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Scheduling of Flyover at Grade Intersection for Amravati

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Abstract: ***This work concerns the effective planning of flight at the intersection of classes under a mixed traffic environment. From the results and simulations performed in the SIDRA Intersection software, different points are observed. This work consists of a proposed crossing in Rajamal Square, Amravati. The area is highly populated, and this place offers the need for a good quality intersection. The graph shows that the turn of the 95% of the worst lane of the car per year increases as the year increases. The maximum value is 0.011. The graph shows that the stopping speed, which is detected, decreases as the year increases. The minimum value of the stopping speed is 0.5485. The graph shows that productivity increases over time. The maximum value of the performance index is 0.30.***
Keywords: Flyover, Intersection, SIDRA and traffic performance

I. INTRODUCTION

The crossing of the bridge is a crossroads that has a special bridge built across the intersection at the level to ensure free flow in two directions on one of the main roads and to reduce congestion in both directions.

This has been seen, over the last few decades, due to increased income and lack of insufficient, a fast and reliable public transport system is increasingly switching to personal vehicles in most cities, leading to massive growth in the automotive population around the world. It is observed that every year the number of vehicles increases by chance. To deal with this situation, it is very difficult to provide additional land according to demand. An alternative arrangement must be provided to reduce or stop congestion. For this purpose, the design of the signal at the intersection or across the bridge or under the passage structure at this place is possible to replace. Bridge or under-pass design is provided after appropriate preliminary studies. But sometimes it is possible that at the end of the project the user may not get a fruitful result.

II. REVIEW OF LITERATURE

Parthumar K. Patel, Arvind M. Jane "Before and after studying the excess - a study of the case of crossing IIM-An."In this work, the author is working on a short-term study at the IIM-A intersection (Andajan Summer-Mandal Road) before and after the construction of the bridge across. And check the condition of the earth. Assess the performance of the bridge and the impact on traffic.

T. Patel, K. Dave, feasibility study and rapid construction of a flight at the Sahakari Zin intersection on NH-8, Himmatnagar. In this paper, the author checks the feasibility of quickly building Fly over at the intersection of sahakari Zin on NH-8, himmatnagar. He noted that the number of accidents occurs due to high vehicle speed, traffic delay, pedestrian risk, lack of a proper object, such as a symbol, signals and markings.

Arjun, L. Venkat, V. M. Naidu, “Economic feasibility and effective planning of a project for a flight to Visakhapatnam (India) In this article, the author mainly carried out the economic expediency of a flight to Visakhapatnam (India) between Maddilapal and satyam. Acquired benefits and cost of construction of the flight, feasibility study was made.

MuraliSambasivan and Yau soon considered a comprehensive approach in a research paper entitled "Causes and Consequences of Delay in the Malaysian Construction Industry" and tried to analyze the impact of specific causes and specific consequences of project delays. They identified the root causes and consequences of the delay in Malaysia's construction projects by conducting a properly designed survey of the questionnaire with clients, consultants and contractors. In addition, they identified ten key causes of delay and six important consequences of delays, and an empirical relationship was established between them.

From the above research papers it is observed that the proper and efficient scheduling is very much necessary at the grade intersection under the mixed traffic environment.

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III. MODELING

The modeling is carried out in the SIDRA software, the different steps and the parameters are presented as follows.

