

Traffic Management System in Emergency by Hydraulic Footpath

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Abstract: One of the primary challenges has been traffic congestion. India is one of the world's quickest and largest economies. Because India has such a large population, there are a large number of private vehicles on the road, causing traffic congestion. As a result, we've introduced the new way to address this issue. In the event of an emergency, on the roadside if there is heavy traffic and an emergency vehicle needs to pass. We can allow the vertical movement of the footpath so that cars can simply crawl on to it and clear their way by employing a hydraulic traffic reduction system, which uses a hydraulic mechanism beneath the sidewalk. By incorporating this system into the construction of the new road, we will be able to save money while also assisting in times of need. As a result, we can reduce traffic congestion during inclement weather and emergencies.

Keywords: Traffic, Hydraulic system

I. INTRODUCTION

One of the primary challenges has been traffic congestion. Congestion on roadways began to obstruct the safe and efficient circulation of transportation as vehicular traffic increased. Congestion can have a direct impact on emergency response vehicles. To avoid this, we developed the Hydraulic TRS idea for easy and efficient vehicle movement. Traffic congestion has been one of the major issues. As vehicular traffic began to increase the congestion on streets began to hamper the safe and efficient movement of traffic. Traffic congestion may directly affect the means of the emergency. So, to avoid these we have introduced the concept of Hydraulic TRS for easy and efficient movement of vehicle. India is a country with the third largest road network in the world. In the year 2019, about 295.8 million vehicles wandered their way through these roads. And amidst this herd, are 10,017 ambulances in an urgency to reach hospitals with patients fighting for their lives. Indian government data shows, about 30% of on-road deaths are caused due to delayed ambulances. Also, more than 50% of heart attack cases reach hospital late due to traffic. With India's speeding population and economy, and people with their personal vehicles, prolonged signals and obstacles for emergencies, our project Hydraulic Traffic Reduce System aims to reduce such casualties. By providing hydraulic jack underneath the foot path such that in case of emergency; vehicles can make their way through the traffic, during signals with ease. With regards to sluggish traffic movements while making way for emergency sirens this way would be certainly effective and a bold approach towards assisting the development of the nation.

Today scenario is people on the earth are rapidly increased and according to that the number of vehicles on the road is also increased. Therefore, the problem of traffic management is arising specially for emergency Vehicles; the idea behind this paper is to implement a system which would easily control the traffic and helps for the emergency vehicles to reach at their destination. This scheme relies completely on automatic intelligent control. Here the goal is to reduce the latency of emergency vehicles with minimum or less disruption to regular traffic flow is possible. However, there is still problem for an emergency vehicle to bypass near the traffic junction. The emergency vehicles could not be going as fast as it can. So, to overcome that problem we have to find the new methods. Sometimes even if there is no traffic then also people have to wait because there is a certain time limit of Traffic signal. So, road users have to wait till the traffic signal turned to green light. Therefore, we have to find new methods which solve this problem.

1.1 Objective of the Project:

- ❖ The study's main goal is to find a solution to the problem of traffic congestion in cities. The following are the other goals:
- ❖ To reduce traffic during inclement weather.

- ❖ In order to improve traffic flow.
- ❖ In the event of an emergency, use the walkway as an extra lane.
- ❖ To ease traffic flow and alleviate traffic congestion.

1.2 Problem Definition:

- ❖ Number of accident increasing a uncontrolled intersections.
- ❖ Delay to passengers.
- ❖ Indian siren to following traffic rules and regulation therefore, haphazard traffic movement takes place.

1.3 Scope of Project:

Since, our concept is based on the hydraulic jack system we use the basic of hydraulics and its principles. Principle of Hydraulics: Hydraulics is based on the Pascal's Law. Pascal's Law: A change in pressure at any point in an enclosed fluid at rest is transmitted undiminished to all points in the fluid.

II. LITERATURE REVIEW

The various researchers presented the following research work related to the hydraulic traffic reduce system as following:

Ashwini Bhawe and et al., (2022,) presented the one of the primary challenges has been traffic congestion. India is one of the world's quickest and largest economies. Because India has such a large population, there are a large number of private vehicles on the road, causing traffic congestion. As a result, we've introduced the new way to address this issue. In the event of an emergency, on the roadside if there is heavy traffic and an emergency vehicle needs to pass. We can allow the vertical movement of the footpath so that cars can simply crawl on to it and clear their way by employing a hydraulic traffic reduction system, which uses a hydraulic mechanism beneath the sidewalk. By incorporating this system into the construction of the new road, we will be able to save money while also assisting in times of need. As a result, we can reduce traffic congestion during inclement weather and emergencies.

