



MEMORANDUM

To: Traffic Study File
From: Rob Spillar, P.E.
Director, Austin Transportation Department
[Handwritten signature: Robert Spillar]
Date: ~~May 21, 2018~~ June 22, 2018
[Handwritten initials: RJ]
Subject: Multi-Way Stop Investigation
Location: Jester Boulevard & Beauford Drive



[Handwritten date: 06/22/2018]

A traffic engineering investigation has been conducted at the intersection of Jester Boulevard and Beauford Drive-Guava Cove (the “study” intersection) to determine whether multi-way stop controls should be implemented to improve the operation and safety for all roadway users at this location. This investigation includes evaluation of location conditions, reported crashes, and traffic data.

Location Conditions

The intersection of Jester Boulevard and Beauford Drive-Guava Cove is located within a residential area in Austin, Texas. This residential area is bounded by FM 2222 to the south, Loop 360 to the east, and Bull Creek greenbelts to the north and west as shown in Figure 1.

Jester Boulevard runs in a north-south direction with Beauford Drive intersecting from the east and Guava Cove from the west forming the stop-controlled approaches. Jester Boulevard is the primary access road to the entire residential area. Beauford Drive runs in an east-west direction and also serves as an access road for residents from Loop 360 via Lakewood Drive. Guava Cove terminates in a cul-de-sac providing access to a few homes.

Jester Boulevard functions as a two-lane neighborhood collector street with a posted speed limit of 30 mph. It is approximately 60 feet wide with two travel lanes, bike lanes and parking/shoulder lanes on both sides of the road. Development along Jester Boulevard immediately north of FM 2222 is commercial but the remaining is residential with homes fronting the road.

Beauford Drive also functions as a two-lane neighborhood collector street with a posted speed limit of 30 mph. It is approximately 44 feet wide with two travel lanes with marked shoulder stripes between Lakewood Drive and Rusty Fig Drive. Development along Beauford Drive is all residential with homes fronting the road.

Additionally, the geometric alignment of both Jester Boulevard and Beauford Drive are very similar consisting of a combination of horizontal and vertical curves.

Figure 1 presents the location map of the study area.

Figure 1: Location Map of Study Area

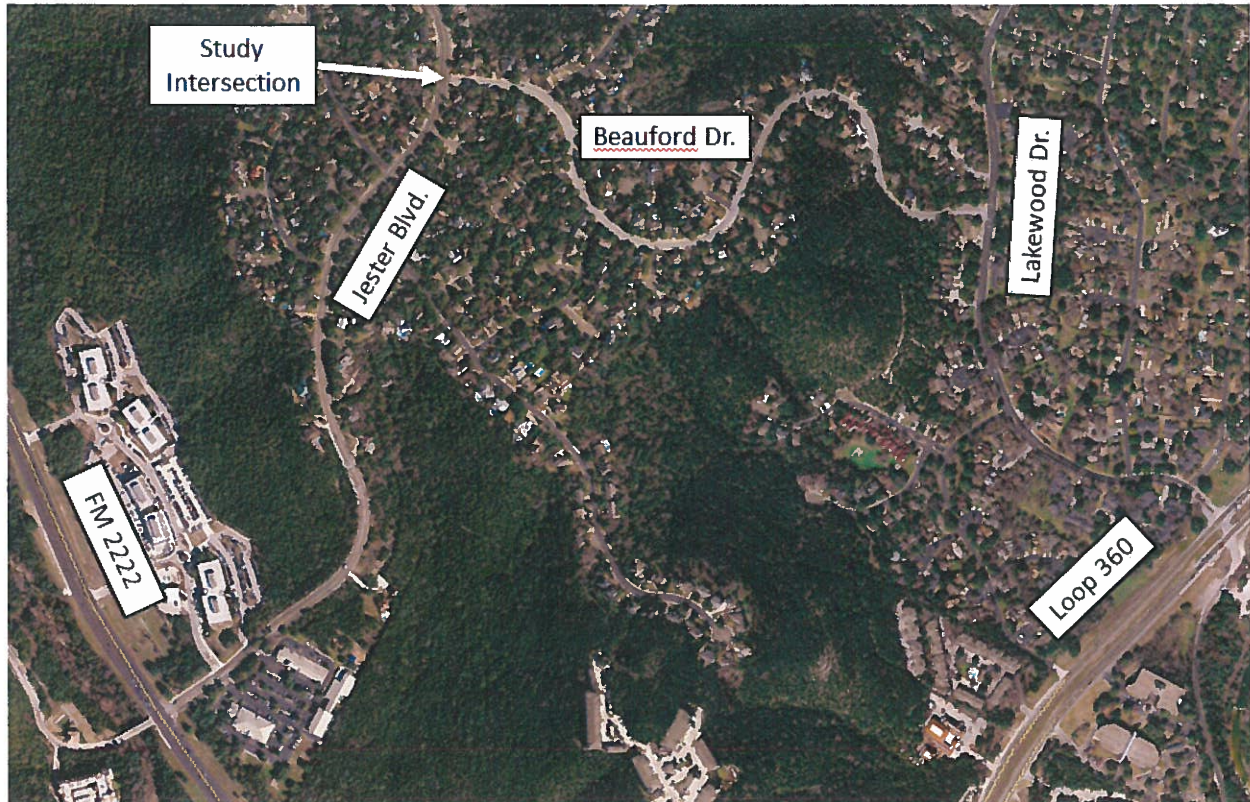


Table 1 presents the roadway geometrics at the study intersection.

