

Traffic Study Summary

Date:	June 17, 2021
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Request:	All-way stops at Avery Parkway and Avery Ranch Drive and at Avery Parkway and Conner Drive; crosswalks on Conner Drive at Avery Parkway and on Avery Parkway at Avery Ranch Drive; and yellow center line pavement markings on Avery Parkway
Recommendation:	Extension of the existing school zone on Avery Parkway; installation of a crosswalk on Avery Parkway at Avery Ranch Drive; and double yellow center line pavement markings on a portion of Avery Parkway

Background

Engineering staff received a request to investigate Avery Parkway during school peak hours to consider adding yellow center line pavement markings, crosswalks, and all-way stop control at the intersections with Conner Drive and Avery Ranch Drive. Avery Parkway is a two-lane roadway classified as a local street and is the major street at these intersections at this time. Avery Ranch Drive is classified on the 2012 Regional Transportation Plan as a minor collector and is proposed to continue northwest outside of the Avery Ranch subdivision with development. Avery Ranch Drive and Conner Drive are both currently stop controlled at their intersections with Avery Parkway. Conner Drive is a two-lane local street. The speed limit on all streets is 30 mph.

Clear Spring Elementary School is located on Avery Parkway within the Avery Ranch subdivision. There is an existing school zone with static school zone signs on Avery Parkway at the intersection with Wood Drake to approximately 500 feet north of Conner Drive.

