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Analysis of an Innovative Movable Divider for Traffic Issues using Bollard System

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Abstract: In past few years, the number of vehicles using the roads has increased which laid to traffic jams and accident. Vehicle barriers and bollards are widely used to control vehicle access to areas for security, safety or social reasons. The movable dividers that we provided reduces the traffic flow which is very high during the peak hours in major cities such as Mumbai, Pune etc. The main aim of this project is to reduce accidents and traffic flow Bollards are short vertical posts, usually made of steel, timber, and recycled plastic, aluminium. This helps to protect pedestrian and accidents chances will be less and also reduces traffic flow. Bollards act as visual guides, reminding drivers to drive safely and responsibly in extra lane. Movable road divider is to separating the two ways of traffic is on-going and incoming vehicles in the traffic.

Keywords: Bollards, movable divider.

I. INTRODUCTION

Nowadays, there is increasing rate of vehicles in major cities such as Mumbai, Pune, and Bangalore which increases rate of accident. Urban cities have challenge to reduce traffic flow and accident. Bollard based Traffic control system Prototype is used. Here bollards are used to protect sites or divert traffic. They are also used for controlling of pedestrian movement at the entry and exit points and also regulate the vehicles passing by thereby ensuring safety to all. In India, where population rises with very high rate and no control on traffic bollards are one of the only choices for pedestrian friendly protection from vehicle attack. These bollards increase driver awareness as well as providing physical barrier protecting both people and property Traffic in metropolitan cities is becoming a challenging task and the violation of traffic rules leads to fatal accidents.

A. Aim of the Project

- 1) To propose automatic bollard system for traffic control.
- 2) More systematic flow of traffic can be seen, resulting in reduction of traffic jams.
- 3) Based on the traffic density the time allotted for the passing of traffic is decided automatically.
- 4) Location Based Services can be done by means of enabled devices.
- 5) High traffic density can be detected and instant alert messages can be sent through advancements in technology.

B. Materials Mainly Used to install Bollards

Bollards can be made in a variety of materials. Choosing the correct material for intended usage plays a big part in the bollards durability and aesthetic value. The following materials are commonly used to make bollards and could be suitable materials for a removable bollard:

- 1) **Steel:** Steel is generally used to create security bollards or bollard covers. Steel is an economic, highly durable material that is less likely to dent than other commonly used bollard materials. It is ideal for use where a high level of structural integrity is required and in areas where corrosion is less of a concern. Moreover steel can be recycled infinitely and all steel used has the potential to be recycled (World Steel Association, 2014).



Figure No. 1

- 2) *Aluminium*: Due to its light weight, aluminium is often used in removable bollards. Aluminium is easily machined and cast and is therefore ideal to create decorative bollards that do not require a high level impact resistance. The aluminium can be made with different levels of hardness and endurance depending on the heat treatment used According to the Aluminium Association (2014) aluminium can be recycled infinitely and has a 20% smaller life cycle CO2 footprint than steel.



Figure No. 2

C. Technical Parameters of Bollards~

- 1) Weight – 200kg (approx.)
- 2) Remote Control Distance – 50m – 100m
- 3) Diameter – 168mm, 219mm, 273mm (can be customized)
- 4) Length Above Ground Level – 600mm
- 5) Depth Below Ground Level – 800mm

II. METHODOLOGY

In this study, after going through the literature and resource material, a questionnaire has been prepared to explore the traffic issues perspective and the data collected is based on traffic congestion. Considering all the above components and studying the problem statement an survey was carried out at the congestion area.

Methodology to achieve the above objective is as follows.

- 1) *Step 1*: Literature survey was carried out from the relevant journal papers, manuals. This helps in getting updated knowledge on the subject besides helping in identification of the factors, influencing the traffic productivity. A survey of the congestion area is required to solve the issue of different category. This discussion helps to find the major factors which are responsible for the reduction of the traffic.
- 2) *Step 2*: To conduct the site visit for the collection of data regarding the factors affecting the traffic at that area.
- 3) *Step 3*: To conduct the survey by site visiting for collection of data regarding the congestion issues.
- 4) *Step 4*: To evaluate the data regarding factors affecting the problems of traffic and recommendations.
- 5) *Step 5*: To prepare the result.

III. DATA COLLECTION

This data collection considers traffic survey jams in India . This data will help manufacture a bollards according to this traffic surveys which are been taken. It will help the Indian road transportation to reduce traffic and accident. This data considers interval of 10 min. This survey has recorded in peak hours, So we will get a idea of traffic survey. The main aim of this data collection is to install a automatic bollards which can reduce traffic and less chances of accident .This data refers of different type of vehicles count in 10 min of interval . According to different type of vehicle we will consider how many bollards will be installed in that area. This analysis carries where there is populated area. This road has neither 4 routes so traffic will be increased nor decrease in the peak hour. The survey was dispensed for a span of 9.00 am to 11.00 am and 7 pm to 9.00 pm using Metro-count 5600 the information collected from the survey was no. of car passing a point.

