MOVE»SM

January 16, 2020

To Laurie Moyer, City of San Marcos Director of Engineering + Capital Improvements:

In December of 2019, MoveSM became aware of city plans for drainage improvements, which would also necessitate road reconstruction at the Sessom Drive and Academy Street intersection. MoveSM views this as an opportunity to make significant improvements to the road design that would encourage traffic safety, especially considering the complex mix of motor, cyclist and pedestrian traffic in this area. We argue that the current four lane striping encourages high speeds and creates unnecessary traffic conflicts for motorists and others. Based on more than thirty years of academic and government-sponsored research, MoveSM recommended in a prior letter in December that the City reconsider the possibility of restriping the roadway to include a continuous center turn lane, often known as a four-lane to three-lane road conversion.

For context, Sessom Drive between Comanche and Holland suffered from over 50 reported collisions between 2014 and 2018, 28 of which occurred between Alamo and Read Street alone[1] (Fig. 1). The current roadway reconstruction project does include added sidewalks in this area and an added traffic control signal, both of which we support. These additions, however, will not reduce traffic conflicts created at several other turning points along Sessom Drive if the planned traffic flow pattern remain the same as existing conditions.

With these safety issues in mind, MoveSM first shared our concerns and suggestions with the City on December 20, 2019. Though we appreciated a thorough response from Mr. Rohit Vij, City Transportation Engineer, on January 8, 2020, we must formally disagree with many of the statements therein. In the response y, the City states that, "[t]raffic along Sessom Drive dictates 2 travel lanes in each direction." Traffic along Sessom Drive is currently estimated at 12,707 vehicles per day according to the Texas Department of Transportation's (TxDOT) Traffic Count Database System[2]. Research suggests that four-to-three lane conversions have been successful on roadways with traffic counts as high as 20,000 vehicles per day (in several states, and various sized communities) and that such conversions have not reduced vehicular throughput (and in some cases, vehicular throughput was increased)[3]. Ranch Road 12 is currently only a two-lane design, and furthermore, by local example, TxDOT completed a four-to-three lane conversion on Highway 80, west of Martindale in 2016 (Fig. 2).

The City response also suggested that the conversion of Sessom drive to three lanes would "deteriorate traffic operations and safety for all travel modes." However, according to published peer-review research, **four-to-three lane conversions have an impressive increase on safety outcomes**. On average, collisions are reduced by up to 30%; in some instances, collisions were reduced by nearly 50%[4]. There are approximately six collisions reported per year in the vicinity of the Sessom and Academy intersection, and as the San Marcos community continues to grow it is not unreasonable to expect an increasing number of collisions along Sessoms Drive. A change to the roadway design is necessary to promote current and future traffic safety.

It is helpful to acknowledge that three-lane conversions have been shown to reduce average speed in some cases. In such cases, however, the average reduction in travel speeds is less than 5mph[5]. In these observations, the net effect is to reduce excessive speeding and to bring average travel speeds in line with posted speed limits. This aspect of the three lane design succeeds at traffic calming, increasing safety for motorists, cyclists, and pedestrians.

Considering cyclist traffic, a four-to-three lane conversion on Sessom Drive would also make possible the addition of on-street bicycle lanes, in line with the San Marcos' Transportation Master Plan (TMP). The overarching goals of the TMP call for road improvements that will "increase bicycle use by integrating this mode within roadway cross-sections," "prioritize safety within the transportation network as more vulnerable road users are encouraged to be on the road," and "incorporate national best practices in the planning and design process."[6] These objectives are not well met by the current 2019 Bike Plan, which calls for shared-use sidewalks and still demonstrates gaps in bike infrastructure.

The inclusion of a shared use path, according to the City's initial response, "is a safe, effective, efficient alternative for cyclists." Yet, it has been well documented that **cyclists on setback paths have higher rates of collisions than cyclists utilizing public roadways.** Cyclists on shared use paths (especially those with high densities of pedestrian traffic, as is the case along Sessom Drive) incur higher rates of collisions with pedestrians and other bicyclists. Furthermore, shared-use paths create additional conflict points between turning vehicular traffic and cyclists (as would be the case at Read, Yale and Harvard Streets). Therefore, we return to the suggestion that a four-to-three-lane conversion along Sessom Drive would make possible on-road bicycle lanes. It is also possible to consider a single bicycle lane added in the uphill direction, where cyclists travel at lower speeds.

