



A Comparative Analysis of Roundabouts in Rajamahendravaram

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ABSTRACT

Nowadays traffic congestion at intersections is one of the main societal, economic and environmental problem in urban areas which particularly become severe during peak hours. At grade intersections are one of the essential elements in any road network. At grade intersections like Roundabouts take part a remarkable role in the level of delay experienced by vehicles on the road network. Compared to stop signs, traffic signals, and earlier forms of roundabouts, modern roundabouts reduce the likelihood and severity of collisions greatly by reducing traffic speeds. Roundabout control and traffic signals are the most common type of at grade intersection control. The aim of this research is to propose the changing of roundabout intersections into the signalizing intersection in the Rajamahendravaram. Traffic congestion is one of major problem in many cities around the world. The Traffic congestion is one of the serious problems in the metropolitan area, upgradation of the roundabout intersections to signalized intersections is the one of the best solutions.

Keywords: Roundabouts, signalized intersections, cost, safety, effective size, operations and traffic congestion.

1.Introduction:

A roundabout intersection is an exclusive form of at-grade intersection where vehicles from the converging arms are forced to move around a central island in one direction in an orderly and regimented manner and move or wave out of the roundabout into their desired direction. In a conventional roundabout, traffic at entry seeks a suitable gap in the circulating stream to negotiate at the roundabout. A roundabout is an alternative form of intersection traffic control. Roundabouts are generally circular in shape, characterized by the yield on entry and circulation around a central island. Roundabouts are convenient for many intersections along with locations that recognize a large number of crashes, long traffic delays, and approaches with relatively balanced traffic flows. Roundabouts have the potential to resolve various problems.

2.Literature Survey:

Since the introduction of the roundabouts in the early 1960s, many different types of models have been developed for determining the roundabout intersection of various parameters like; capacity and level of service, effective size, etc. This part of the paper addresses several different approaches used to determine roundabout intersection performances. The literature review will go through the different theories upon which models are based, and the various equations that use a series of variables and parameters for estimating capacity and delay. In many countries, these models have developed. Many of the models developed elements of different software technologies that assess roundabouts and traffic signal corridors or network at microscopic and macroscopic levels.

3. Methodology:

The video data which was collected from the selected roundabout was processed. The number of each type of the vehicles from each of the approach leg was calculated. The number of vehicles found was converted into passenger car unit (PCU). When the value of a vehicle class may be considered as the ratio of the capacity of the road way. When there is passenger car only to the capacity of the same road way when there is vehicle of that class only. Here trying to show the realistic behavior of the present traffic flow condition at the peak hour on the selected roundabout in Rajamahendravaram city. Manually collected data are used for the simulation. All the locations are trying to show realistic behavior. In this study, the simulation results and parameters evaluation **give** the best preference to improve the existing traffic flow condition of the two-lane and single-lane roundabout corridor.

6. Result:

Roundabout	Leg No	Heavy Vehicles (3.5)	Light Vehicles			Total No of Vehicles	Total Traffic (PCU)
			Cars & Autos (1)	Motors & Cycles (0.5)	Total		
Devichowk junction	E	51	390	1208	1598	1649	1172.5
	W	48	472	1112	1584	1632	1196
	N	87	160	687	847	934	808
	S	69	215	700	915	984	806.5
						3983	
Kambalcheruvu junction	E	59	209	521	730	789	676
	W	35	256	929	1185	1220	843
	N	15	134	597	731	746	485
							2004

7. Conclusion and Future Scope:

Highway capacity manual for low traffic volume on the intersection (3000 vehicles per hour), a roundabout is recommended. For high traffic volume (more than 3000 vehicles per hour), a traffic signal is recommended. Kambalcheruvu junction traffic volume is 2004 vehicles per hour so the roundabout is within the design traffic so no need to of signalized intersection at Kambalcheruvu junction and traffic congestion is also low at Kambalcheruvu junction. Devichowk junction has a present traffic volume of 3983 vehicles per hour so the roundabout is crossed its design traffic so signalized intersection has to provide at Devichowk junction.

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