The results are presented by the straightforward extraction from subway count presenting the information of assorted categories of vehicles passing on the chosen ten lane wide road at their several timings and additionally, the count of such category of vehicles during a time span of over hour is place forth. The typical speed of the revered class therein specific slot of your time i.e. hour is additionally argue to own a transparent understanding of the particular congestion issue.

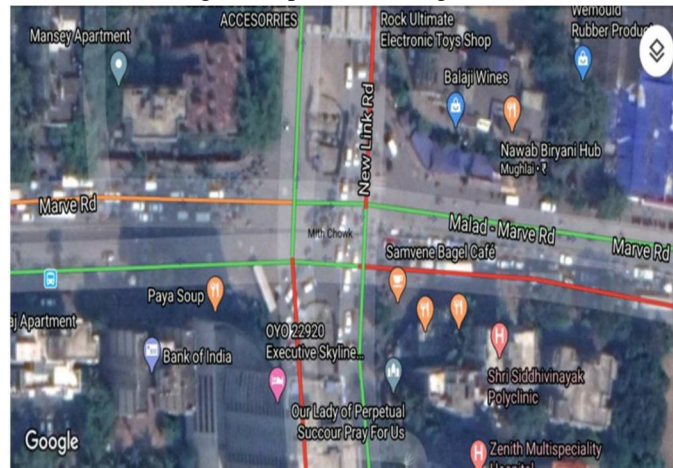


Figure No. 3

This figure shows the route where we are going to install bollards.

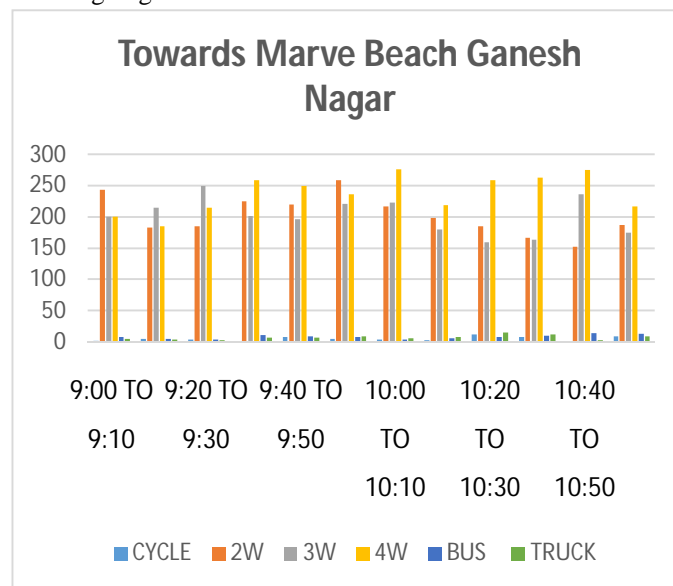


Figure No. 4

IV. CONCLUSION

- A. The research is conclusive that the research is very productive and is very useful for controlling the traffic problems which results in loss of time as well as human life as well as loss of property.
- B. The proposed structure helps to reduce the chances of traffic jams and to provide clearance of road for the emergency vehicles to an extent. In these proposed work we are aimed to clear the traffic in accordance to priority.
- C. The study concludes that use of automatic bollards would rectify the existing traffic condition and would promote advance technology. It Lane following which is most neglected traffic rule especially in India will also be practiced by the introduction of bollards.
- D. This way the manual work of the labours will also reduce as it would be centrally operated. The overall road system which plays an integral part for any developing country would reach a greater height.

V. RESULT

- A. The congestion of traffic through traffic jams can be easily reduced.
- B. Reduction of the Accidents.
- C. Smooth flow of traffic during traffic peak hours as numbers of lane is increased.
- D. Optimum use of bollards for the improvement of future traffic conditions.

| LOCATION :- | Mith Chowki Singal. | | | | | |
|------------------------|------------------------------------|-----|-----|-----|-----|-------|
| | (Towards Marve Beach Ganesh Nagar) | | | | | |
| TIME INTREVAL IN AM | CYCLE | 2W | 3W | 4W | BUS | TRUCK |
| 9:00 TO 9:10 | 1 | 243 | 200 | 200 | 8 | 5 |
| 9:10 To 9:20 | 5 | 183 | 215 | 185 | 5 | 4 |
| 9:20 TO 9:30 | 4 | 185 | 250 | 215 | 4 | 3 |
| 9:30 TO 9:40 | 0 | 225 | 201 | 259 | 11 | 7 |
| 9:40 TO 9:50 | 8 | 220 | 196 | 250 | 9 | 7 |
| 9:50 TO 10:00 | 5 | 259 | 221 | 236 | 8 | 9 |
| 10:00 TO 10:10 | 4 | 217 | 223 | 276 | 4 | 6 |
| 10:10 TO 10:20 | 2 | 198 | 180 | 219 | 6 | 8 |
| 10:20 TO 10:30 | 12 | 185 | 159 | 259 | 8 | 15 |
| 10:30 TO 10:40 | 8 | 167 | 163 | 263 | 10 | 12 |
| 10:40 TO 10:50 | 0 | 152 | 236 | 275 | 14 | 3 |
| 10:50 TO 11:00 | 9 | 187 | 175 | 217 | 13 | 9 |

VI. ACKNOWLEDGEMENT

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