Emergency Transportation

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Abstract— Traffic has become a major part of our daily routine. Every day many people lose their lives due to accidents on roads, road rages and delay in medical emergencies etc. These mishaps include individuals from all age groups. Heavy traffic on roads led to slow movement of traffic which causes a big problem in providing medical help in emergency situations. In Indian cities, it is difficult for an ambulance to reach the patient and then bring him/her to the hospital on time. By providing air ropeway from nearer intersection to AIIMS Hospital Delhi, we are going to estimate reduction in delay. We will overcome the problem of traffic congestion by making the patient fly over the traffic on roads. This air tramway system will reduce the incoming and outgoing traffic inside hospitals premises and nearby areas which will lead us to noiseless atmosphere near hospitals. We are going to provide the ropeway system for medical emergencies which reduces the time for a patient to reach the hospitals. Ropeway will reduce air pollution, noise pollution and traffic congestion near hospital area due to less number of Ambulance vehicles.

Key words: Tramway, PCU, Traffic Congestion, Ropeway

I. INTRODUCTION

Heavy traffic on roads led to slow movement of traffic which causes a big problem in providing medical help in emergency situations. Ambulances and private vehicles with patients remain stuck in traffic for hours due to which patient is unable to get required medical attention and lose their life. In the United States, an estimated one out of 12 pregnant women and one out of 25 may seek emergency care. Blaring sirens, frustrated calls to action, exchange of expletives and anxiety have come to define ambulance movement on the city's chaotic roads.

Fig. 1: Ambulance Stuck In Traffic Jams near AIIMS Hospital Delhi

If we can even save off five minutes from the time it takes an ambulance to operate, it would make a big difference, said Imran Subhan, head emergency department at Apollo Health City. Emergency tramway system will increase the survival rate of individuals who are losing their lives due to unattended medical as they remain stuck in traffic for long hours by helping them getting to their destinations As this will help patient to reach the desired destination on time it will also help in improving overall life expectancy.

II. OBJECTIVE

The overall objective of this study is to provide air tramway from hospital to nearest intersections for emergency cases. We will overcome the problem of traffic congestion by making the patient fly over the traffic and will reduce the incoming and outgoing traffic inside hospitals premise and nearby areas which will provide us to noiseless atmosphere for hospitals. By air tramway we can decrease pollution near All India institute of medical sciences (AIIMS), New Delhi, India.

III. SURVEY AT SITE LOCATION

This study is concerned with determine the PCU values of vehicles in under mixed nature traffic flow at on congested highways. The capacity of highways also increases with use of shoulder area and its positive effect on PCU value for type of vehicle increases with increases lane width. According to the public ambulance operator Emergency Management and Research Institute (EMRI), which operates 45 ambulances in GHMC limits, the average response time (time taken to reach a patient and time taken to ferry him/her to a hospital) has increased over the years due to increased traffic density. The average time within the GHMC limits is around 40 minutes, up by 10 minutes from five years ago.

A. *Air Pollution Emission*

In Europe air pollutants related to the transport systems vary from 40% for NOx to 20% for PM and CO. The emission profile can be estimated using the specific emission factors related to the vehicle specific power VSP used during the phases of acceleration, cruise, deceleration and queue. In this work we have defined a general model to compare emission produced by a bus line and tramway line in the same conditions.

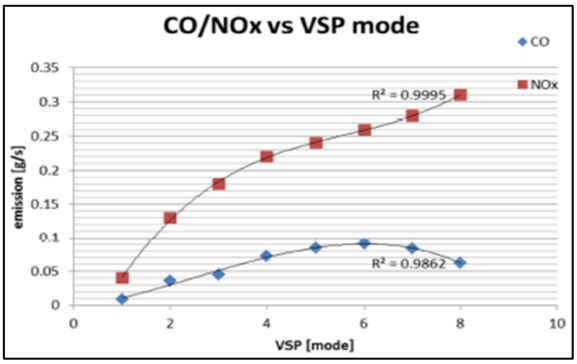

Fig. 2: Emission rate for different VSP mode

IV. METHODOLOGY

Different surveys are conducted in nearby areas of AIIMS relating to traffic, pollution level, time taken to reach the hospitals, number of deaths in hospitals due to late arrivals with a precise questionnaire with different types of attributes. Detailing of road intersections near by the hospitals premises which help to reach the hospitals. Calculated all congestion

points around the hospitals which are going to increase the time of arrival of patient to the hospital. At last we estimated the cost of project to know the efficiency.