Chanakya K. Tummewar and et al., (2021), presented the India is one of the fastest growing economies in the world. The average income of Indians is growing and thereby the number of privately owned vehicles is rising. Hence traffic control problems are arising. Hydraulic Jack System Installed in Footpath for Reducing Traffic in Case of Emergency. This is the one of best solution to control the traffic. Highway paving materials, under normal operating conditions, are subjected to various forces. Motor vehicles, of necessity, have at least one set of driving wheels which exert tractive forces on the surface of the paving. The remaining wheels do not exert this tractive force but merely roll on the surface of the paving.

Akash Pawar and et al., (2022), presented the increasing traffic congestion has become a major problem in many of the developing metropolitan areas across the globe. Peak hour traffic congestion has become something everyone has to face due to the way in which the current society operates. The timings which are in place in different parts of the world has led to the inevitable overloading of the existing roads every day. To counter act this problem we have introduced the new way. In the times of PEAK HOUR/EMERGENCY on the road side there is huge traffic congestion and there is need to give a path to more vehicle at a time. By using hydraulic traffic reduce system i.e. use of hydraulic mechanism underneath the PEDESTRIAN, we can allow the vertical movement of pedestrian so that vehicles can easily crawl on to it and clear their way. By introducing this system while constructing of the new road we can make it cost effective and we regularly use it in peak hour and also this will help in the times of emergency.

Ms. Nida Aafreen Aslam Khan and Ms. Komal Sunil Pise (2020), presented the India is one of the fastest growing economies in the world. The average income of Indians is growing and thereby the number of privately owned vehicles is rising. Hence traffic control problems are arising. Hydraulic Jack System Installed in Footpath for Reducing Traffic in Case of Emergency, Automatic Street Light Control System Based On LDR (Light Dependent Resistor) For Minimize the Electricity Consumption. This is the one of best solution to control the traffic. Highway paving materials, under normal operating conditions, are subjected to various forces. Motor vehicles, of necessity, have at least one set of driving wheels which exert tractive forces on the surface of the paving. The remaining wheels do not exert this tractive force but merely roll on the surface of the paving

Darshan Shingane and et al., (2022), presented the India, is a country with the third largest road network in the world. In the year 2019, about 295.8 million vehicles wandered their way through these roads. And amidst this herd, are 10,017 ambulances in an urgency to reach hospitals with patients fighting for their lives. Indian government data

shows, about 30% of on-road deaths are caused due to delayed ambulances. Also, more than 50% of heart attack cases reach hospital late due to traffic. With India's speeding population and economy, and people with their personal vehicles, prolonged signals and obstacles for emergencies, our project Hydraulic Traffic Reduce System aims to reduce such casualties. By providing hydraulic jack underneath the footpath such that in case of emergency; vehicles can make their way through the traffic, during signals with ease. With regards to sluggish traffic movements while making way for emergency sirens this way would be certainly effective and a bold approach towards assisting the development of the nation.

Md. Aaqib and et al., (2022) presented, the hydraulic footpath traffic reducing system is based on a hydraulic Jack system for reducing traffic congestion. At present time the footpath provided on the edges of the road is mono functional reserves only for pedestrians. To reduce the congestion of traffic we propose the design of a modified footpath platform which will be used by both vehicles as well as peoples to reduce the traffic congestion. We ought to use hydraulic jacks and pre-stressed concrete slabs to provide an upward and downward motion to the footpath. With the help of this mechanism, the footpath can be used for pedestrians by raising its level and also could be used as a separate lane by lowering it. Hence, reducing the amount of traffic significantly by simply providing an extra lane on the road.

