

Construction Technology Analysis of Pavement Cushion in Highway Engineering Construction

Li Jinwei

CCCC Fourth Highway Engineering Co.,Ltd, Beijing, 100123, China

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Abstract: With the increasing investment in highway construction in China, people's demand for highway construction is also increasing. Pavement and subgrade are two important links in highway construction, and the pavement cushion has received extensive attention as an important project connecting the two links. This paper analyzes and studies the main problems existing in the road cushion during highway engineering construction, and proposes corresponding solutions to improve the actual effect of pavement construction and improve the pavement construction in China.

1. Introduction

The road surface layer in highway engineering construction refers to the structural layer between the road surface and the roadbed. From the aspect of the road surface structure, the cushion layer is also the bottom layer. It is not difficult to see from its position structure that the pavement cushion occupies a position that cannot be underestimated in the entire pavement structure. Effective construction of the pavement cushion can ensure the waterproof and frost-proof performance of the pavement, and also improve the solidity reliability of the entire pavement. At the same time, the technology involved in the actual construction of the road cushion will also be changed due to actual needs. For example, at present, China's main pavement construction materials are mainly divided into gravel cushion construction and gravel cushion construction. The construction quality of gravel cushion is higher than that of gravel cushion construction, which is suitable for high-grade highway construction. Construction projects, of course, are also costly. Therefore, in actual construction, it is necessary to consider the cost and other issues in combination with actual needs and conditions, in order to play the practical role of the road surface cushion.

2. Current status and existing problems of construction technology of pavement cushion for highway engineering construction

With the development and construction of China's economy, the construction level of highway engineering in China has also been significantly improved. However, actual road construction is still affected by many external factors. At present, China's highway construction construction still has a lot of room for improvement, and relevant staff have a long way to go in the research of highway construction and construction. Among them, the performance is more obvious is the construction technology of pavement cushion.

2.1. The stability of the pavement cushion is not enough

Pavement cushion construction technology is a key factor to ensure the stability of pavement structure as a whole for pavement construction. In the compaction operation of the road cushion, the stability cannot be guaranteed, which leads to insufficient stability of the pavement structure. A certain security risk. It is particularly obvious that when the construction environment itself is in a high load condition, the road surface cushion is more prone to deformation and the stability is obviously insufficient. At present, the working height standards of most road mats do not match the expectations, resulting in poor actual results and not playing a good role.

2.2. Pavement cushion structure is less tight

Since most of the road cushions are often not tight in construction, it is difficult to effectively control the compaction of the cushion during the compaction of the pavement during highway construction. The accuracy of the compaction is detected. Can not be guaranteed. In addition, due to the problem of low tightness, there is also an error in the detection of the pavement mat lamination. This kind of error is often concealed for the entire cushion structure environment and is difficult to find during construction. Hard to find. This also makes it difficult to ensure quality and safety risks in the later practical use.

2.3. The bending degree of the road cushion has a large error.

Poor road surface deflection is the key to ensure road stability, and the same road surface cushion deflection value has the same effect. In addition to the original measurement problems, the results of the deflection test of the road surface cushion are subject to large errors due to various external environments. For example, the pressure load caused by the vehicle will cause displacement of the cushion layer, and finally affect the test results.

3. Technical points and main control measures for pavement layer construction in highway engineering construction

The technical requirements for the construction technology of the road surface cushion in highway engineering construction are high, and the main technical points are as follows.

First of all, ensure that the corresponding preparation work is effectively implemented before the construction of the road surface cushion. First, ensure scientific and reasonable selection and purchase of construction materials, and select construction materials that meet the corresponding standards. Strengthen the inspection of construction materials, strengthen the corresponding management system for the construction team, and do a good job of pre-construction inspection and improvement to ensure the actual construction can be completed smoothly.

