A Study on Surface Road Traffic Problems in the City of Guwahati North East India

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Abstract

Road transportation plays a significant role in promoting the socio economic and better livelihood. It there seems to be slow development in this sector than the speed of economic development will move slower. This could experience from the problems faced by the user or the stakeholder of the road transportation. Problem of traffic congestion has been experienced rapidly with the pace of development of better livelihood of the people as well as due to the development of infrastructure of the city and the region as a whole. The basic objective of the present study is to identify the problems related to road transportation in Guwahati city and giving some alternative solution to better management of road transportation flow. Therefore, an attempt has been made to understand the problems, reasons and possible solutions for better traffic management.

Key words: Road Transportation, Traffic Police, Accident, Overtaking, Signals & Pollution

Introduction

Transportation is said to be a spinal cord of economy. Without which no progress can be made in the country. It is important for the country's economic development and social integration. Due to easy access, door-to-door service reliability, flexibility of operation and road transport has earned an increased share of both passenger and freight traffic. Transport sectors contributions in India's gross domestic product accounts for 4% percentage of total share.

Problem relating to rod transportation and congestion of traffic in Guwahai city is a solemn experience faced its stakeholders, road users. Due to the traffic congestion, transport passengers waste valuable time, fuel and money. Problems on urban roads can be alleviated by making more infrastructure, though sometimes not possible or not possible for many reasons to build additional infrastructure, such as the lack of necessary funds, sustainable infrastructure and so on.

However, existing infrastructure can be modified to reduce congestion

on city roads. For example, the construction of a bypass in a city may reduce the number of vehicles entering the city, and thus reduce the traffic load on city roads. Crowds are sometimes seen due to unstructured drift of vehicles on city roads and an organized traffic flow can be expected to reduce congestion.

Review of Literature

In the recent scenario of road transportation some of the scholars have contributed their thought as: Milne, A.M, (1955), the economics of inland transport, SIR ISSAC PITMAN and Sons ltd. London, "Discuss transport problems in relation to wider economic consideration of use of scarce resources. He gives emphasis on coordination of different modes of transport so as to avoid duplicity of service and wastage of resources. He made a study of the history of development of transport in Britain".

Pathak, B.N. (1979) and Sachdeva, Nath, (1979) have emphasized that "Transport is not demanded in its own right. The demand for transport reflects the level of social and economic activities and the benefits it provides in their pursuance. But as these benefits are high, the role of transport has kept growing in production as in everyday life".

Srivastava, S.K., (1981), "gives a historical survey of the means of transportation and also examines their present position and offered suggestions for the improvement of their operational efficiency".

Objectives of the study

The researcher has undertaken the following objectives in the study:

1. To identify the problems related to road transportation in Guwahati city
2. To find out the possible solution to better management of road transportation flow

Methodology of the Study

The research is based on both primary and secondary source of data. The primary data have been collected with the prepared set of questionnaires from the users of the road transportation such as commuters, local inhabitants and the secondary information has been collected from the various published documents of government, such as publications of NHAI, PWD, GMC, GMDA, Journals. The data has been collected, tabulated and interpreted in a scientific manner to bring out the fact of the study.

Sample Size: To collect the responses from Traffic Police, the researcher has chosen 280 numbers of Traffic Police from 14 Police Station of Guwahati city. Similarly, to collect information from local inhabitant, the researcher has chosen 200 respondents and for collecting information from the drivers of vehicles, the researcher has taken total of 410 samples viz. Truck driver 180, Trekker drivers 80 and City bus driver 150.

Data Interpretations & Result

Level of measures taken to control the traffic congestion:

The table: F-1 shows that the opinion of traffic police on the level of actions adopted to control the traffic congestion in the city. In this regard 20 police from each police station of Guwahati city (i.e.14 police station) were interviewed to know their views relating to the controlling system and measures of the traffic police. 15% out of the total respondents i.e. police have opined that the measures are sufficient, 35% respondents out of the total sample respondents said that the method needs more improvement. Remaining 50% of sample respondents agreed that the mode of controlling traffic in the City is not up-to the mark and sufficient.

