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TRAFFIC NOISE ANALYSIS : A REVIEW

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ABSTRACT— This paper reviews the literature on research conducted on analysis and sound reducing technique traffic noise. Environmental noise pollution is a threat to health and well-being for living beings. The studies have also concentrate on the monitoring, recording, analysis, and to some extent mapping related themes. It is more severe and common than ever before, and it will continue to increase in magnitude and harshness because of population growth, urbanization, and the combine growth in the use of increasingly powerful, and highly mobile sources of noise. It will also grow because of constant growth in highway, rail, and air traffic, which remain major sources of environmental noise. Noise adversely changes general health and well-being in the same way as doe's chronic stress. It negatively affects future generations by lowering residential, social, and learning environments with corresponding economic losses. Population residing along the busy traffic lanes is continuously exceed to the sound levels which are above the permissible limits.

Keywords—noise level, road traffic noise, barrier, sound insulation, health hazard, environment noise.

I. INTRODUCTION

Florence Nightingale recognized noise as a health hazard in 1859 when she wrote "Unnecessary noise is the most cruel abuse of care which can be inflicted on either the sick or the well [1]. Noise pollution; an urban territorial circumstances is assuming serious proportions in every city. The frequency and intensity of pollution has been increasing day by day [2]. Although transportation is an indispensable part of the modern society, its benefits may be overshadowed by its negativities and is a cause for concern for the community Noise pollution is also known as environmental noise or sound pollution is the proportion of noise with harmful impact on the activity of human or animal life. The source of outdoor noise world wise is mainly cause by machine transport and proportion systems. Urban planning may give rise to noise pollution, is by side industrial and residential building can result in noise pollution in residential area. Some of the main source of noise in residential areas includes transport noise, loud music, etc. Noise pollution from road traffic causes one such negative consequence. Due to exposure of noise people are suffering from difference kinds of diseases like Hearing Impairment Interference with hearing, interference in communication. It is a growing environmental problem that is increasingly becoming an omnipresent, yet unnoticed form of pollution not only in developed countries but also in the developing countries.

II. EFFECT OF TRAFFIC NOISE ON HUMAN HEALTH[6]

The negative health consequences of noise exposure have been studied frequently .The non- audioable effects of noise on humans have been intensively studied. These effects include noise annoyance, and are linked with various psychological symptoms (headaches, argumentativeness, changes in mood and anxiety). They also impair intellectual performance. Moreover, chronic exposure to noise can cause sleep interruption or cardiovascular diseases (e.g., Basner et al. Seidman and Standring, Stansfeld and Matheson). Discloser to noise in everyday urban life is considered an environmental stressor.

III. LITERATURE STUDY

The study of the noise level at different location of Banepa city situated in Nepal. The study report community noise level measure in day time in developing area. The noise

levels were measured using sound pressure level meter at many places predominated by both commercial and residential at Banepa town particularly reflecting motor vehicular traffic prone areas. The noise level at Banepa city is very high and it is harmful to the human health, proper precaution should be taken to reduce the noise level in the Banepa city, Nepal. Some of the suggestion made by Mr. Murthy was planting trees on both sides of the road, restricting the use of hydraulic, proper parking system should be provide, avoiding the use of vehicle producing high noise, people awareness programmed should be arranged which will help to reduce the noise in Banepa city[7].

The study regarding the Green roof to reduce noise effect. In the built up typically rigid. Hence, there are more chances of strong increase in sound pressure level due to the reflection in opposite building.

The following layer is made:

Planting layer: - The influence of plant layer absorption is less obvious. But specific plants are able to absorb sound well accurate system from by plant is more compare.

Green Roof Shape: - For effective noise prevention shape of green roof is very important it well he in proper shape is essential green roof on non-stronger then the fiat roof. Non vegetation roof can reduce noise up to 10dB and 20dB. But Galbrun measured light weight green roof result then. They found 20 dB to 30 dB reduction in noise.

Solar Panel: - Solar panel is fully rigid with of 1 m and thickness 6cm. This is infinitely long, large number of panel are put in parallel without any gaps in between them six panel distribution over a building roof.