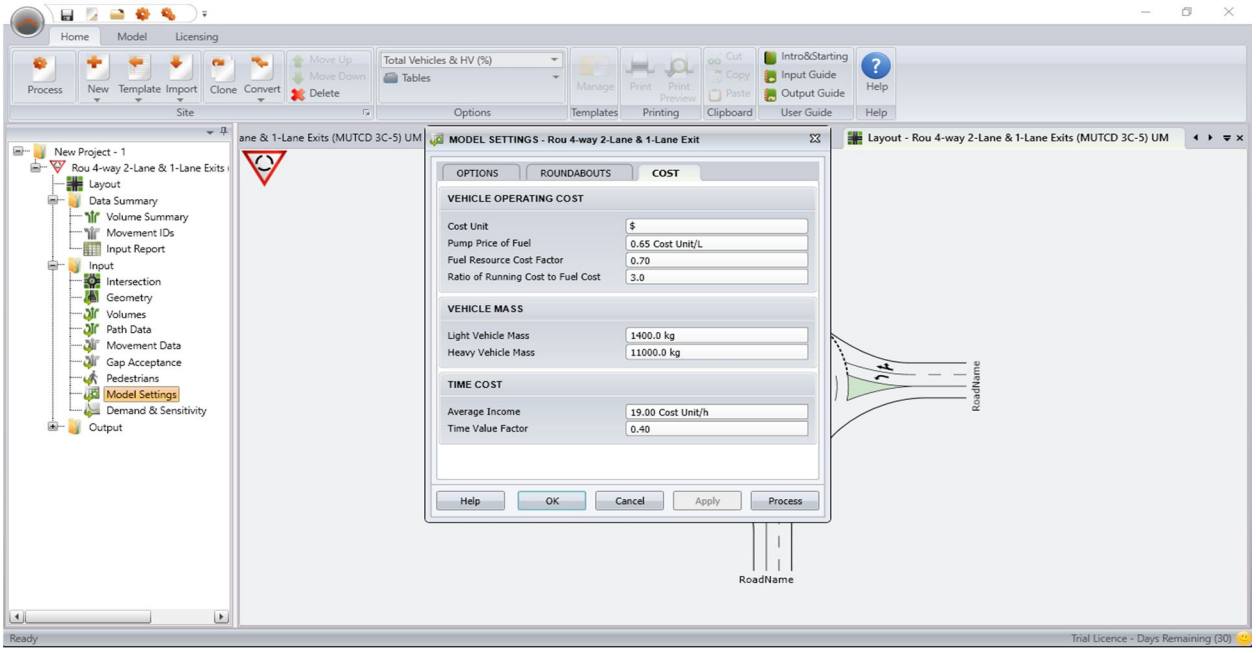

Figure 1: Cost Details (SIDRA software)

The above figure shows the cost details of the model which is considered for the modeling in the SIDRA software.

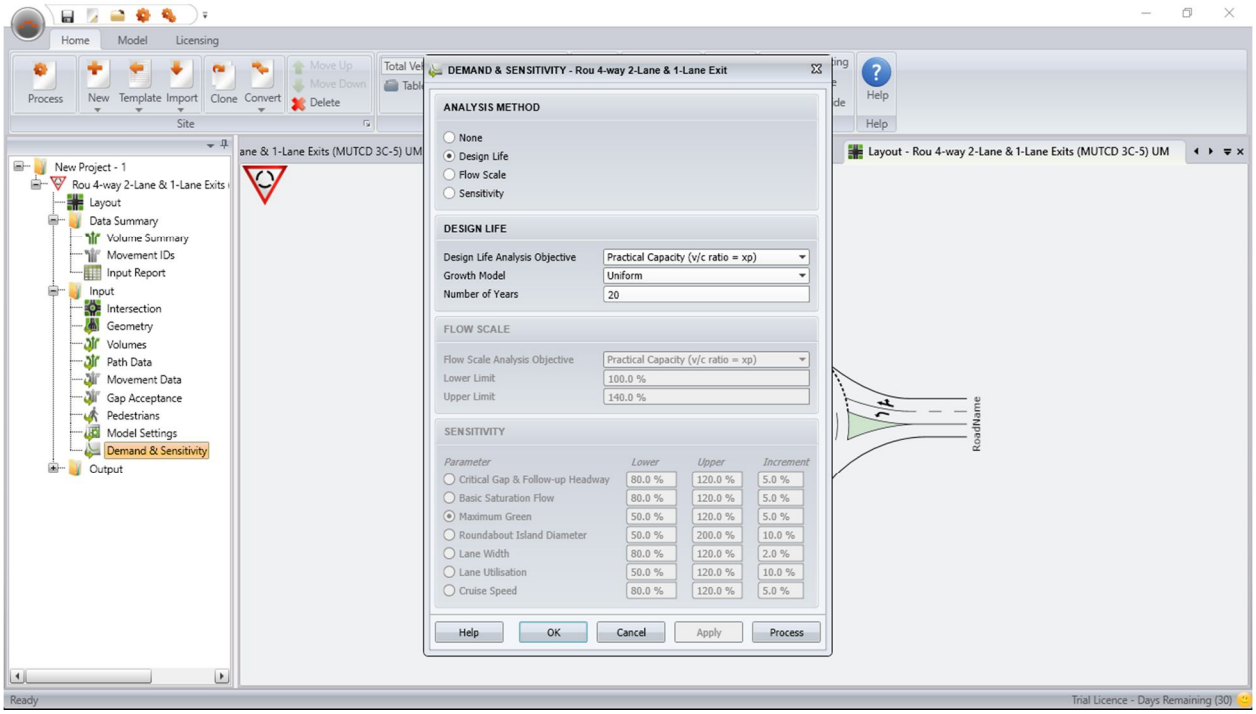

Figure 2: Demand and sensitivity details of the model (SIDRA software)

The above figure shows the Demand and sensitivity details of the model which is considered for the modeling in the SIDRA software.

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The table 1 shows the intersection parameters which consists of time, peak flow period considered for the modeling in the SIDRA software.

Table 1: Intersection Parameters (Md Sameer Sohail et al 2020)

Title	Roundabout with 2-lane approaches and circulating road, and 1-lane exits
Intersection ID	1
Unit Time (for volumes)	60 minutes
Peak Flow Period (for performance)	15 minutes

The table 2 shows the Geometry – Approach Data consisting of location, number of approach lanes, number of exit lanes, median width and extra bunching which is considered for the modeling in the SIDRA software.