Table 1-Measures adopted to manage the traffic congestion

Measures	Sufficient	Require improvement	Not sufficient	Total
% of Response	42 (15%)	98 (35%)	140 (50%)	280 (100%)

Source: Response of the Traffic Police

Let take hypotheses (H0) that there is no significant differences in the numbers of respondents agreed on level of measures taken for controlling of traffic congestion.

Here H1 = there is significant difference in the numbers of respondents agreed that three different method on level of measures taken for controlling of the traffic congestion.

The result found that the value of $\chi 2 = 51.79$. The value of $\chi 2$ at 5% level of significance against the degree of Freedom 2, {i.e. y = (3-1) =2} is 5.99. Hence, the H0 is rejected and H1 is accepted. It means that there are significant differences in numbers of respondents agreed with three different method of level of measures taken for controlling of traffic congestion.

In practice, the table 1 exhibit that the unhappiness of majority of the traffic police of on controlling measures adopted for road transportation in Guwahati city. Therefore, the top level traffic police authority should be properly investigates the problems for effective transport system. Some sample respondents told that the existing system has been running for a long time; nothing has changed in the last few decades.

Traffic Police Engagement for road transportation

Traffic police personnel are essential for easy control of traffic. Convenient road traffic relies heavily on traffic police. Therefore, the researcher has investigated sufficiency of traffic police personnel. It has been found in the given table that out of the total sample

Table no: 2 - Number of traffic police engaged for traffic control

Remarks of traffic Police		Total
Quiet Sufficient	Insufficient	280 (100%)
90.(32%)	190.(68%)	

Source: Response of the Traffic Police

respondents of traffic police, 68% respondent stated that engagement of the traffic police personnel are not sufficient for controlling ongoing traffic congestion of the city. On the other 32% i.e. 90 respondents replied that the engagement of the traffic police personnel is quite sufficient. It has been seen that traffic police recruitment has not been happening for a long time. The state government should appoint more traffic police to reduce the traffic jam problem in Guwahati city.

Responsibility allocated to Traffic Police

The smooth function of traffic also depends on many factors; one of the important factors is the work of the traffic charges. The table 3 shows the opinion of different traffic polices personnel on the load of responsibility. The majority of the police personnel (i.e. 51% respondents) stated that the responsibility assigned to them are out of manageable limit .Only 31% sample traffic respondent polices have opined that load is manageable. The loads of responsibilities are inadequate as per the view of 18% respondents.

Table no: 3 - Responsibility assigned

Measures.	Manageable.	Inadequate	Beyond the manageable limit.	Total
Number of Respondents	87.(31%)	51.(18%)	143.(51%)	280.(100%)

Source: Response of the Traffic Police

It is found from the table 3 that the Traffic Police Department needs sufficient police personnel to operate its function smoothly. The distribution of duties should be organized in a scientific manner so that the traffic police should not feel over-utilized.

Transfer of Traffic Police:

The efficiency of traffic police is also affected by the frequency of transfer of their duty. The investigation of the researcher on this issue reveals that in case of majority police personnel (i.e. 60% of sample traffic polices) are being transferred very frequently. 35% respondents opined that their transfer occurs moderately. 15% of the respondent traffic police get rare chance of transfers in the duty.

Table no : 4 - Transferring of Police Duty

Frequently	Moderately	Rarely	Total
168.(60%)	98.(35%)	52.(15%)	280 (100%)

Source: Response of the Traffic Police

In fact, both frequent and rare transfers are not good for building the capabilities of police personnel. Therefore, the state government should have a prudent policy for transferring the work of the traffic police.

Category wise violation of traffic rules:

Seamless vehicular traffic depends on the degree of compliance of the traffic rules by the road passenger. It has been observed that a substantial fraction of drivers violate traffic rules. Violation of traffic standards by heavy vehicles can pose serious problems for easy road traffic.

