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TO STUDY REMEDIAL MEASURES OF TRAFFIC CONGESTION FOR CENTRALLY BUSINESS DISTRICT AREA

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ABSTRACT
The essential activities that are responsible for the growth of own and surroundings which reflects the intellectual awareness of major activities are well known happen in the city centre. Such centres are smoothly run through the transport nerves and that's why it is very important to take care of those transport nerves. Such kind of cities is known as Centrally Business District. The Amravati city/district located in Maharashtra state is kind of CBD and I choose this area for my entitled project. The business growth of city is tremendously increased since from last decade, but as comparison to this the transport nerves of the city are very weak which tends to a lot of traffic congestion. It is observed that the problem for congestion is due to the unplanned road networks in city. Also the city has a railway station which located at the centre of the city due to which there is no workable scope for doing any kind of changes in the transport nerves and as well in the transport system in the Amravati CBD. So I want to study about possible remedial measures in Amravati CBD to minimize the congestion and in this paper I mention about my study regarding the same.

I. INTRODUCTION

The business area in the city is the center of all major activities reflecting the culture of large cities in the most comprehensive manner having a functional significance. In the old cities, the space devoted to transportation has remained more or less the same from the past years while the requirements for such space have undergone a tremendously increases. The old urban centers have such physical characteristics, which do not allow the innovations and functions to improve. So, one of the primary tasks of the planning fraternity is to look into the modifications in existing situations of infrastructure for better management especially for the CBD.

The table below helps to know the category wise Indian vehicular population growth.

Year	Two wheeler	Light Motor Vehicles	Jeeps	Cars	Taxis	Buses	Goods Vehicle	Miscellaneous	Total vehicles
1	2	3	4	5	6	7	8	9	10
2001	38556026	1777130	1126148	5297219	634357	633900	2948300	4017946	54991026
2002	41581058	1878261	1177245	5748036	688204	635006	2973740	4242787	58924337
2003	47519489	2113781	1180057	6594166	825416	720696	3491637	4562042	67007284
2004	51921973	2167324	1282113	7267174	901889	767593	3748484	4661385	72717935
2005	58799702	2337264	1 307926	8072650	939738	678521	3877622	5488296	81501719
2006	64743126	2492726	1 376744	9109855	1039845	762341	4274984	5818646	89618267

2007	69128762	2697449	1460364	10146468	1042347	1098422	5118880	6014568	96707260
2008	75336026	2903821	1547825	11200142	1201862	1156568	5600938	6405672	105353854
2009	82402105	3146619	1638975	12365806	1307805	1205793	6040924	6843006	114951033
2010	91597791	3615086	1760428	13749406	3615086	176642	6431926	7552876	127745972
2011	101864582	4016888	1974253	15467473	1789417	1238245	7064495	8045441	141865607
2012	115419175	4242968	1987098	17569546	2011022	1296764	7658391	8866332	159490578

Aim
To study about the reasons for traffic congestion on an important road link in Amravati CBD area (Rajapeth-Rajkamal- Jaistambha) and propose remedial measures in context to urban planning.

Objective
On the basis of review I have decided to target following points:
- Comprehensive Study area profiling of Amravati
- Analysis of congestion issues identified
- Proposal and evaluation of an integrated strategic planning proposal

Scope of Work
The Amravati's CBD area is mainly covers Rajapeth, Rajkamal and Jaistambh, so paln to work on this congestion prone zone and decided my scope of work as follows:
- Study area length is 1.3 km (i.e. Rajapeth - RajkamalChowk - Jaistambha)
- Classified Volume Count, pedestrian count and speed & delay survey is carried out for the data collection.
- The limitation of the study is that Origin-Destination survey and parking survey are not be carried out in this work. The same may be considered as extension to current research and proposal.

II. METHODOLOGY

Congestion, there are various reasons for congestion on which basis I found different meanings of congestion, but there is one common thing that the congestion is kind of physical and relative phenomena. A physical phenomenon in a way that the vehicle's demand for limited road space is near full load, causing the vehicle to hinder each other from progressing and the relative phenomena associated with user expectations are contrary to road system performance.

