Analysis of Seismic Safety of Highway Bridges Based on Midas Civil Computer Technology

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Abstract. With the continuous development of society and the prosperity of cities, China's contemporary road and bridge construction projects are more and more. In the road and bridge construction also gradually applied more new technology and new equipment, the overall construction quality has been effectively and rapidly improved. But at the same time, due to the high technical requirements of road and bridge construction, especially the complex seismic construction treatment, there are many imperfections in the construction. Therefore, based on Midas Civil computer technology, this paper analyzes the problems caused by seismic damage in road and bridge construction, and further discusses the important control links in the construction process, so as to promote the development of China's traffic construction.

Keywords: Road and Bridge, Earthquake, Construction Treatment, Midas Civil Computer Technology

1. Introduction

With the rapid development of road and bridge construction, the new era puts forward more requirements on the safety performance of pavement, roadbed setting and other aspects of construction, which is also one of the important indicators to measure the construction quality of engineering projects\textsuperscript{[1]}. There are many obvious problems in the seismic treatment of road and bridge construction in China, which affect the actual quality and service life of road and bridge construction. Therefore, how to carry on the seismic construction technology innovation development of road and bridge engineering at the present stage is of far-reaching significance to the overall development of China's traffic construction.

2. Analysis of seismic safety of highway Bridges based on Midas Civil computer technology
The seismic damage of road and bridge construction is affected by many factors, and there are different factors in different stages of construction. At present, asphalt concrete is used as the raw material for seismic resistance of most roads and Bridges in China. In order to further improve the seismic construction quality of road and bridge, and keep the overall stability of road and bridge construction, it is necessary to adopt more effective ways of prevention and avoidance. The safety system of road and bridge is to effectively carry out drainage through certain means or preparation measures to prevent the water from permeating into the subgrade surface below the corrosion of steel bars and the overall structure of road and bridge. We can conduct phased analysis from the design of Midas civil computer technology, construction and system maintenance of road and bridge engineering:

First of all, in the safety system design of midas civil computer technology of road and bridge projects, scientific and reasonable planning and design of midas civil computer technology of roads and Bridges should be carried out in better combination with the specific conditions of the construction area to effectively discharge or block the surface water out of the roadbed, so as to enhance the stability of the roadbed in the design of midas civil computer technology.

![Figure 1. The level measures the cross sections of roads and Bridges.](image)

Next in the process of construction, construction personnel and supervise workers to real-time to in-depth study of the effectiveness of the security system design of midas civil computer technology analysis, and if found design of midas civil computer technology flaws or other do not tally with the design of midas civil computer technology is modified at any time and correction, to ensure the construction quality in the construction process, and improve the speed of drainage and efficiency.
In the maintenance phase at the end of the road and bridge project, maintenance personnel need to regularly test and maintain the safe road surface of the road and bridge, so as to implement the supervision and treatment of earthquake resistance. If safety hazards are found, they should be dealt with and reported in the first time, so as to ensure traffic safety in a meticulous way. In the actual curing process, some reasonable and effective curing measures are applied to solve the drainage problems caused by seismic resistance and improve the drainage conditions of the base surface[4].

3. Principles of safety roadbed treatment in road and bridge maintenance

In the seismic treatment of road and bridge construction and maintenance, attention should be paid to the inspection and regular maintenance of drainage facilities on the one hand, so as to ensure that drainage facilities of different projects in road and bridge can work normally; In addition to combining the actual situation of local continuous testing and improvement of road bridge maintenance in seismic processing to follow the principle of the following aspects: first, seismic processing should be on the basis of the comprehensive planning of different drainage facilities, and combining with the actual situation of layout, construction coordination, reasonable use of local natural topography and water system planning; Secondly, drainage ditches should be coordinated with farmland water conservancy and hydropower facilities to reduce the impact of agricultural water on the seismic stability of road and bridge construction[5]. In addition, before road and bridge design of Midas civil computer technology, targeted investigation should be carried out according to local environment, and targeted research and analysis should be conducted on local water source and rainfall, so as to plan the key maintenance section.

