



FREDERICK COUNTY GOVERNMENT

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DIVISION OF PUBLIC WORKS

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Christopher's Crossing Warrant Analysis Summary

March 12, 2020

RE: Summary Report

The Office of Transportation Engineering (OTE) initiated a warrant analysis to determine if four way stops at three Christopher Crossing intersections are needed. Our consultant, A. Morton Thomas & Associates (AMT), collected data on turning movement counts and conducted an analysis based on the Manual on Uniform Traffic Control Devices (MUTCD) standards. We have concluded that four way stops are not warranted at this time and are unlikely to be warranted in the future.

Based on the MUTCD, there are three primary criteria that may warrant All Way Stop Control (AWSC):

Condition A - If a traffic signal is warranted at the intersection, an AWSC is used as an interim measure that is installed quickly before a signal can be installed. *The intersections were analyzed and did not meet warrant requirements for traffic signals.*

Condition B - 5 or more reported crashes at that intersection over a 12-month period which includes left-turn, right-turn and right-angle collisions. *Available crash data did not meet warrant requirements.*

Condition C -

1. The total vehicular volume entering the intersection from the major street approaches must average at least 300 vehicles per hour for any 8 hours of the day; and
2. The combined vehicular and pedestrian volume from the minor street approaches must average at least 200 units per hour for the same 8 hours. *Observed traffic volumes did not meet warrant requirements.*

The MUTCD provides for adjustments to the volume warrants if approach speeds exceed a certain threshold. *These speeds were not observed during a speed study conducted on Christopher's Crossing last November.*

The Christopher Crossing intersections at Stone Ridge, Glen Heather and Jordan Valley do not meet these criteria. The AWSC works best when the major and minor streets have similar volumes of traffic. The traffic volume on the minor streets is not high enough to warrant a signal and is too low to justify stopping the major street traffic.

We have also considered other criteria as specified in MUTCD Section 2B.07 in the engineering study:

- A. The need to control left-turn conflicts - *The left turning volumes are very low coming out of the side streets, presenting few conflicts. Left turning traffic volume is also too low going into the side streets to warrant a need to control conflicts.*

- B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes – *High pedestrian volumes have not been observed at the intersections, and significant growth in pedestrian volume is not anticipated. Moreover, pedestrian crossings will be provided across all legs of the intersections as part of the proposed Christopher Crossing Improvements project. Pedestrian crossing warning signs will also be added to warn of the potential presence of pedestrians at these crossings. Vehicles are required to stop for pedestrians in crosswalks per State law.*
- 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 - *After review of the geometry of Christopher's Crossing and existing foliage, no steep vertical or horizontal curves were identified that are associated with hindering sight distance. The posted speed limit is 30 miles per hour, which requires at least 200 feet of sight distance for a motorist to stop to avoid a conflicting vehicle. The shortest sight line we found was 308 feet at Jordan Valley Way. During our investigation we discovered that the available intersection sight distance at Jordan Valley Way is not consistent with the recommendations found in "A Policy on Geometric Design of Highways and Streets", published by the American Association of State Highway and Transportation Officials (AASHTO), commonly known as the "green book". Sight distance at this intersection cannot be improved at this time because the obstructions lie on private property outside the right-of-way area. The County plans to install warning signs as an interim solution on the Christopher's Crossing approaches to alert motorists to the possibility of encountering cross traffic at this intersection. A permanent solution to provide adequate intersection sight distance will be pursued during the design phase of the project.*
- 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 – *Christopher's Crossing and the side streets are of different design and operating characteristics, so this option would not apply. From an operations viewpoint, multi-way stop control at these dissimilar streets will not improve traffic operations along Christopher's Crossing; it will increase delays. The traffic volumes coming out from the minor streets is too low to warrant All-Way-Stop-Control intersections along Christopher's Crossing.*