In the methodology following surveys and assessment has been made on which some interpretations are made
For congestion measurements following surveys have been done:
       a. Speed survey
       b. Travel time survey
       c. Check for level of service
       d. Delay measures
       e. Traffic counts
       f. Pedestrian survey

The following statistical data helps me to figure out the remedial measurements:

1. Registered Vehicles in Amravati city

Years	Total No. of vehicles	Two wheelers		Motor car		Auto rickshaw	
		No. of Vehicles	%	No. of Vehicles	%	No. of Vehicles	%
2015	503671	448477	89.04	39109	7.76	16085	3.19

III.   DATA COLLECTION & ANALYSIS

In the part of data collection, Travel time and delay survey, pedestrian count and classified volume count is carried out for Rajkamal square.

1. Speed and delay:

Here, use the Android mobile app "My Tracks" to perform speed and latency investigations.

2. Classified Volume Count and Pedestrian Count:

Manual Classified volume count survey and pedestrian count are carried out by video camera .Here survey days is chosen as one full working days of the week (i.e. Monday to Friday), to track the vehicle flow. from Monday to Friday, survey is done for 12hour at all location and by analyzing very low vehicle movement 6:00 am - 7:00 a.m., further survey is done for 12 hour i.e. 7:00 a.m, to 1:00 p.m. and 3:00 p.m. to 9:00 p.m. Vehicle count &pedestrian count are done at four location in both direction namely Rajapeth, Shyam Square & Jaistambh Square of study area. The following table shows the count for each category during specific time:

Time	2 Wheeler	Car	Auto	Bus	Truck / Tractor	Tempo	Pedestrian	Cycle	Hawker
Location : from Rajapeth Square to Shyam Square									
7 AM to8AM	478	44	354	9	45	356	128	28	59
8 AM to9AM	550	65	345	4	*59*	369	210	51	60
9 AM to10AM	1260	80	400	7	25	349	230	55	55
10 AM to11AM	1590	89	460	9	19	360	300	58	69
11AM to12AM	1870	110	212	12	28	199	278	59	78
12 PM to 1PM	1720	90	150	4	12	169	244	48	12
3 PM to4PM	690	79	165	2	10	159	310	22	19
4 PM to 5PM	790	106	188	5	6	158	358	55	45
5 PM to 6PM	1890	145	220	10	15	320	458	65	29
6 PM to7PM	1950	102	250	2	4	15	503	45	10
7 PM to 8PM	1521	108	104	1	0	4	119	60	5
8 PM to 9PM	702	45	159	1	0	0	119	9	2

The following graph shows that PCU count is very high during 10:00 a.m. -11:00 a.m. in morning& maximum during 5:00- 6:00 pm in evening.

PCU Count From Rajapeth Square to Shyam Square
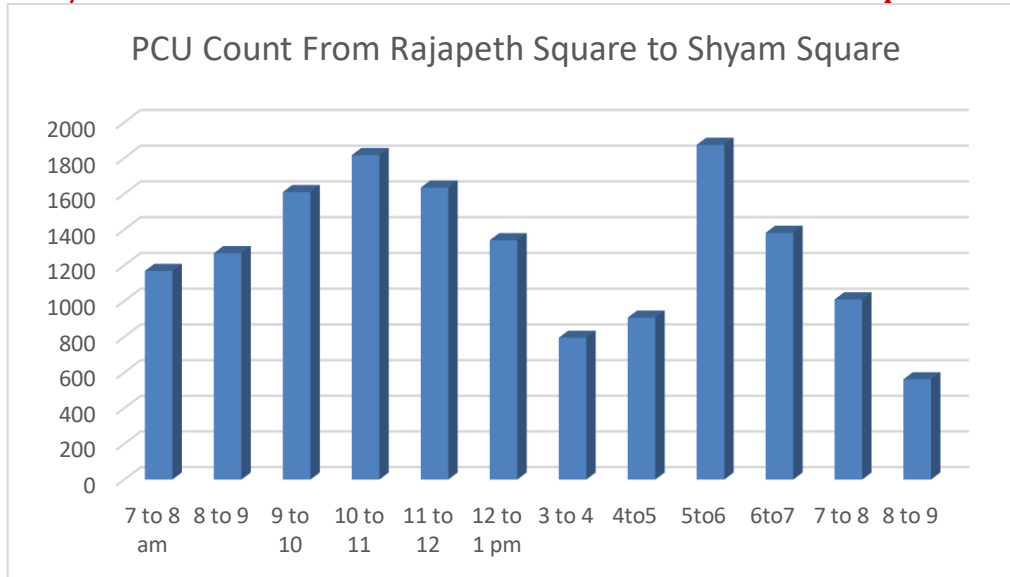
The following graph indicates that Pedestrian count is maximum during 10:00-11:00 a.m.in morning and during 5:00-6:00 p.m. during evening.