Second, pay attention to the sequence of construction. Pave mat construction is mainly divided into gravel cushion and gravel cushion, and the actual procedures are strictly adjusted according to different types. When constructing the gravel cushion, firstly, each layer of the gravel layer can be compacted and ensured that the thickness meets the corresponding requirements. Secondly, the material of the cushion layer is separated according to the thickness and the diameter of the gravel should not be too large, so that it can be used well, and the contact area is increased to reduce the gap. During the laying, the width of the gravel cushion can be more than 0.5mm to 1mm, and the walls on both sides can be treated by using the stone to avoid the loss of the cushion material. In addition, in the process of controlling the tightness of the cushion, attention should be paid to controlling the water content when using the rolling method. Another important link is the scientific and rational construction according to the actual conditions of the surface layer of the foundation. The local base surface layer has a hard shell layer of a certain thickness with good bearing capacity, and the laying work can be realized by mechanical apportionment. Firstly, the gravel is piled into several sand piles, and then mechanically paved; and when the bearing capacity is insufficient, The method of sequential advancement realizes paving; while the local base surface is soft, scientific measures are taken to improve the foundation condition, ensuring that the corresponding person or light tool can be constructed above. For the gravel cushion, the foundation condition is detected before construction, and the lower the bearing capacity, the softer part is excavated, and the gravel or the lime soil is used to compact and fill. In addition, the water content can be controlled by mixing the lime soil evenly during the construction, and it can be air-dried in the event of excessive moisture. It is also worth noting that the layered looseness is controlled and the machine is used for on-site inspection to ensure that it is within the corresponding standard range. Drainage treatment shall be strictly carried out after the indenter, and the construction of the upper layer shall be avoided in time to avoid the occurrence of rain.

In addition, pay attention to several problems during construction. Firstly, ensure that the

position of the cushion construction is clean before the construction. There is no other debris, that is, the relevant staff must strictly implement the relevant cleaning treatment before the construction work. In addition, real-time monitoring of the water content of the cushion is also very important, to ensure that the water content is in the corresponding requirements, to avoid the phenomenon of water shortage or excessive water. The materials involved in the construction of the cushion must undergo strict inspection to ensure the quality and performance of the construction materials. In addition, improving the supervision mechanism of the construction team itself and establishing a corresponding supervision system is also an important content. Finally, the maintenance of construction equipment will be strengthened during construction to ensure the effective operation of equipment and equipment, to achieve the complementarity of manual and mechanical operations, improve overall construction efficiency and improve construction quality.

4. In order to ensure the effective development of the construction of the road cushion, it is necessary to adjust and improve according to the existing conditions, the main measures are as follows

4.1. Improve the pre-construction supervision work

For highway engineering construction, material quality is a key factor in ensuring construction quality. The requirements for construction materials for pavement cushions are mainly reflected in the demand for fullness of the pellets. It can be said that good construction quality can effectively ensure that the construction work can achieve the desired goals. For example, effective control of the quality of the gravel material and the corresponding crushed stone can ensure the construction effect. In the actual construction, the crushing treatment is adopted to adjust the crushed stone, and the dust is used to purify and enhance the actual effect. Its own hardness and structural strength can improve the actual effect of highway construction. In addition, since the geological environment varies greatly with the region, the actual geological environment science construction should be considered during the construction of the road, and the corresponding materials should be different. In the actual construction operation, the cushion is changed according to the situation. Performance is changed to ensure that the material is more suitable. In addition, the test and inspection are indispensable when selecting natural gravel or graded gravel, and the analysis and treatment according to the actual situation to ensure the reliability of the actual operation and improve the stability of the cushion. It can be said that the material is the necessary factor to ensure the effective effect of the cushion effect, and improving the applicability of the material is an important means to improve the stability of the cushion. In addition, when selecting relevant materials, the situation should be considered strictly according to the actual cost problem. In the road sections with lower demand, suitable materials can be selected and adapted to local conditions. Only in this way can we truly ensure that the best use of materials, improve the practicality of the cost, ensure the stability of the road surface cushion, and ensure the stability of the road surface.