To know the violation of traffic rules, the researcher has conducted a survey among selected vehicles. It has been found that 50% of the samples of truck drivers were imposed penalty for more than 5 times. In case of sample of buses drivers, the percentage is 46%.

Table no: 5 - Have you been imposed penalty?

Types	1 to 2 times	2 to 5 times	More than 5 times	Not at all	Total
Truck	18.(10%)	54.(30%)	90.(50%)	18.(10%)	180.(100%)
Trekkers	20.(25%)	28.(35%)	24.(30%)	8.(10%)	80.(100%)
Bus	33.(22%)	15.(10%)	69.(46%)	33.(22%)	150.(100%)
Total Figure and Average percentage	71.(17%)	97.(24%)	183.(45%)	59.(14%)	410.(100%)

Source: Sample Survey

The information of penalty imposed on vehicles signifies that the repeated violation of traffic rules by the heavy vehicles. The percentage of trekker drivers involved in violation of traffic rule more than 5 times are only 30%, which is very less than the same of trucks and the buses.

The researchers have also interviewed the traffic police personnel to know the traffic rule violation by these categories of vehicles. In this regard, the 20 traffic polices from each police station were taken as sample. The table 6 shows the category wise violation of traffic rule. It has been observed that the majority respondents, i.e. 40% ofthe sample Traffic Polices personnel opined that the motorcycle riders have been seen major violator of traffic rules. On the other 21% and 11% respondents respectively stated that the Truck and Trekkers are more often violators of the traffic norms. Similarly 21% of the sample of traffic police accused that the buses as main violators of the traffic norms. Very less percentage of the traffic polices i.e. 2%, 3% and 2% respectively opined that the Car, Auto and other vehicles also violates traffic rules.

It is also worth noting that the large majority of motorcyclists are young boys and college students. Many

Table no: 6 - Categories of vehicle violating Traffic norms

Categories	Percentage
Motorcycle	40%
Truck	21%
Trekkers	11%
City Bus	21%
Auto	2%
Car	3%
Others	2$
Total	100%

Source: Response of the Traffic Police

of them received a driving license for two wheelers without maturity in the driver's and civic sense. Therefore, the state government should formulate a plan and policy for issuing a driving license for the students. The state may impose heavy fines on motorists for violating any standard.

Use of foot over bridge for crossing road by the commuters:

The traffic congestion in the city is complex. There are many traffic jams because people don't use foot-over bridges. It has been observed that very few people use foot-over bridges to cross the road. The researcher tried to understand the reason why more percentage of commuters does not use foot over bridge. According to 73% of the sample respondents' i.e. local inhabitants, foot over bridge is tall enough and not scientifically constructed which becomes the reason inconvenience for the pedestrians. Therefore, the commuter or pedestrian do not prefer to use foot over bridge. Remaining 27% of local inhabitants which are belonging to young age group people opined that foot over bridges are the best means for crossing the busy road.

Let us take the hypotheses (H0) that, there is no significant difference in numbers of respondents preferring Foot over bridge and not preferring Foot over bridge.

Here, H1 = there is significant difference in numbers of respondents preferring Foot over bridge and not preferring Foot over bridge.

It has been observe that, the value of $\chi 2$ is 42.32. The value of $\chi 2$ at 5% level of significance against the degree of Freedom 1, {i.e. y= (2-1) =1} is 3.84. Since the value of $\chi 2$ is more than 3.84, therefore, the H0 is rejected and H1 is accepted. It means that there is significant difference in the numbers of respondents in relation to the categories of preferring foot over bridge and not preferring foot over bridge.

Table no: 7 - Use foot over bridge to cross the road by inhabitants

Preferring Foot Bridge	Not preferring Foot Bridge	Total
54.(27%)	146.(73%)	200.(100%)

Source: Survey on Commuters opinions

In fact, there is only three foot over bridges located in Pan Bazar (nearby Sukleswar Temple), Maligaon, and in ABC (nearby Hanuman Temple). As the table 7 reveals that the majority of commuters do not prefer foot over bridge, there is need for changing the existing system of the foot over bridge.