Pedestrian count
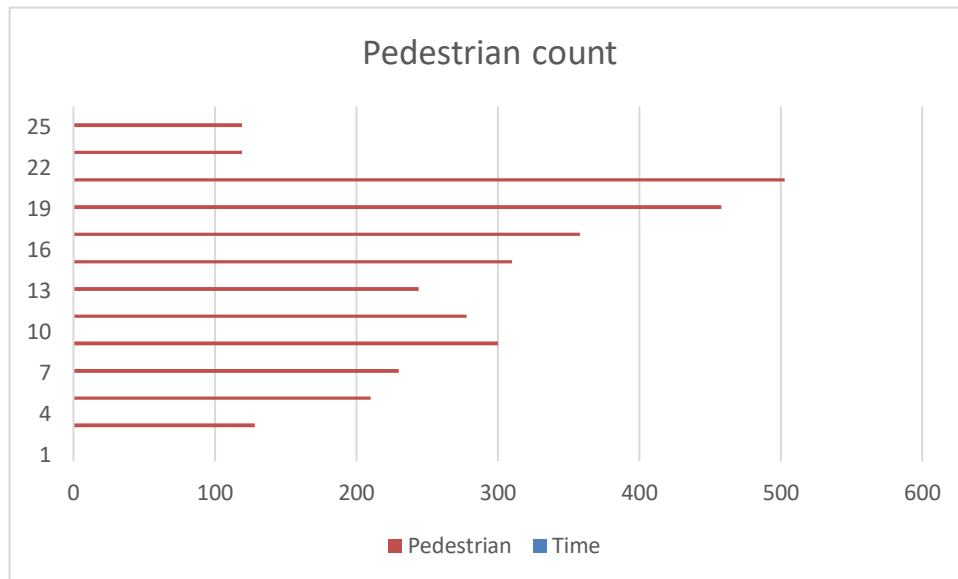
IV.   REMEDIAL MEASURES

As per data collected and analysed, short term and long term measures are proposed to reduce traffic congestion on Rajkamal Square As per identified location from "My Tracks", measures are proposed for Rajakaml Square to reduce the traffic congestion. Near the intersection during peak duration the vehicle and pedestrian movement is at maximum level in week days and also on the both sides of road due to vendor's encroachment the traffic congestion maximizes. So, it is necessary to manage such kind of informal activity. Also it is necessary to make the public opinion while making any plan. It is necessary to involve people who actually are using the whole traffic and

transport system i.e. stakeholders. Their opinion whether they would like to accept the solution, proposal or not and their ideas for possible solutions have also been taken.

V.   CONCLUSIONS

The proposed remedial measures are based on the solution of basic problem of traffic management. To reduce the traffic congestion either - on urban road or - in urban area, most important thing is to manage the traffic flow. As the study area having very old CBD characteristics, the width of road is very narrow and uneven where widening of road by demolition is quite difficult. These problems can be solved by broadening the road, but the cost is very high.

Traffic management plans should consider the issues of recent major needs:
- Unauthorized parking is not allowed.
- Stores on the sidewalks and on the road should be transferred.
- Nighttime visibility should be improved by adding appropriate street lights at the intersection.
- At a certain distance from the intersection parking spaces should be provided.
- At the intersection there always Traffic police should be appear.
- Billboards should be removed from the corner of the road to increase the line of sight.
- One major measure proposed is to banning of rickshaw movement along the stretch of Shyam Square.

VI.   FUTURE SCOPE OF WORK

There are also other locations of congestion that can be treated as future scope. There is scope for further work for traffic and transportation to be done at city level. Some of the long term strategies can be leading to detailed explorations regarding the following:
- Relocation of traffic generating land use activities from CBD
- Development of alternative CBD in new developing area
- Redesigning of critical junctions at Jaistambh
- Banning of Heavy vehicle movement in certain stretches at city level
- Calculation of various congestion cost and their effect on economy
- Parking management plan.