



# Purpose & Need Memorandum

## Spur 399 Extension EIS

### Collin County

---

CSJ TBD – US 75 to US 380

November 23, 2020

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

## Table of Contents

<b>1. Background.....</b>	<b>1</b>
<b>2. Needs.....</b>	<b>1</b>
<b>3. Supporting Facts .....</b>	<b>1</b>
<b>3.1. Reduced Mobility and Connectivity .....</b>	<b>1</b>
3.1.1. Deficient Arterial Roadway Network to Support Anticipated Travel Demand .....	1
<b>3.2. Demands on the Transportation System .....</b>	<b>3</b>
3.2.1. Population Growth.....	3
3.2.2. Roadway Capacity and Continuity .....	4
<b>4. Purpose.....</b>	<b>6</b>

## 1. Background

In April 2020, TxDOT completed the US 380 Feasibility Study recommending an alignment for a new freeway facility across Collin County. The proposed extension of Spur 399 between US 75 and US 380 in the southwest quadrant of McKinney was a component of the recommended freeway alignment. Existing Spur 399 is approximately 0.5 mile long and serves to transition traffic between US 75, SH 5, and SH 121/Sam Rayburn Tollway (SRT) south of McKinney.

## 2. Needs

The proposed action is needed because of reduced mobility and connectivity between the eastern portion of Collin County and destinations south of McKinney, including the Dallas metroplex. This is due to a deficient arterial roadway network and lack of regionally significant arterials to address the demands that current and forecasted population growth has on the existing transportation system.