4.2. Choice and improvement of material transportation and paving methods

According to the actual application in recent years and the reference statistics of excellent foreign projects, it is not difficult to see that the number of vehicles transported depends on the length of the paved section. In order to ensure the uniformity of the paved road, the corresponding staff must improve the accuracy of the shipping work, and strictly divide the transportation materials of each vehicle into uniform and uniform shipments to achieve the same degree of identity. In addition, for the paving construction of the pavement, the construction personnel regard the water content and the width of the paving as the main technical effect requirements. That is to say, the whole process of the actual operation is strictly monitored, and the factors such as the width and thickness of the cushion paving and the water content are monitored as indicators of the project. Through the monitoring of the water content, the effect of the rolling and laying of the cushion is predicted. For the whole process, the material is undoubtedly an important factor affecting the paving effect. Therefore, it is ensured that the water content inside the working structure can be

controlled and grasped by the method of crushing and compacting during the operation. For different construction environments, as well as different road grade requirements, the corresponding cushion paving scheme will be different. In addition to the use of the paver in the operation of compacting and compacting the road surface cushion, it also includes the construction of the bulldozer and the grader. Before the operation, the construction personnel should scribe on the already compacted roadbed. The demand for materials inside each cell is presented by statistics and calculation. The materials are discharged according to the demand and paved with bulldozers. The grader is perfect and flat. In addition, in order to ensure that the mistakes in paving operations can be effectively reduced, the review work after the completion of the paving work is indispensable. Once the quality problems such as improper operation and construction are found, timely and corresponding effective measures can be taken to avoid unnecessary problems. , bringing security risks and reducing the quality of the project.

4.3. Control the mixing material rolling construction

When the preliminary plastic forming work of the pavement layer of highway engineering is completed, the water content of the mixed material is firstly analyzed, and the water content is strictly controlled to avoid unnecessary occurrence of excessive or too low water content. problem. Once the moisture content of the mixture is found to exceed the design requirements of the construction, effective measures are taken to adjust and improve it, including the immediate use of high-intensity vibratory rollers and roller compactors to control and adjust the operation in a timely manner. Strengthen the control and use of mechanical equipment, as far as possible to ensure the accuracy of the machine to reduce the deviation caused by the machine. In this mechanical construction operation, the flatness and thickness of the road surface are guaranteed as the key content of the control, and the excessively high pressure causes the construction strength to be too high, and the rolling marks appear. Once over-construction will cause unnecessary late effects, the difficulty of later construction will increase. In addition, the construction sequence for the rolling construction is strengthened, and the rolling work ensures that the construction work in the order of the two sides of the first road is strictly followed to ensure the high quality of the construction. Improve the quality of the roller compaction construction as much as possible, avoid the difficulty of the later stage, and play the biggest role of the construction of the road cushion.

4.4. Strengthen the construction measurement requirements of the cushion

Road construction measurement is nothing more than an important means of controlling the quality of demand control, and it is the same for pavement construction. First, the relevant construction personnel strengthen the post-monitoring management and the real-time measurement and control data in the early stage. The measurement results during construction work will directly affect the construction of the entire road surface. The corresponding staff will improve the measurement link during construction, ensure the accuracy of the measurement data, and strengthen and improve according to the actual needs, to meet the corresponding standards. The main means of construction measurement is linear measurement, which is to adopt GPS positioning system or other electronic equipment technology to ensure the accuracy of construction measurement is effectively improved. In addition, the distribution of the network is used to improve the accuracy, increase the coverage area, and ensure the establishment of a global vision to form a comprehensive monitoring network. In this way, effective measurement and monitoring of the cushion construction and subsequent construction treatment are realized, the overall construction quality is improved, and the construction can be completed as expected.

In addition, the management of the team in road construction is also crucial. In order to improve the effective implementation of road pavement construction, it is necessary to strengthen the management of the construction team, strictly implement the relevant construction needs, and strengthen the normative and institutional. Only in this way can the construction of the actual pavement bedding be maximized, and the corresponding effects can be exerted to improve the overall construction quality. In addition, the team ensures that there are enough technical personnel and corresponding management personnel to ensure that the personnel can complete the operation

requirements with high quality, maximize the construction effect, and improve the efficiency and quality of the construction.

5. Conclusion

In order to ensure that the pavement cushion technology in highway construction can play a practical role, strengthen the quality of pavement construction, and strengthen the management of pavement construction of highway engineering. In addition, relevant researchers have given sufficient practical analysis to analyze and based on a large number of experiences and actual conditions, to find the most reasonable technical methods and corresponding construction material selection, and effectively improve the quality and stability of pavement construction of highway engineering. Improve the construction of highway pavement in China and give play to the value of highway construction. In this regard, it still takes a long way to go, and more experience and technology to supplement.

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