERCHANGE, RECONSTRUCT AND WIDEN 4 TO 4/6 LANE FRONTAGE					FUNDING CATEGORY: S102	
DESCRIPTION:	ROAD					MTP REFERENCE: FT1-7.100.5, IN1-7.510.1, TSMO2-001	
REMARKS:	REVISE SCOPE; DELAY ROW AND UTILITY PHASES TO FY2020						

**Project History:** PART OF REGIONAL 10 YEAR PLAN

Total Project Cost Information:		Cost of Approved Phases:	Authorized Funding by Category/Share:					Funding By Category
			Federal	State	Regional	Local	Local Contribution	
Preliminary Engineering:	\$2,500,000							
Right Of Way:	\$17,000,000							
Construction:	\$42,000,000	\$17,000,000	\$15,100,000	\$1,900,000	\$0	\$0	\$0	\$17,000,000
Construction Engineering:	\$2,048,720							
Contingencies:	\$1,181,283							
Indirects:	\$0							
Bond Financing:	\$0							
<b>Total Project Cost:</b>	<b>\$64,730,003</b>							
<b>Funding by Share:</b>			\$15,100,000	\$1,900,000	\$0	\$0	\$0	\$17,000,000



DISTRICT	COUNTY	CSJ	HWY	PHASE	CITY	PROJECT SPONSOR	YOE COST
DALLAS	COLLIN	0364-04-049	SS 399	C	MCKINNEY	TXDOT-DALLAS	\$16,105,069
LIMITS FROM:	AT SH 5					REV DATE: 11/2019	
LIMITS TO:						MPO PROJECT ID: 55156	
TIP	CONSTRUCT INTERCHANGE					FUNDING CATEGORY: 2M	
DESCRIPTION:						MTP REFERENCE: IN1-11.540.1, TSMO2-001	
REMARKS:	REVISE SCOPE; ADD CONSTRUCTION PHASE TO FY2022; ADD PROJECT TO THE 2019-2022 TIP/STIP						

## PENDING FHWA APPROVAL

Project History: 10 YEAR PLAN PROJECT

Total Project Cost Information:		Cost of Approved Phases:	Authorized Funding by Category/Share:						
			Federal	State	Regional	Local	Local Contribution	Funding By Category	
Preliminary Engineering:	\$2,000,000								
Right Of Way:	\$3,120,000								
Construction:	\$16,105,069		\$16,105,069 2M:	\$12,884,055	\$3,221,014	\$0	\$0	\$0	
Construction Engineering:	\$957,896								
Contingencies:	\$481,839								
Indirects:	\$0								
Bond Financing:	\$0								
Total Project Cost:	\$22,664,804								
			Funding by Share:	\$12,884,055	\$3,221,014	\$0	\$0	\$0	\$16,105,069

DALLAS	ELLIS	0442-03-042	IH 35E	C	RED OAK	TXDOT-DALLAS	\$29,246,463
LIMITS FROM:	AT FM 664					REV DATE: 07/2018	
LIMITS TO:						MPO PROJECT ID: 13034	
TIP	RECONSTRUCT INTERCHANGE					FUNDING CATEGORY: 4	
DESCRIPTION:						MTP REFERENCE: IN1-7.515.1	
REMARKS:							

Project History: PART OF REGIONAL 10 YEAR PLAN

Total Project Cost Information:		Cost of Approved Phases:  4:	Authorized Funding by Category/Share:						
			Federal	State	Regional	Local	Local Contribution	Funding By Category	
Preliminary Engineering:	\$1,500,000								
Right Of Way:	\$6,000,000								
Construction:	\$29,246,463		\$23,397,171	\$5,849,292	\$0	\$0	\$0	\$29,246,463	
Construction Engineering:	\$1,340,283								
Contingencies:	\$854,466								
Indirects:	\$0								
Bond Financing:	\$0								
Total Project Cost:	\$38,941,212								
			Funding by Share:	\$23,397,171	\$5,849,292	\$0	\$0	\$0	\$29,246,463