Table 2: Geometry – Approach Data (Md Sameer Sohail et al 2020)

Location	Name	Type	No of App lanes	No of Exit lanes	Median width (m)	Extra Bunching (%)
South	Road1	Two-way	2	1	–	0
East	Road2	Two-way	2	1	–	0
North	Road3	Two-way	2	1	–	0
West	Road4	Two-way	2	1	–	0

IV. RESULTS

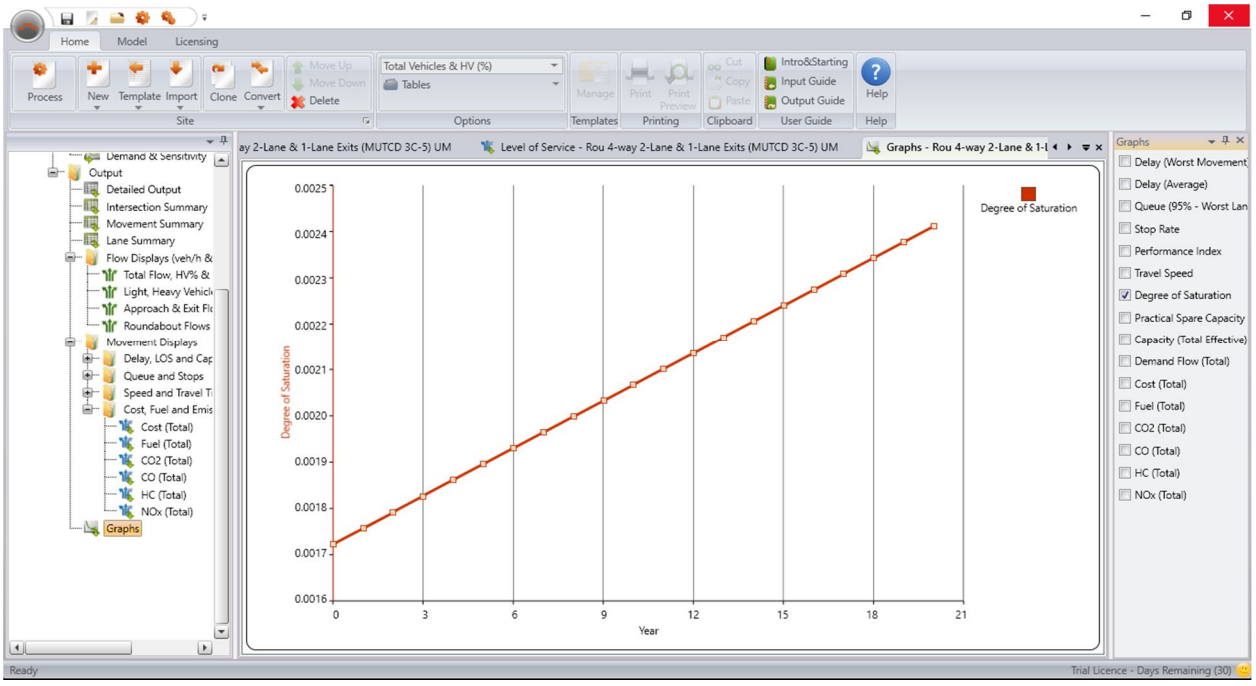

Figure 3: Degree of saturation per year

From the above graph it is observed that the degree of saturation goes on increasing as the year goes on increasing. The maximum value is found to be 0.024

