

Problems and Countermeasures in Maintenance Management of Expressway Bridges and Culverts

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Abstract: *Based on the current development of our country, there are some problems in the management of highway bridge culvert maintenance and will lead to some hidden safety problems. Strengthening the maintenance of highway Bridges and culverts is the primary task in current work. This paper mainly analyzes the characteristics of highway Bridges and culverts and the existing problems in maintenance management, and puts forward the corresponding countermeasures.*

Keywords: expressway bridge and culvert; Maintenance management; Solution countermeasure.

1. INTRODUCTION

In recent years, with the increase of the travel volume of Chinese people, the highway construction has been rapid development, followed by the number of highway bridge culvert is also increasing with the increase. Conversely, the construction of Bridges and culverts is also making great contributions to the transportation industry. In the transportation industry, there are many large models and vehicles with huge loads. With the increase of the frequency of use of these vehicles, it not only tests the quality of Bridges and culverts, but also tests the maintenance and management of Bridges and culverts. The importance of maintenance management is closely related to the safety factor of Bridges and culverts, so it is a very important work to do a good job in the maintenance management of Bridges and culverts.

2. MEANING AND CHARACTERISTICS OF BRIDGES AND CULVERTS

Bridge culvert is the general name for bridge and culvert, bridge culvert is the common name in engineering terms. The location, aperture, inlet and outlet forms, reinforcement and energy dissipation measures are the key factors that determine the flood resistance of small Bridges and culverts. The evaluation index and standard can provide the decision basis of flood resistance for highway design, construction and maintenance.

About the construction of bridge and culvert according to different construction environment, there are different construction technology, including: on the dry land caisson foundation construction technology, island method caisson foundation construction basic points and construction technology, floating method caisson foundation construction basic points and construction technology three types

3. SOME PROBLEMS EXISTING IN THE MAINTENANCE MANAGEMENT OF BRIDGES AND CULVERTS

3.1 The increase in the number of vehicles increases the load

Nowadays, the development of China's transportation industry is getting better and better. With the increasing demand of Chinese vehicles and population, some originally built Bridges and culverts cannot meet the actual requirements. Moreover, the increasing number of vehicles is also accelerating the aging of Bridges and culverts, and the durability of Bridges and culverts is accelerating the decline.

3.2 Overload operation of Bridges and culverts

The increase of vehicles leads to overload operation of Bridges and culverts in actual operation. One reason is that the construction time of Bridges and culverts is too long, leading to certain aging phenomenon of Bridges and culverts, which cannot bear the bearing range when they were just built. Second, there are some violations of the regulations of the vehicle overload load resulting in the overload of the bridge and culvert. The existence of the above two problems will lead to the intensification of the damage degree of Bridges and culverts, and the serious will cause structural damage and thus the occurrence of traffic accidents.

3.3 Fatigue problem of Bridges and culverts

The materials used in the construction of Bridges and culverts are more or less present. Some defects, in the case of multiple loads these small defects will gradually form damage over time and lead to macroscopic cracks. If the crack is not controlled effectively, it is very likely to cause the fracture of the material and structure. Fatigue type damage caused by fatigue is a common and core problem in all Bridges and culverts. In practical cases, there are also many bridge and culvert collapse events

caused by fatigue. The tedious point of bridge and culvert fatigue problem is that it is often not easy to be found in the early stage of the problem, and the consequences brought by the later stage are extremely disastrous.

3.4 Some problems existing in Bridges and culverts

First, in the early stage of the design of some Bridges and culverts, the foundation structure is not reasonably designed, and the roadbed maintenance construction is not carried out according to the standard requirements, thus making the roadbed too soft bearing capacity is insufficient. Second, because of the season, in the process of construction, if the rain and snow weather, and the steel structure under the action of force will produce some small cracks, when the rain and air together into the steel structure to produce chemical reactions, the result is very likely to lead to corrosion of steel materials. Third, there is some damage to the smoothness of the road surface. After a period of use, the ground will appear potholes. If the road surface is not maintained and repaired in time, the result will be the collapse of the road surface or bridge deck.