The foot over bridge should be comfortable and attractive. The state government may consider using electronic ladder cases for the foot-over bridges mentioned above. Pedestrians should have adequate use and awareness of zebra crossing devices.

Entry Timing for Light Motor Vehicles and Heavy Vehicles:

Often times the smooth flow of traffic depends on the road vehicles. In practice, the government set aside time for

freight vehicles to enter the city. The time allotted for heavy vehicles is excluding normal working hours. However, many drivers of freight vehicles violate traffic rules. Researchers have come to the public's opinion that some of them felt that traffic violations were repeatedly violated by heavy freight vehicles in relation to the city's opening hours.

Table no: 8- Respondents Opinion on Violation of Traffic

	Violation of traffic norms in relation to entry hour of the goods carriage heavy vehicles cause traffic congestion	Violation of traffic norms in relation to entry hour of the goods carriage heavy vehicles doesn't cause traffic congestion	Total
Number of respondents	295.(59%)	205.(41%)	500.(100%)

Source: Sample Survey

To this problem, the researchers assume and undertake the null hypotheses i.e. (Ho) and alternative hypotheses i.e. (H1) as follow.

Ho = There is no significant difference in numbers of respondents who believe and does not believe the violation of traffic norms committed by the good carriage heavy vehicles in relation to the entry hours cause traffic congestion in the city.

H1=There is significant difference in numbers of respondents who believe and does not believe the violation of traffic norms committed by the good carriage heavy vehicles in relation to the entry hours cause traffic congestion in the city.

After calculating, it has found that the χ 2is 16.2 and the value of χ 2 at 5% level of significance against the degree of Freedom 1, {i.e. y= (2-1) =1} is 3.84. Since, the value of χ 2 is more than 3.84. Therefore, H0 is rejected and H1 is accepted. It has proven that there is significant difference in the numbers of respondents who agreed with the two different ways as shown in table no. 7.

As per table no. 8, the majority inhabitants, i.e. 59% of total respondent believes that the violation of traffic rules by the good carriage heavy vehicles creates traffic congestion in the city. This situation calls for rigorous and honest police scrutiny to maintain entry times for heavy vehicles in the city.

Checking the capacity of heavy vehicles:

Well-maintained roads are important for the smooth flow of transportation networks. Due to heavy vehicles, the road is damaged. According to PWD officials, the roads are prepared on the basis of vehicles and size.

Table no: 9-Opinion of the Truck Drivers on regularity of the Police Checking on the capacity of Vehicles

Regularly Checking	Rarely Checking	No Checking	Total
45. (25%)	72. (40%)	63. (35%)	180.(100%)

Source: Survey on the sample Truck Drivers

However, it has been observed that heavy vehicle carries more than the limit so the roads are deteriorating which will lead to poor road conditions.

Investigators received comments from truck drivers about the ability of vehicles to regularly check police. It has been found that those samples 40% of sample truck drivers are of the opinion that the police rarely check the capacity of the vehicles. Another 35% of them responded directly to no police check on the capacity of the heavy vehicle.

This shows that the majority of the sample truck driver respondents i.e. 75% did not give a good opinion on the police check for the ability of the vehicles. Only a small number of respondents i.e. 5% said that the police regularly checked the capacity of heavy vehicle. Hence, this observation indicated the need for police investigation into heavy loads of heavy vehicles.

Incidents of Road Accidents

It has been mentioned previously that some sample respondents have cited road accidents as a significant issue of traffic problems. The given table no. 10 shows the type of road accident occurred in between 2007 to 2012. According to this information, on average of 65% of accidents were low risk but the remaining 35% of accidents were either fatal or dangerous. In fact, on average of 20% accidents seems to be fatal and 15% were serious i.e. dangerous in the period above study.