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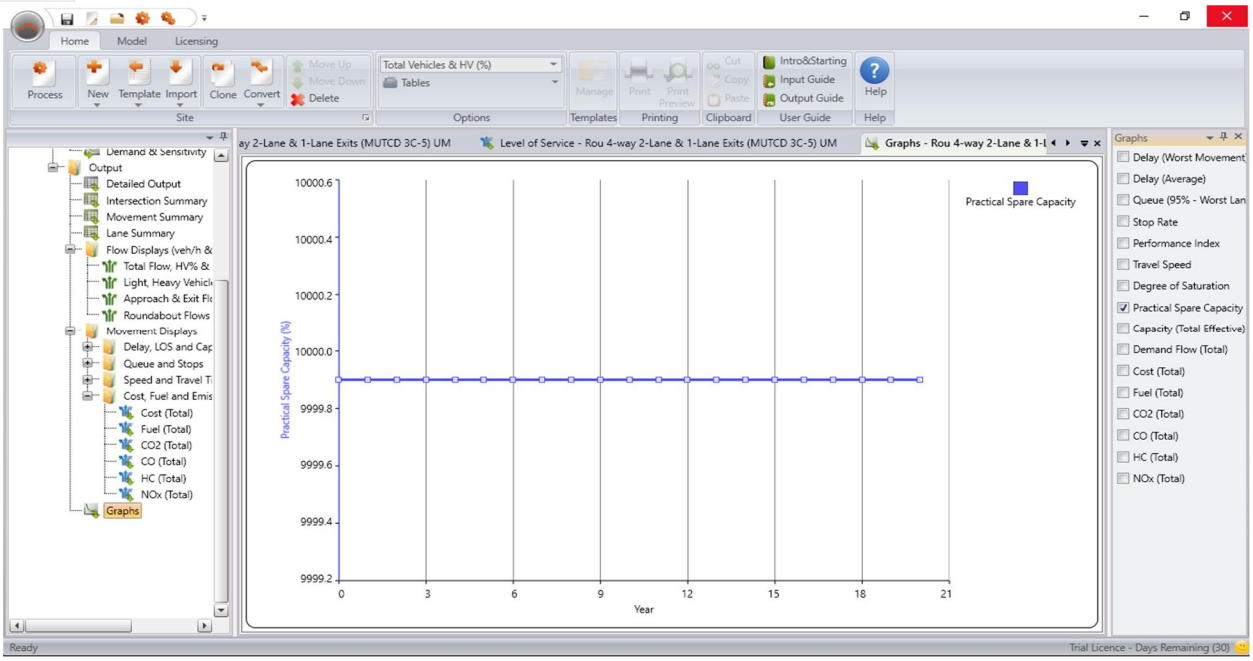

Figure 4:Practical spare capacity (%) per year

The above figure gives the data related to the spare capacity per year for the model in SIDRA software.

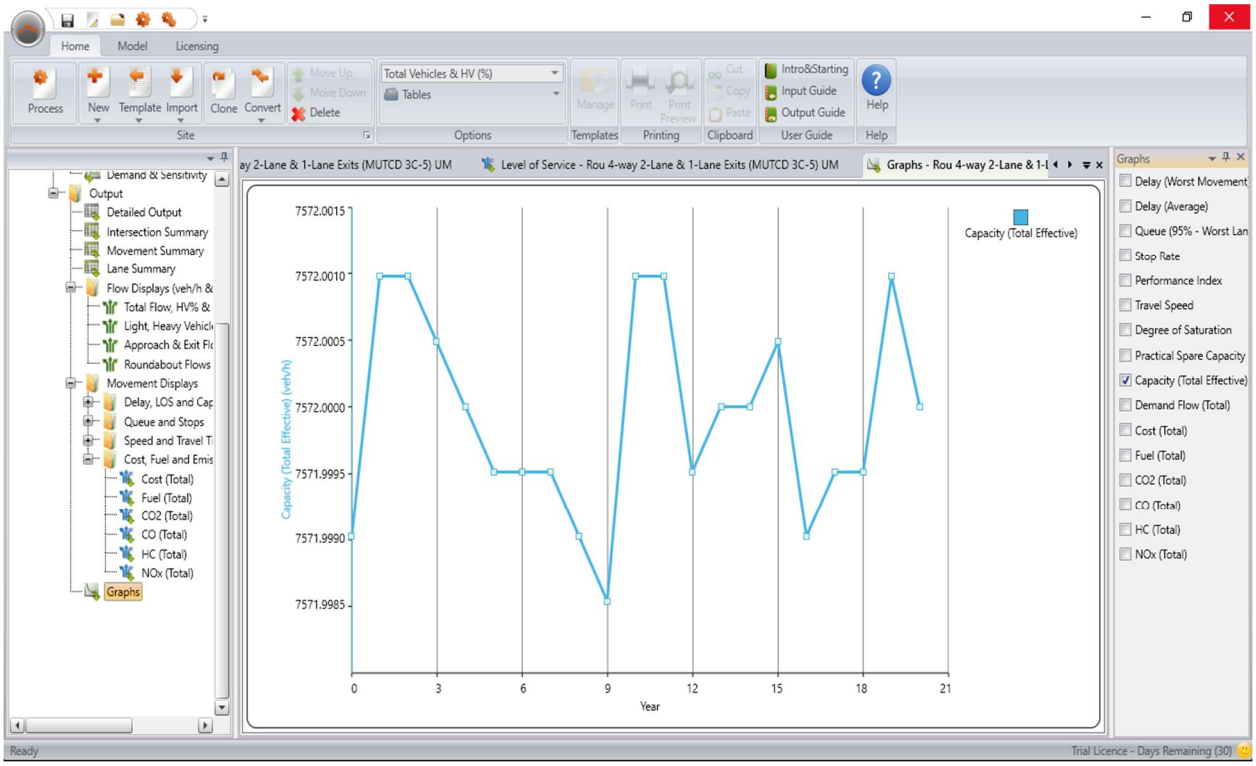

Figure 5:Capacity (total effective) (vehicle per hour)

From the above graph it is observed that the total effective capacity (vehicle per hour) is fluctuating over the years and the maximum value is found to be 7572 (vehicle per hour).