A four-to-three-lane conversion alone would increase the safety of on-street cyclists by the very nature of traffic calming achieved by a three-lane roadway design, and would also help to maintain separation between pedestrians and faster cyclists. These considerations are in addition to the evidence that **four-to-three lane conversions increase safety for motorists, too**. One factor of this safety improvement is in turning actions by vehicles which can take refuge from through-traffic, and wait to turn when it is safe to do so. The current conditions (which would prevail in the current plan) force turning traffic to block a travel lane which create conflicts between turning traffic, oncoming traffic in the opposite lane, and vehicles trying to get around the vehicle stopped in the travel lane (Fig. 4).

MoveSM's position is supported by current research and best practices, demonstrating that a four-to-three lane conversion can be readily implemented without major alterations to the current drainage improvement plans. While we acknowledge that the design plans are presently at 90%, and wish we had an opportunity to provide input earlier in the process, much of our recommended changes in the design are accomplished simply within the striping plan.

In the name of safety for ALL users of the road, including vehicles, pedestrians, and cyclists, MoveSM urges you to reconsider the present design and the City's initial response and to again review our recommendations for a four-to-three lane restripe with on-street bike lanes for integration into the Sessoms project. This is a critical roadway for current and future roadway users in San Marcos, and we are prepared to continue to advocate for these safety improvements to the Council, if the present design remains the direction at month's end. We also welcome the opportunity to collaborate with the City further in advance of that.

We do thank staff for its past and current consideration of our input and look forward to continuing to participate in the future. Thank you for your review of this matter.

Sincerely and on behalf of the Members of MoveSM,

Dane Atkins

Notes:

1. Crash data was obtained from the TxDOT Crash Records Information System (https://cris.dot.state.tx.us/public/Query/app/welcome)

2. Traffic estimates were obtained from the TxDOT Traffic Count Database System (https://txdot.ms2soft.com/tcds/tsearch.asp?loc=Txdot&mod=TCDS).

3. Among the earliest studies found that AADT *increased* in all cases after the roadway reduction to 3-lanes; this study included roads between 9,000 and 20,000 vehicles per day (Welch, 1999). A later study sponsored by the Highway Safety Information System expanded on these results, to demonstrate success with roads ranging from 3,000 to 26,000 vehicles per day (HSIS, 2010).

    - Welch, T. M. (1999). The conversion of four lane undivided urban roadways to three lane facilities. *TRB/ITE Urban Street Symposium*: Dallas, Texas.
    - HSIS (2010). Evaluation of lane reduction "Road Diet" measures on crashes. *Federal Highway Administration, United States Department of Transportation*. Available: https://www.fhwa.dot.gov/publications/research/safety/10053/10053.pdf

4. The previously cited Federal Highway Administration study (HSIS, 2010) found an average 29% reduction in reported crashes after 3-lane conversions. In this study, they also validate the finding of up to a 47% reduction in reported crashes, first documented by Persaud and others (2010).

    - Persaud, B., Lan, B., Lyon, C., & Bhim, R. (2010). Comparison of empirical Bayes and full Bayes approaches for before–after road safety evaluations. *Accident Analysis & Prevention*, *42*(1), 38-43.

5. The impact of three lane conversion of average travel speed, and the reduction of maximum travel speed is discussed at length by Knapp and Giese (2001).

    - Knapp, K. K., & Giese, K. (2001). Guidelines for the conversion of urban four-lane undivided roadways to three-lane two-way left-turn lane facilities.

6. Quoted direction from the San Marcos Transportation Master Plan, page 7. (https://www.sanmarcostx.gov/DocumentCenter/View/14745/Transportation-Master-Plan---Adopted)

Figure 1: Map demonstrating the severity of the crash history at Sessom Drive. With continued community growth, the rate and severity of traffic collisions should be expected to worsen.