Table no: 10- Yearly Accident Mix in the Guwahati

Type/year	2007	2008	2009	2010	2011	2012	Total Figure and Average percentage
Fatal	288 (16%)	342 (19%)	306 (17%)	324 (18%)	252 (14%)	288 (16%)	1800 (20%)
Serious/ Dangerous	243 (18%)	257 (19%)	216 (16%)	270 (20%)	176 (13%)	189 (14%)	1350 (15%)
Less Risky	1053 (66%)	1111 (62%)	963 (67%)	1170 (62%)	761 (73%)	819 (70%)	5850 (65%)
Total	1584 (100%)	1710 (100%)	1485 (100%)	1764 (100%)	1189 (100%)	1296 (100%)	9000 (100%)

Source: Records of State Traffic Branch Guwahati, Assam

Another noteworthy fact is that from 2007 to 2007, road accidents were not significantly reduced. This explanation indicates a very serious topic for road commuters currently in road accidents.

Overtaking of the other vehicles while driving:

It is noted that the drivers of different commercial vehicles are impatient while driving. Lot of times, they try to overtake other vehicles with the unnecessary purpose of competition, which can lead to road accidents and followed by traffic congestion. According to the investigator's sample survey, on average of 27% sample respondents i.e. drivers do not like to overtake other vehicles on the road. This indicates that 73% of drivers prefer to overtake the other vehicles while driving in the city.

Table no: 11-Overtaking of the other vehicles while driving in city

Types	Often	Sometimes	Not at all	Total
Truck	90. (50%)	54. (30%)	27. (15%)	180. (100%)
Trekkers	32. (40%)	32. (40%)	16. (20%)	80. (100%)
Bus	15. (10%)	90. (60%)	45. (30%)	150.(100%)
Total Figure and Average percentage	137. (33%)	176. (43%)	88. (21%)	410.(100%)

Source: Drivers Opinion

On average, 33% of the sample driver prefers to overtake the other vehicles on the city's busy streets. City buses often do not practice overtaking other vehicles. 10% of city bus drivers usually have the habit of overtaking vehicles. Unlike that majority of Trump and Trekker sample drivers, other vehicles on the road prefer to overtake because of commerce.

Table no. 11 Demonstrates that 50% of sample truck drivers and 40% of sample trekker drivers often overtake other vehicles on the road. It is also noteworthy that the number of road accidents with a truck is as big as compare to the trekkers.

Driving experience of a driver:

In terms of preventing road accidents and traffic congestions, the driver's driving experience is a very important issue for study. It has been found that 68% of sample drivers have more than 5 year of driving experience.

This shows that a small group of sample respondents i.e. 32% have experience of driving for less than five year. However, in the case of trackers and trucks a significant fraction of sample drivers i.e. 40% and 35% of sample respondents have less than 5 years of experience. Therefore, this is one of the reasons for the increased involvement of trucks and trekkers in vehicular accidents

Table no: 12- Driving experience of a driver

Types	Less than 2 years	Less than 5 but more than 2 yrs	Less than 10 yrs but more than 5 years	More than 10 years	Total
Truck	9. (5%)	54. (30%)	45. (25%)	72. (40%)	180. (100%)
Trekkers	8. (10%)	24. (30%)	32. (40%)	16. (20%)	80. (100%)
Bus	15. (10%)	18. (12%)	48. (32%)	69. (46%)	150.(100%)
Total Figure and Average percentage	32. (8%)	96. (23%)	125. (30%)	157. (38%)	410. (100%)

Source: Field Survey

Drivers check the vehicles problem from time to time:

The sudden break downing of the vehicle's machine causes road congestion in the city. Therefore, it is important for every driver to have regular inspection of the vehicle. Table no. 13 demonstrates that the majority of sample driver i.e. on average of 46% of respondents of selected vehicles most often check vehicles, while the remaining of 54% of respondents check occasionally. Compared to the bus, the number of trackers and the trucks vehicles is less frequent. Only 20% of tracker drivers usually prefer to check their vehicles. This observation indicates the need to ensure regular inspection of vehicles by the department of road traffic and DTO.

