Study on Time Space Management in Work Zone from Jagir Ammapalayam to Seelanaickenpatti in NH7

Venkatesh.G
M.E Construction Engineering and Management, The Kavery Engineering College, Mecheri,Salem.

S.Sakthivel
Assistant Professor, Department of Civil Engineering, The Kavery Engineering College, Mecheri,Salem.

Abstract – The purpose of this investigation is to find out the various problems involved in the highways due to the setting up of the work zones at the various points in the particular section of the road. Time space management is the major concern in road construction projects and established guidelines exist for some countries. The large number of new major road infrastructure projects requires the enhancement of highways for the safe operation and maintenance of the traffic. Constructability is an important aspect, which becomes more pressing in light of public-private partnership (PPP) nature of these projects. We can and must build faster, bigger, safer and more economically than our predecessors and to meet this challenge, effective project management is crucial. The major problem faced in the construction of roads is the diversion of the traffic and safe work zones for the workers. The management of these zones is highly under the low priority list of all contractors or the firms which carry out the works. The improvement of the roads should be carried out with proper detailing and scheduling. Proper study of the traffic pattern of the particular section is to carried out. With the details derived and using suitable Statistical Packages Social Sciences(SPSS) for the time space management of the work scheduling is to be done. A study on the NH7 stretch between Jagir Ammapalayam and Seelanaickenpatti is to be carried out and subsequently a Statistical Package Social Science(SPSS) is developed on time space management system.

Index Terms – Time Space Traffic Management, SPSS, Transportation Management Plan.

1. INTRODUCTION

The road system is the most important part of the transportation system in the whole world. This system requires a high level of management. Our country as a whole does not have a proper system to monitor this traffic. The road system requires a high amount of management features for the proper functioning and to avoid the traffic jams and accidents which occur daily in Salem as it is a Fifth largest Municipal Corporation of Tamil Nadu. Our highway infrastructure is ageing and congestion is increasing. Transportation agencies must find ways of building and reconstructing roads and bridges while limiting impacts to the traveling public. Managing traffic during construction is necessary to minimize traffic delays, maintain motorist and worker safety, complete roadwork in a timely manner, and maintain access for businesses and residents. Effective time space traffic management includes assessing work zone impacts and documenting strategies for mitigating the impacts in a transportation management plan (TMP). [7]

Time space traffic management strategies should be identified based on the project constraints, construction phasing/staging plan, type of work zone, and anticipated work zone impacts. Once these strategies are implemented, they need to be monitored to ensure they effectively manage work zone impacts. So the various problems that are faced in the modern India where there are precious lives lost and time lost due to improper management of the traffic.

The proper need for the time based management is needed to sort out the issue. This kind of heavy vehicular quantity facing roads need proper build up of a management system for the traffic management. The time management system can be used to enable in the proper facilitation of the traffic. The time management system is brought about with the study of the pattern of the traffic in the particular area. The various time series are the ones at which the traffic tends to be heavy during this time the vehicular count should be also known for the formulation of a good management system.

2. OBJECTIVE

- To study the causes of traffic issues in the selected road stretch.
- To study the amount of vehicular passage in the area to be under surveillance.
- To prepare the questionnaire for the receiving of required data from the road construction companies.
- To space out the time of operation of the work based on the movement of the vehicle.
- To prepare an SPSS model ensuring that the end user's perspective is taken into consideration and thus improving the efficiency of the organizational structure.

3. SCOPE OF THE PROJECT

- It would help in improving the efficiency and proper step by step planning of project implementation.
- Proper utilization of the work force which is to be utilized without wastage of men, material and machinery.

4. METHODOLOGY

Initially the roads which tend to have heavy traffic the numbers of vehicles which are travelling on it are to be analyzed for the considered section. Later, time-space management strategies are analyzed in case of any constructional operations like building, reconstructing or maintenance of roads or bridges in this selected zone. The following figure, shows the flow of the work for the project. The complete road section which stretches from Jagir Ammapalayam to Seelanaickenpatti is about 10km.The stretch consists of three major points at which the traffic survey is to be carried out.

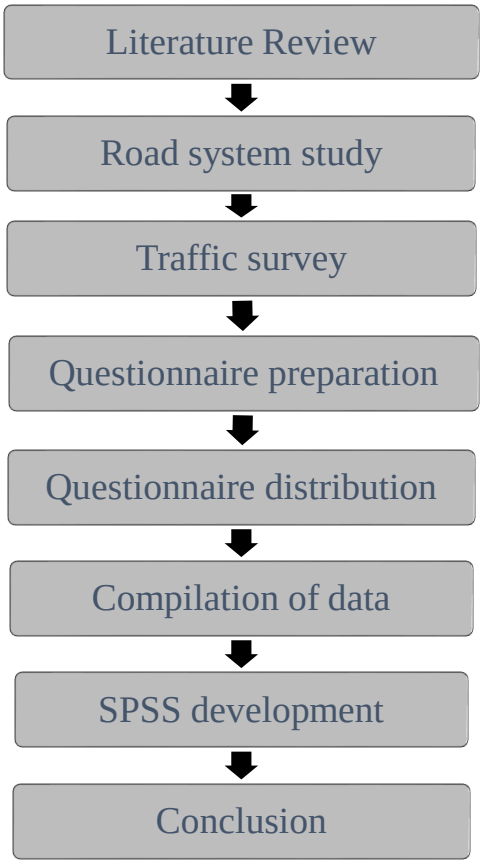

Figure 4.1 Flow chart showing the steps involved in project.