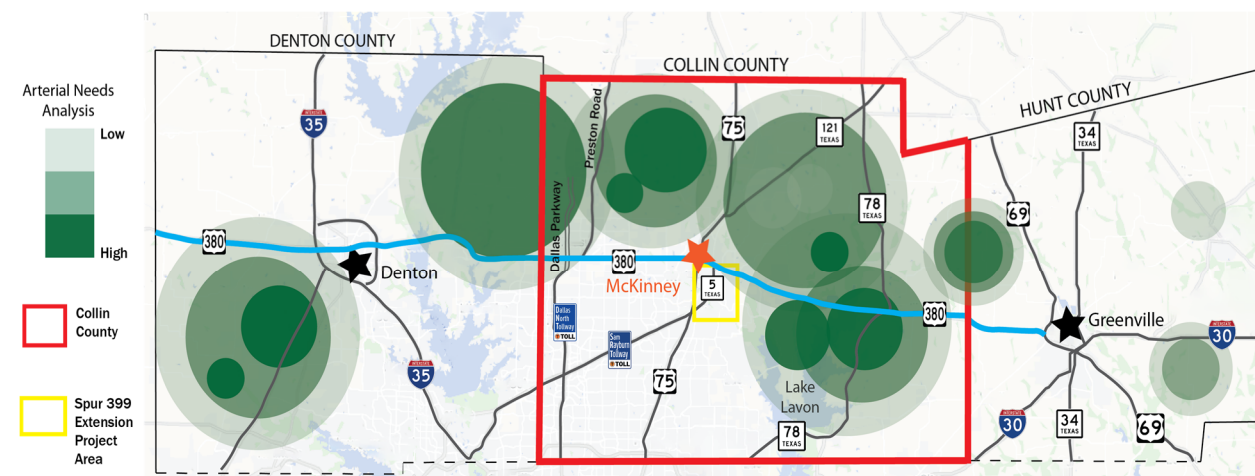
## 3. Supporting Facts

### 3.1. Reduced Mobility and Connectivity

#### 3.1.1. Deficient Arterial Roadway Network to Support Anticipated Travel Demand

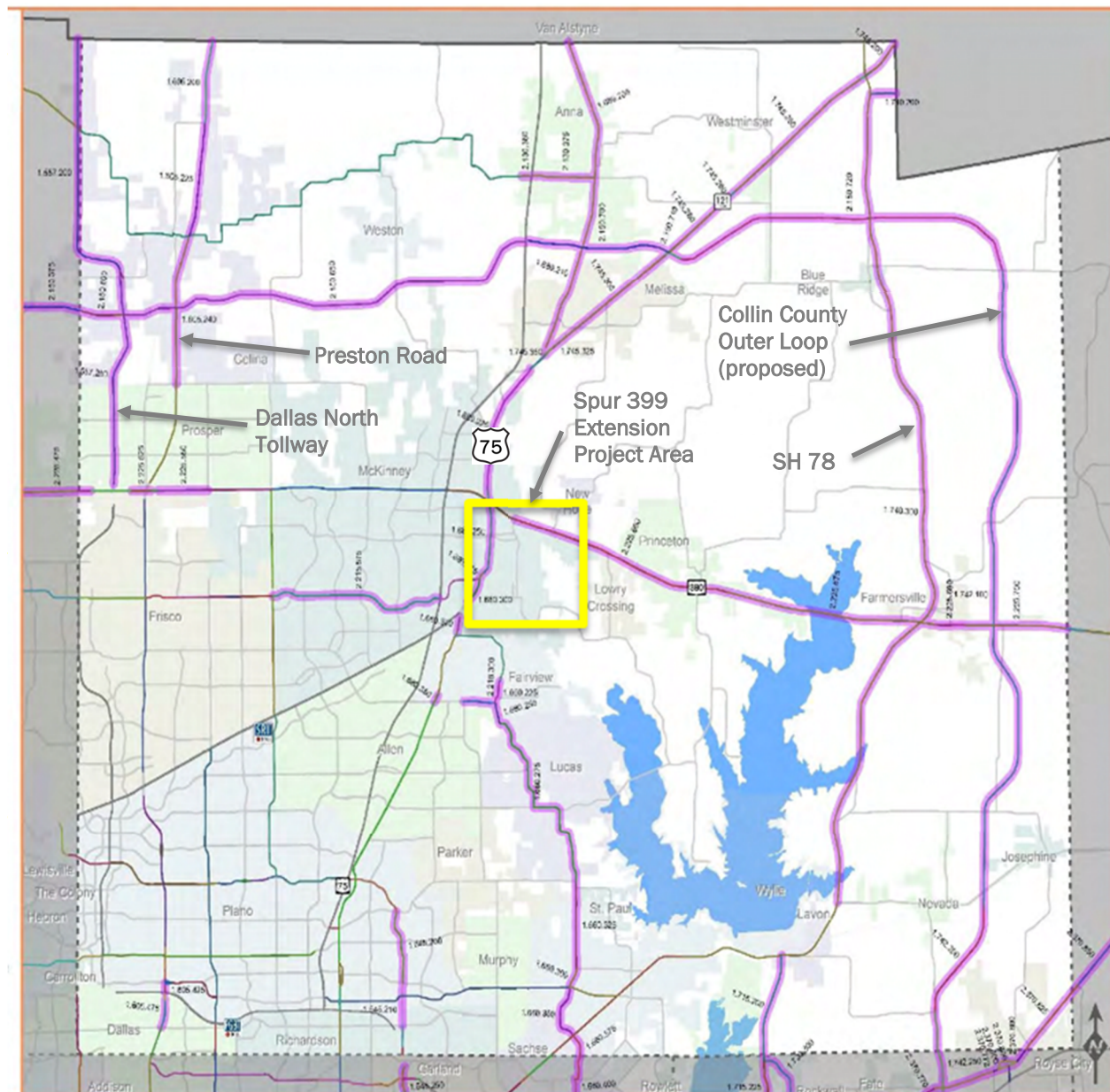
Northern and eastern Collin County have been identified by North Central Texas Council of Governments (NCTCOG) in the Metropolitan Transportation Plan (MTP), *Mobility 2045*, as areas (shown in green on Figure 1) where population growth and development will occur, arterial spacing and connectivity is lacking, and congestion occurs on existing arterials. In addition to the lack of arterials within these areas, corridors connecting these areas to the more robust regional roadway network within central and southwestern Collin County are also limited. The NCTCOG has also indicated that the existing arterial framework lacks the capacity to handle the anticipated travel demand. Travelers accessing employment, education, healthcare, and commerce in the Dallas metroplex south of McKinney must access US 75/SH 121 in McKinney to travel south. As growth in these areas continues, congestion along US 75 through McKinney will continue to worsen without consideration of additional reliever routes to bypass the most congested areas and provide connectivity to destinations to the south.

Figure 1: Areas with Deficient Existing Arterial Networks



The north-south regionally significant arterials (RSAs) identified across Collin County by NCTCOG include US 75/SH 121 through McKinney, SH 78 east of Lake Lavon, a portion of the future Collin County Outer Loop near the eastern edge of the county, and Preston Road and the Dallas North Tollway through Prosper to the west, as illustrated in Figure 2.