Table no: 13- Drivers check the vehicles problem from time to time

Types	Very frequent	Rarely	Sometimes	Not at all	Total
Truck	72. (40%)	36. (20%)	54. (30%)	18. (10%)	180. (100%)
Trekkers	16. (20%)	32. (40%)	24. (30%)	8. (10%)	80. (100%)
Bus	99. (66%)	36. (24%)	12. (8%)	3. (2%)	150.(100%)
Total Figure and Average percentage	187 (46%)	104. (25%)	90. (22%)	29. (7%)	410.(100%)

Source: Field Survey

Pollution certificates of Vehicles

Air pollution in urban areas is an important issue related to road transport. From the table no. 14 it has been observed that 76% of the sample drivers of selected vehicles possess pollution certificate. Remaining 24% does not have a pollution certificate. Although most of the selected drivers of the selected vehicles have pollution certificates, a large part i.e. 24% have to get pollution certificates for their vehicles. This information reveals that the air pollution remains a threat to commuters.

Table no: 14 - Number of drivers have pollution certificate

Types	Yes	No	Total
Truck	144. (80%)	36. (20%)	180. (100%)
Trekkers	48. (60%)	32. (40%)	80. (100%)
Bus	120. (80%)	30. (20%)	150. (100%)
Total Figure and Average percentage	312. (76%)	98. (24%)	410. (100%)

Source: Field Survey

The PCB (Pollution Control Board) conducted a survey on June and July 7 in various places in the city. The survey report has been tabulated in the following table no. 14. In this table a diesel vehicles has been tested. 81% of vehicles violate carbon emission regulations. The violation of the criteria related to carbon emissions is higher in Beltola and Adabari i.e. in N.H.by Pass.

Table no: 15
Vehicular Emission Checked at Various Points in Guwahati city, Diesel Vehicle.

Date	Station	No of vehicle tested	No. of vehicle exceeding limit	Percentage of vehicles violating the norms of carbon emission out of the total vehicle tested
23.6.2011	Adabari	69	62	89.8%
22.6.2011	Amingaon	28	20	71.4%
02.7.2011	Zoo Narengi Road	36	27	75.0%
14.7.2011	Khanapara	42	29	69.0%
15.7.2011	NH by pass (Beltola)	46	41	89.0%
Total		**221**	**179**	**81%**

Source: Pollution Control Board, Guwahati,Assam

Like the problem with diesel vehicles, researchers also tried to determine the carbon emissions left by petrol vehicles. From Table no. 16 it is observed that 53% of sample vehicles exceeded carbon emission criteria. Violations of carbon emission norms are at the Zoo-Narangi Road and Guwahati Club, with 71% and 70%, respectively.

It has also been shown that diesel vehicles have higher carbon emissions than petrol vehicles. Whereas, the major components of diesel vehicles are commercial vehicles in nature and most drivers of diesel vehicles are not aware of carbon emissions. This result reflects the need for government surveillance on carbon emissions.

Table no: 16
Vehicular Emission checked at Various Points in Guwahati, Petrol Vehicles

Date	Station	No. of vehicle tested	No. of vehicle exceeding limit	Percentage of vehicles violating the norms of carbon emission out of the total vehicle tested
24.6.2011	Maligaon	159	33	20.75%
25.6.2011	Ulubari	167	72	40%
28.6.2011	Near Meghdoot Cinema	147	72	48.9%
29.6.2011	Guwahati club	230	163	70.8%
02.7.2011	Zoo-Narengi road	152	108	71.0%
03.7.2011	Ganeshguri	142	70	49.2%
21.7.2011	Kachari	112	70	52.5%
Total		1109	588	53.0%

Source: Pollution Control Board Guwahati.

Noise Pollution

One of the biggest violations is the use of ear splitting, illegal high decibel air cams which is also a violation of human rights. In Guwahati it has been seen that the majority of buses and commercial vehicles use high decibel sound to give the horn. The questions to the passengers were asked, according to the majority of sample respondents (i.e. sample 68%) that they could not tolerate the sound of horns flown by commercial vehicles.