DALLAS	ROCKWALL	0451-04-021	SH 205	C	ROCKWALL	TXDOT-DALLAS	\$2,702,009
LIMITS FROM:	JCT SH 205/ JOHN KING (N. GOLIAD ST)					REV DATE: 11/2018	
LIMITS TO:	NORTH OF JOHN KING (COLLIN COUNTY LINE)					MPO PROJECT ID: 55074	
TIP	WIDEN 2 LANE RURAL HIGHWAY TO 4 LANE DIVIDED (6 LANE ULTIMATE)					FUNDING CATEGORY: 2M	
DESCRIPTION:						MTP REFERENCE: RSA1-1.715.200	
REMARKS:	DECREASE CONSTRUCTION FUNDING AND DELAY TO FY2022						

Project History: 10 YEAR PLAN PROJECT

Total Project Cost Information:		Cost of Approved Phases:	Authorized Funding by Category/Share:						
			Federal	State	Regional	Local	Local Contribution	Funding By Category	
Preliminary Engineering:	\$1,200,000								
Right Of Way:	\$1,000,000								
Construction:	\$2,702,009		2M:	\$2,161,607	\$540,402	\$0	\$0	\$2,702,009	
Construction Engineering:	\$158,826								
Contingencies:	\$63,723								
Indirects:	\$0								
Bond Financing:	\$0								
Total Project Cost:	\$5,124,558								
			Funding by Share:	\$2,161,607	\$540,402	\$0	\$0	\$0	\$2,702,009

## Appendix B:

### 2025 and 2045 Traffic Data



## MEMO

January 31, 2019

**To:** Mohamed "Mo" K. Bur, District Engineer  
Attention: Lacey Rodgers, P.E., Director of TPD

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

**From:** Lee Theobald  
Planner, TPP

**Subject:** Traffic Data  
CSJ: 0047-05-054  
SH 5:  
From South of FM 1378  
To South of Melissa Road  
Collin County

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Attached are diagrams depicting 2025, 2045 and 2055 average daily traffic volumes and turning movements on SH 5 from South of FM 1378 to South of Melissa Road for the proposed condition. 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.

Due to differences in traffic volumes the project was separated into four sections.

Section 1: From South of FM 1378 to SH 399 Spur

Section 2: From SH 399 Spur to Eldorado Pkwy.

Section 3: From Eldorado Pkwy. to West University Dr. (US 380)

Section 4: From West University Dr. (US 380) to South of Melissa Road

Please refer to your email request dated January 7, 2019.

If you have any questions or need additional information, please contact Lee Theobald at (512) 486-5143.

