

Analyzing the Compaction Construction Technology of Roadbed and Pavement in Highway Engineering

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Abstract: *With the rapid development of the social economy, the number of cars is increasing, and the requirements for the quality of highway engineering construction are becoming higher and higher. At present, the common diseases in highway engineering mainly include roadbed settlement, road potholes, cracks, honeycomb pits, ruts, etc., which not only affect people's normal traffic and driving comfort, but also cause significant traffic pressure to highway engineering in China. The common diseases in highway engineering are mostly related to the compaction technology and quality of roadbed and pavement. Therefore, in highway engineering construction, it is necessary to pay attention to the compaction construction technology of roadbed and pavement to ensure the quality of highway engineering. The paper elaborates on the important role of roadbed and pavement compaction construction technology in highway engineering, analyzes the influencing factors of roadbed and pavement compaction construction, and summarizes the key points of roadbed and pavement compaction construction technology.*

Keywords: Highway; Roadbed and pavement; Compaction construction; Technical points.

1. INTRODUCTION

The compaction of roadbed and pavement in highway engineering is an important process in the entire pavement construction. Adequate compaction of the roadbed and pavement structural layer is an important condition to ensure the strength of the roadbed and pavement, which is related to the quality of the entire construction and the service life after it is put into operation. If the compaction construction quality does not meet the standards, it will not only affect the actual application and durability of the project, but also increase traffic risks in highway applications. Therefore, attention must be paid to the compaction quality of the roadbed and pavement during construction. To achieve this, construction enterprises and personnel should strive to improve compaction technology and management level based on the specific situation of the construction site and local natural and geological conditions, and use relevant technical measures in a targeted manner. Only in this way can the overall quality of highway engineering be ensured. Therefore, it is necessary to conduct relevant research on the technical measures for compaction construction of roadbed and pavement in highway engineering.

2. THE IMPORTANT ROLE OF COMPACTION CONSTRUCTION TECHNOLOGY FOR ROADBED AND PAVEMENT IN HIGHWAY ENGINEERING

In highway engineering, the road surface directly bears the load of automobiles, and the roadbed plays an important supporting role in the road surface. Only by strictly controlling the compaction quality of the roadbed and pavement during the construction process can the strength and stability of the roadbed and pavement be guaranteed, and the functional use of highway engineering be achieved. In highway engineering construction, the compaction of roadbed and pavement is a key construction process, which plays a decisive role in the construction quality of highway roadbed and pavement. The compaction construction technology of roadbed and pavement plays an important role, mainly manifested in the following aspects: 1) It is conducive to improving the overall strength and bearing capacity of the roadbed and pavement structure in highway engineering. With the rapid development of the social economy, the demand for highway transportation and transportation is still increasing day by day, and various types of heavy trucks and their load capacity have put forward higher requirements for the bearing capacity of the roadbed and pavement. Effective application of roadbed and pavement compaction construction in highway engineering construction.

Strengthening the compaction control of highway roadbed and pavement through technology can greatly improve the overall strength and bearing capacity of the roadbed and pavement structure, and reduce the occurrence of highway collapse or irreversible deformation. 2) It is conducive to improving the smoothness of the roadbed and

pavement of highway engineering. Road smoothness is the core factor affecting driving comfort, and ensuring road smoothness is one of the important roles in compaction construction. There are two main factors that determine the smoothness of the road surface, one is the quality of construction raw materials, and the other is the effectiveness of rolling construction. If the raw materials are qualified and the compaction construction is not strictly carried out according to the requirements, it is easy to cause uneven height of the roadbed filling in various places. In this regard, construction personnel must keep in mind the key points of road compaction construction technology. In order to strengthen the control of road surface smoothness, it is necessary to design engineering quality testing plans in accordance with industry standards, and flatness testing usually uses a 3m ruler. For areas that do not meet the testing standards, immediate repairs should be made to avoid affecting the quality of the project.