4. Seismic treatment of road and bridge based on Midas Civil computer technology

4.1. Scientific design of Midas civil computer technology of road and bridge seismic resistance

In order to more effectively ensure the subgrade surface quality in the construction of roads and Bridges, the construction of the need to implement a more scientific and reasonable system for road and bridge seismic design of midas civil computer technology, adopting different kinds of advanced technologies can also enhance the overall level of the design of midas civil computer technology and quality, at the same time, the focus of system design of midas civil computer technology is to enhance the overall design of midas civil computer technology of roads and Bridges and drainage system, in the process of design of midas civil computer technology should be combined with the surrounding geological conditions and hydrological water conservancy conditions, environment and geological conditions of not through the corresponding analysis, comprehensive consideration with the surrounding environment and geological conditions for coordination and adaptation. However, if there are some defects or unreasonable factors in the design of Midas civil computer technology, it may further lead to environmental pollution and soil erosion. Therefore, in the process of seismic design of midas civil computer technology of roads and Bridges, various factors should be considered according to local conditions and environmental benefits should be paid attention to. From the perspective of long-term development, safety design of Midas civil computer technology of roadbed surface of roads and Bridges should be steadily improved[6].
4.2. Ensure the quality and performance of safe materials

From the traditional point of view, the safety layer of road and bridge construction is the part between the concrete pavement and asphalt soil layer of road and bridge, so much attention should be paid to the proper selection and use of raw materials in seismic treatment. In the choice of decorating material and collocation, the health environmental protection that ought to pay attention to source and healthy and comfortable collocation, the material that should avoid to choose insecurity or drainage performance is poor in use process, the collocation that pays attention to material and balance processing, had decided all sorts of material use amount, undertake macroscopic whole observation and adjustment. In particular, subgrade and ground materials, which occupy a larger proportion of the whole road and bridge, therefore, also have the greatest impact on the safety performance of subgrade surface. Proper control of the quantity of selected materials can effectively prevent the collocation of building materials, so that the seepage index does not exceed the standard phenomenon. Three commonly used system dynamics equations can effectively control the cost of prefabricated buildings:

◆ Leveling equation: The equation for calculating leveling variables.

\[ L: \ \text{LEVEL.K=LEVEL.J+DT*(RIN.JK-ROUT.JK)} \] (1)

◆ Rate equation: The equation for calculating rate variable is the specific form of decision function.

\[ R: \ \text{RATE.KL=f (L.K, A.K, C,)} \] (2)

◆ Auxiliary equation: an equation that auxiliary explains the rate variable or simplifies the decision function.

\[ \text{AAUX.K=g (A.K, L.K, R.JK, C,)} \] (3)

In the calculation of the three equations above, the formula has no standard form (f indeterminate). And the rate is constant in DT. The rate equation is calculated at time K and is assumed to remain constant in the interval from K to L (DT). The system dynamics establishes the system structure model from the system microstructure, describes the system structure framework with loop diagrams, describes the logical relationship between the system elements with causal diagrams and flow diagrams, describes the quantitative relationship between the system elements with equations, and conducts simulation analysis with special simulation software.

4.3. Improve the standardization of seismic construction of roads and Bridges

In terms of seismic code design of midas civil computer technology of roads and Bridges, the first procedure is to start with the standardization of construction, rationally optimize the construction application and green environmental protection design of midas civil computer technology, and embed the concept of ecological environmental protection in the process, so as to reduce the construction pollution at the root. In the specific layout and management of roads and Bridges, the materials and structures used should be discussed. In the process of construction, attention should be paid to the adjustment and inspection of safety, environmental protection, health and other aspects from different areas such as roads, Bridges and earthquake resistance. And in the overall layout of the link should pay attention to the application of green and environmental protection design of midas civil computer
technology treatment, so as to better meet the drainage roadbed in the face of various traffic environment needs and design of midas civil computer technology requirements. In addition, in the process of selecting materials, attention should also be paid to environmental protection and energy saving, as well as the overall ventilation and drainage design of midas civil computer technology, so that the surface water of the subgrade surface can be discharged as soon as possible.

5. Conclusion

There are many obvious problems in the seismic treatment of road and bridge construction in China, which affect the actual quality and service life of road and bridge construction. With the rapid development of road and bridge construction, the new era puts forward more requirements on the safety performance of pavement, roadbed setting and other aspects of construction, which is also one of the important indicators to measure the construction quality of engineering projects. At the same time because the roads and Bridges construction in technology have higher requirements, especially for earthquake-resistant construction process is relatively complex, there are many drawbacks in the construction, especially of roadbed and ground material, its proportion in the whole road and bridge is bigger, therefore also had the greatest influence of safety performance of subgrade surface, need to focus on the further research.

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