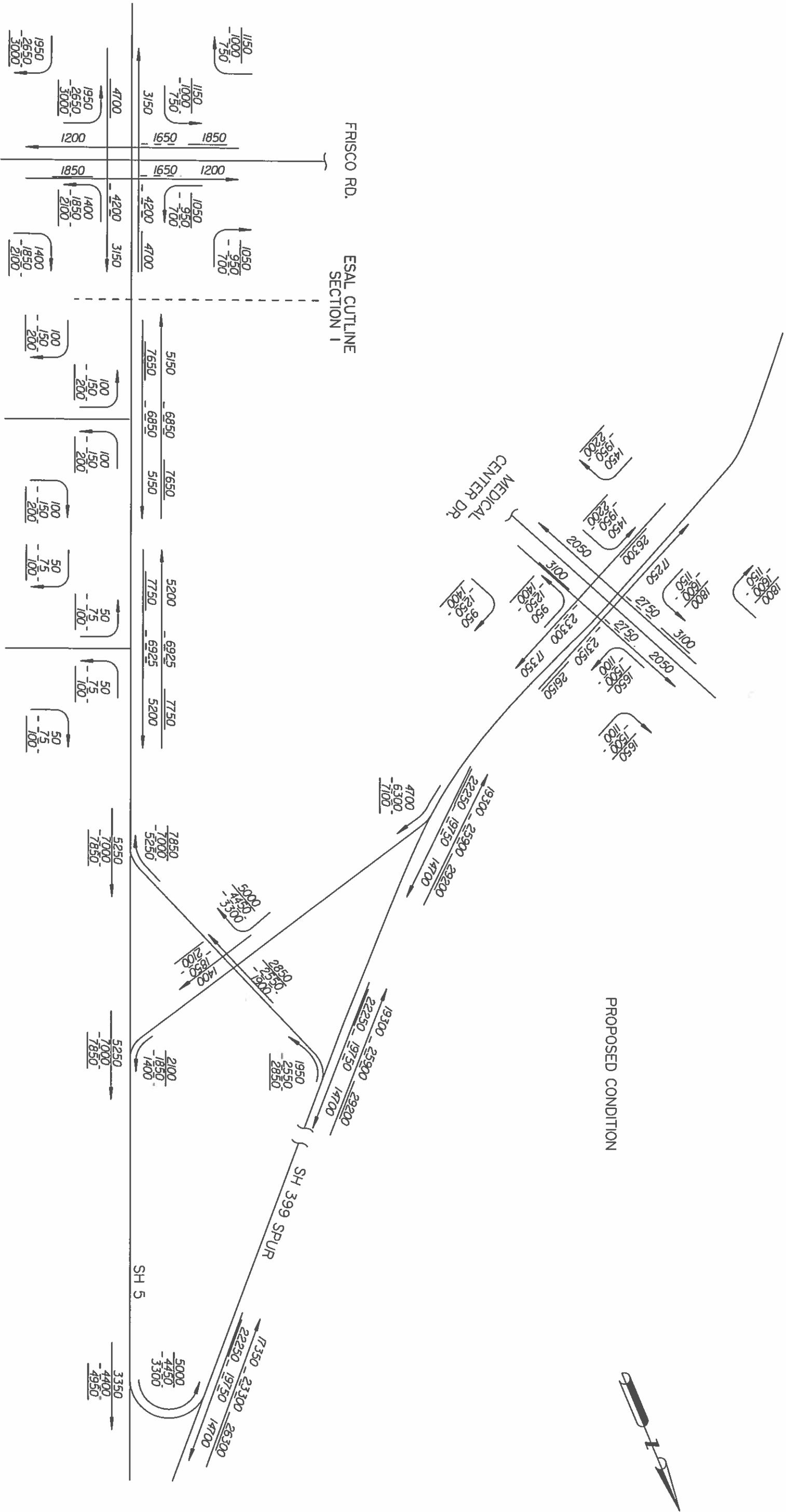
### Attachments

**CC:** Matthew Atkinson, P.E.,  
Transportation Engineer, Dallas 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

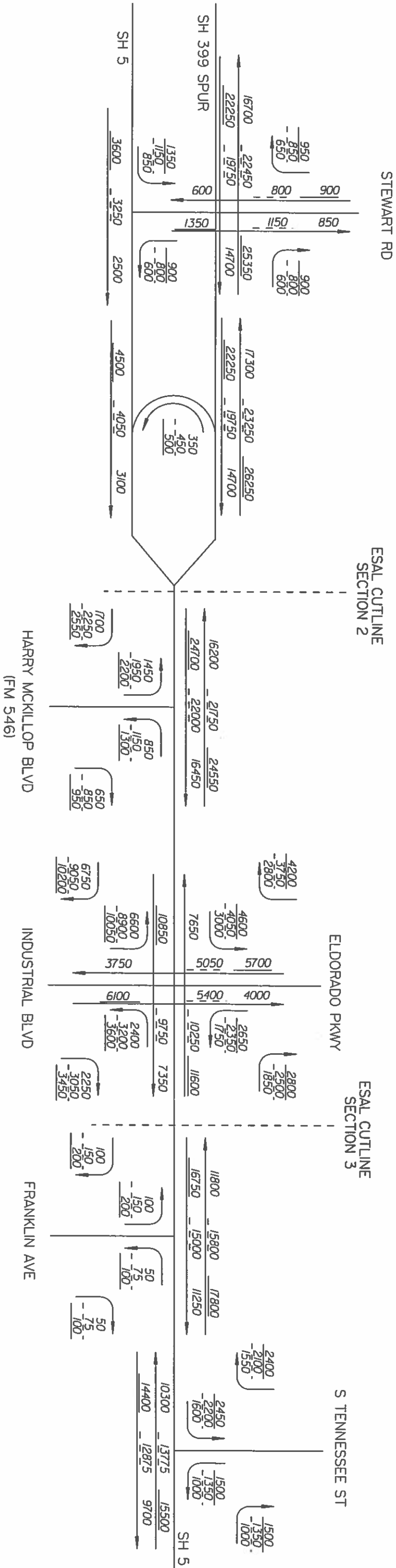


MATCH LINE (A)

2025, 2045 AND 2055 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG SH 5 FROM SOUTH OF FM 1378 TO SOUTH OF MELISSA ROAD  
TRANSPORTATION PLANNING AND PROGRAMMING DIVISION  
JANUARY 31, 2019