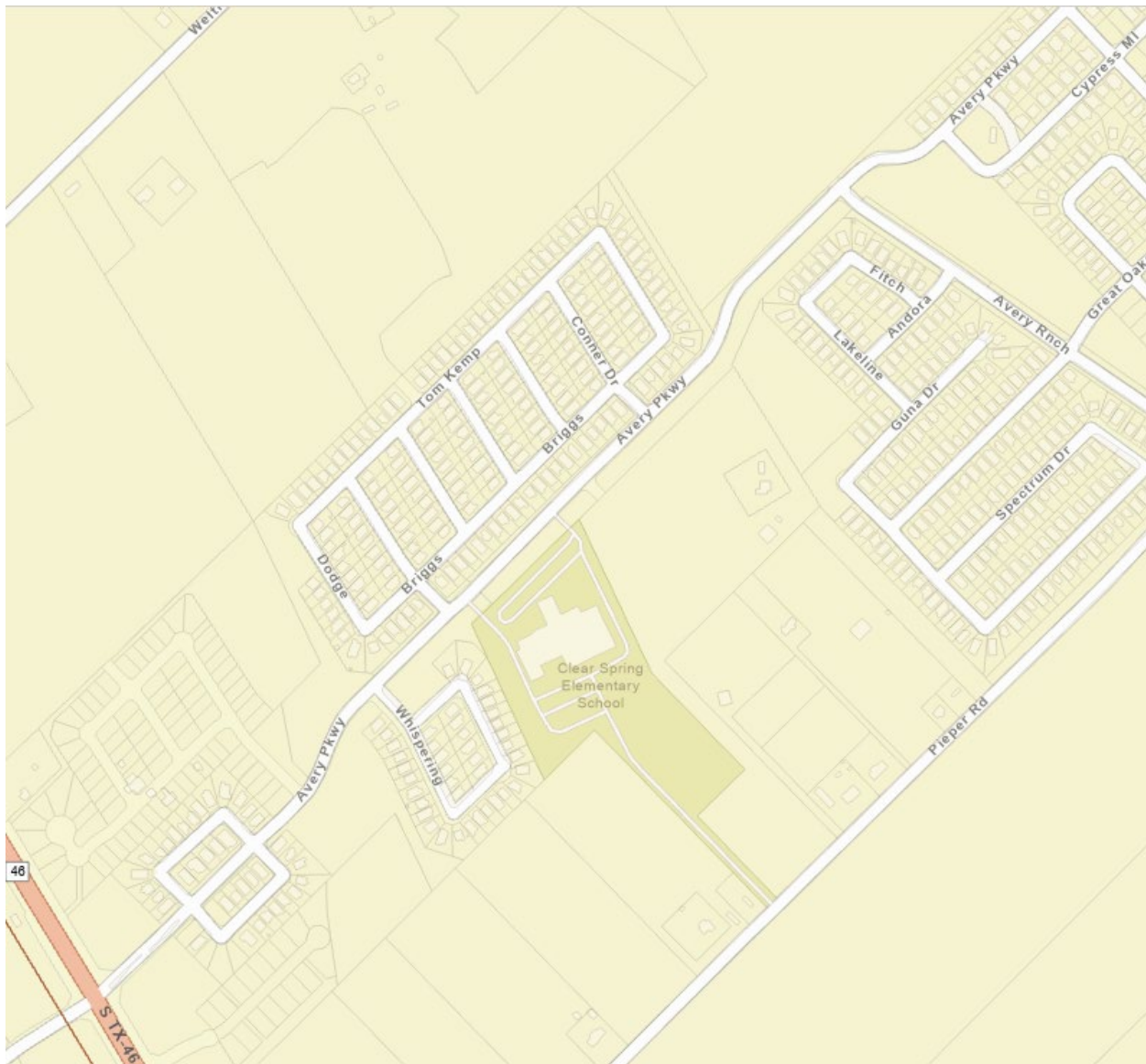


Figure 1. Avery Parkway from SH 46 to Cypress Mill

Guidance

Section 2B.04 of the *Texas Manual on Uniform Traffic Control Devices* (TMUTCD) provides support and guidance for right-of-way at intersections. The following TMUTCD guidance was considered for the all-way stop control requests,

Once the decision has been made to control an intersection, the decision regarding the appropriate roadway to control should be based on engineering judgment. In most cases, the roadway carrying the lowest volume of traffic should be controlled.

Based on the existing traffic control and local street network, TMUTCD guidance from Section 2B.07 was used for engineering judgement. The attached multi-way stop evaluation details the specific criteria evaluated.

Sections 3B.01 and 3B.02 of the TMUTCD provide support and guidance for the application of yellow center line and no-passing zone pavement markings and warrants, respectively. The following TMUTCD guidance was considered for the yellow center line pavement marking request,

Center line markings should be placed on paved urban arterials and collectors that have a traveled way of 20 feet or more in width and an ADT of 4,000 vehicles per day or greater....Center line markings should also be placed on other traveled ways where an engineering study indicates such a need.

On two-way, two- or three-lane roadways where center line markings are installed, no-passing zones shall be established at vertical and horizontal curves and other locations where an engineering study indicates that passing must be prohibited because of inadequate sight distances or other special conditions.

Section 3B.18 of the TMUTCD provides guidance for the installation of crosswalks,

An engineering study should be performed before a marked crosswalk is installed at a location away from a traffic control signal or an approach controlled by a STOP or YIELD sign. The engineering study should consider the number of lanes, the presence of a median, the distance from adjacent signalized intersections, the pedestrian volumes and delays, the average daily traffic (ADT), the posted or statutory speed limit or 85th-percentile speed, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.

Section 7C.02 of the TMUTCD provides support and guidance for the establishment of crosswalk markings at intersections to mark designated pedestrian routes to schools.

Crosswalks should be marked at all intersections on established routes to a school where there is substantial conflict between motorists, bicyclists, and student movements; where students are encouraged to cross between intersections; where students would not otherwise recognize the proper place to cross; or where motorists or bicyclists might not expect students to cross.

Crosswalk lines should not be used indiscriminately. An engineering study considering the factors described in Section 3B.18 should be performed before a marked crosswalk is installed at a location away from a traffic control signal or an approach controlled by a STOP or YIELD sign.

Crash History

Traffic crash data for 2018 through May 2021 was found through TxDOT's Crash Records Information System. There were five (5) reported crashes on Avery Parkway between Whispering Way and Cypress Mill during this time. Two (2) crashes occurred in the daytime on weekdays. One crash was due to assault between the driver and passenger, causing them to crash into a light pole; the other involved a

6-year-old running into a car with his bike. The remaining three (3) of the five were at night. Two involved impaired judgement due to drugs or alcohol; the third involved an unlicensed, teen driver with diverted attention who ran into a fence. None of the five crashes seem to be speed related.

Data Collection

Traffic speed and volume data were collected on Thursday, October 29, 2020 for Avery Parkway at Avery Ranch Drive. The average daily traffic (ADT) on Avery Parkway was 1,899 vehicles per day (vpd) and the 85th percentile speed was 34 mph. The ADT on Avery Ranch Drive near the intersection with Avery Parkway was 672 vpd.

Site Investigation

A site investigation was completed in September 2020 to evaluate vehicle and pedestrian traffic during morning and afternoon school peak times on Avery Parkway between Whispering Way and Avery Ranch Drive(see Figure 1). School peak times are approximately 7 am to 7:30 am, and 3 pm to 3:30 pm. Pavement width of Avery Parkway is approximately 30 feet.

Parents parallel park southwest-bound on Avery Parkway opposite the school, causing other vehicles to go into the middle of Avery Parkway in order to go around them (see Figure 2 below). However, Avery Parkway does not have vertical or horizontal curves in front of the school, so these vehicles do have adequate sight distance for these maneuvers.



