Abstract

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Topic: Traffic volume of building demolition

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The effects on traffic are often disregarded during the planning process and run phase of construction sites in general, even though building operations, especially demolition work, cause a considerable traffic volume and have a negative influence on the traffic system. As a result of an early estimation of the traffic impacts it is possible to identify those as such and find possible solutions. An early identification of the influenced traffic and the chronological appearance can be beneficial, especially for demolition sites in sensitive situations referring to traffic.

An early estimation of traffic volume is the key to carry out the planning and execution of the work to be done without a hitch. Therefore, detailed planning and preparation as well as the task assignment is required (Zilch et al. 2013). The importance of the handling of increased traffic through building or demolition sites grows bigger due to increasing traffic problems beyond inner-city areas. As a direct result it needs to be a part of the area of responsibility.

Besides traffic problems, time pressure as well as a high complexity of work procedures demand intensive coordination. To make the grade it is crucial to develop a construction logistics concept (Brune 2002).

The objective of this research project is to quantify the volume of traffic caused by demolition sites.
In order to reach the objective, definitions and fundamentals of demolition are introduced. Furthermore, construction logistics are fundamentally defined and connected with demolition sites.

To estimate the volume of traffic caused by demolition sites, possible factors involved are identified and put into a logical order. Therefore, specifications of the demolition sites, such as technical data and local facts, are analyzed and the possible effects considered.

On the basis of literature review, research approaches and projects as well as examples are introduced. The carried out research reveals that the effects on traffic have not been investigated sufficiently yet. By means of literature an office-based application has been developed to estimate the traffic volume. The application is an approach to calculate the capacity and resource requirements for the transport of the break mass. Furthermore, it allows to calculate the traffic volume caused by the transport of the demolition site waste and gives a definite number of trips (truck trips).

Finally, the results are compiled to an overall system in order to estimate the volume of traffic caused by demolition. The developed system describes all the required steps including the usage of the office-based application.

Additionally, the system is applied to case studies and assessed according to its result quality as well as its applicability in practice. The results and findings are discussed and verified in an expert interview.

In conclusion, the context of this research shows that the developed system quantifies the volume of traffic resulting from demolition work. Based on the usage of the office-based application a tangible result of traffic volume caused by the transport of the break quantity or rather break mass can be calculated.