2.1 An Analysis of Foreign Language Learners' Cultural Self-Confidence

Firstly, the survey on the concept of cultural self-confidence found that 66.84% of the students knew about cultural self-confidence, 7.02% of the students knew about some concepts of cultural self-confidence, and 26.13% of the students did not know about cultural self-confidence. This shows that most students have been exposed to cultural self-confidence, their overall cognitive level is not enough. As for the factors affecting cultural self-confidence, this is a multiple topic. 55.78% of the students think that learning pressure is one of the reasons, 61.31% of the students think that schools and society do not pay enough attention to it, and 58.29% of the students think that foreign cultural invasion is too serious. This shows that the lack of cultural self-confidence education is serious. With the acceleration of the international situation and the process of globalization, the cultures of various countries have gradually blended.

2.2 Colleges foreign language majors are more deeply affected by the impact of foreign culture. It is necessary to establish cultural self-confidence as an important topic in foreign language education

Secondly, the survey on College Students' acceptance of the cultivation of their own culture shows that 54.77% of the students have seen self-confidence in publicity culture from online platforms such as official account, 46.23% of the students have seen publicity in offline activities, 34.17% of the students have received publicity and education in class, and 9.05% of the students said they have never seen publicity. This shows that the current emphasis on traditional culture is far from enough, especially in the education of foreign language majors. Although the education of professional courses is put in the first place, the education of their own culture is essential. The improvement of cultural self-confidence is not instantaneous. Colleges, as the main battlefield of education, need to give full play to their guiding role.

As for Chinese traditional culture, more than 57% of the students said they liked the strong atmosphere of traditional festivals, 43% of the students said they liked festivals because they could have holidays. This shows that many students just regard traditional culture as a holiday, and ignore their cultural allusions and national cultural heritage rooted in their hearts. When asked about the attitude of China's traditional Dragon Boat Festival, which was successfully applied for the world heritage by South Korea, 58.29% of the students said they were very angry and 34.17% said they were surprised. This shows that most students still have a sense of protection of Chinese culture.

2.3 At present, many foreigners still have one-sided views on Chinese culture

Chinese culture has problems such as pedantry and obsolescence. 56.28% of the students think that Chinese culture does not need foreigners' affirmation, but hope that foreigners can understand Chinese culture. 23.12% of the students felt helpless or angry because of foreigners' negation. When asked about the students' views on the future development prospects of Chinese excellent culture, 54.77% of the students were optimistic about the inheritance of Chinese culture and believed that Chinese culture would spread around the world. This shows that students have a sense of identity and pride in Chinese culture. The survey on taking Chinese traditional culture as a compulsory course and examination content shows that 37.69% of the students are willing to accept, 46.23% of the students are willing to accept the course and are not willing to take the exam, 16.08% of the students do not accept both. The survey of Chinese or history courses in colleges and universities shows that 45.23% of the students think it is necessary, but they can choose to attend or not. 44.72% of the students thought it was necessary and should be forced to attend classes. This shows that students are interested in traditional culture and have a certain understanding. They have the confidence to accept the relevant assessment. For students, the acceptance of elective courses is higher than that of compulsory courses. Therefore, how to promote students' conscious attention and

cognition to the excellent traditional Chinese culture, make students have the willingness and interest to learn, avoid compulsory learning assessment, stimulate students' interest in their own culture, and cultivate students' feelings for the excellent traditional Chinese culture is the focus of higher education.

Based on the above survey results, the publicity of foreign culture and the cover up of domestic culture are common phenomena in real society. Many students believe that domestic culture cannot be compared with foreign culture. The main reason is that they are blinded by market orientation, which also reflects the lack of students' speculative ability. Foreign language majors in colleges and universities are deeply affected by the impact of foreign culture. It is particularly important to establish cultural self-confidence in foreign language education. In view of the particularity of this group, it is necessary to explore new ways to enhance cultural self-confidence.

