



Table 7.3: 2020 Intersection Control Delay Comparison

Intersection	Control Delay (Sec/Veh)			
	AM		PM	
	DDI	SIMR	DDI	SIMR
Cattlemen Road	44	34	36	44
SB Off-ramp	27	20	24	22
NB Off-ramp	23	17	21	12
Coburn Road (Signal)	36	37	41	43

7.2 SAFETY COMPARISON

7.2.1 PEDESTRIANS / BICYCLES

As part of the SIMR arterial separator, the free-flow lanes at the interchange off-ramps would not provide a signal controlled crossing for pedestrians across Fruitville Road or across the on-ramp acceleration lanes. At the northbound and southbound ramp terminal intersections, this includes three and four free-flow lanes, respectively. The DDI alternative proposes crossing pedestrians into the median at the signal controlled crossover intersections. At the multi-lane eastbound to southbound on-ramp, a pedestrian actuated signal would be installed to give pedestrians a controlled crossing. The DDI alternative also proposes a 30 mph design speed at the crossover intersections which would enhance both pedestrian and bicycle safety.

In SIMR alternative, approaching the interchange from the west, eastbound bicycles in the outside bike lane would need to shift across three thru vehicle lanes to position correctly to pass through the interchange safely. The lane change would occur along Fruitville Road where unfamiliar drivers are also positioning their vehicles and not as likely to notice a bike. Depending on where the physical arterial separation begins, bicycles will have a reduced distance to make the lane change than if no arterial separation was present. In the DDI alternative, a buffered bike lane and keyhole beginning west of the Cattlemen Road intersection will guide bicycles thru the interchange safely and at a reduced design speed of 30 mph.

7.2.2 VEHICLES

The existing conditions safety analysis determined that the highest crash types along Fruitville Road were rear end collisions and sideswipes. Rear-end collisions are common at signalized intersections and can be caused by high levels of congestion. In the SIMR arterial separation configuration, rear-end crashes could potentially increase because of the poor lane utilization and congestion approaching the intersection. By reducing the delay and arterial travel time upstream of the I-75 interchange and using a lower design



speed of 30 mph, the DDI alternative can reduce congestion and potentially reduce the number of rear-end collisions.

Sideswipe and “run off the road” crashes can also be reduced by removing the loop-ramp. Loop-ramps often confuse drivers because they require a right-turn instead of a left-turn for a typical on-ramp. Unfamiliar drivers must make quick lane changes in order to correctly position on the right side of the road to enter the loop-ramp. By relocating the I-75 entrance ramp to the conventional side of the road, the DDI configuration can reduce sideswipes and rear end crashes on Fruitville Road approaching the on-ramps. Out of the 27 crashes occurring on the I-75 ramps, 22% were single car “run off the road” type crashes on the loop on-ramps, including one fatality. The tight turning radius and high speeds of the loop-ramp lead to drivers losing control of their vehicles and sliding off of the road. The DDI alternative proposes more conventional on-ramps that will be designed to 70 mph merge criteria to provide acceleration distance prior to merging with the I-75 mainline traffic.

7.3 COST COMPARISON

The Long-Range Estimating (LRE) system was used to develop construction cost estimates for the I-75 SIMR Alternative as part of the I-75 PD&E Study. The I-75 SIMR Alternative construction cost was estimated to be approximately \$156.0 million for the ultimate configuration of I-75 (general use and express use lanes), with an additional \$2.9 million for stormwater ponds. The LRE costs, when adjusted for current costs and elimination of the express lanes, is estimated to be \$106.0 million. The LRE system was also used to estimate the Proposed DDI Alternative (Diverging Diamond Interchange), which was determined to be approximately \$75.7 million. The LRE cost estimates for the I-75 SIMR Alternative and Proposed DDI Alternative can be found in **Appendix I**. The construction cost of the Proposed DDI Alternative is estimated to be approximately \$30.3 million less than the I-75 SIMR Alternative.

7.4 ENVIRONMENTAL IMPACTS

Since both alternatives fall within nearly the same footprint, potential environmental impacts are similar between the SIMR alternative and the proposed DDI alternative.

7.5 RIGHT-OF-WAY COMPARISON

Since both alternatives will utilize the in-field areas within the interchange for the required stormwater management needs, right-of-way is needed in both alternatives for roadway impacts only. The primary need is for the inclusion of the proposed eastbound travel lanes and eastbound right turn lane along Fruitville Road west of Cattlemen Road, where the proposed curb and gutter and sidewalk for both alternatives falls outside of the existing right-of-way. In addition, both alternatives include corner-clip right-of-way acquisition at the southwest and southeast quadrants of Fruitville Road at Cattlemen Road. With either alternative, the additional right-of-way required is less than ¼ acre from a total of three parcels.