Table no: 17 - Problem of Noise Pollution

Severe Problem	Not serious	Total
680 (68%)	320 (32%)	1000 (100%)

Source: Sample Survey

No city or any civilization in the world will tolerate this kind of noise pollution. It seems that the lack of control by the concerned body has led to such a situation. Will the traffic departments and other related enforcement crackdown on such violations? The traffic police should look into the matter immediately, otherwise it will adversely affect the coming days.

Traffic Signals:

The Traffic signals plays a vital role in facilitating the smooth flow of traffic system. Researchers tried to find out if the city's traffic signal works properly or not. Investigators ask straight questioned the inhabitant and passengers in this regard. Table no. 18 shows that 68% of sample respondents find problems in traffic signal systems of the city. This 68% of sample respondents said that the traffic signals are not scientific. Only the remaining 32% of sample respondents are not experiencing any issues with the traffic signal. Most respondents say that although some areas are full of electronic devices, they are not working properly. The traffic police engaged at the traffic point could not control the traffic. Few other respondents said the timing of the signal was not adjusted to the road impedance. Therefore, the government must come up with scientific tools to control the city's smooth traffic flow.

Table no: 18
Do you face problems in traffic signals. Yes/No. If yes, please mention…….

Yes	No	Total respondents
680. (68%)	320. (32%)	1000. (100%)

Source: Sample Survey

Pavement Markings and Signage

The smooth flow of road traffic in metro roads is also affected with adequate marking signs on the road. It is noticed in the city Guwahati that pavement markings and signage were seen inadequate. Opinions were taken from the general public asking them questioning whether the city of Guwahati has been signed and marked properly. The majority of the sample respondents i.e. 75 % do not agree that the mark and the signage have been drawn properly in the city of Guwahati. As per them, the signature is outdated and government officials do not make any effort to facilitate it convenient. The government has to come up with updated technology to make road users easier. It has been reported that the number of accidents does occurs for not maintaining those mark and signage properly

Table no: 19
Pavement Markings and Signage

Yes	No	Total
750. (75%)	250. (25%)	1000. (100%)

Source: Commuters Opinion.

Conclusion

In urban areas, congestion and road problems are often accepted. The junctions and intersections of the road are being properly controlled by the traffic police with using up to date and modern technology which more than likely to reduce road-related issues. When the flow of vehicles increases in sequences, it jams traffic and leads to longer wait times in the stream of vehicles. When crossing at the junction, the car's stream will have to wait for others. Occasionally, prolonged flow of vehicles waiting at the junctions produces a stagnant state. The design of a seamless traffic flow system at the traffic junctions should reduce severe traffic congestion while not waiting for others. The described system can be used for cities where roads are not wide and there is a single lane way system for urban roads. It is hoped that the use of this method will help to reduce the urban traffic jams.

Road issues are an inter-disciplinary field; such problems need expertise of various fields such as law, engineering, economics, social sciences (psychology, humanities, etc.), ethics and management. This is why there is a need for a nodal agency that can implement traffic laws, traffic planning, design, and operations that will lead to better traffic management and better flow subsequently. Therefore, in order to resolve the road issues, Assam governments need to take a detailed study of the long-term perspective on road safety programs.

This in turn stimulates regional development and planning. Therefore, transport planning is essential for the economic development of any region, especially in the haphazard growth of existing cities in developing countries where the trend of urbanization is high.

References:

- Milne, A.M, (1955) The economics of inland transport, SIR ISSAC PITMAN and Sons ltd. London.
- Pathak, B.N. GU (1951-79) Road transport in the North East Region of India, Unpublised P.hD. Thesis.
- Sachdeva & Nath.,N. (1979). Motor Transport in New Madhya Pradesh, Agra Univerisity. Agra.
- Srivastava, S.K., (1981). Economics of transport, S. Chand & Co ltd, New Delhi.
- Wilson Reginald, (1998). The Development of Transport Enterprises under Different Economic and Political Conditions – EDI World Bank.
- The working group Report on Road Transport For The eleventh five year plan Government of India Planning Commission New Delhi