According to acoustics practioners, tress and hedges are not effective or present if it's arrange or present in significant depth and density then we can reduce a noise significant. In United Kingdom, the transport and road research laboratory conducted experiment for 15 min. then they had found reduction noise up to 6 db. But before experiment they were arrangement tress in proper way. They take a spacing 1m and trunks diameter of 012m. Green belt: - The arrangement of tress in such a way that it can make belt called green belt. For effective noise 15m deep and 2.5 m stem height planted at 1 m average spacing with .11m diameter [3].

Road traffic is major issue how a day to avoid this issue they suggest some method in Santiago Chile city road traffic noise is many source of noise pollution. When noise level exceeds 80 dB during day time it causes hearing loose, in this method they use GIS technique. By using this technique they found input data about that area like acoustic data, graphic, topography, etc.

Following are the steps of analyzing the noise:-

i) Input data:-

Road & Topography data are insured into GIS to manage them as thematic layer know special data as noise level traffic flow road surface are put into GIS as addition attribute.

ii) Noise Mapping actual scenario:-

Geometric and acoustic models of each evolution point are created in sound predicting module as 3D model of evolution point is created. The noise pollution module generates contour noise map of influence area for the evolution point corresponding to the based scenario using LD indicate representative of day time Leq level in dB(A).

iii) Model Validation/Calibration:-

Predicted noise in the exact location of the station measurement are compare the validity of sound prediction is determine according to range of ±3

iv) Selection of measurement:-

The road traffic noise control measurement in other cities are reviewed and selected.

v) Noise mapping projected scenarios:-

Scenarios associated to selected measures are projected single compare and combine measure are compare. It is an alternate process of a project and base scenarios at the sidewalk receptor location.

vi) Noise impact assessment:-

A assessment criteria on for propose measures depends on the risks associated worth day time road traffic noise expose facades of residential and hospital building are assed.

By using above method step thy found some control measured, which are as follows:

a) Traffic flow reduction:- Reduction of 30% in the average light medium weight day time flow.[1]

A barrier of living bamboo is much more environmental friendly, competitive in construction and management, and give a sustainable infrastructure. It seems to be a actual possibility to use living green noise barriers along roads. Although vegetation screens may not give the highest values in noise absorption, it is to be expected that they have extra advantages for the air quality, ecological value and acceptance by society. People do not be appreciate noise barriers hardly based on their noise reduction, but also based on their appearance. A vegetation screen is expected to be more positively appreciated than a conventional one. The noise level can be reduce by using Bamboo, This feasibility study show that the noise reduce effect of a bamboo noise barrier with height of 5 meters and a thickness of 6 meters is roughly comparable to a 3 meter high noise barrier. Reflection of noise barrier this has to do particular with the acoustic absorption of the noise barrier [2].

IV.WORKING WITH SOUND ACOUSTIC SHIELD

The noise-reducing effect of a sound screen is based on the fact that sound has to make a deviation along and over the barrier. The length of the deviation decides the degree of the noise reduction. Therefore, the higher screen is better, and a barrier is less effective when more away from the source. It is assumed here that there is hardly any exposure of transmission of noise through the sound barrier itself. Therefore, an optimal sound isolation of the screen is important.

V. PERMISSIBLE LIMIT OF NOISE SPECIFIED BY DIFFERENT ORGANIZATION

Table 1: Ambient noise level to be maintained [4]

S/N	Area code	Category of area	Limits in Db (A) in between	
			Day	Night
1	A	Industrial	75	70
2	B	Commercial	65	55
3	C	Residential	55	45
4	D	Silence	50	40

Day time limit: 6:00 am to 9:00 pm
Night time limit: 9:00 pm to 6:00 am

Table 2: MPCB Noise Level Limits [5]

Category Area	Limit in dB (A) Leq	
	Day time	Night time
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence	50	40

VI. MEASURING INSTRUMENT

Metrix+ Sound Meter:-

Noise measurements were performed using a Metrix + Sound Meter which are designed for sound level measurements according to the IEC standard. It supports diffuse sound field measurements and also meets standard requirements when the supplied windscreen is mounted.

Fig No. 1: Matrix+ Sound Meter s[10]

Specifications: -
Display= 14 mm
Parameter Measure= L_P, Lmax, Leq, LN
Measurement Ranges= L_P= 30-130 dB (A)
35-130 dB (C)
35-130 dB (F)
Leq = 30-130 dB
Ln= 0-100%
Resolution= 0.1 dB
Frequency Weighting = 'A','C','F'
Accuracy= Fast (125ms)
Slow (1sec)
Memory = 30 Group with measuring condition

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