Table 1: Roadway Geometrics at the Study Intersection

Street Name	Approach	Existing Control	No. of Approach lanes	Approach Width (ft.)
Jester Boulevard	NB	None	1	19
Jester Boulevard	SB	None	1	19
Guava Cove	EB	Stop	1	15
Beauford Drive	WB	Stop	1	21

Data Collection

Vehicular volume and speed data were collected for 24 hours on Jester Boulevard and Beauford Drive in April of 2018. Table 2 presents the eight highest hours of vehicular volume through the study intersection over the 24-hour period.

Table 2: Vehicular Volumes (Highest Eight Hours)

Hour		Major Street (Jester Blvd.)	Minor Street (Beauford Dr.)	Total
From	To			
5:00PM	6:00PM	286	144	430
6:00PM	7:00PM	232	139	371
4:00PM	5:00PM	207	127	334
3:00PM	4:00PM	184	109	293
7:00PM	8:00PM	155	93	248
8:00AM	9:00AM	328	86	414
11:00AM	12:00PM	202	79	281
2:00PM	3:00PM	207	78	285

Table 3 presents speed data on Jester Boulevard approaching the study intersection. Speed data was not collected on Beauford Drive and Guava Cove because the stop controls on these streets at the study intersection would not produce accurate operating speeds indicative of those away from the intersection.

Table 3: Vehicular Speeds (24 Hours)

Location	Direction	85 th -Percentile Speed
North of Beauford Drive-Guava Cove	Southbound	34.2 mph
South of Beauford Drive-Guava Cove	Northbound	35.9 mph

Crash History

Austin Police Department's crash database was reviewed to analyze all reported crashes at the study intersection within the previous one year time period (per TMUTCD requirements). There were no reported crashes at the study intersection within the last year. However, one crash occurred at the intersection back in May of 2015 due to a motorist on Beauford Drive failing to yield to a motorist travelling northbound on Jester Boulevard.

Analysis

Jester Boulevard and Beauford Drive both function as residential neighborhood collector streets. Jester Boulevard is the main access road to the entire residential area. Beauford Drive also serves as an access road for residents from Loop 360 via Lakewood Drive. Traffic data and the roadway network were analyzed to determine the appropriateness of multi-way stop controls at the study intersection per the following criteria in the *2011 Texas Manual on Uniform Traffic Control Devices* (TMUTCD).

Criteria 1 – Interim Controls

Where traffic signals are warranted and urgently needed, a multi-way stop control is an interim measure that can be installed quickly to control traffic while arrangements are being made for the signal installation.

Criteria 1 is N/A.

Criteria 2 – Crash History

If five or more reported crashes occurred within the twelve month period, multi-way stop controls should be considered. These crashes, such as right-turn, left-turn, and right-angle collisions, should be susceptible to correction by multi-way stop controls.

There were no reported crashes within the 12-month period.

Criteria 2 is NOT MET.

Criteria 3 – Minimum Traffic Volumes

These criteria should be used when the volume split of traffic on the intersecting roads is nearly equal, and the following three conditions are satisfied.

- Condition 1 – The total vehicular volume entering the intersection from the major street approaches (total of both approaches) average at least 300 vehicles per hour for any 8 hours of an average day; and
- Condition 2 – The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) average at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but
- Condition 3 – If the 85th-percentile approach speed of the major street traffic exceeds 40 mph (65 km/h), the minimum vehicular volume requirements are 210 and 140 vehicles per hour for any eight hours for the major and minor streets, respectively.

Criteria 3 is NOT MET.

Criteria 4 – Combination of Criteria

A multi-way stop may be appropriate if no single criteria is met, but where criteria 2 and criteria 3 (Conditions 1 and 2) are satisfied to 80% of the minimum values. The reduced volume criteria for speeds over 40 mph are excluded from this criteria.

- Condition 1 – If four crashes occur in a 12-month period, multi-way stop control should be considered. These crashes should be susceptible to correction by multi-way stop control, such as right-turn, left-turn, and right-angle collisions; and
- Condition 2 – The total vehicular volume entering the intersection from the major street approaches (total of both approaches) average at least 240 vehicles per hour for any 8 hours of an average day; and
- Condition 3 – The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) average at least 160 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour.

Criteria 4 is NOT MET.

Criteria 5 – Other Criteria

The TMUTCD gives the option of considering the following other criteria in the multi-way stop investigation.

Condition 1 – The need to control left-turn conflicts;

Condition 2 – The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;

Condition 3 – Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop; and

✓ Condition 4 – An intersection of two residential neighborhood collectors (through) streets of similar design and operating characteristics where multi-way stop controls would improve operational characteristics of the intersection.

Condition 4 is MET. *Condition 1 is also a concern*

Summary

This traffic engineering investigation was conducted at the study intersection to determine whether multi-way stop controls should be implemented to improve the operation and safety for all roadway users after considering location conditions, reported crashes, and traffic data.

TMUTCD Criteria 1, 2, 3, and 4 are NOT MET for the study intersection based on this latest study.

However, Condition 4 under Criteria 5 is satisfied. *§ Condition 1 of criteria 5 is a noted concern.*

- Jester Boulevard and Beauford Drive both function as residential neighborhood collector (through) streets of similar operating characteristics. Jester Boulevard is the primary access to the entire residential area. Beauford Drive also serves as an access road for residents from Loop 360 via Lakewood Drive. Guava Cove terminates in a cul-de-sac providing access to a few homes
- Jester Boulevard and Beauford Drive both have residences fronting the roads
- The geometric alignment of both Jester Boulevard and Beauford Drive are very similar consisting of a combination of horizontal and vertical curves.

Recommendation

As a result, it is my engineering judgment that the installation of multi-way stop controls is appropriate at the intersection of Jester Boulevard & Beauford Drive.