Figure 2. Parallel-parked parent during PM pick-up

There is a horizontal curve on Avery Parkway northeast of Avery Ranch Drive as seen in Figure 3 below. The south side of Avery Parkway west of the intersection with Avery Ranch Drive does not have a sidewalk. Children cross Avery Parkway on foot and bicycles to get to the sidewalk on the north side of Avery Parkway on their route to school, and the opposite path in the afternoons on their way home

from school. The crossing location is currently not marked and outside of the existing posted school zone.



Figure 3. Avery Parkway looking northeast at Avery Ranch Drive

Conner Drive is approximately 150 feet northeast of the northernmost school driveway. A sidewalk exists spanning the entire length of the north side of Avery Parkway, however the sidewalk on the south side of the street ends at the northernmost school driveway (Figures 2 and 4). Little to no traffic was observed turning onto or out of Conner Drive at Avery Parkway during both the morning and afternoon school peak times. This intersection is stop controlled on Conner Drive, and vehicles do not appear to have a problem approaching the intersection slowly or stopping at the stop sign. Based on the observations conducted, children do not have any issues crossing Conner Drive without a marked crosswalk.



Figure 4. Avery Parkway at Conner Drive



Figure 5. Conner Drive at Avery Parkway Looking Northeast

A marked crosswalk with police crossing guard during both morning and afternoon school peak times is present across Avery Parkway at Dorman Drive (Figure 6). The intersection of Avery Parkway and Dorman Drive is controlled by an all-way stop. All children are gathered and escorted by teachers at afternoon release in a single-file line to this crosswalk location before crossing the street all together in one group. During this time, all vehicles are stopped at the intersection by the police officer for approximately 5-10 minutes before resuming normal operation. In the mornings just as well as afternoons, children all appear to use only the existing crosswalk at Dorman Drive in order to cross Avery Parkway to get to the school.



Figure 6. Marked Crosswalks at Avery Parkway and Dorman Drive

The northeastern corner of Dorman Drive at Avery Parkway also serves as a bus stop for another school, likely middle school. Children can be seen in Figure 7 waiting near the stop sign at this corner for morning bus pick-up. Avery Parkway carries majority of the pedestrian traffic, but Briggs Drive – parallel to and north of Avery Parkway – serves some pedestrian traffic too. Several children walk and bike to school in the mornings, however pedestrian activity is much heavier in the afternoons leaving school – some getting picked up along Avery Parkway to skip the parent vehicle pick-up line, and some walking and biking home.



Figure 7. Children waiting for the bus at Avery Parkway and Dorman Drive

During the morning peak time, parents enter and exit the school parking lot for drop-off using the northeastern driveway while the buses use the southwestern driveway. In the afternoons, the driveway functions switch, where the parents use the southwestern driveway and the buses use only the northeastern driveway. The parent line is long as is usual and can be expected at an elementary school, but traffic does appear to function smoothly. Figure 8 shows the parent drop off line during the morning peak time.



Figure 8. Two-lane utilization at northeast school driveway during morning drop-off

Recommendations

Avery Parkway was evaluated for yellow center line pavement markings following the guidance in the TMUTCD and does not currently meet any warrants based on ADT or sight distance issues. However, based on the site investigation and engineering judgement, it is recommended that double yellow center line pavement markings be installed from SH 46 to Cypress Mill at this time.

The intersection of Avery Parkway and Avery Ranch Drive was evaluated for an all-way stop following the guidance in the TMUTCD. It does not currently meet any of the warrants for an all-way stop (see multi-way stop evaluation attached).

Data was not collected for the intersection of Avery Parkway and Conner Drive for the requested all-way stop. Staff did not conduct a full all-way stop warrant analysis because of the large difference in traffic

volumes between the two roadways. None of the other non-volume all-way stop warrants from the TMUTCD were met and an all-way stop is not recommended for this intersection at this time.

The requested marked crosswalk on Conner Drive at Avery Parkway also does not appear to warrant based on the guidance in the TMUTCD. Instead, based on the site investigation and engineering judgement, it is recommended that the existing school zone on Avery Parkway be extended on the northeast side to 200 feet northeast of Avery Ranch Drive. Also, crosswalk markings are recommended at this time on Avery Parkway at Avery Ranch Drive with a School Crossing Assembly with downward-pointing arrow (S1-1; SW16-7P) at both approaches of the crosswalk on Avery Parkway.