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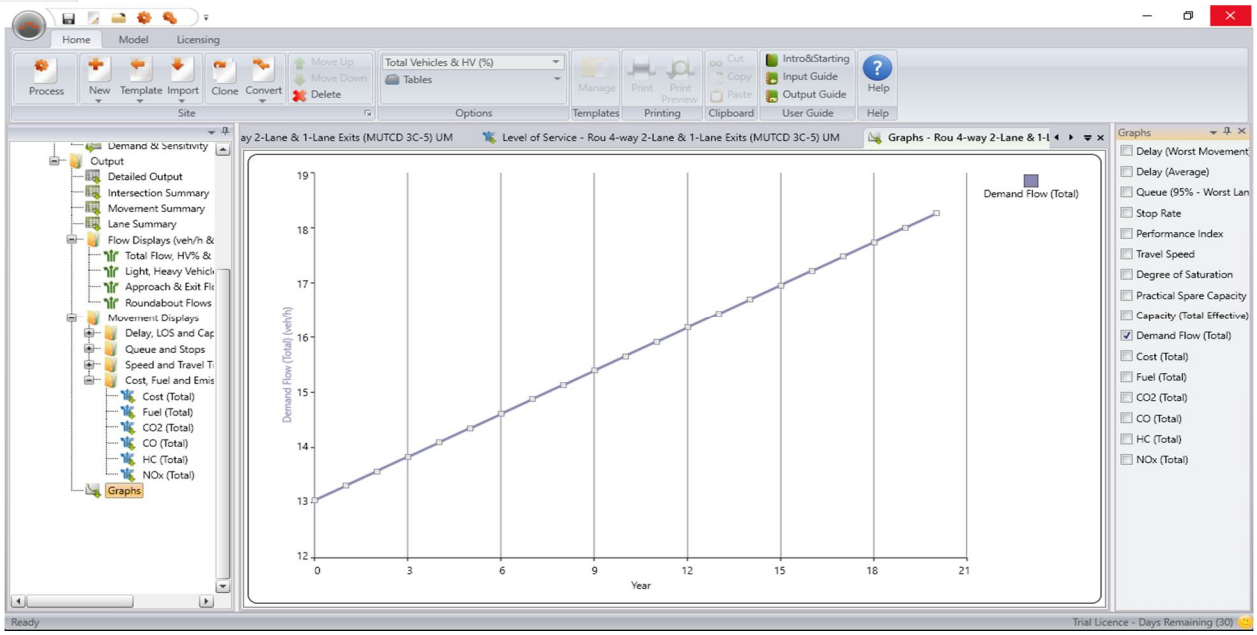

Figure 6: Total demand flow (vehicle per hour)

From the above graph it is observed that the total demand flow (vehicle per hour) goes on increasing as the year increases and the maximum value is found to be 18.5 vehicle per hour.