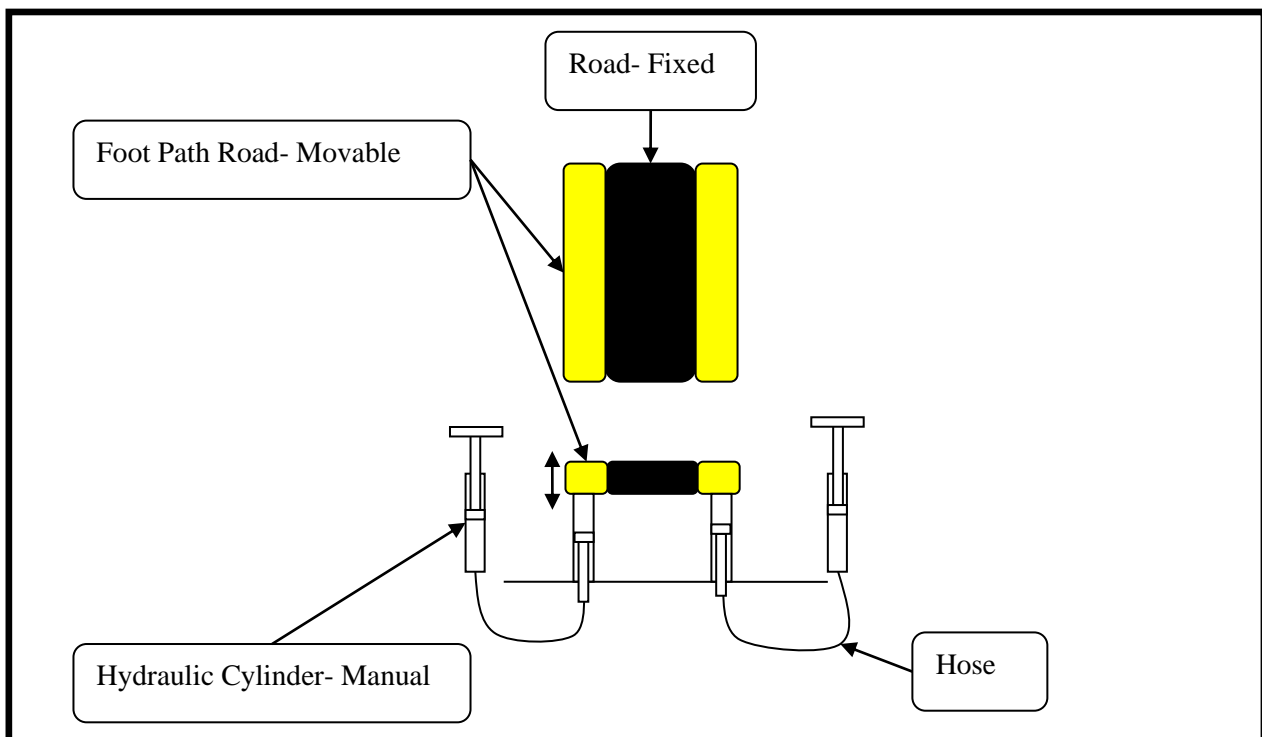
This paper emphasizes the dissolution of major traffic congestion at Dahisar check Naka and its traffic and traffic volume. The survey day was selected on the working day that is Tuesday and the peak hour time is selected for survey between two points. Additional data is collected and analyzed in the morning and afternoon. This study will help to introduce the modified footpath traffic reducing system in conjunction with the study area ensuring smooth traffic flow

III. DEVELOPMENT OF THE PROJECT

3.1 Parts used in the Project

- ❖ Hydraulic Cylinder- manual operated
- ❖ Hoses
- ❖ Road-(Plywood)

3.2 Diagram of the Project



3.3 Working of the Project:

For the vertical movement of the footpath we are going to install the hydraulic cylinder /mechanism underneath the foot path with hand operated Hydraulic cylinder: A hydraulic cylinder is a device that is used to lift the heavy loads by applying a force via a hydraulic cylinder. Hydraulic cylinder lifts the loads using the force created by the pressure in the cylinder chamber As shown in the figure a Hydraulic cylinder is fixed at a place for lifting purpose. The working of hydraulic cylinder is when the pumping process takes place the piston rod moves in upward direction. This helps to lift the weight.

So the pumping rod gives the up and downward direction which leads to lifting process with manual process. During our study we have conclude that the hydraulic jack system in footpath with less area of construction is very innovative idea in construction world and importantly there is no need to construct any special type of construction to installation of hydraulic jack system which will helps to reduce construction cost, it will also save the cost of land. This system helps during emergency such as road accident, traffic jam

IV. ADVANTAGES, DISADVANTAGES AND APPLICATION OF THE PROJECT

4.1. Advantages of the Project:

Advantages of the project as per following like as:

- ❖ Improve and settle several traffic volumes at a particular section.
- ❖ Fast movement of emergency vehicles.
- ❖ Better method to use footpath as a carriageway.

4.2. Disadvantages of the Project:

Dis-advantages of the project as per following like as:

- ❖ High installation cost

4.3. Application of the Project:

Our project should use for following various applications like as:

- ❖ Reduce the traffic in emergency

4.4 Future Scope:

By espousing this conception of using hydraulic jack underneath the path for construction of new roads in ultramodern world we can help to reduce the business traffic problems. In future when we will construct any new road so we can suppose about installation of hydraulic jack system in path and introduce as new conception of two in one uses of path, within lower land demand. It'll also produce a great impact of our country in new construction technology world.

4.5 Conclusion:

Traffic congestion is a worldwide problem that wastes time and energy while also polluting the environment. Identification of congestion is the first step in determining the best approach for avoiding it. Congestion is divided into numerous categories to make it easier to grasp. The problem of traffic congestion can be caused by a variety of factors. There are several options for dealing with traffic congestion. Regularity measures and economic measures are two related measures for traffic management that have been proposed. Access and parking management, as well as price policies, are examples of regularity measures. Overall, this approach can be used to solve difficulties. I am optimistic that it will help to alleviate traffic congestion in the future.

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