# Feasibility Study of Sky Walk For Pedestrian Safety In PCMC

**Mr. Jagdish Desai[1], Mrs. Smita Pataskar[2]**
ME. Construction Management
D.Y.Patil College of Engineering , Akurdi, Pune-411044

***Abstract-*** *Walking is one of the most sustainable traffic modes in urban transportation system. Particularly in countries like India. Because of the flexibility and mobility involved in it.Pedestrian are facing problem during crossing at signalized intersection cross walk under the mix traffic condition Analysis of field data yield some notable observation as follows pedestrian adjust their crossing speed based on the traffic condition at the particular time. Pedestrian non uniform arrival pattern was observed and some of pedestrian crossing cross walk during flash red signal phase and red phase. Considering the above mention pedestrian crossing factor study conducted on crossing time delay and waiting time delay base on signal red time for pedestrian in waiting area. Provision of grade separator and sky walk facilities will ensure the moment of pedestrian safe comfortable and also reduce the travel time a study was conducted in Chinchwad station area.The study results are presented in this paper. In present work study of pedestrian planning is taken up, to improve the pedestrian facility at these intersection.*

***Keywords***- Pedestrian, traffic, sky walk

## I. INTRODUCTION

India is second most populated country in the word with its population of one billion plus. Many people in India do not have access to transport. At all they just simply walk for their daily transport need.

Walking is still a major mode of transportation in cities of India. The pedestrian traffic has large share in metros as well as in mid-size cities of India Despite of fast growing number of vehicle. However there is negligence toward study of pedestrian behaviour, flow characteristics, capacity of pedestrian facilities etc.

Due to in adequate facilities provided for the pedestrian movement, there exists a constant conflict between pedestrian and motor vehicles in sharing the limited space of the road, I have selected Chinchwad station intersection are such an intersection which are facing these problem such as high pedestrian traffic, heavy conflict of pedestrian-vehicular traffic major trip generator and attractor areas, the traffic flow is continuous, the pedestrian flow is of mixed type.

Most of Indian cities have high pedestrian death in road accident in Pune poorly maintained and unplanned pedestrian infrastructures has become a major road safety issue and as per the latest statistics which record 57-80 people who die on PCMC are pedestrian.

## II. OBJECT OF STUDY

1. To examine the feasibility of a skywalk facility on the basis of magnitude of pedestrian problem.
2. To study the traffic characteristics of main stretch of Chinchwad station to Mahaveer circle.
3. To study about existing pedestrian flow characteristic's.
4. To study the plan sky walk feasibility in Chinchwad station area to ensure safe and secure movement for pedestrian.

## III. SCOPE OF STUDY

The study has been carried out because it was felt that in recent years due to increasing population, development and awareness the number of road trips increased and subsequently the number of pedestrian visiting the study area has also been increased as the study area is major junction, study area faces induced traffic which creates difficulty in pedestrian movement across well as along the road, The large-scale movement of pedestrian traffic and their associated risk for the movement on the urban rod network due to incessant movement of high speed vehicular traffic, there is need to develop exclusive pedestrian to be free from vehicular traffic.

## IV. STUDY AREAS

The ever-growing population of Pune is putting lots of pressure on the existing infrastructure especially on the transportation segment. PCMC suburbs such as Chinchwad, Nigadi, Pimpri, Akurdi are marked with congestion problem mainly near the station area. The station area is marked with chaos which the existing entry/exist points cannot handle.

The problem aggravates with the road side hawking and vehicular parking. The sky walk is an elevated walk way dedicated to the pedestrians connecting the railway station,

high concentration commercial area and destination points where the concentration of pedestrians prevail. The purpose of the sky walks is for efficient dispersal of commuter's rom station/ congested area to strategic locations viz. bus stops, taxi stands, shopping areas, off roads etc. and vice versa. This would hopefully help to decongest the crowded streets. Foot over bridges or Sky Walks are one of the most efficient ways to achieve the above objectives of seamless vehicular traffic and safe pedestrian movement.

Fig.1 Old Pune Mumbai Highway

**Walking Speed and Signal Cycle Analysis:**

PCMC city is an excellent location to study the traffic and pedestrian characteristics at signalized intersection sites chosen for the study in Chinchwad.