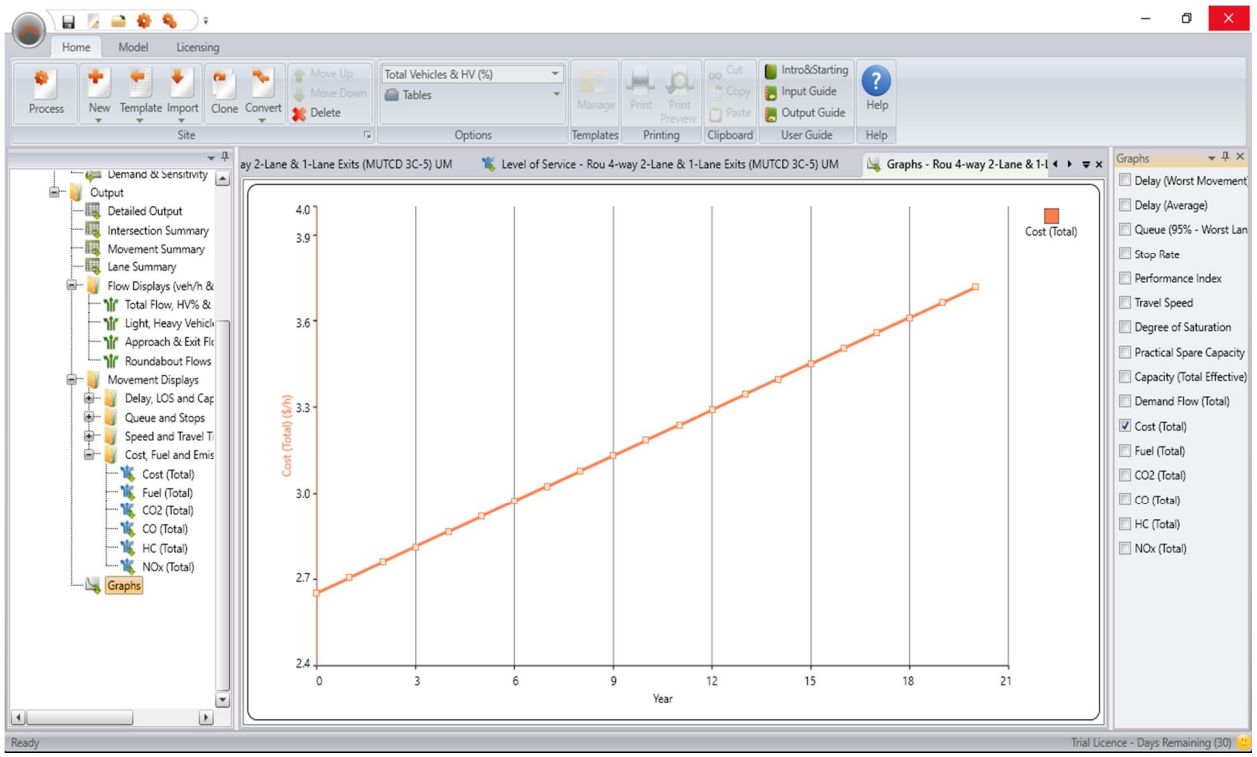

Figure 7: Total cost ($/h) yearwise

The above figure gives the results about the total cost revenue for the model.

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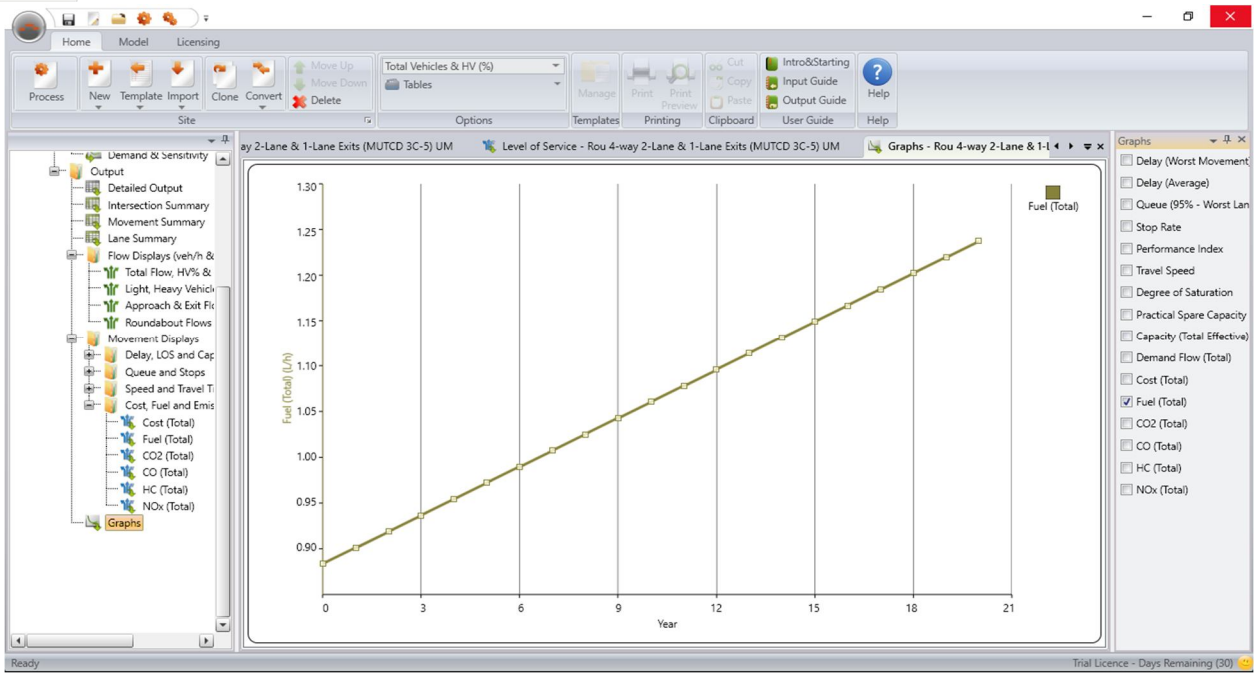

Figure 8: Total fuel (L/h) yearwise

From the above graph it is observed that the total fuel (l/h) goes on increasing as the year increases and the maximum value is found to be 1.25 l/h.

