



## **Reducing Encroachment Problems on Roads to Reduce Traffic Congestion instead of Widening the Road**

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**ABSTRACT:** the paper studies the ways through which the problem of encroachments on the roads can be reduced. It analyses the problems behind the encroachments and also provides the solution through which the problem of encroachment can be reduced. The paper consists of the concept of redesigning roads. Also it explains scope of relocating or providing specific spaces for various aspects, which causes the encroachment on the roads.

In order to establish research, a further analysis is explained through a case study of Medical Road, Aligarh. Medical Road has very heavy traffic congestion during peak hours caused by encroachment. The road has potential of relocating various aspects and redevelopment of the road. The study concludes with the concept of redevelopment of the road and its advantages on the traffic problems.

**Keywords:** encroachment, road, layout, solutions, road rendering

### **I. INTRODUCTION**

Heavy traffic is one of the major issues in India. Many factors are responsible for it such as improper design of the road, unorganized maintenance of the roads, un-followed traffic rules, traffic loads, encroachments on the roads etc. The word encroachment commonly means illegal use of resources. In the case of lands/roads, encroachment is occupying the government/ private land/footpath illegally.

Earlier the growth of slums and vending activities on footpaths and roadside were seen as the most common types of urban encroachment. But as the urbanization has increased, new sorts of encroachment can be seen like creating ramp in front of houses, making constructions on drains, protruded balconies, illegal mining, illegal sand excavation, using roads for illegal parking purpose and dumping of waste matter on vacant land. As the problem keep on growing and is overlooked as a general trend, everyone can blame the next to defend himself but that can neither reduce gravity of the problem nor the offence because encroachment in urban areas have toppled the whole planning, right from its framing to implementation and thereafter. So as, its impact is also getting varied with urbanization and now it is not just limited to natural resources alone but also ruining the heritage structures, slowing the movement of traffic in cities, wasting precious time of tourists in passing through congested streets, road accidents etc.

Construction of religious structures on the road side is also another way for encroachment of the road. Allahabad High Court has asked the Officials to remove any religious structure that were raised in public places in last five years. The Court also asked the State Government to make out a plan so as to ensure that public roads are not obstructed creating hindrance in the smooth flow of traffic movement of public due to observance of religious activities.

The importance of an efficient planning of road network cannot be ignored. Planned development is the crucial zone that strikes a balance between the needs of large-scale urbanization and individual building. It is the science & technology and aesthetics of roads as it saves the development from chaos and unpleasant environment. Our present Prime Minister, Mr Narendra Modi, has announced his vision of 100 smart cities in India but the word Smart cannot be fulfilled until we resolve the problem of encroachments. It is not advisable to remove the encroachments for the roads completely but we can mitigate the problems generated by it.

### **II. TYPES OF ENCROACHMENTS ON ROADS**

As per our study the encroachments on the roads are of various types which are explained below

1. *Unauthorized Construction on the roads* - As per Indian rules, the roads must have at least 30 feet ROW for various activities but unauthorized construction of *chhaja* and other projections reduces the right of width.

2. *Unauthorized Parking and Auto Stands* – An unauthorized auto stand not only creates problems in traffic movement but also causes hindrance in pedestrian movement. Most of the road accidents are because of hindrance in the pedestrian movement. Uncontrolled parking also causes the hindrance in traffic movement.

3. *Encroachment by Shopkeepers* – In a commercial road most of the shops encroach the road for their advertisements, resulting reduced right of the way.

4. *Encroachment by Hawkers/Vendors* – Unauthorized vendors can be seen nearby most of public buildings in India, causing reduced ROW and hindrance in traffic and pedestrian movement.

5. *Road Side Religious Structures*

### III. PROBLEMS GENERATED BECAUSE OF ENCROACHMENT

1. Problems for pedestrian: Street vendors that include commercial system of stalls of tea shops, fast food hawkers, encroaches the road pavements and creates problem for the pedestrians.

2. Pedestrians cannot use the pavements which are exclusively made for them, they are bound to use the roads for walking. As now the roads are being used by pedestrians, the movement of vehicles gradually becomes slower, resulting in congestion on roads. Thereafter increasing road accidents.