MATCH LINE (A)



PROPOSED CONDITION

MATCH LINE (B)

LEGEND

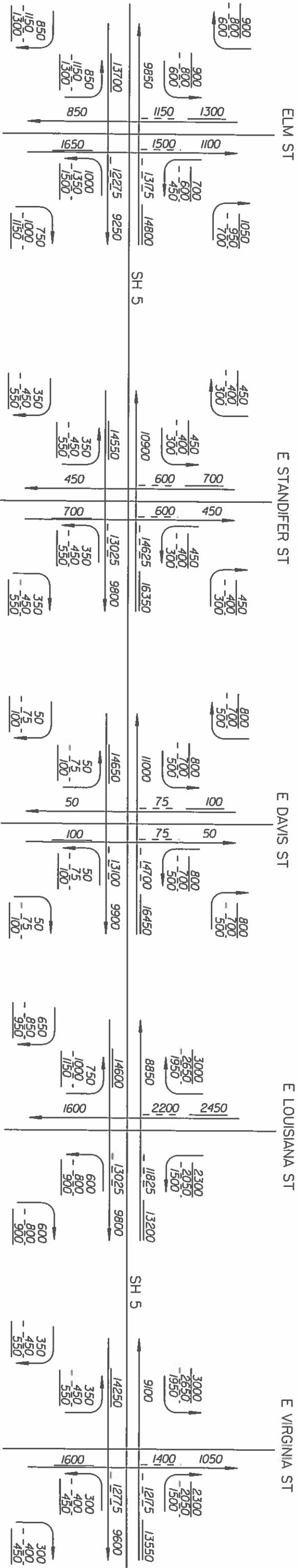
1000 - 2025 ADT  
1000 - 2045 ADT  
1000 - 2055 ADT

2025, 2045 AND 2055 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG  
SH 5 FROM SOUTH OF FM 1378 TO SOUTH OF MELISSA ROAD  
COLLIN COUNTY

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION  
JANUARY 31, 2019



PROPOSED CONDITION



MATCH LINE (B)

MATCH LINE (C)