Figure 2: Regionally Significant Arterials in Collin County

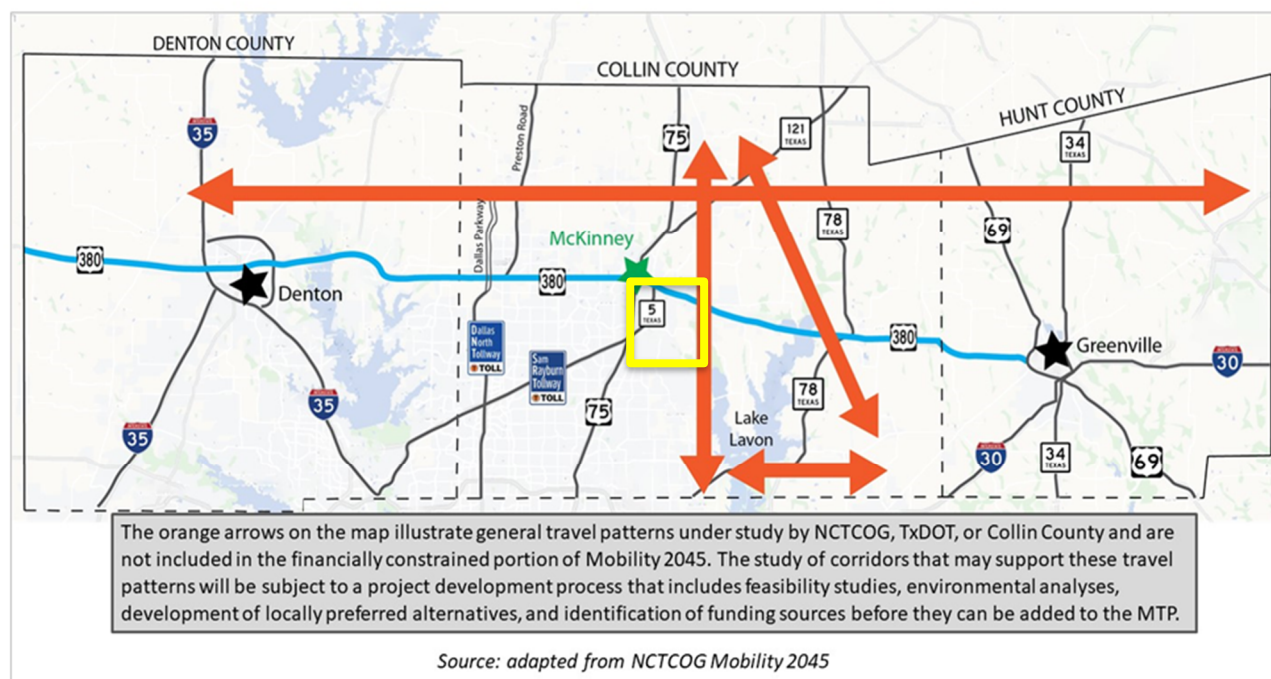


As shown in Figure 2, physical constraints such as Lake Lavon to the southeast and developed communities to the west and south limit consideration of other RSAs in the Collin County. US 75/SH 121 is the only north-south arterial providing connectivity for travellers from northern and eastern Collin County to the Dallas metroplex.



*Mobility 2045* also identifies areas of transportation need and general regional travel (shown as orange arrows) shown in Figure 3, that require further study to address mobility issues in the region.

Figure 3: NCTCOG Corridors for Future Evaluation



### 3.2. Demands on the Transportation System

#### 3.2.1. Population Growth

In 2019, Collin County had a population of 1,034,730 people, making it one of the most populous counties in Texas and has experienced a 32.3 percent increase in population between 2010 and 2019 (US Census 2019). According to the Texas State Demographer's 2014 population projections by migration scenario data, over the next 30 years Collin County could anticipate an increase in population of up to 160 to 170 percent. Communities around the project area have experienced even greater growth between 2010 and 2019 as shown in Figure 4.

Figure 4: Population Growth in the Project Area

	2010	2019	Percent Population Increase 2010-2019
Collin County TX	782,341	1,034,730	32.3%
City of McKinney TX	131,117	199,177	51.9%
City of Princeton TX	6,807	13,894	103.7%
Town of Fairview TX	7,248	9,141	26.1%

SOURCE: US Census Bureau, American Fact Finder; accessed July 2020

Development and employment growth continue to occur in the project area including the proposed expansion of the McKinney National Airport and planned industrial development around the Airport by major employers such as Encore Wire. Airport Drive, presently the only access to the Airport and the neighboring industrial area, carries traffic between US 380 and US 75/SRT as drivers avoid traveling through McKinney to take US 75 or SH 5 south to destinations in the Dallas metroplex.

