M E M O R A N D U M

11/17/2022

To: Traffic Study Files

From: Lee Austin, P.E.
Area Engineer
Austin Transportation Department

Date: November 17, 2022

Subject: Speed Zone Investigation

Location: Barton Springs Road – S. Congress Avenue to 650 feet west of Azie Morton Road

Year(s) of Previous Investigation: 1984

A speed zone investigation has been conducted by the Austin Transportation Department to recommend an appropriate speed limit on Barton Springs Road from S. Congress Avenue to 650 feet west of Azie Morton Road (the study segment). Figure 1 at the end of this document presents a map of the study area with existing and proposed speed limits along the study segment. Staff previously studied this section of Barton Springs Road in 1984.

Location Conditions

Barton Springs Road is a four-lane, arterial roadway approximately two miles long between State Loop 1 (MoPac) and S. Congress Avenue with an existing speed limit of 35 miles per hour (MPH). The roadway from Zilker Metropolitan Park to S. Lamar Boulevard is median divided with unprotected bike lanes in the street. The roadway from S. Lamar Boulevard to S. Congress Avenue is undivided with a center turn lane and protected bike lanes. Sidewalks are present for a majority of the study segment. The segment of Barton Springs Road from Zilker Metropolitan Park to S. Congress Avenue has a high level of pedestrian and bicycle traffic due to its proximity to Zilker Metropolitan Park and other attractors typical to a dense, urban environment.

Figure 1 presents the study segment and the surrounding street network.

Traffic Data

Speed and volume data were collected during May of 2022 to determine the appropriate posted speed limit for the study segment.

Block Number	Location	Posted Speed Limit	50th – Percentile Speed		85th – Percentile Speed		Daily Traffic Volumes
			EB	WB	EB	WB	
1600	West of Kinney Avenue	35	31	30	36	35	22,574

Crash Data

Austin Police Department's crash database was reviewed to analyze documented crashes along the study segment within the past eighteen months. Seventy-eight crashes were documented during this period; no specifically identified pattern from excessive speed is present. The table below lists eighteen of the crashes that did not occur at the major intersections.

Date / Time	Direction		Weather	Light	Road	Injury	Comments
	At Fault	Other					
6/12/2021 7:40 pm	EB	-	Clear	Daylight	Dry	Possible Injury	While turning right, motor vehicle rear-end collision with scooter following too closely
7/5/2021 3:31 pm	WB	WB	Rain	Daylight	Wet	Possible Injury	Sideswipe
7/06/2021 7:04 pm	WB	WB	Cloudy	Daylight	Dry	None	Unsafe lane change
7/08/2021 7:40 pm	WB	WB	Clear	Daylight	Dry	Possible Injury	Failed to yield right of way to cyclist
7/25/2021 9:28 pm	EB	-	Clear	Dark, lighted	Dry	None	Failed to yield right of way to pedestrian in crosswalk
7/30/2021 7:08 pm	WB	EB	Clear	Daylight	Dry	None	U-turn, did not yield right of way
8/11/2021 7:34 pm	WB	EB	Cloudy	Daylight	Dry	Possible Injury	Failed to yield right of way while turning left
9/12/2021 2:07 pm	WB	WB	Clear	Daylight	Dry	Possible Injury	Failed to yield right of way while backing into roadway
03/10/2022 7:01 pm	SB	EB	Clear	Dark, lighted	Dry	Possible Injury	Failed to yield right of way while turning left
4/08/2022 8:18 pm	WB	EB	Clear	Daylight	Dry	Serious Injury	Unsafe speed, did not yield right of way while turning left

4/09/2022 1:48 pm	WB	WB	Clear	Daylight	Dry	None	Unsafe lane change
4/18/2022 4:17 pm	EB	EB	Clear	Daylight	Dry	Possible Injury	Failed to maintain assured distance – rear end
4/29/2022 3:01 am	WB	-	Clear	Dark, lighted	Dry	None	Vehicle hit median, had been drinking
5/4/2022 10:00 pm	WB	-	Cloudy	Dark, lighted	Dry	None	Vehicle hit median, had been drinking
5/07/2022 2:30 am	WB	-	Clear	Dark, lighted	Dry	None	Driver inattention, vehicle left roadway
7/28/2022 11:32 pm	WB	-	Clear	Dark, lighted	Dry	None	Vehicle left roadway, had been drinking
9/13/2022 1:20 pm	WB	WB	Clear	Daylight	Dry	Possible Injury	Failed to yield right of way to cyclist while turning right
10/09/2022 4:54 pm	WB	WB	Cloudy	Daylight	Dry	Possible Injury	Opened door into traffic lane, followed too closely

Analysis

The analysis of the speed data indicates that the 85th percentile speed along Barton Springs Road is between 35 and 36 mph from S. Congress Avenue to 650 feet west of Azie Morton Road. Staff followed the procedures specified in the Texas Procedures for Establishing Speed Zones, 2006, which takes into consideration the 85th percentile speed. In this investigation, staff also employed USLIMITS2, a tool provided by the Federal Highway Administration designed to help practitioners set reasonable, safe, and consistent speed limits for specific segments of roads. USLIMITS2 takes into consideration the 85th percentile speed and other factors such as the 50th percentile speed, annual average daily traffic, roadway characteristics and geometric conditions, level of development in the area around the road, crash and injury rates, presence of on-street parking, and extent of ped/bike activity, as well as several others depending on the road type. A 30 mph speed limit was recommended by the USLIMITS2 tool utilizing data particular to the segment between S. Congress Avenue and 650 feet west of Azie Morton Road. A 35 mph speed limit is to be maintained from State Loop 1 (MoPac) to 650 feet west of Azie Morton Road as this segment will need additional investigation since the street context changes dramatically west of the segment studied in this investigation.

