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ENVIRONMENTAL NOISE EMITTED BY HIGH-RISE CONSTRUCTION IN URBAN AREAS – INTERFERENCE AND PERCEPTION IN THE VICINITY

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KEYWORDS

Environmental noise, civil construction, urban areas

ABSTRACT

Nowadays urban society lives alongside a physical agent known as noise, present in all segments of everyday life. The World Health Organization (WHO) acknowledges that sound pollution (noise) is the third main cause of environmental problems in the world, only being placed behind air and water pollution (2010). WHO also acknowledges that it can disturb the work, rest, sleep and communication between human beings, also bringing harm to hearing and causing or provoking diverse psychological reactions. The research's goal is to determine the interference and perception of noise generated by vertical urban construction sites, measuring the amount of disturbance brought upon those who work or live in the vicinities. The methodology of the investigation will be made of three steps: Bibliographical review; determination of parameters and procedures to be used on the matter; calculation of the amount of emitted noise and determination of the level of disturbance. The work is currently in the stage of pilot application for adjustments in the methodology.

INTRODUCTION

The vertical urban expansion can be observed in many cities, not only on the great national and regional metropolises, but also at medium-sized or even small cities. This form of expansion, generally named "verticalization", refers to a process that distinguishes itself physiologically by the construction of buildings with lots of pavements, which leads to various paths of interpretation connected to elements of modernity within urban space.

This expansion contributes to the urban thickening, which means further intensification of usage and occupation of ground areas (Martins, 2009).

In an increasing rate, vertical buildings (commercial or residential) will further proliferate. Building processes are modernized, new construction technologies are developed and, with them, new equipments and machines that produce noise in the environment, thus interfering with the local populace which works or lives nearby.

Maia (1999) points out the economic activity of Civil Construction as a key part to development and growth, through the great number of workers it gathers.

OBJECTIVES

To determine the interference and perception of the noise emitted by vertical urban construction sites in order to obtain a coefficient of disturbance inflicted upon those who live or work nearby such places. This proposition of work aims to complete certain goals, such as evaluate both in quality and quantity the interference of sound pressure level emitted by vertical buildings in urban areas and its perception by those in the vicinities, also, define the propagation of sound pressure level of equipments and implement standards in order to elaborate a methodology for acoustic mapping of such places, in order to help the administration (workplace layout, working schedule) and to help urban planning in order to improve the populace's life quality.

METHODOLOGY

The methodology of investigation will be made of three steps: The first one is destined to a bibliographical review, and will hold to the objective of define the state-of-the-art on the theme of urban noise, methods of



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evaluation and both national and international regulation, taking notes about what is being done (on both national and international fronts) when it comes to standards on noise control. The second step has as goal setting the limits and characterization of the area to be analysed, of the workplaces, noise-producing equipments and nearby populace, all things considered in the investigation. The overall field will be comprised of 12 workplaces, being 4 in the stage of foundation, 4 in the stage of structuring and 4 in the finishing stages; description of the investigated company which is focused on the main activity; time such company spent on the market; number of employees; area on which the company works; existence of lack thereof of security procedures and other noise-related procedures; the characteristics of the workplace; existing factors which create interference or produce noise, that is, the aforementioned items are to be gathered and properly noted as data. A survey will also take place, which will showcase the profile of the people that inhabit and/or work in the vicinities of the workplace, who will answer a questionnaire about the disturbances caused by noise. The questionnaire will be based on ISO 15666:2003 - Acoustics — Assessment of noise annoyance by means of social and socio-acoustic surveys. In the third stage, our field of work, that is, noise in the high-rise constructions at Recife, will be defined. Also, the comparative parameters of the gathered data are to comply to the norm named NBR10151 (Evaluation of noise present in inhabited areas in order to further the comfort of the community)

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