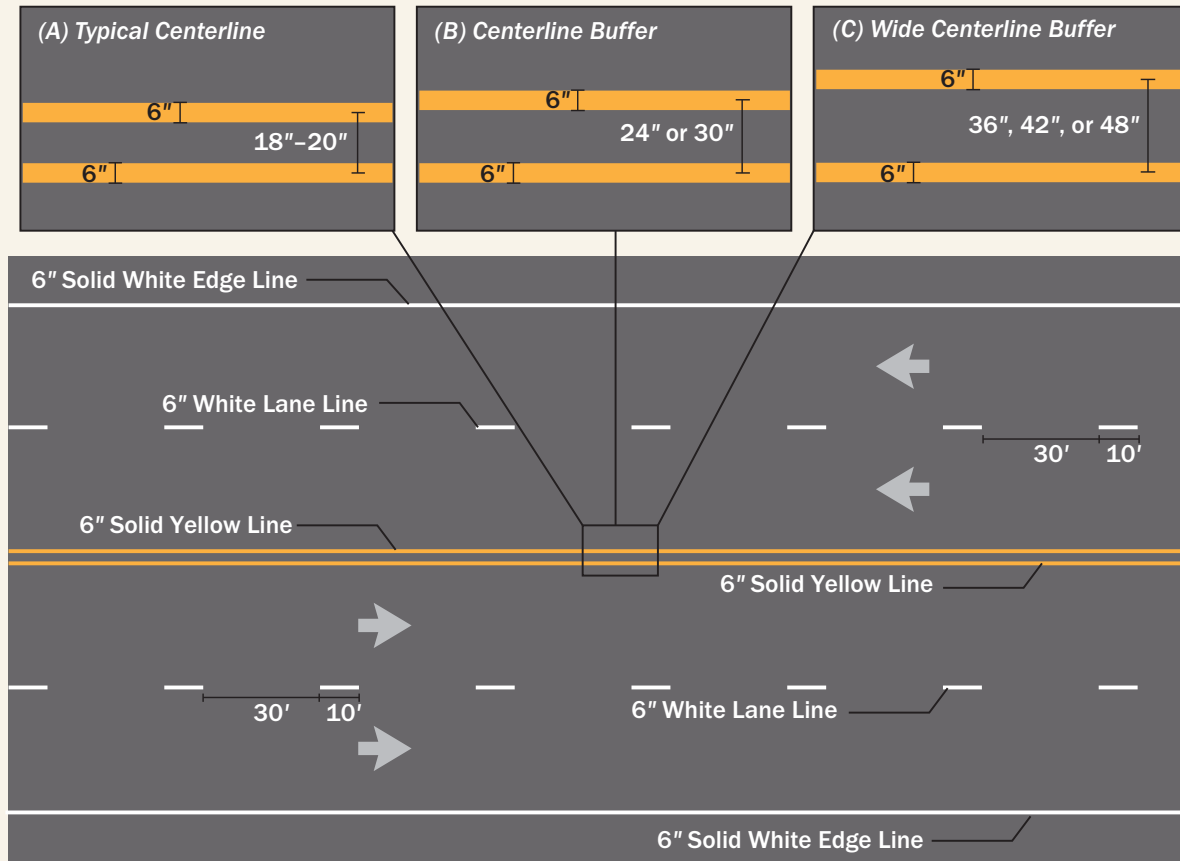


## TECHNICAL BRIEF | Centerline Buffers on Two-Lane Undivided Roadways

Figure 1 shows examples of a typical centerline (18 to 20 inches between the middle of the solid yellow lines), a centerline buffer (24 or 30 inches between the middle of the solid yellow lines), and a wide centerline buffer (36, 42, or 48 inches between the middle of the solid yellow lines) on two-lane undivided roadways in Texas based on Texas Department of Transportation (TxDOT) Traffic Standards (1). Widespread application of any type of centerline buffer in Texas has been limited, so this technical brief shares the expected safety effects associated with this countermeasure.