The three major points are Jagir Ammapalayam, AVR Circle and Seelanaickenpatti are considered. These points are where the usual accumulation of traffic takes place. The various points which involves a high level of risk are properly assessed and these points are entitled to the various set of varying methodologies for the study of the traffic related aspects involving the vehicles present in the particular area of interest. Once the road survey is completed, a questionnaire is prepared based on different factors affecting the project. The questionnaire helps in analyzing the issues during different phases of the project. Thus, it can be supplied to the organization taking up the project so that they can easily analyze the major problems that may arise in construction due to the traffic. The organizations that take up the project are supplied with questions to study and analyze the problems. An SPSS model is then made in such a way that these issues are rectified and thereby increasing the efficiency. Many companies were approached with the questionnaire and the major concerns in construction due to traffic is then found out from the questionnaire analysis.

5. RESULTS AND DISCUSSION

The questionnaire survey has been prepared regarding the work zone related notations and various factors too. A questionnaire is prepared to analyze the important issues that are caused due to any constructional activity in the selected zone. The analysis should be focused towards construction strategies and technologies that can be used to save time and cost, and provide a better, safer driving experience during construction. The study comprises in consulting contractors, engineers and project managers who are involved in the road construction. This resulted in total of 50 questionnaires being distributed and about 35 were returned and the analysis was being done.

The analysis of the questionnaires has helped in formulating the various problems which occur and in the road repair. The various companies have given their own recommendations for carrying out the various modulations in the work zones.[1] The various work zones are not properly considered during the time of work on the highways all those who are involved are totally obsessed with the various unwanted stuff. They don't properly involve in the various works in the site.

The movement of the various machinery and labors are not carried out properly in the site. The speed of the vehicles is not properly controlled. The car drivers do not tend to reduce the speed of the vehicles when they are crossing the work zones. The various people who are involved in the analysis for the questionnaire were all project managers or engineers who have had a minimum experience of 10 years in the field of road works.

They have properly understood each and every part of the questionnaire before they undertook the survey. After conducting the questionnaire survey, the ideologies of different people are going to be collected and then the required data is going to be represented. Based on this the required told are chosen and the required result is brought out by using required tools.

The various problems which were studied in the questionnaires are given as follows from the various surveyed questions from the various companies:

- The non-calculation of the density of the vehicle which are crossing over the highway has ever been done by most of the contractors or the companies which take up the works.
- The rain in the region tends to cause a lot of hardship to the work zones and the labors on the site; during the rain due to poor visibility the drivers are unable to have a proper vision on the road. This increases the possibility of accidents and errors.
- The U junctions are the zones with a high amount of risk, as there are intersection of more roads to it the traffic tends to add up at these points and problems are eminent.
- The road as such is used by the local people for them to go for work school etc., and the others who travel into the city and out. These people are the worst effected in the maintenance work carried out at the work zones.

5.1. Solutions for the various problems

The various problems involved in the work zones of the highways need proper remedial measures to be taken to make the working much simple and properly worth without wasting a lot of money and avoiding accidents.

5.2. Lack of information about the traffic intensity

- Traffic cameras should be installed on all the major junction points and at the three major points of intersection which is at the Jagir Ammapalayam, AVR Circle and Seelanaickenpatti. The full traffic should be studied with the help of these cameras the total intensity can be learnt.
- The traffic study for the various timings should be properly carried out in order to find out the timings of the peak pressure.
- The timing at which the heavy traffic is predicted by the survey carried out, the peak hours is predicted at about 7am to 8am, 11am to 12pm, 4pm to 5pm and 9pm to 10pm.[8]

5.3. Rain related issues

- The season of the work being carried out is highly important so that the rainy season can be avoided and the various issues are fixed. The load on the people working and the cost can be completely removed.
- In order to tackle the problem of the rain the culverts should be constructed to reduce the degradation of the work zone.

The speed limitation along the work zone for the cars coming along the way should be limited to about 20km/hr. The work zone lengths are highly debatable and yet the minimum size of the work zone should be about 500m and upto a maximum of 5km in order to enable easy and proper carrying out of the work in the work zone. Without any loss of man, material and machinery.

6. CONCLUSION

The study of the time space management on the work zone in the NH7 along Jagir Ammapalayam to Seelanaickenpatti to has enabled in the work structure of the highway construction. The traffic densities along the complete section of the highway at the three major points are noted. The three major traffic filled points on the section are closely monitored and the various feeder roads are studied. The questionnaire was prepared according the various requirements for our detailed study on the highway work zone management.

The questionnaire was distributed to various numbers of companies who carry out road repair and road construction works. The various responses and the risk from the questionnaires are formulated. Using the SPSS the various issues are properly formulated and the various high risk issues are dealt with at most care. The time space along which the work zone work should be carried is to be done in timings other than the peak hours. The other major point to be considered is to carry out the work during the proper season and avoiding the rainy season too.

- The proper space should be allocated between the work zones in case of multiple points.
- The speed limitation should be properly monitored with the help of sign boards and
- Personnel holding or showing red flag for the traffic control.

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Authors

Mr.Venkatesh.G has completed B.E Civil Engineering from KCT, Coimbatore and he is currently Pursuing M.E in Construction Engineering and Management in The Kavery Engineering College, Affiliated to Anna University Chennai, Tamil Nadu, India. His current Project include Simulation Model.

Mr.Sakthivel.S M.E., is Currently Working as Assistant Professor in The Kavery Engineering College, Anna University Affiliated to Anna University Chennai, Tamil Nadu, India. And he guided many UG and PG Projects.