LEGEND

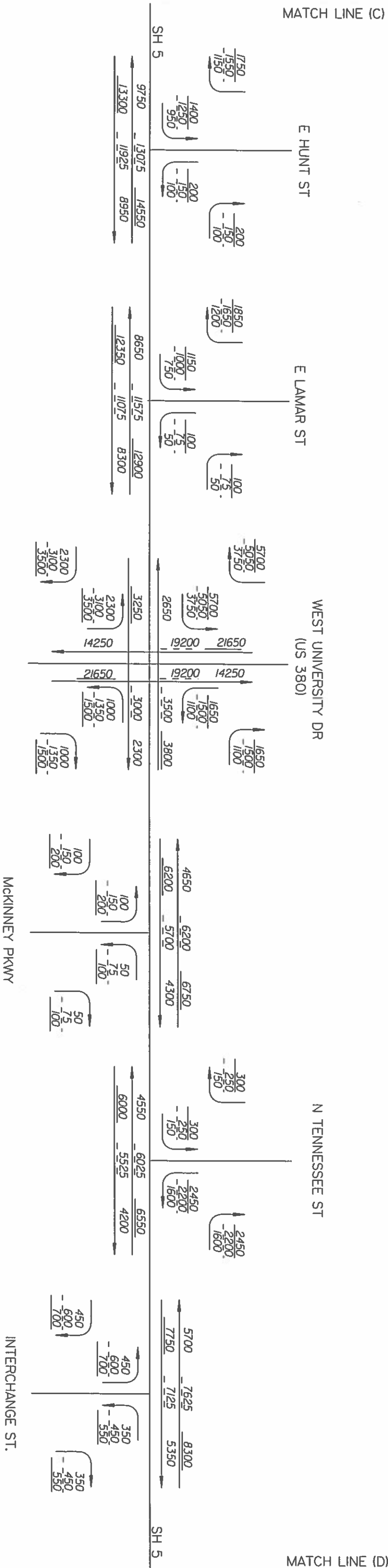
1000 - 2025 ADT  
1000 - 2045 ADT  
1000 - 2055 ADT

2025, 2045 AND 2055 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG  
SH 5 FROM SOUTH OF FM 1378 TO SOUTH OF MELISSA ROAD

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION  
JANUARY 31, 2019



PROPOSED CONDITION



LEGEND

1000 - 2025 ADT

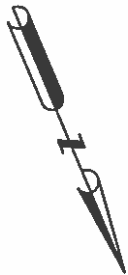
1000 - 2045 ADT

1000 - 2055 ADT

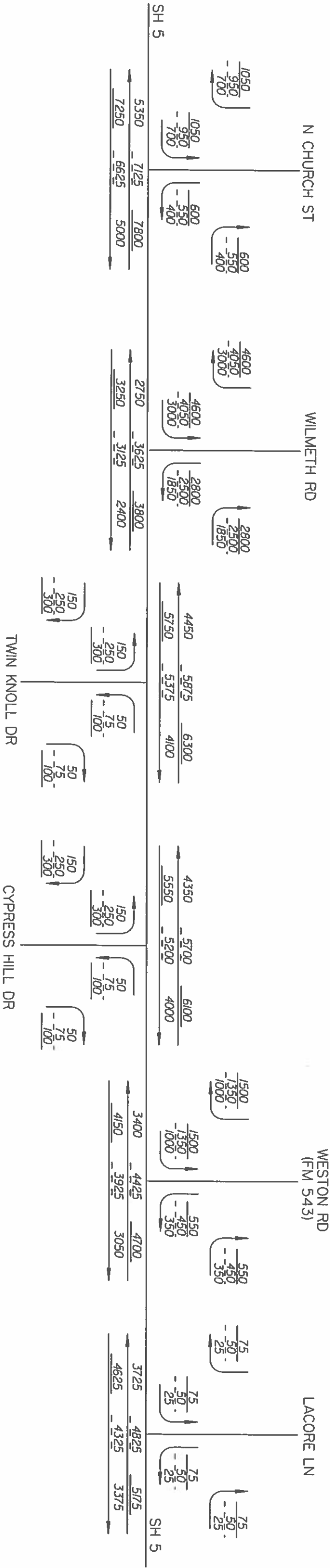
2025, 2045 AND 2055 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG SH 5 FROM SOUTH OF FM 1378 TO SOUTH OF MELISSA ROAD