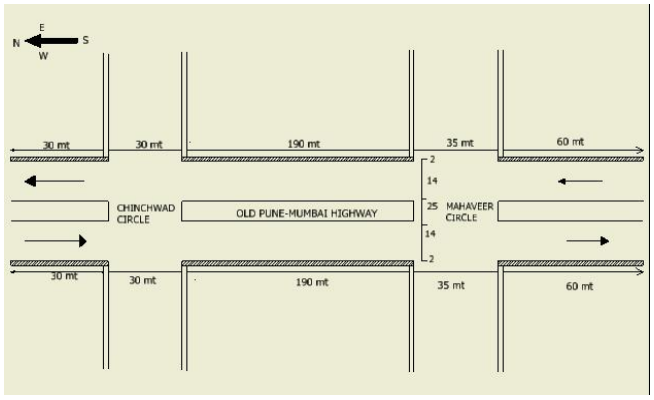



Fig.2 Old Pune Mumbai Highway

Collected data from the field observation and PCMC R.T.O. department are tabulated in table 1. Data were collected in 1hour interval by field measurement and observation information about pedestrian crossing volume, crosswalk length, crossing location, pedestrian phase time (in green phase, flashing red phase, and red phase). Crossing behaviour (walking or running, alone or in group) and walking speed pedestrian.