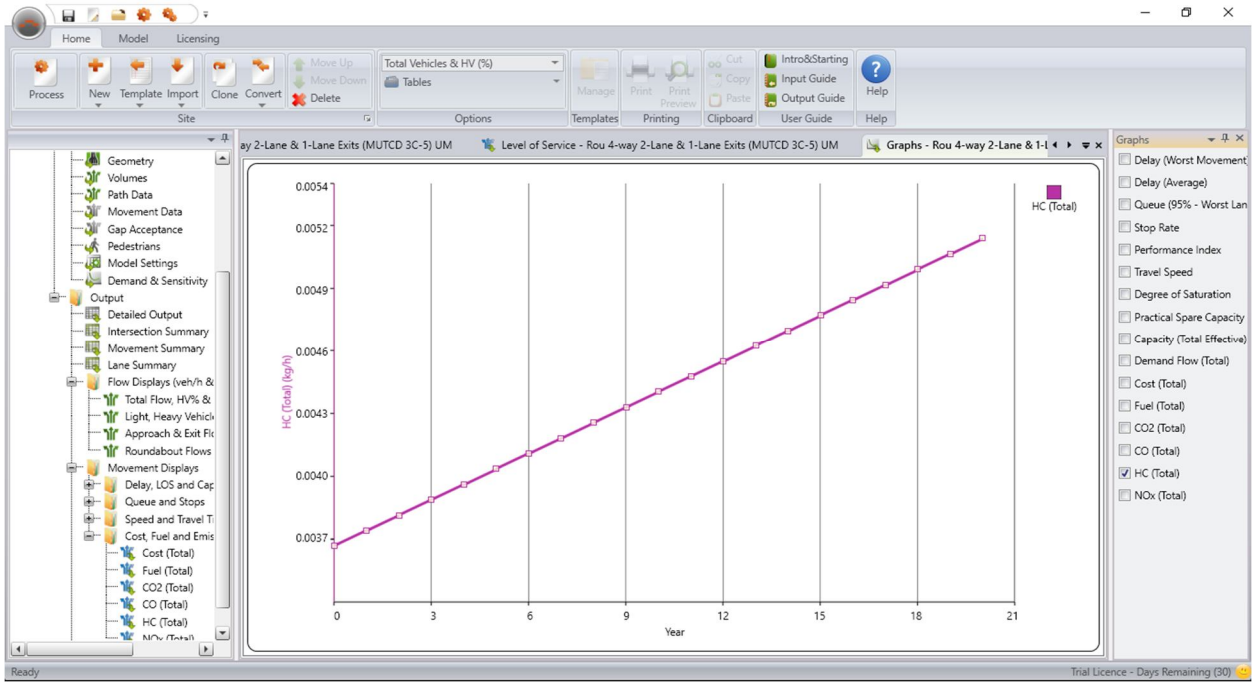

Figure 9:Total HC (kg/h) yearwise

From the above graph it is observed that total HC (kh/h) is found to be increasing as the year goes on increases and the maximum value is found to be 0.0052 kg/h.

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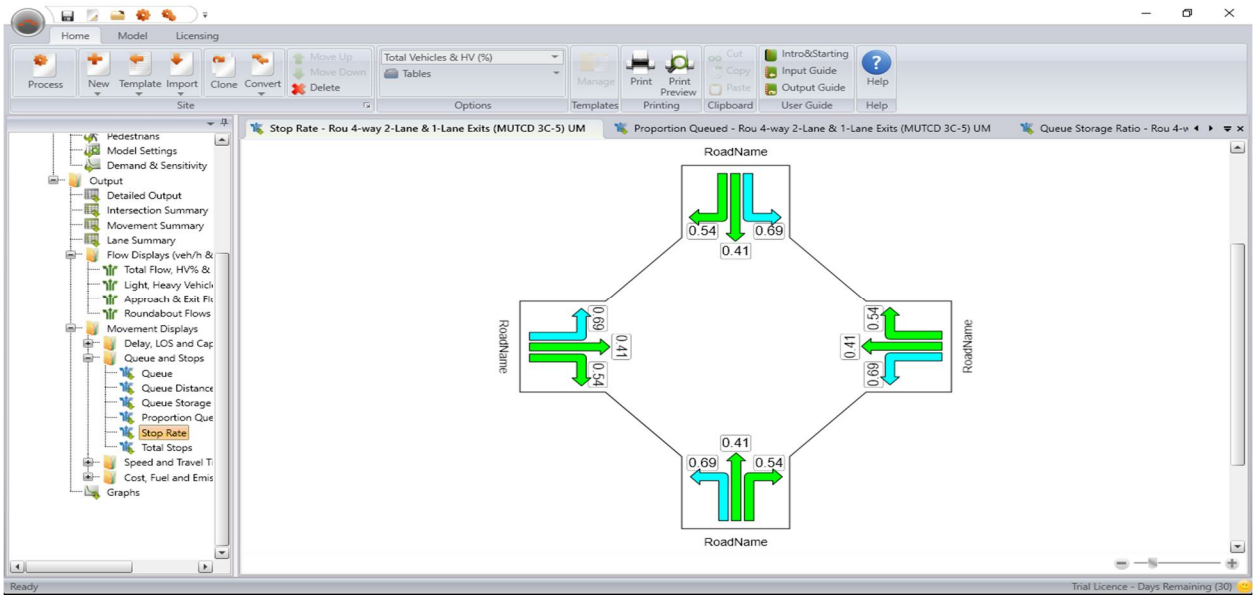

Figure **Error! No text of specified style in document.**.1: Stop rate for the different roads

The above figure gives the results in terms of the stop rate for the different roads.