### 3.2.2. Roadway Capacity and Continuity

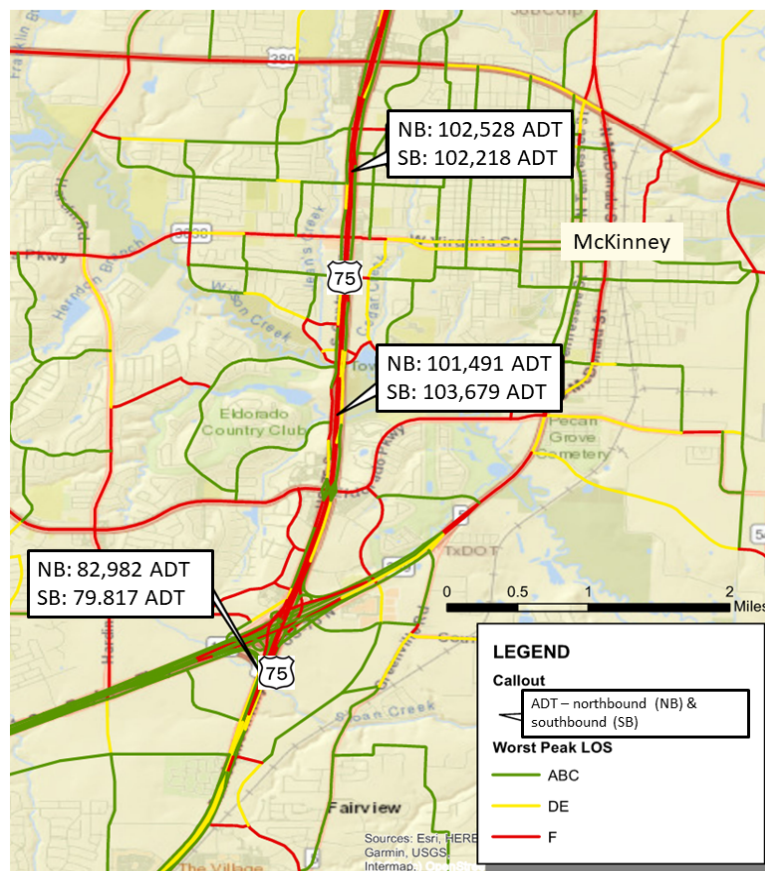
As growth continues and travel demand increases, NCTCOG has made recommendations to add capacity to the existing north-south roadway system within the project area by 2045.

- SRT/SH 121 – this existing 6-lane freeway would be widened to 8 lanes to provide new/additional toll road capacity by 2045
- SH 5 (Spur 399 to Industrial Boulevard/El Dorado Parkway, terminating at Airport Drive) – this existing 2-lane facility would be expanded to a 4-lane facility by 2028 and to a 6-lane facility by 2045
- US 75 – this existing 8-lane freeway from US 380 south would be widened to a 10-lane facility by 2045

These improvements would add capacity to the existing roadway network but would not support the connectivity and mobility needs of travelers from the eastern portion of Collin County to bypass current and forecasted areas of congestion along these roadways, particularly through McKinney, to reach destinations south of McKinney.

In the 2014 Collin County Mobility Plan, most segments of US 75 between US 380 and the junction with SH 5, Spur 399, and the SRT, were modeled at Level of Service (LOS) F for 2035. As modeled under the 2045 MTP, NCTCOG has indicated that the same segments of US 75 will be over capacity and operate at LOS D/E and F during peak hours in 2045, as depicted in Figure 5.