4. PROPOSE SOME SOLUTIONS BASED ON THE PROBLEMS FOUND

4.1 Establish a highly professional team

After some investigations, the current situation is not optimistic. The level of personnel in maintenance management technology is not uniform. It is not an easy thing to be professional in the true sense, and there are certain difficulties and complexities in the maintenance work of Bridges and culverts. First of all, we want to improve the technology of the staff, should be based on the existing development of bridge and culvert maintenance, timely targeted technical training and management training of the staff, so as to master the best method of maintenance management suitable for the current situation. Moreover, regular training and education for employees' cultural literacy should not only be promoted technically, but most importantly, practitioners can attach great importance to it through ideological and cultural education, rather than being imposed by the outside world. Finally, in the continuous learning of theoretical knowledge, we should also pay attention to the training of practical operation, arrange appropriate exchange meetings, through the exchange and summary of previous experience, in order to establish a standardized team in a real sense.

4.2 Strengthen management supervision

To ensure the maintenance and management of highway Bridges and culverts smooth and high quality. After the completion of the quantity, the leadership must strengthen the supervision and management and check the corresponding equipment. First of all, the equipment used in the maintenance and management process needs to be regularly inspected and reasonably equipped to take preventive measures. In the process of inspection, data and equipment are verified using high-end equipment and advanced technology. Specialization in equipment can make the following inspection work more efficient. Secondly, the maintenance team should strengthen its efforts in the daily maintenance inspection of highway Bridges and culverts, carefully observe the use and wear situation, and make detailed records and timely reports. A detailed record can not only enable the maintenance personnel to better solve the problem, but also pave the way for the future work. After reporting, follow-up maintenance progress should be timely followed up.

In the vehicle overload this aspect of the corresponding provisions, to violate the vehicle to carry out strict norms and restrictions. The long-term driving of overloaded vehicles on highway Bridges and culverts not only increases the workload of maintenance and management, but also aggravates the wear of Bridges and culverts in light cases. In heavy cases, the collapse of Bridges and culverts will cause traffic accidents and threaten the safety of other vehicles. In the management of the problem can be through some traffic control set up the corresponding reminder and set up some penalties to standardize the traffic of vehicles.

4.3 Improve work efficiency

If it is necessary to do a good job of maintenance and management of highway Bridges and culverts, it is necessary to realize mechanization operation. In the maintenance work through the full use of a variety of machinery to carry out, not only more professional and improve the work efficiency. In the overseas cases, the management of Bridges and culverts has been scientifically related to the economic benefits. By referring to the foreign cases, some relevant materials and technologies have been introduced to improve the management level and the work efficiency.

4.4 Increase the fund budget of conservation management appropriately

The use of highway Bridges and culverts naturally cannot be separated from the subsequent maintenance and maintenance. Repair, which is an important factor to ensure the safe use of Bridges and culverts. Appropriate increase of relevant maintenance management funds can better guarantee the continuous operation of highway Bridges and culverts. The maintenance and management of Bridges and culverts directly affect the daily travel safety of vehicles. Appropriate increase of funds can better guarantee the quality of the road to a longer service life, prolong the service life, but also save a lot of funds for the construction of the whole project. In the process of maintenance and management of Bridges and culverts, it is necessary to adapt to the actual situation and not according to a fixed routine for maintenance, so as to achieve practical and feasible improvement of

work efficiency.

4.5 Reconstruction plan of dangerous bridge

The reconstruction of dangerous bridge is an important project, which also has strong value. Dangerous bridge usually means that the key parts of the bridge and culvert have suffered serious damage, and the deterioration is becoming more and more serious with the passage of time, which will affect the use of the bridge and culvert, and endanger the traffic safety. Another situation can also be called a dangerous bridge, that is, the main part of the bridge culvert load-bearing capacity reached the limit, can no longer bear the load, other components are also beginning to deformation, into a state of damage. It is very critical to deal with the dangerous bridge, which can be solved through bidding. In the process of bidding, some unqualified construction units can be filtered out, and the occurrence of "back door" can be prevented. Through bidding, excellent construction units can be obtained to carry out the maintenance and transformation of the dangerous bridge.

5. CONCLUSION

To sum up, the quality of maintenance and management of highway Bridges and culverts is not only related to the convenience of traffic, but also directly affects the personal safety of the public. Therefore, high attention should be paid to its maintenance and management, so as to reduce or even avoid the occurrence of such things that harm the property safety of the public.

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