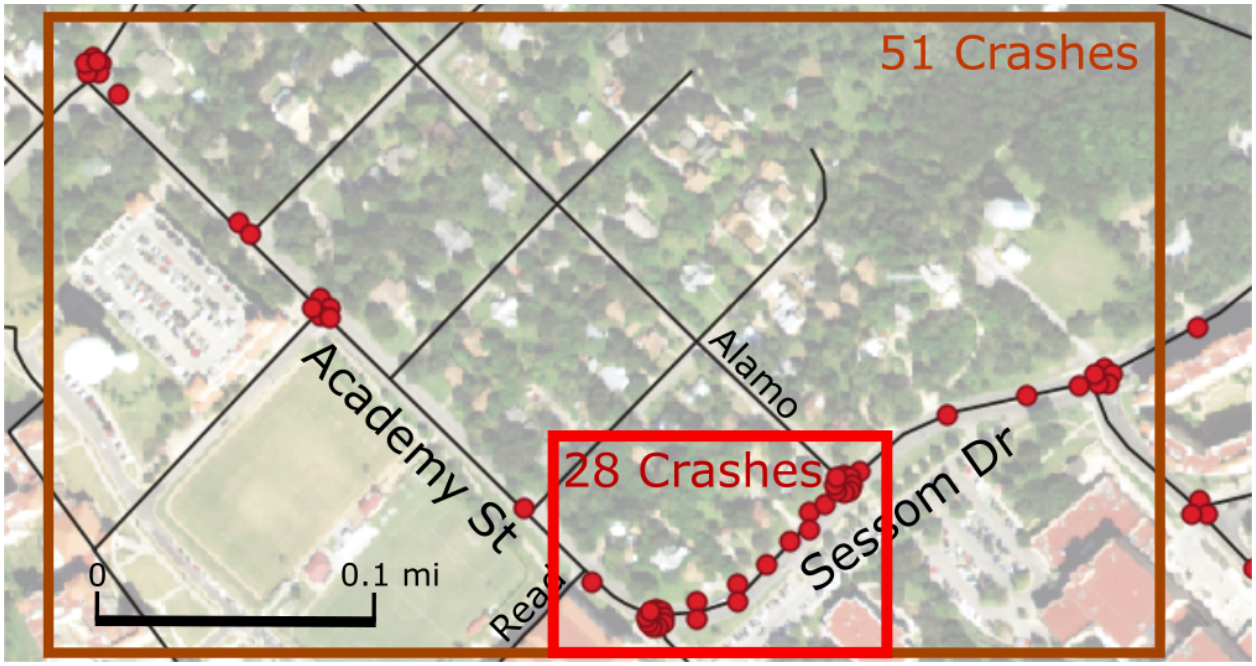

Figure 2: Texas Highway 80 was converted between 2015 and 2016, as shown by a history of street-view imagery (courtesy of Google Maps).

Figure 3: The Texas Traffic Count Database System is publicly available. The data can be interpreted to estimate, not only traffic throughput, but turning traffic as well. The disparity between traffic count estimates on Sessom Drive (12,707) and Academy Street (9,624) suggest that nearly 25% of all Sessoms/Academy motor traffic makes turning movements along this stretch of roadway.

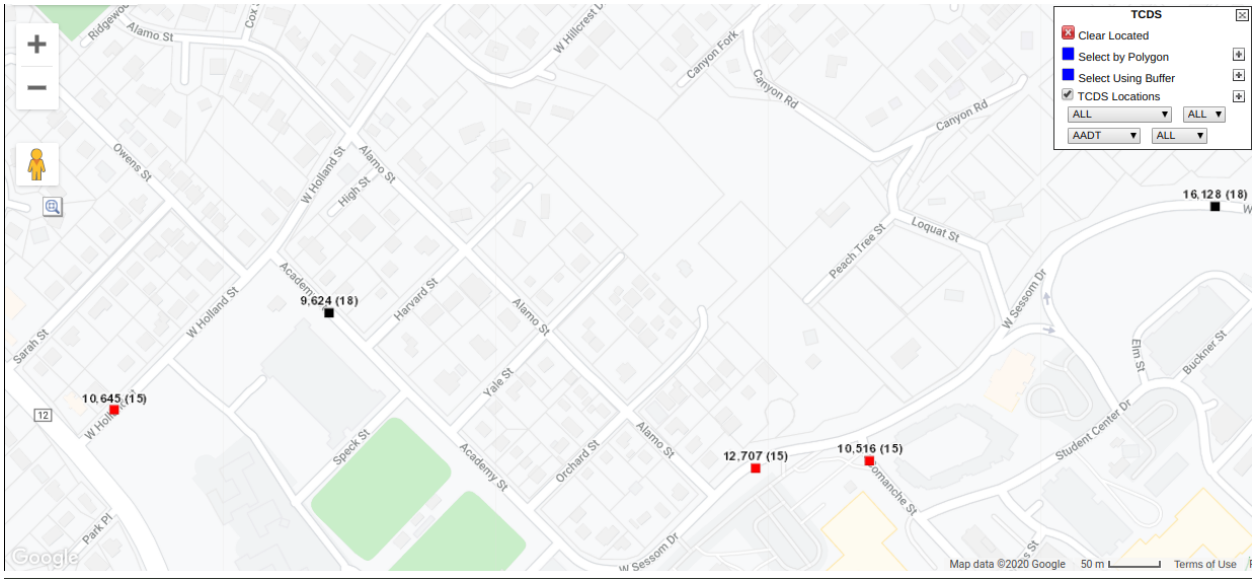

Figure 4: Illustration of Conflict Points created by both four lane, and three lane roadway painting schemes. (Adapted from Welch, 1999).