3. Hawkers encroach upon the roads and leads to immense traffic congestion.

4. Shopkeepers display most of their items outside the shops which sweep away some portion of roads like utensils shop, mannequins on display.

5. No proper Parking, it becomes difficult in the areas where the roads are encroached.

6. Loss of amenities, including the planting of trees as well as pleasantness, coherence and harmony of the street space caused by encroachment.

7. Public common law right of unimpeded movement and access to property is violated.

8. Safe and efficient functioning of roads is effected and movement of pedestrian and vehicles is affected.

9. Public assets of road turning fragile due to encroachment.

10. Encroachment also results in obstruction of views and results in the appearance of the place to be in excessively built form.

### IV. SCOPE OF STUDY

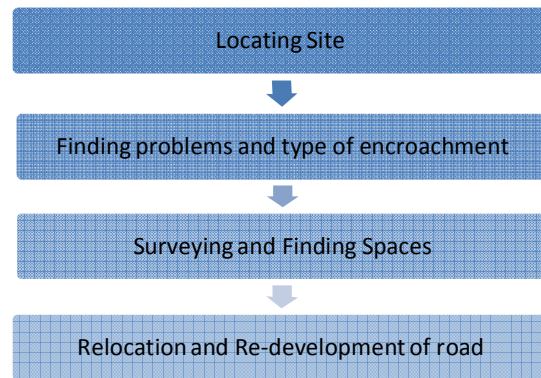
These solutions are applied to the whole of the municipality with regard to structures or parts of buildings that projects or encroaches into the road space.

The measures provided in this document are for the consistent decision making to control encroachment on all legal roads in this area.

Our guideline will facilitate

- Safety for pedestrians, vehicles, and cyclists
- Maintenance of uncluttered Street space
- The provisions of clear corridors for vendors and separate lane for two wheelers
- The preservation and protection of public access options along the road corridor
- Protection of public assets
- Manage rightful use of personal benefit by ensuring that private benefit is compensated by some corresponding public good.

### V. METHODOLOGY



### VI. SOLUTIONS

Survey before plan & diagnostic approach, can be the primary act. Surveying the area with the encroachments and preparing a complete list of problems and conditions of the roads, going to the roots of problems and coming to the solutions and conclusions.

#### 1- Encroachment Free Pavements and Footpaths

Most important point is that we should strive on provision of encroachment-free pavements for pedestrians, it is a crucial measure. The main objective is to provide suitable walkways for pedestrians, so that they may not require to walk on the roads that is meant for vehicular movement, causing hazard to themselves and to vehicular traffic also. Not only pedestrians will get benefited from it, but it can make less congestion on roads and vehicular chaos can be reduced to large extent. The roads should have free flow of traffic.

#### 2- Redesigning of Roads

Vehicles plying on street parking has to be removed or they can be relocated to the nearby parking lots or open spaces. Effective on-street parking results in less traffic jamming and safer roads.

#### 3- Relocate or Remove Parking-

Segregation of vehicular movement and pedestrian movement, but creating an integration of spaces.

It can be done by creating separate spaces for autos, parking for 4 wheelers and also creating spaces for bikes and cycles such that it does not disturb movement on roads and flow of pedestrians.

#### 4- Adjusting Road Width

Road width is kept same, but the layout is redesigned keeping in mind how the vendors, pedestrians and vehicles are kept segregated but also interconnected to each other. Basic goal is to keep the traffic calm by removing the encroachments and reducing the congestion on the roads. Each lane width should be adequate making space for both 2 wheelers and larger vehicles. Single lane keeping to be 3.5 m wide. These roads are abutting pedestrian lanes along with them, so planting of trees on the edge of roads act like a buffer zone between pedestrian and vehicular traffic.

#### 5- Specific Space for Vendors with Proper Design-Level Difference –

Spaces for vendors and local shops need to be assigned properly. It is also necessary to have level difference of about 1 ft from the level of road. It acts like a buffer space. Entry of vehicles is physically prohibited in this zone.



#### 6- Controlling Expansion of Shops and Construction

Any ongoing construction should not conquer the space of the road and banning the expansion of shops on the roads and pavement.