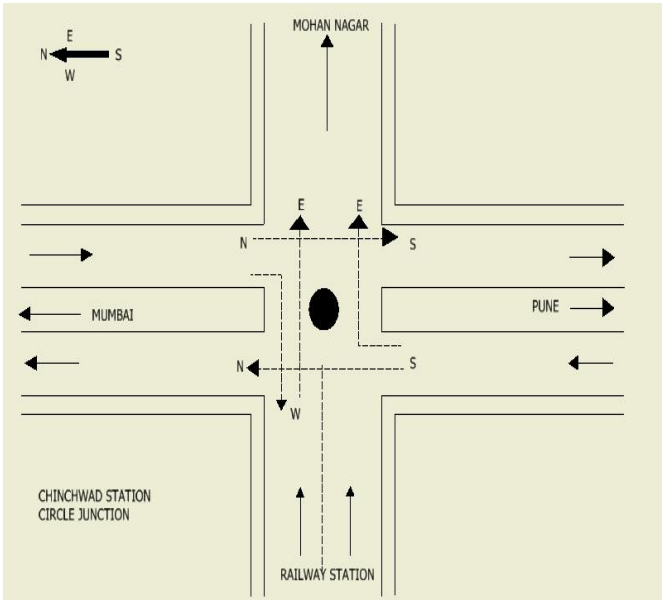



Fig.3 Traffic movement Chinchwad circle

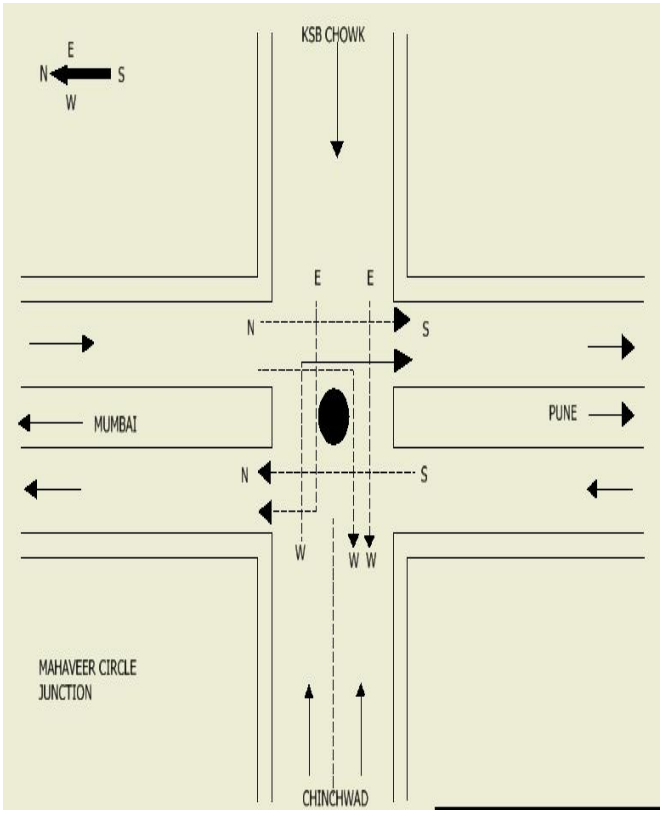


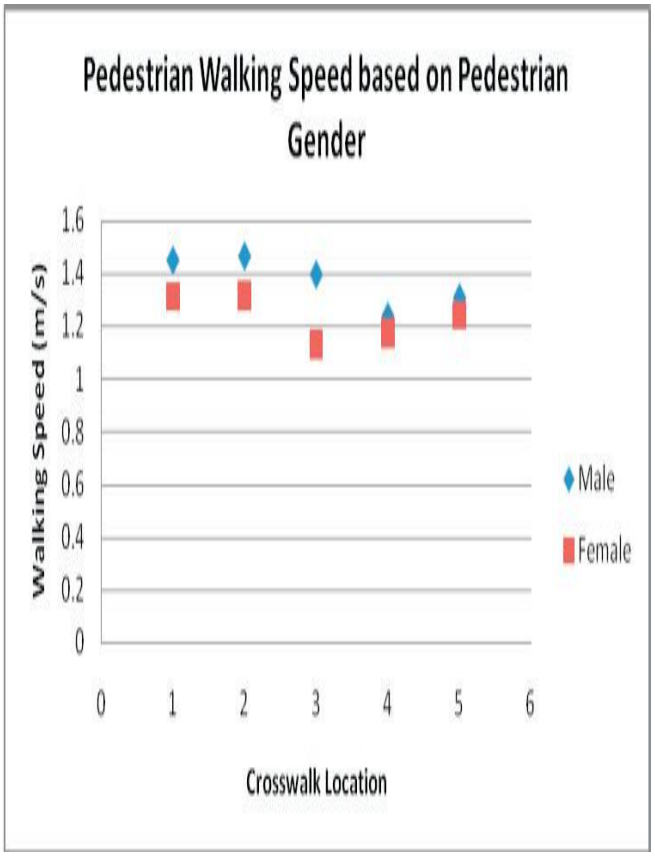

Fig 4. Traffic movement at Mahveer circle

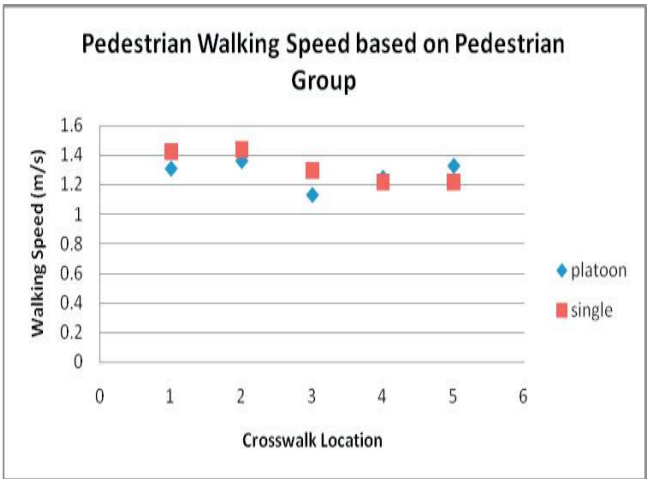
Table No1: Study location field measurement data

| Intersection Name | Direct-ion | Length of cross walk | Signal phase (sec) | | |
|---|---|---|---|---|---|
| | | | Green (sec) | Flashing red(sec) | Red (sec) |
| Chinchwad station circle | N-S | 16 | 28 | 4 | 72 |
| | N-W | 16 | 28 | 4 | 72 |
| | S-N | 16 | 53 | 4 | 47 |
| | S-E | 30 | 53 | 4 | 47 |
| Mahaveer circle junction | N-S | 16 | 64 | 4 | 100 |
| | N-W | 16 | 64 | 4 | 100 |
| | E-W | 35 | 18 | 4 | 110 |
| | E-N | 35 | 18 | 4 | 110 |
| | S-N | 16 | 70 | 4 | 90 |
| | W-S | 35 | 23 | 4 | 102 |

## WALKING SPEED ANALYSIS:

The above data has been collected from the referring research conducted in Mumbai on "modeling pedestrian delay at signalized intersection crosswalk under mixed traffic condition.



