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Study and Assessment of Noise pollution in Amravati city

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Abstract —Increasing urbanization causes tremendous increase in vehicular traffic vehicular traffic is the main cause of noise pollution creates short term and long term physiology and physiological effects, it is essential to assess the noise environment.

Amravati city is facing the problem of increasing vehicular traffic which affect the noise environment of the city. panchawati junction, Irwin square, jaistambh chowk, Rajkamal chowk are selected for study and assessment of noise level as many educational institutes, hospitals and markets are located near the junction. To focus on traffic volume and how to control the noise level in Amravati city.

Keywords-*Decibel, human, noise, pollution, traffic volume, vehicle*

I. INTRODUCTION

India has mitnessed an explosive growth of population accompanied by uncontrolled organization over the last five decades. The population growth has been mainly centered around cities. Much of urban migration driven by rural; pollution desires for the advantages that urban areas offer such as opportunities to receive education, health care and service such as entertainments. These results into the extension are small towns in all direction, dense pollution at important commercial places, and tremendous increase in vehicular population. Rapid organization gives rise to unrestrained noise pollution and associated health effects and can cause both short term and long term physiological and psychological disorders.

II. NEED OF RESEARCH

The study area of project is Amravati City of Maharashtra State. Due to irrigation of people surrounding Amravati City is facing the problem of growing population and consequently the tremendous growth in vehicular traffic. The city is also facing the noise pollution due to land speakers. It is essential to measure the noise level at important intersections in order to known the noise pollution at intersections and its effect on the surrounding environment, as the selected intersections are surrounded by education institutes hospitals and commercial area.

The social survey among the inhabitants of selected educational institute will be carried out in order to study the awareness, perception and reaction of individuals to noise pollution.

III. OBJECTIVES

1. To measure the traffic volume at important intersections.
2. To measure the noise descriptors at two intersections i.e. Panchavati Square and Rajkamal Square.
3. To assess the noise level in the form of Leq, Lmax, Lmin, LNP, TNI.
4. To carry out the social survey to find the residence perception to vehicular noise and its effect on residence. (i.e. educational building i.e. Dr. P.P. hospital.)

IV.DATA COLLECTION

The data about noise but is collected by using digital second level meter TES. Noise levels were measured at selected junctions on working days at morning and evening peak hour the details of sampling locations are given in Table No…1…

The noise levels were measured by using above mentioned sound level meter. The sound level meter is kept at 1.5m height and data was collected for time duration of 10 minutes at 15 Sec. interval. The levels were measured at A-weighted, fast range as it resembles to the hearing by human ear.

Table No.1

Location of Sampling Stations at Different Junctions

Sr. No.	Name of Junctions	Sampling Stations	Distance
01	Panchavati square	01 – PJN on Paratwada Road	100
		02 – PJN on Irwin Road	100
		03 – PJN on Camp Road	80
		04 – PJN on ITI Colony Road	70
		05 – PJN on Morshi Road	100
02	Irwin square	01 – INJ on Morshi Road	100
		02 – INJ on Girls High School Square Road	100
		03 – INJ on Khaparde Bagicha Road	75
		04 – INJ on Jaisthambh Road	100
03	Jaisthambh Square	01 – JJN on Irwin Road	100
		02 – JJN on Jawhargate Chowk Road	80
		03 – JJN on Shyam Chowk Road.	100
		04 – JJN on Fly over.	75
04	Rajkamal Square	01 – RJN on Shyam Chowk Road.	100
		02 – RJN on Ambadevi Road.	100
		03 – RJN on Rajapeth Road	100
		04 – RJN on Fly over Road	100

V.   DATA ANALYSIS

The noise level measured at different locations, and data is analyzed in the form of noise level parameters to assess the quality of noise environment at location and compare it with required standard.

The following parameters are completed.

i)   Leq $= L50 + (L10 - L90)^2/56$
ii)   LNP $= L50 + [L50 + (L10 - L90)^2/60] + L50 + (L10 - L90)$
iii)   TNI $= 4 (L10 - L90) + (L90 - 30)$ dB (A)

Where,

a) Leq =   is equivalent noise level

b) LNP   =   is noise pollution level

c) TNI =   is traffic noise index

d) L10 =   indicate respectively the level exceeded for 10% of time in a   recorded noise level for a given interval.

e) L50 =   indicate respectively the level exceeded for 50% of time in a recorded noise level for a given interval.

f) L90 =   indicate respectively the level exceeded for 90% of time in a recorded noise level for a given interval.

VI.CONCLUSIONS

The study and assessment of noise level at important intersections bring forward the following conclusions.

1]The selected sanctions are heaving traffic junctions.
2]The equivalent noise level at different intersections is found to be 64.76 dB (A) to 81.34 dB (A) at morning peak hours. And 62.11 dB (A) to 79.6 dB (A) at every peak hour which is more than the prescribed limit i.e. 65 dB (A).
3]The noise pollution level (LNP) is found to 72.57 to 91.14 dB (A) Irwin square LNP is more which is harmful as the main Government Hospital and Holy Cross Convent School is nearer to this junction which may affect the health and performance of the student.
4]Traffic noise Index (TNI) is found to be 68.8 dB (A) to 107.8 dB (A)
5]All to noise level parameters are found to be more than the prescribed limits.
6]Noise annoyance survey shows the 100% of respondents are attached from traffic noise footing of horns is the main source of noise and vehicles like trucks, motors cycles and autorikshaws produce more noise.
7]The main affected activity in the study area is listening which is very serious because as an educational institute is the most important activity.
8]The main impact of noise is found to be on the concentration of students which is an essential part directly effects on the performance of students.

Study shown all noise level parameters are more than the prescribed limits and required remedial measures to minimize the noise levels.

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