Recommendation

Based on the analysis of this information, it is my engineering judgement that the speed limit on Barton Springs Road from S. Congress Avenue to 650 feet west of Azie Morton Road should be established at **30 mph**. Figure 1 presents the recommended speed limits in the study segment.

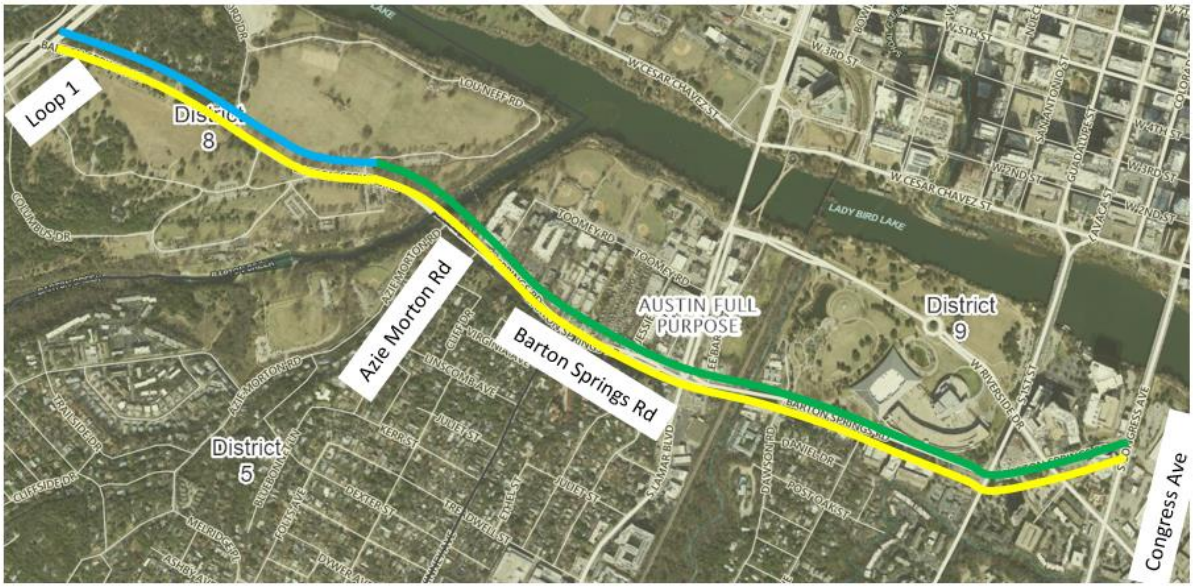

	Figure 1. Barton Springs Rd	Proposed Speed Limit Change	Existing 35 mph for deletion Proposed 30 mph Proposed 35 mph N

USLIMITS2 Speed Zoning Report

Project Overview

Project Name: Barton Springs Rd btw Congress and Zilker

Analyst: Ravi D

Date: 2022-11-04

Basic Project Information
Route Name: Barton Springs Rd
From: Congress Ave
To: West of Azie Morton Rd
State: Texas
County: Travis County
City: Austin city
Route Type: Road Section in Developed Area
Route Status: Existing

Crash Data Information
Crash Data Years: 5.00
Crash AADT: 22574 veh/day
Total Number of Crashes: 988
Total Number of Injury Crashes: 101
Section Crash Rate: 1599 per 100 MVM
Section Injury Crash Rate: 163 per 100 MVM
Crash Rate Average for Similar Roads: 641
Injury Rate Average for Similar Roads: 193

Roadway Information
Section Length: 1.5 mile(s)
Statutory Speed Limit: 35 mph
Existing Speed Limit: 35 mph
Adverse Alignment: No
One-Way Street: No
Divided/Undivided: Undivided
Number of Through Lanes: 4
Area Type: Commercial
Number of Driveways: 41
Number of Signals: 9

Traffic Information
85th Percentile Speed: 36 mph
50th Percentile Speed: 31 mph
AADT: 22574 veh/day
On Street Parking and Usage: High
Pedestrian / Bicyclist Activity: High

Recommended Speed Limit:

Note: The section crash rate of 1599 per 100 MVM is above the critical rate (695). 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.

Disclaimer: The U.S. Government assumes no liability for the use of the information contained in this report. This report does not constitute a standard, specification, or regulation.

Equations Used in the Crash Data Calculations

Exposure (M)
M = (Section AADT * 365 * Section Length * Duration of Crash Data) / (100000000)
M = (22574 * 365 * 1.5 * 5.00) / (100000000)
M = 0.6180

Crash Rate (Rc)
Rc = (Section Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Rc = (197.60 * 100000000) / (22574 * 365 * 1.5)
Rc = 1598.80 crashes per 100 MVM

Injury Rate (Ri)
Ri = (Section Injury Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Ri = (20.20 * 100000000) / (22574 * 365 * 1.5)
Ri = 163.44 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 = 640.76 + 1.645 * (640.76 / 0.6180) ^ (1/2) + (1 / (2 * 0.6180))
Cc = 694.54 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 = 192.92 + 1.645 * (192.92 / 0.6180) ^ (1/2) + (1 / (2 * 0.6180))
Ic = 222.80 injuries per 100 MVM