MEMORANDUM

To: Traffic Study Files

From: Alison Mills, P.E., South Austin Engineer
Transportation Engineering Division
Austin Transportation Department

Date: September 7, 2021

Subject: SPEED ZONE INVESTIGATION

Location: East Slaughter Lane – Old Lockhart Road to 1450 feet east of Vertex Boulevard

Date(s) of Previous Investigation: None

The Transportation Engineering Division (TED) of the Austin Transportation Department conducted this engineering speed zone investigation to determine the appropriate speed limit on East Slaughter Lane from Old Lockhart Road to 1450 feet east of Vertex Boulevard as no speed limit is established in the City's Code of Ordinances for this segment of East Slaughter Lane.

Location Conditions

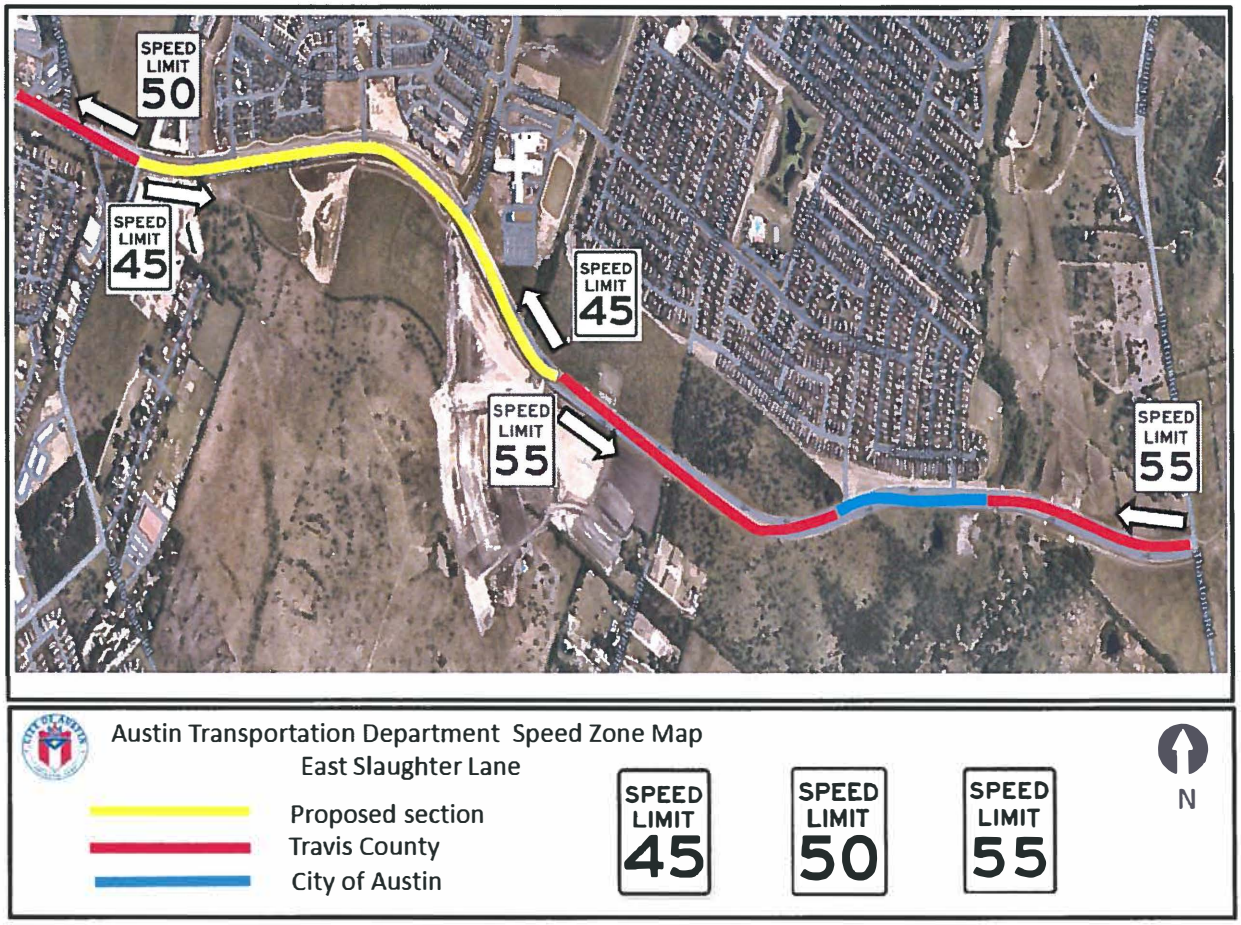
Between 2015 and 2019, East Slaughter Lane was a two-lane, undivided roadway terminating at Vertex Boulevard under Travis County's jurisdiction. East Slaughter Lane was extended east of Vertex Boulevard to Thaxton Road and expanded to a four-lane, median-divided roadway open to traffic in April 2021. The City of Austin now has jurisdiction on East Slaughter Lane within the extents of the engineering investigation between Old Lockhart Road and 1450 feet east of Vertex Boulevard. Goodnight Ranch subdivision and Blazer Intermediate School are on the north side of East Slaughter Lane.

Figure 1 represents a map of the study area.