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION

JANUARY 31, 2019



PROPOSED CONDITION



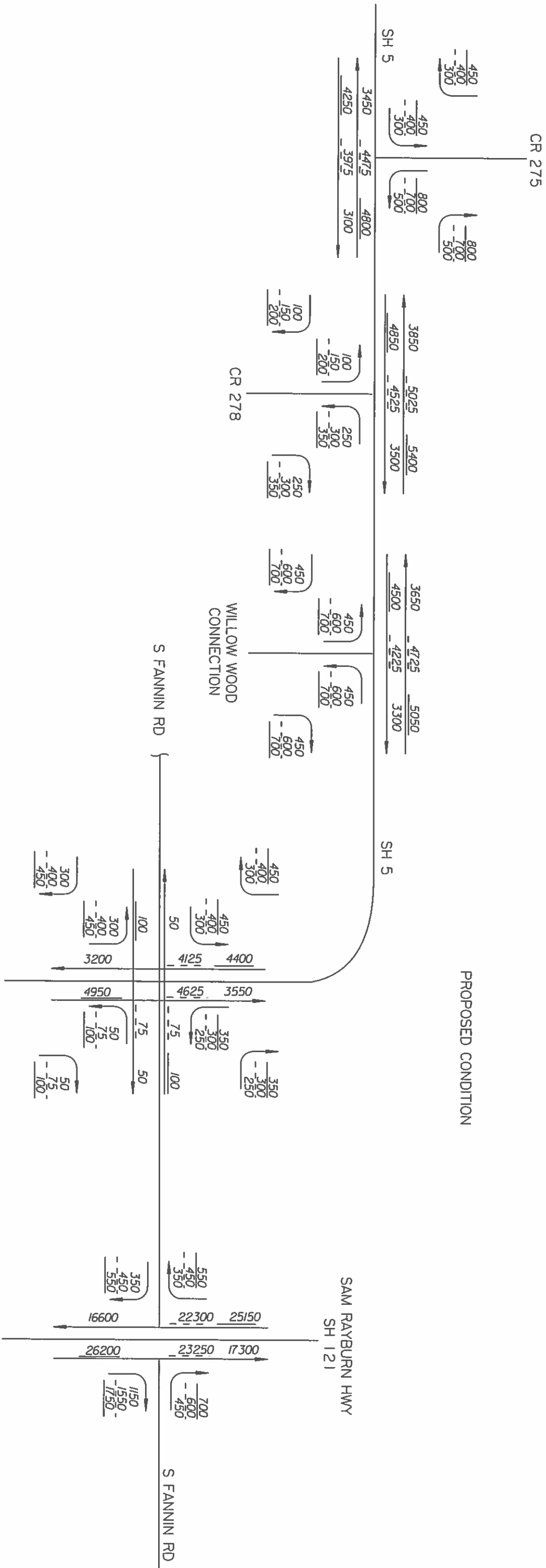
MATCH LINE (D)

MATCH LINE (E)

2025, 2045 AND 2055 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG SH 5 FROM SOUTH OF FM 1378 TO SOUTH OF MELISSA ROAD

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION

JANUARY 31, 2019



MATCH LINE (E)

