Our Transportation System is in Crisis – 382

The crossover head-on collision on the Solomon Hochoy Highway on the morning of Sunday July 19, 2016 caused me to revisit median traffic safety. According to media reports, a vehicle crossed the southbound carriageway and hit another on the northbound carriageway, about 300 metres south of the Chaguanas Flyover.

The median cross-slopes of the Solomon Hochoy Highway used to be in the shape of a wide-flattened-U, and there was (is?) a concrete invert drain at the base of the median. The cross-slopes were altered sometime around the early to mid-1990s presumably to facilitate grass-cutting by tractors. The shape of the median cross-slope now often appears to be a humpback V-shape. To me, the results have not been generally positive. These median cross-slopes are flattest between the Chaguanas Flyover and the Carlsen Field Interchange.

Flatter median slopes and ditches will reduce the likelihood of single-vehicle rollover crashes and increase the probability that an errant motorist can safely regain control. Flattening the slopes of narrow medians should be approached with care. Although it will increase the likelihood of safe recovery, flattened slopes may allow an errant vehicle to more easily cross the median into opposing traffic.

Median width is generally defined as the width of the portion of the divided highway separating the travelled ways for opposite directions which includes the inside shoulders. According to the American Association of State Highway and Transportation Officials (AASHTO), a highway with a median width of 15m or more has a very low incidence of head-on collisions caused by vehicles crossing the median. With narrower medians, median barriers will eliminate head-on collisions. The Solomon Hochoy Highway in the vicinity of the recent collision is of the order of 11 metres, and there is no median barrier.

Median barriers are longitudinal barriers most commonly used to separate opposing directions of traffic on a divided highway. While these systems may not reduce the frequency of crashes due to roadway departure, they can definitely help prevent a median crash from becoming a median crossover head-on collision.

Most of the cross-over collisions appear to occur from southbound crossing to northbound. For example, on Tuesday April 20, 2010 a loaded ten-tonne goods truck crossed the southbound carriageway of the Solomon Hochoy Highway near Gasparillo just after midday and crashed into a 4x4 pickup on the northbound carriageway, killing all three occupants of the pickup: father, 63, mother, 60, and daughter, 24, who was married only two months ago. Newspaper reports stated that it was raining heavily and that the truck suffered a tyre blow-out and the driver lost control.

Another example is on the afternoon of Sunday December 12, 2010, my friend and former colleague at the Traffic Management Branch (TMB), Ministry of Works in South Trinidad, John “Bunny” Lezama, was killed when a three-tonne truck crossed the southbound carriageway of the Solomon Hochoy Highway in the Macaulay area, and crushed his car on the left lane of the northbound carriageway. He was usually cautious on the roads—even when he put on the vehicle signal to turn, he would also indicate with his hand; he would hardly ever leave the left lane of the highway; and, he would never exceed 80 kmph. His job was assisting in the preparation and installation of traffic safety devices on the roadways.

Median barriers separate opposing traffic streams, provide a recovery area for out-of-control vehicles, and provide a place for vehicles to stop in the event of an emergency. In addition, some medians and median barriers can potentially reduce oncoming headlight glare from vehicles.

Among the factors involved in selection of a barrier system are the types of vehicles using the roadway, the roadway geometry, and the potential severity of a median crossover crash. There are three basic categories of median barriers: rigid barrier systems, semi-rigid barrier systems, and flexible barrier systems.

Rigid Barriers: Concrete barriers are the most common type of rigid median barrier in use today. While the initial cost of installation can be relatively high, concrete barriers are known for their relatively low life-cycle cost, effective safety performance, and their relatively maintenance-free characteristics. One drawback is that crashes associated with rigid barriers may result in more severe injuries because, relative to other barrier systems, a rigid system absorbs the least energy in a crash. These barrier systems have proven to be highly effective in locations with high traffic volumes and high speeds. Concrete barrier systems are also very effective in places with heavy truck traffic, and in areas where sufficient median widths to accommodate other barrier systems are not available.

Semi-Rigid Barriers: Commonly referred to as guardrail or guiderail, semi-rigid barriers typically consist of connected segments of metal railing supported by posts and blocks. The semi-rigid barrier system is most suitable for use in traversable medians having no or little change in grade and cross slope. In comparison to rigid barriers, semi-rigid barriers can be less costly, but can be more difficult to install in locations with slope and poor soil conditions. Additionally, the need for repair following impact can drive up life-cycle cost. Guardrail systems are designed to absorb energy during a crash, and the entire assembly is designed to move or deflect during an impact.

Cable Barriers: A typical cable barrier consists of multiple steel cables that are connected to a series of posts. These systems are considered the most versatile and forgiving barrier systems available for reducing the severity of median crossover crashes. Cable median barriers minimize the forces on the vehicle and its occupants and absorb most of the energy of a crash. In comparison to rigid and semi-rigid barriers systems, cable barrier systems generally have a lower installation cost. Like guardrails, however, they typically require maintenance after a crash, and therefore can have a higher life cycle cost.

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