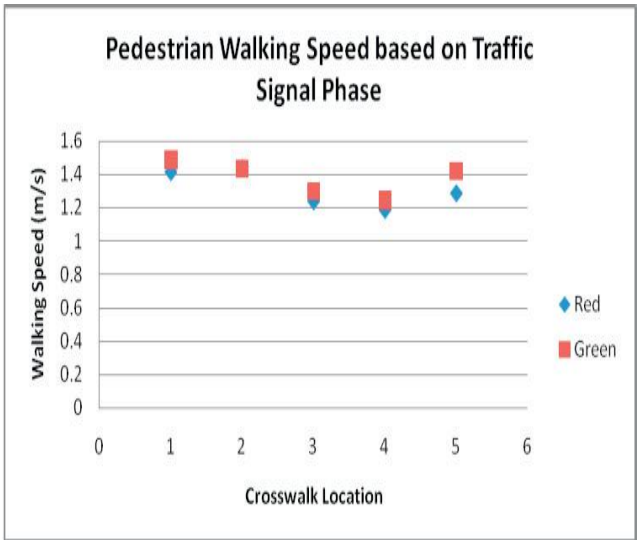




Fig 5. Pedestrian walking speed based on pedestrian and traffic characteristics at selected intersection crosswalk in Mumbai

In India, the present design practice in signalized intersection is to assume the pedestrian walking speed to be a constant value 1.2m/sec. from field study conducted in Mumbai, the crossing behavior of pedestrian has been found to be largely varying from the assumed constant value.

| Intersection Name | Direction | Length of cross walk (m) | Actual time allowed for pedestrian(sec) | Average walking speed(m/sec) | Time needed to cross (m/sec) |
|---|---|---|---|---|---|
| Chinchwad station circle | N-S | 16 | 12 | 1.2 | 13 |
| | N-W | 16 | 12 | 1.2 | 13 |
| | W-E | 20 | 12 | 1.2 | 16 |
| | S-N | 16 | 12 | 1.2 | 13 |
| | S-E | 30 | 12 | 1.2 | 25 |

| | | | | | |
|---|---|---|---|---|---|
| Mahaveer circle junction | N-S | 16 | 12 | 1.2 | 13 |
| | N-W | 16 | 12 | 1.2 | 13 |
| | E-W | 35 | 12 | 1.2 | 29 |
| | E-N | 35 | 12 | 1.2 | 29 |
| | S-N | 16 | 12 | 1.2 | 13 |
| | W-S | 35 | 12 | 1.2 | 29 |

As per PCMC RTO department 12 sec timing is allowed for pedestrian to cross the road all the vehicular traffic moment has been stopped for pedestrian to cross the road. Walking speed analysis determine by considering the average designed walking speed (1.2m/s).

## V. CONCLUSION

In Research project, some major problems are found at intersections like high pedestrian traffic, insufficient pedestrian facility high vehicle traffic, and improper signal system, and current pedestrian accident fatality is very high at this intersection.

There is a definite need for an alternative mode of transport to reduce the congestion. The skywalk is an excellent alternative for that. It has reduced the congestion and traffic at and near Chinchwad station to some extent.

## REFERENCES

[1] Hitesh a. patel “feasibility study of sky walk proposed as in urban area “a case study” ISSN 2349-0780

[2] Jiten shah “feasibility study of providing skywalk for pedestrian in chandni chowk, delhi

[3] S. marisamynathan “modeling pedestrian delay at signalized intersection crosswalks under mixed traffic condition’

[4] Dr. lavanya rekha bahadur “ a study of the bandra skywalk in mumbai”

[5] Comprehensive mobility plan (CMP) for PCMC nov 2008

[6] Indian road congress IRC: 103-1988- guidelines for pedestrian facilitie.