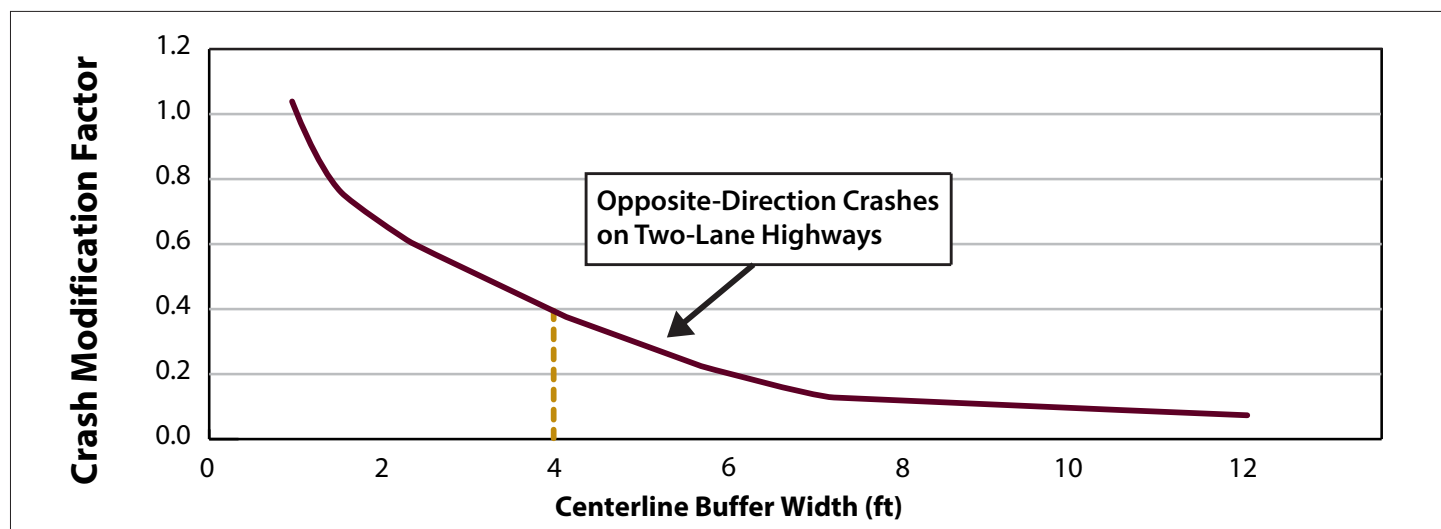
Note: For (A) Typical Centerline, 16" minimum for restripe projects when approved by the engineer.

**Figure 1. Examples of Typical Centerline and Centerline Buffers on Two-Lane Undivided Roadways (Developed Based on Criteria in the TxDOT Traffic Standards [1]).**

National Cooperative Highway Research Program (NCHRP) Project 17-66 (2) documents the safety effects of centerline buffers on opposite-direction (OD) crashes on rural Texas highways. For the analysis, researchers identified seven two-lane highway sites treated with wide centerline buffers (between 4 and 12 ft) and 56 untreated comparison sites. Analysis results indicated that the centerline buffer had a positive effect on reducing OD crashes on two-lane highways, with a coefficient statistically significant at the 15 percent level.

Figure 2 presents the crash modification factor (CMF) for the two-lane highway centerline buffer width for OD crashes. The number of OD crashes decreases as the centerline buffer width increases. A centerline buffer width of 4 ft is equivalent to a CMF value of 0.4 (or a 60 percent reduction). The study found a significant effect as centerline buffers widened, up to 8 ft. Increasing the centerline buffer width beyond 8 ft did not offer additional benefits. NCHRP Report 995 recommended that centerline buffers be used on roads with paved shoulders and lane widths that are (ideally) 12 ft.

**Research results indicate that 4-ft centerline buffers have a positive effect on reducing opposite-direction crashes on two-lane highways.**



**Figure 2. Crash Modification Factor for Opposite-Direction Crashes for Centerline Buffer on Two Lane Highways (2).**

A human factors study within TxDOT Project 0-7096 (3) conducted an online survey to assess motorist understanding of various centerline buffer widths on two-lane roadways. Findings indicated a decline in comprehension of the correct driving behavior when the centerline buffer width was 6 ft or greater. Open-ended responses also indicated that participants thought centerline buffer widths greater than or equal to 6 ft could be a turn lane. Therefore, researchers on that project recommended that the allowable centerline buffer width be limited to 4 ft.

*Driver comprehension of the correct driving behavior declined when the centerline buffer width was  $\geq 6$  ft, so researchers recommended widths no more than 4 ft.*

## REFERENCES

1. Traffic Standards (English). PM(1)-22 and CLB(2)-23. Texas Department of Transportation. <http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/standard/toc.htm>.
2. Dixon, K., S. Geedipally, E.S. Park, R. Srinivasan, B. Lan, M. Brewer, S. Das, L. Wu, C. Zegeer, and E. Rista. *Guidance for Selection of Appropriate Countermeasures for Opposite Direction Crashes*. NCHRP Project 17-66 Final Report. National Cooperative Highway Research Program. Washington, DC. 2020.
3. Finley, M.D., L. Theiss, S. Venglar, J. Habermann, and A.M. Pike. *Traffic Control Device Analysis, Testing, and Evaluation Program: FY2021 Activities*. Report No. FHWA/TX-23/0-7096-R1. Texas A&M Transportation Institute. College Station, TX. 2023.

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