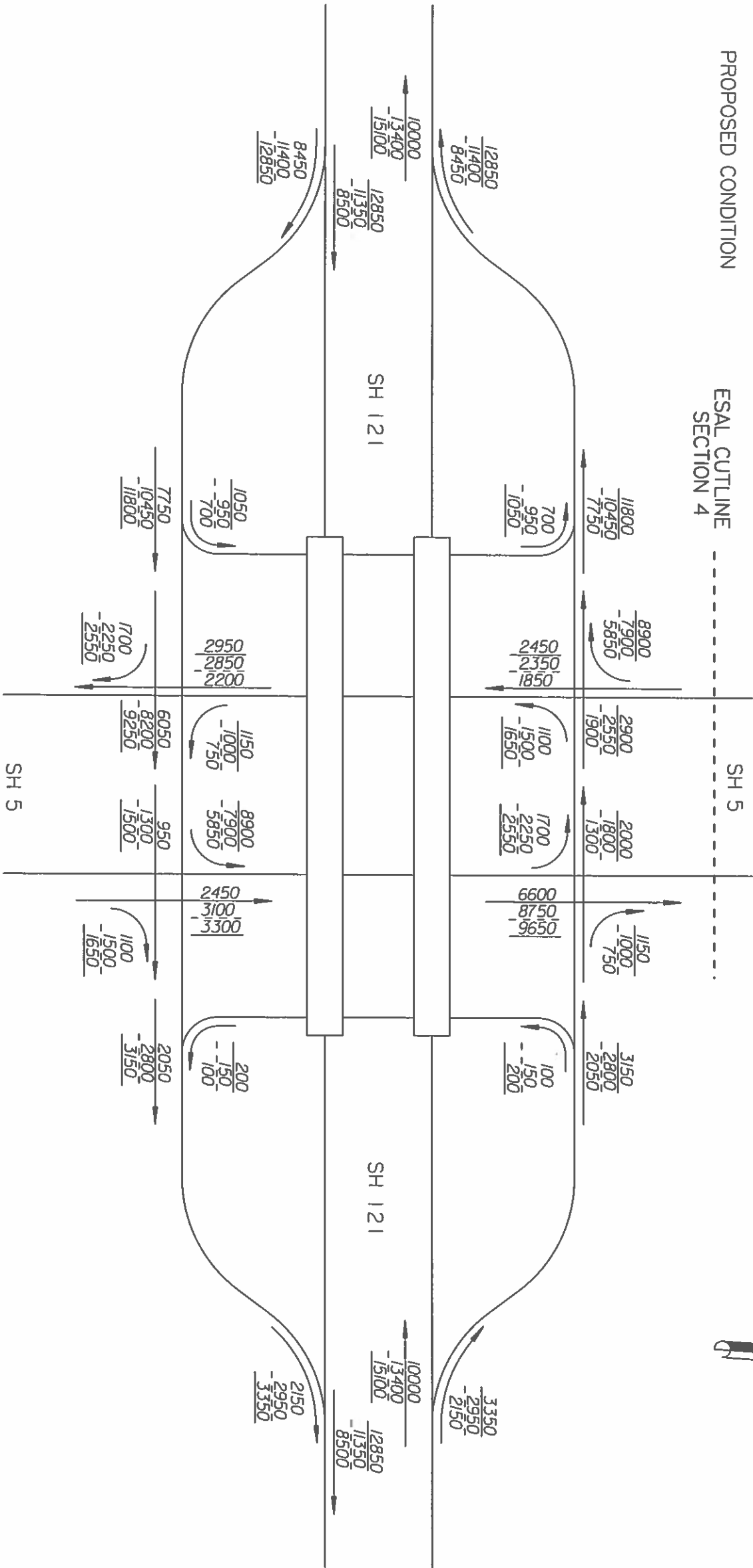
MATCH LINE (F)

LEGEND

1000 - 2025 ADT  
1000 - 2045 ADT  
1000 - 2055 ADT

2025, 2045 AND 2055 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG  
SH 5 FROM SOUTH OF FM 1378 TO SOUTH OF MELISSA ROAD

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION  
JANUARY 31, 2019



MATCH LINE (F)

2025, 2045 AND 2055 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG  
SH 5 FROM SOUTH OF FM 1378 TO SOUTH OF MELISSA ROAD  
TRANSPORTATION PLANNING AND PROGRAMMING DIVISION  
JANUARY 31, 2019



# TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Dallas District

January 29, 2019

Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)													
Description of Location	Base Year					Percent Tandem Axles in ATHWLD	ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S N	Rigid Pavement	SLAB	
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks								
	2025	2045											ADT
SH 5 (Proposed Condition)													
Section 1													
From FM 1378 To SH 399 Spur Collin County	10,500	14,000	59 - 41	10.2	8.7	5.7	11,200	40	2,723,000	3	3,401,000	8"	
Data for Use in Air & Noise Analysis													
Vehicle Class	Base Year												
	% of ADT		% of DHV										
	91.3		94.3										
	4.6		3.0										
Light Duty	4.1		2.7										
Medium Duty													
Heavy Duty													
Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)													
Description of Location	Base Year					Percent Tandem Axles in ATHWLD	ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S N	Rigid Pavement	SLAB	
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks								
	2025	2055											ADT
SH 5 (Proposed Condition)													
Section 1													
From FM 1378 To SH 399 Spur Collin County	10,500	15,700	59 - 41	10.2	8.7	5.7	11,300	40	4,367,000	3	5,456,000	8"	

# TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Dallas District

**January 29, 2019**

Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)												
Description of Location	Base Year						ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S N	Rigid Pavement	SLAB
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks							
	2025	2045			ADT	DHV						
SH 5 (Proposed Condition)												
Section 2												
From SH 399 Spur To Eldorado Pkwy  Collin County												
Data for Use in Air & Noise Analysis												
Vehicle Class	Base Year						ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S N	Rigid Pavement	SLAB
	% of ADT		% of DHV									
	94.8		96.6									
	2.7		1.8									
2.5		1.6										
Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)												
Description of Location	Base Year						ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S N	Rigid Pavement	SLAB
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks							
	2025	2055			ADT	DHV						
SH 5 (Proposed Condition)												
Section 2												
From SH 399 Spur To Eldorado Pkwy  Collin County												

# TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Dallas District

January 29, 2019

Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)									
Description of Location	Base Year				ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement		SLAB
	Average Daily Traffic		Dir Dist %	K Factor			Percent Trucks		
	2025	2045							
	ADT	DHV							
SH 5 (Proposed Condition)									
Section 3									
From Eldorado Pkwy To West University Dr. (US 380)	23,250	31,100	59 - 41	10.2	6.0	4.0	11,600	30	8"
Collin County							4,185,000	3	5,216,000
Data for Use in Air & Noise Analysis									
Vehicle Class	Base Year								
	% of ADT		% of DHV						
Light Duty	94.0		96.0						
Medium Duty	3.2		2.1						
Heavy Duty	2.8		1.9						
Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)									
Description of Location	Base Year				ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement		SLAB
	Average Daily Traffic		Dir Dist %	K Factor			Percent Trucks		
	2025	2055							
	ADT	DHV							
SH 5 (Proposed Condition)									
Section 3									
From Eldorado Pkwy To West University Dr. (US 380)	23,250	34,950	59 - 41	10.2	6.0	4.0	11,700	30	8"
Collin County							6,721,000	3	8,378,000

# TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Dallas District

January 29, 2019

Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2025 to 2045)												
Description of Location	Base Year					ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S N	Rigid Pavement	SLAB	
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks ADT							DHV
	2025	2045										
SH 5 (Proposed Condition)												
Section 4												
From West University Dr. (US 380) To South of Melissa Rd Collin County	15,050	20,000	59 - 41	10.2	7.2	4.8	40	3,230,000	3	4,032,000	8"	
Data for Use in Air & Noise Analysis												
Vehicle Class	Base Year											
	% of ADT		% of DHV									
	92.8		95.2									
	3.8		2.5									
Light Duty	3.4		2.3									
Medium Duty												
Heavy Duty												
Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2025 to 2055)												
Description of Location	Base Year					ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S N	Rigid Pavement	SLAB	
	Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks ADT							DHV
	2025	2055										
SH 5 (Proposed Condition)												
Section 4												
From West University Dr. (US 380) To South of Melissa Rd Collin County	15,050	22,150	59 - 41	10.2	7.2	4.8	40	5,143,000	3	6,419,000	8"	