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Autor: Phung Manh, Tien
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Bridge Databank and Computer Technique

Tien PHUNG MANH
Civil Engineer, Ph.D.
RITST
Ho Chi Minh city, Vietnam

Tien Phung Manh, born 1965, received his civil engineering and Ph.D. degree from the Zilina University in Zilina, Slovakia. He works at the Research Institute for Transportation Science and Technology (RITST) in Vietnam. He researches failures, the load carrying capacity and the bridge management system.

Summary

Keeping archives, the observation and the processing of information on bridge objects are important activities of the bridge management during their whole service life. The good quality bridge databank will become one of the main sources of providing complete information on the different aspects of bridge objects. The object of this paper is to present the basic structure of the bridge databank. The way of using of the computational technology for the creation of the bridge databank, the way of the observation and analysis in the bridge databank are also being presented in this article.

Keywords: Bridge databank; management system; computer technique.

Abstract

The bridge object belongs to the important object of the transport network. Therefore the incorporation of the bridge construction into the road communication from the viewpoint of safety and reliability of operation must also be as such it should not be the limiting element of the road efficiency. From this viewpoint, keeping archives, the observation and the processing of information on bridge objects are important activities of the bridge management during their whole existence. The good quality bridge databank will become one of the main sources of providing complete information on the different aspects of bridge objects, on the basis of which the bridge management may decide on their maintenance, modifications or reconstruction in time, in a quicker and more economical way.

At present, the computational technology is being developed in both aspects (hardware and software). There are various computational programs making it possible to work with data. Therefore the application of the computational technology on the creation of the bridge databank will become an inevitable task.

Every bridge management system contains many main modules: collection of data, keeping and processing of data, deciding module. The structure of these modules has less or more effect on the efficiency of the bridge management. The aim of this section is to deal with the structure of the bridge databank – the main module of the bridge management system. Some conditions, which must be taken carefully at the creating of the bridge databank, are dealt in this section.

Different bridge owners have different needs, therefore the structure of a bridge databank may be different. According to the analysis in this papers, the basic project of the bridge databank could be created with various parts (general data of the bridge, designs, the way of the construction, load and load carrying capacity, failure rate, service life and reliability) as it is presented in this section.

Over the years, some agencies have attempted to systematize data on structures using classical paper filling schemes to contain condensed structural data that is regularly needed for the administration and preservation of structures. By this system, keeping archives, the observation and the processing of information on certain bridge or on selection group of bridges are very difficult and it takes much time and money for these activities. Today, the computational technology is being developed in both aspects (hardware and software). There are various computational programs making it possible to work with data. Therefore, the choosing of the computational program to create the quality databank, which meets the mentioned conditions, is now a main problem.

According to the analysis in this article, the bridge databank formed by means of ACCESS 7.0 could become a suitable, useful and effective databank. It may have a convenient and logical structure. The bridge databank could be formed very easy and quickly.

Main parts of the data management system created in the ACCESS environment are various tables, queries, forms, reports and macros. The tables store different information on the every viewpoint of the bridge objects. The queries contain various sub databases formed on the base of the created tables by means of the different relations. The queries are used to view, change, and analyze data in different ways. They can also be used as the source of records for forms and reports. Therefore the users could take various information and data from various existing tables in the bridge databank and create the group of the necessary data of the researched bridge objects. The forms are the main environments of the bridge databank for inputting and updating of the data. The reports help to give out various results from the processing of the data. In this contribution, the main steps for creating of tables, some easy queries, forms and reports in the bridge databank are presented too.

The bridge databank – the bridge database formed by means of the computational programs MS ACCESS could contain more text and graphic information on all bridge objects. On the base of the efficiency of the computational technology, every bridge managers could perform some different analyses of this bridge databank from various viewpoints (for example searching and selection of certain information on the concrete bridge object from any observed viewpoint: designs, the way of construction, record, load and load capacity, failure rate, service life and reliability) very quickly by means of several queries. The users may create the necessary sub-database of several bridge objects from the created bridge databank according to certain criteria for their evaluation.