### CASE STUDY- MEDICAL ROAD, ALIGARH

Medical Road is the road that connects Jawahar Lal Nehru Medical Hospital to the city. It is also connects to one of the three entrances of Aligarh Muslim University. So it has very high traffic density during day hours. Although this road is 18 M wide but because of unorganized system and encroachments, it has traffic jam during day hours.

**Fig. 1** Site Location (Source: Google Earth)

#### 1. Justification of Location

The road is wide enough (15M wide) for vehicular moment as per traffic density but the site has 40% of its area encroached, resulting traffic jam and accidents on the road.

#### 2. Problems Identified

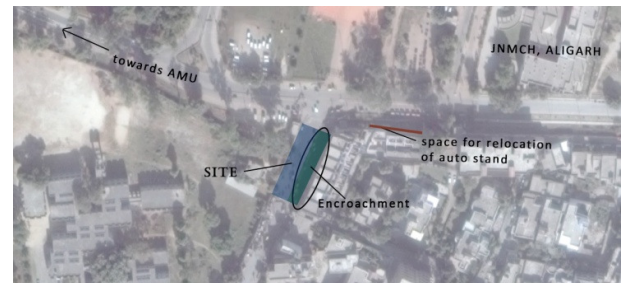
- Heavy traffic density during peak hours:** The road is the approachable path to JNMCH Hospital. The hospital is 1500 bedded hospital so it has high foot fall. Due to this the road is always busy. Along with it the road is connects to one of the entries to the university, which results in increased traffic.
- Unauthorized Auto stand:** The site has unauthorized auto stand, resulting in hindrance in traffic movement.
- Hawkers and Vendors**



**Fig. 2** Site View.

### 3. Solutions to the Problems:

- Relocation of Auto Stand:** The auto stand can be relocated in front of the JNMCH gate, because the road has enough space for auto stand. The land is presently used for unauthorized garbage disposal. Relocating the auto stand will not only result in less traffic density but it will also be a convenient option for the passengers (most of them are for JNMCH hospital).



**Fig. 3.** Location for auto stand (Source: Google Earth).

#### b. Redevelopment of Road:

- Specified area has been provided for the vendors and hawkers. This will reduce the hindrance in traffic.
- The area for vendors is wide enough to have pedestrian movement.

(iii) Level of the vendor's area has been kept -450 mm, to ensure no vehicular movement. The area, designed for vendors, has trees and plants in order to have pleasant environment and to create buffer zone.

(iv) A service lane has been provided for the customers of medical stores.

(v) Along with it bicycle lane of 2M width has been provided to encourage the eco friendly vehicular movement.



Fig. 4. Proposed Plan & Section.

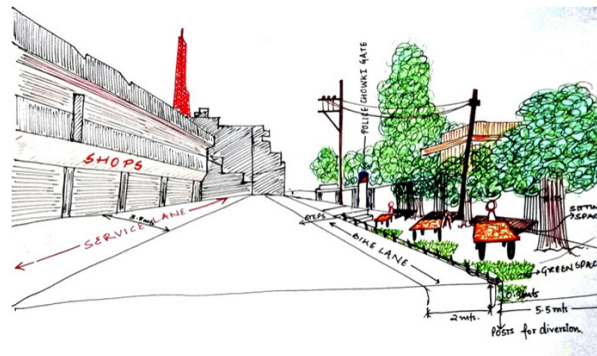


Fig. 5. Conceptual View.

**VII. CONCLUSION**

Encroachment problems on road can be reduced to reduce traffic congestion instead of widening the road. Heavy traffic is a traffic congestion instead of widening the road. Heavy traffic is a major problem in India. There are many factors responsible for this. Encroachment, being out focal point is one of the

major factors that have to be looked upon. Our study has identified Different types of encroachment on Indian roads and then we have aimed to identify the problems generated due to encroachment. Our methodology comprises of identification of site, finding problems by means of survey and then proposing relevant solutions.

To reduce the tension on the roads, encroachment free road is the beneficial aspect. There might be a much more efficient and different criteria to achieve solution for a problem, some beneficial ways used were- controlling expansion of unauthorized construction, redesigning of roads, free pedestrian walkways, relocation of vehicles (autos, rickshaws, 2 wheelers), assigning areas for vendors- by keeping minus level from road level, creating buffer zone between road and vendors- by planting low height trees.

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