V. CONCLUSION

In order to mitigate traffic congestion, several Indian city authorities have taken initiatives to build flights at major intersections. However, in most cases there is no comprehensive approach to planning. The place for flights was decided on the basis of modern operating conditions or at some times even by the perception of decision-makers, without resorting to an analytical planning approach. The present work consists of the Proposed Intersection at Rajkamal Square, Amravati. The square is highly populated and the need of the good quality intersection is proposed at this location. The results obtained in terms of the stop rate, performance index, cost data in the case of the model in SIDRA software.

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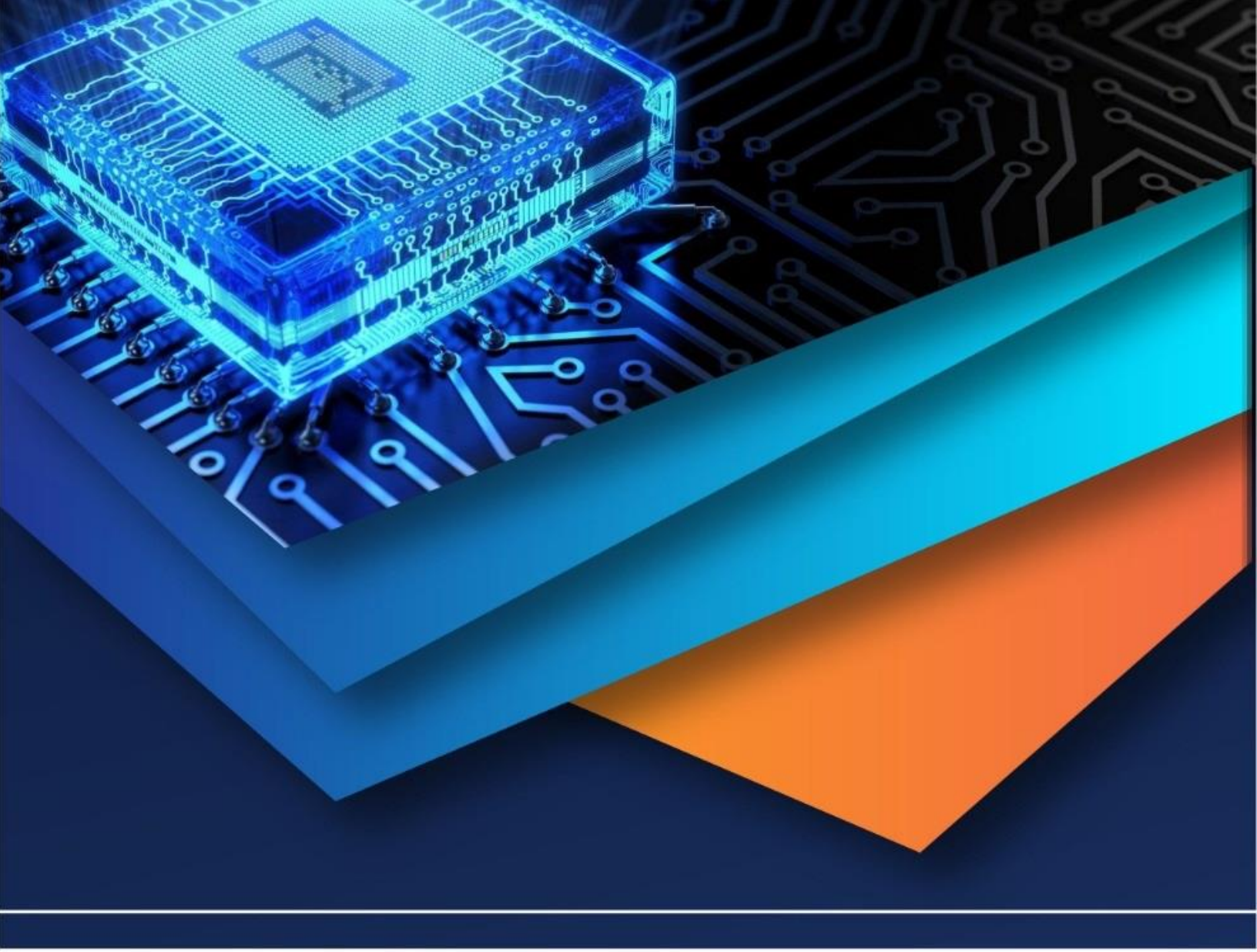

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