Figure 1: Study Area

The section to the west of Old Lockhart Road is under the jurisdiction of Travis County and the existing speed limit is 50 MPH. Travis County has verbally agreed to restudy this section to see if it's justified to lower the speed limit. To the east of 1450' east of Vertex Boulevard, Travis County recently conducted a study and designated the section as 55 MPH. These existing speed limits are reflected in Figure 2.

Figure 2: Existing and Proposed Speed Zones



Investigation Data

TED's investigation was conducted in accordance with the TxDOT's "Procedures for Establishing Speed Zones," which focuses on a traditional methodology of 85th percentile speeds.

This investigation also utilized FHWA's USLIMITS2 tool to evaluate speed limits from a safe systems approach, which includes the following inputs to consider in setting reasonable, safe, and consistent speed limits based on the context and operating characteristics on the study segment:

- 85th percentile speed
- 50th percentile speed
- Statutory speed limit
- Section length
- Road alignment
- Median treatment
- Number of through lanes
- Adjacent land use
- Driveway density
- Traffic control devices
- Bicycle, pedestrian, and parking activity
- Daily vehicular volume
- Crash rate

As summarized in Table 1, TED collected speed and volume data in July and August 2021 to aid in its analysis, which recorded over 14,000 vehicles west of Vertex Boulevard and over 8,000 daily vehicles east of Vertex Boulevard.

The 85th percentile speed on the eastbound and westbound lanes was recorded in the range of 49 mph to 57 mph. The average 85th percentile speed on East Slaughter Lane was recorded at 53 mph for the eastbound and westbound lanes of traffic.

Table 1: Speed and Volume Data

Block Number	Street Segment	Existing Speed Limit	85% Speed		Traffic Volumes
			EB	WB	
2400	From Alderman Dr. to Goodnight Ranch Rd.	None	54	49	14,461
2800	From Vertex Blvd. to 1450 ft. east of Vertex Blvd.	None	57	52	8,384

In addition to the speed and volume data, inputs previously listed for the USLIMITS2 investigation were collected, which are summarized in the attached addendum.

Recommendation

TED has determined a speed limit of 45 mph is appropriate for the study segment, based on the two methodologies used for setting speed limits and particularly these considerations:

- The crash rate and injury crash rates for the study segment both exceed average crash rates for similar roads.
- The study segment is experiencing development adjacent to the road, including new schools, residences, and businesses, that are changing the operation of the road to a more urban context needing an appropriate speed limit.

Appendix

USLIMITS2 Speed Zoning Report

Project Overview

Project Name: eslgt2

Analyst: Alison

Date: 2021-09-07

Basic Project Information
Route Name: E Slaughter
From: Old Lockhart
To: 1450 East of Vertex
State: Texas
County: Travis County
City: Austin city
Route Type: Road Section in Developed Area
Route Status: Existing

Crash Data Information
Crash Data Years: 1.00
Crash AADT: 11400 veh/day
Total Number of Crashes: 16
Total Number of Injury Crashes: 8
Section Crash Rate: 385 per 100 MVM
Section Injury Crash Rate: 192 per 100 MVM
Crash Rate Average for Similar Roads: 200
Injury Rate Average for Similar Roads: 63

Roadway Information
Section Length: 1 mile(s)
Statutory Speed Limit: 60 mph
Existing Speed Limit: mph
Adverse Alignment: No
One-Way Street: No
Divided/Undivided: Divided
Number of Through Lanes: 4
Area Type: Residential-Collector/Arterial
Number of Driveways: 4
Number of Signals: 0

Traffic Information
85th Percentile Speed: 53 mph
50th Percentile Speed: 47 mph
AADT: 11400 veh/day
On Street Parking and Usage: Not High
Pedestrian / Bicyclist Activity: Not High

Recommended Speed Limit: **45**

Note: The section crash rate of 385 per 100 MVM is above the critical rate (326). The injury crash rate for the section of 192 per 100 MVM is above the critical rate (139). A comprehensive crash study should be undertaken to identify engineering and traffic control deficiencies and appropriate corrective actions. The speed limit should only be reduced as a last measure after all other treatments have either been tried or ruled out.

Equations Used in the Crash Data Calculations

Exposure (M)
M = (Section AADT * 365 * Section Length * Duration of Crash Data) / (100000000)
M = (11400 * 365 * 1 * 1.00) / (100000000)
M = 0.0416

Crash Rate (Rc)
Rc = (Section Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Rc = (16.00 * 100000000) / (11400 * 365 * 1)
Rc = 384.52 crashes per 100 MVM

Injury Rate (Ri)
Ri = (Section Injury Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Ri = (8.00 * 100000000) / (11400 * 365 * 1)
Ri = 192.26 injuries per 100 MVM

Critical Crash Rate (Cc)
Cc = Crash Average of Similar Sections + 1.645 * (Crash Average of Similar Sections / Exposure) ^ (1/2) + (1 / (2 * Exposure))
Cc = 199.97 + 1.645 * (199.97 / 0.0416) ^ (1/2) + (1 / (2 * 0.0416))
Cc = 326.03 crashes per 100 MVM

Critical Injury Rate (Ic)
Ic = Injury Crash Average of Similar Sections + 1.645 * (Injury Crash Average of Similar Sections / Exposure) ^ (1/2) + (1 / (2 * Exposure))
Ic = 63.18 + 1.645 * (63.18 / 0.0416) ^ (1/2) + (1 / (2 * 0.0416))
Ic = 139.30 injuries per 100 MVM