Figure 5: US 75 Level of Service and Traffic Volumes



SOURCE: Kimley-Horn, November 2020; data obtained from NCTCOG 2045 MTP

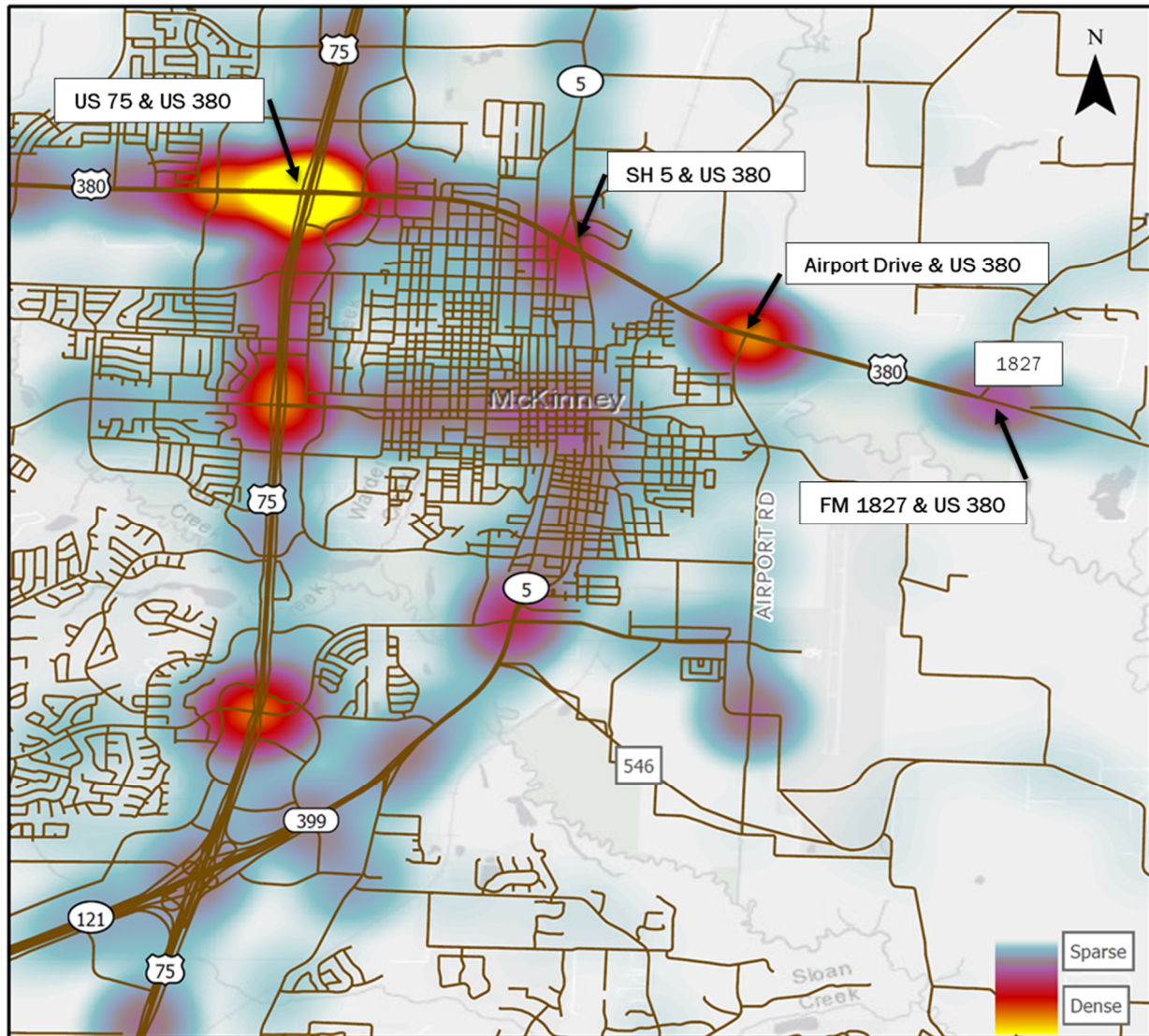
Incidents and construction projects exacerbate the constrained capacity and congestion along US 75 and connecting roadways. Traffic from northern and eastern Collin County must take US 75 or SH 5 to reach destinations south of McKinney because they are the only roadways available to connect to the Dallas metroplex. Traffic analyses conducted during the 2020 US 380 Feasibility Study for Collin County indicated that motorists are using Airport Drive from US 380 to travel south and then connect to SH 5 via West Eldorado Parkway and FM 546 (Harry McKillop Boulevard) or Industrial Boulevard or Elm Street. These routes allow motorists to bypass congested sections of US 75 to travel to the south but also take them through industrial, commercial, and residential areas along roads that vary from 2 to 4 lanes.

Based on the 2017 TxDOT Crash Records Information System [CRIS] database<sup>1</sup>, crash rates higher than the statewide average are occurring at the intersection of Airport Drive and US 380, US 75 and US 380 in the heart of McKinney, Industrial Boulevard and SH 5, and West Eldorado Boulevard and US 75 as shown in Figure 6. The high incidence of crashes at these intersections is attributed to increased use of these routes by motorists to avoid congestion along US 75 south of US 380. There are no other routes within the project area that

<sup>1</sup> TxDOT CRIS Database, accessed November 29, 2017

support network connectivity or emergency response access between these two areas when incidents or construction activity occurs along US 75.

Figure 6: Crash Rate Heat Map for the Spur 399 Project Area



#### 4. Purpose

The purpose of the proposed action is to improve north-south mobility and connectivity of travellers from eastern Collin County to destinations south of McKinney, including the Dallas metroplex.