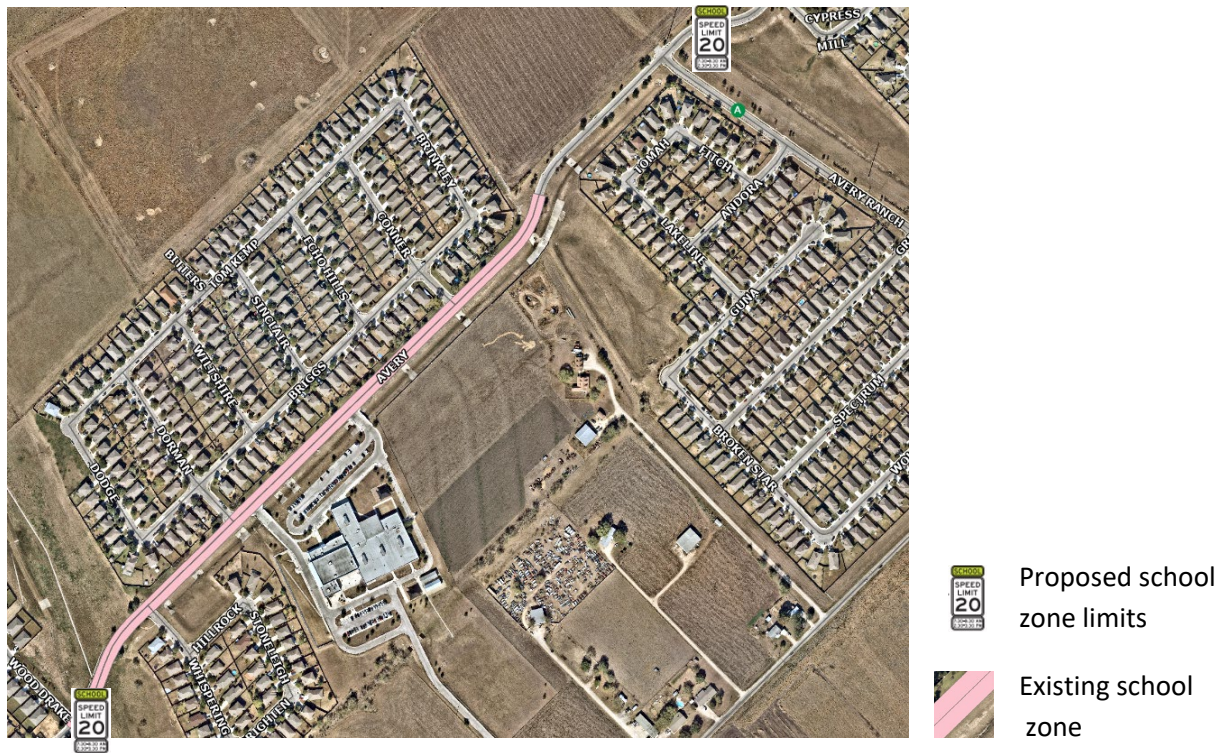


Figure 8. Recommended school zone extension on Avery Parkway

Attachments

Multi-way Stop Application Evaluation – Avery Parkway and Avery Ranch Drive

Multi-way Stop Application Evaluation

Avery Parkway at Avery Ranch Drive – October 2020

Section 2B.07 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD) provides support and guidance for the application of multi-way (all-way) stop applications. Table 1 provides the guidance criteria and current traffic data and Table 2 provides other criteria that may be considered in the engineering study.

Table 1. Multi-way Stop Guidance Criteria (TMUTCD Section 2B.07)

Criteria	Minimum Values	Current Values	Criteria Met?
A. Traffic signal <ul style="list-style-type: none">Interim measure for the installation of a traffic signal.	-	-	No
B. Crashes <ul style="list-style-type: none">Right- and left-turn and right-angle collisions12-month period	5	0	No
C.1. Major street volume <ul style="list-style-type: none">Total of both approachesAverage of any 8 hours of an average day; and	300	101	No
C.2. Minor street volume <ul style="list-style-type: none">Total of both approachesAverage of same 8 hours of major street with an average delay of at least 30 seconds per vehicle during the highest hour; but	200	45	
C.3. High-speed criteria <ul style="list-style-type: none">85th-percentile approach speed of the major-street traffic exceeds 40 mph.	Major street 85 th -percentile approach speed = 34 mph		
<ul style="list-style-type: none">70 percent of major street volume	210	101	No
<ul style="list-style-type: none">70 percent of minor street volume	140	45	
D. Combination crash/volume criteria <ul style="list-style-type: none">Where no single criterion is satisfied	Criteria B, C.1 and C.2 Met? No		
80 percent of crashes	4	0	No
80 percent of major street volume	240	101	No
80 percent of minor street volume	160	45	

Table 2. Multi-way Stop Other Criteria (TMUTCD Section 2B.07)

Criteria	Criteria Met?
A. The need to control left-turn conflicts;	No
B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;	No
C. 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	No
D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.	No