

Performance Evaluation of Al Jame's Roundabout Using SIDRA

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Abstract : This paper evaluates the performance of a multi-lane four-legged modern roundabout operating in Muscat using SIDRA model. The performance measures include Degree of Saturation (DOS), average delay, and queue lengths. The geometric and traffic data were used for model preparation. Gap acceptance parameters, critical gap, and follow-up headway were used for calibration of SIDRA model. The results from the analysis showed that currently the roundabout is experiencing delays up to 610 seconds with DOS 1.67 during peak hour. Further, sensitivity analysis for general and roundabout parameters was performed, amongst lane width, cruise speed, inscribed diameter, entry radius, and entry angle showed that inscribed diameter is the most crucial factor affecting delay and DOS. Upgradation of the roundabout to the fully signalized junction was found as the suitable solution which will serve for future years with LOS C for design year having DOS of 0.9 with average control delay of 51.9 seconds per vehicle.

Keywords : performance analysis, roundabout, sensitivity analysis, SIDRA

Conference Title : ICGHOST 2020 : International Conference on Ghost Conference

Conference Location : ghost city, Other

Conference Dates : December 12-13, 2020