

6. CONCLUSIONS

This research has presented a comparison study of fully actuated-signals against the traditional fixed-time traffic signals for four-legged levelled junctions having three approach lanes including right-turn bay and two exit lanes, based on the programme written in *SIDRA* software (Akcelik & Associates Pty Ltd 2010), recently procured by the *Road Development Authority of Sri Lanka*. In the absence of real-time traffic data, availability of limited vehicle turning movement data were used to simulate variability of vehicle arrivals in the dynamic and stochastic behaviour of traffic at Sri Lankan at grade intersections. It is believed that the presented results shall be utilised for various contributions to design and planning of vehicle-actuated signals for the future needs of Sri Lanka. Moreover, this research could be continued for further development connected to this subject.

- Replacement of fixed-time(static) traffic signals with fully actuated-vehicle signals shall not produce any significant improvements (reduction in delay) to stand-alone at grade four-legged intersections, which have three approach lanes including right turn-bay with optimum length and two exit lanes, for urban areas.
- Pretimed signals with Phasing arrangement Type-‘B’ is the best option for four-legged levelled intersections having three approach lanes (including separate right-turn), when they operate at permitted practical cycle time (180s).
- Four-legged intersections, which are presently functioning with the Phasing arrangement Type-‘A’ (absence of Right-Turn pocket or exclusive Right-lane); opening of Right-turn pocket/bay with optimum length by road-widening and switch to pretimed signal Phasing Type-‘B’ would produce a long run benefits.
- Level of Service is ‘C’ or better is one of the targets.
- Replacement of Fixed-time signals with fully vehicle actuated signals shall not produce any significant improvements for Sri Lankan at grade intersections in urban area like Colombo.
- Semi-actuated signals would be a better option for signalised intersections. Further, remain with fixed-time signals for major roads (continuous high demand) and replace minor roads (highly fluctuating traffic demand) signals with vehicle actuated is the best solution.

- Phasing arrangement Type-B is the best for intersections which have separate right-turn bays/pockets or exclusive right-turn lanes.
- Intersections, which presently in operation of Type-A would be transformed to Type-B by introducing right-turn bays with *optimal length* for highly demanded direction for long-term benefits.
- These results tally with *Ben-Edigbe and Ibrahim (2010)* in their recent research paper found that '*optimised static signals (fixed-time) can produce good results and should also be considered especially at standalone intersections when traffic operations are at peak regularly*'.