Fig. 3: Tramway used as a Transport System

According to INDIAN Standard 5229:1998 aerial ropeways for transportation of passengers have these specifications

- Maximum slope of the loaded rope shall not exceed 100 percent.
- The vehicles must be capable of passing over the trestles even in presence of inward and outward oscillation.
- In order to ensure the free movement of passengers and personnel in the station, the side clearance between the spaces occupied by a vehicle and fixed obstacles belonging to the installation shall not be less than 0.40 meter measured towards the interior of the line. Such clearance shall be 0.5 meter measured towards the outside of the line.
- The maximum height of the lowest portion of the vehicle from the ground, measured in the most unfavorable conditions, shall not be more than 8 m. However, if the height above ground is more than 25 m and such length is less than 20 percent of total ropeway, installation of chair will be allowed if a suitable designed and approved rescue cable pathway is provided below the chair where the vertical distance from cable path to underside of the chair is kept within 25 m or a separate rescue arrangement may be provided.
- The maximum speed of the vehicle / group of vehicle while entering the station shall not be more than 1.5 meter per second.
- The area at disposal of each standing passenger shall be at least 0.22 square meters. The calculation of the various components shall be done, taking into account the weight of 80 kg per passenger.

Wind Action the wind forces and their effects (static and dynamic) should be taken into account when designing ropeways. The provisions mentioned in IS 875 (part 3) and in IS 802 (Part 1) shall be followed. The wire rope conforming to IS 10891 (Part 1) shall be of stranded construction with a fiber core. The fiber core shall conform to IS 1804. The nominal breaking strength of the tensioning or regulating ropes shall be at least 5.5 times the maximum axial load in the rope during operation. The driving gear shall be provided with an emergency motor even when there is something wrong with the main motor or even in case of power failure. However, installations having length less than 200 meter winching device may be provided. The 'service brakes' besides ensuring the holding of the driving gear when the installation is stopped, shall work when the feeding power fails or in case of overload of the ropeway.

V. ESTIMATED COST OF ROPEWAY CONSTRUCTION

Rate of items will use in ropeway construction as per Nagar Palika Parishad, Delhi, India.

Quantity	Items	Rate in Rupees
4	Ropes Wheels	14,00,000
4	Rope 18mm 320 Meter	5,00,000
2	Rope Track 30mm 500 M	18,00,000
2	Cable Trolley	8,00,000
2	Hanger	8,00,000
2	Gear Box	5,00,000
2	Shafts and Coupling	5,50,000
1	Wind Machine	8,00,000

Table 1: Some items of Ropeway with their rates

VI. CONCLUSION

After the estimation has been completed following points will present the conclusion of our projects

- We are going to provide the tramp way system for medical emergencies which reduces travel time.
- The project will facilitate the organ donation quickly.
- Tramp way is environment friendly by using the tramp way the pollution level will also be reduced up to 25%.
- Cost estimation of tramp way is less as compared to the construction of additional lane.
- Ladies which are going for deliveries will be benefited as there is no chances that tramp way will get stuck in traffic congestion.
- The survival chance of the patient will be more in comparison to the roadway.

Air-Tramway System	Road Construction
More Economical.	Less economical.
Require less space for construction.	Require more space.
It will by- pass the heavy traffic on roads.	It will have heavy traffic due to enormous vehicles on roads.
Need less time for construction.	Need a lot of time for construction.
It will not affect the moving traffic at the time of construction.	It will affect the moving traffic at the time of construction; therefore it will slow down the speed of moving vehicles.
There is no need to divert traffic at the time of setup of air tram way system.	There might be a possibility of diverting the traffic during road work.

Table 2: Merit of air-tramway over road construction

In comparison with many other passenger transport systems, ropeways have a positive energy balance. They run on electricity, with energy recovery provided through regenerative braking. Just one motor is required to move several carriers. Energy consumption can be adjusted to suit the number of passengers. Ropeways are ideal for public services to sensitive recreation areas. Ropeways are committed to state-of-the-art products that combine the latest technologies with quality, design and sustainability and meet customers' individual requirements. Ropeways can handle steeper gradients better than other systems.

ACKNOWLEDGMENT

I express my deep sense of gratitude to Mr. Arunaksh Bhandari and Mr. Abhishek Nigam, student of civil engineering in IEC College of Engineering and Technology, Greater Noida for his invaluable help. I am highly thankful to them for their continuous support and effort in completing this work.

Last but not the least, I am thankful to my father Mr. Ram Lal Prasad, mother Mrs. Ragini Devi and sister Dipinti Jaysawal for their support and encouragement not only during this project work but throughout my life.

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