3. ANALYSIS OF FACTORS INFLUENCING THE CONSTRUCTION QUALITY OF HIGHWAY ROADBED AND PAVEMENT COMPACTION

3.1 Effect of moisture content of materials

The moisture content of the material has a great impact on the compactness of the subgrade and pavement. According to the experience of the current highway project implementation, if the moisture content of the soil is too high, it will mean greater water lubrication. At this time, the resistance between the soil particles will be relatively small, and even under the same rolling strength, the difference in dry density will be relatively large. The continuous dissolution and compaction of water have a certain impact on the soil, under which the air resistance between soil particles is greatly reduced, resulting in the compaction of the roadbed and pavement not meeting the expected standards; On the contrary, when the soil moisture content is low, due to the relatively small water lubrication effect, the resistance between soil particles increases abnormally. During the rolling process of mechanical equipment, it is necessary to eliminate the interference of these resistance as much as possible. The spatial synchronization between soil particles is smaller, and the compactness increases [2]. When construction operations are carried out on highway engineering sites, the compactness intensity reaches a specific standard, and the work done by the compaction machinery cannot offset the resistance kinetic energy between soil particles. In this case, the compactness remains within a certain resistance range for a long time without significant changes. Therefore, the moisture content of materials has a very direct impact on the compaction index, and on-site construction personnel should maintain the moisture content of materials within a specific range based on the compaction construction standards in the roadbed and pavement.

3.2 Impact of rolling method

The selected compaction method during the compaction construction process, namely the sequence of parts and key details during compaction, will greatly affect the quality of roadbed and pavement construction. Improper compaction methods can easily lead to substandard road compaction. In order, the edge of the road surface should be compacted first, and then the middle part of the road surface should be compacted. In addition, it is necessary to plan the compaction route reasonably and minimize the turning and emergency stopping of compaction equipment to avoid uneven stress inside the roadbed soil.

3.3 Impact of compaction equipment

As the main tool for subgrade and pavement compaction construction, compaction equipment will affect the construction materials used for pavement compaction in the process of subgrade and pavement compaction construction. Different mechanical equipment needs to be selected under different construction environments. The temperature, site size, Soil type, etc. of the construction site should be considered for detailed investigation. Relevant factors will also directly affect the construction quality, such as improper selection of compaction equipment, The incorrect use of compaction equipment in situations where road compaction requirements are high can lead to unsatisfactory road compaction. In general, the greater the impact and influence of heavy compaction machinery on the compaction degree, the better the compaction effect; On the contrary, lightweight compaction machinery and equipment have little impact on compaction degree; At the same time, for compaction machinery equipment of the same weight, steel wheel rollers have better compaction effects than vibration rollers. Due to the frequent occurrence of blind spots in highway engineering construction, it is necessary to prepare small grinding machines in advance for auxiliary operations, and if necessary, manual operations can also be carried out.

4. ANALYSIS OF CONSTRUCTION TECHNOLOGY FOR COMPACTION OF ROADBED AND PAVEMENT IN HIGHWAY ENGINEERING

With the rapid development of information technology, social information is growing explosively. Schools are not the only way to obtain information. A good social atmosphere is extremely important. The prevalence of electronic products, excessive pursuit of entertainment and sensory stimulation will lead to the lack of traditional cultural knowledge. In the new media era, we should do a good job in cultural publicity, focus on the development of Chinese culture, and improve the whole society's understanding of the lack of cultural self-confidence. The subjective reasons such as the weak cultural psychology and the lack of speculative ability of college students result in the lack of cultural self-confidence. If we want to change this kind of cultural weak psychology, the key is to need students to overcome the cultural weak psychology and establish a healthy mentality of cultural self-confidence. Under the influence of multiculturalism, college students lack the ability of value judgment and are prone to extremes, which is also an important manifestation of the current lack of cultural self-confidence of college students. As the base for talent training, colleges and universities are the last education base for students before they enter the society. Therefore, colleges and universities must play an important guiding role. The society is the extension of colleges and universities. They need to work together to create a good cultural atmosphere. As an important position of cultural development and education, colleges and universities are very important for the cultivation of students' cultural self-confidence. All colleges and universities should implement the concept of "three" education put forward by the Party Central Committee, that is, "all personnel education, whole process education and all-round education". Take "Strengthening Morality" as the fundamental task of talent training, and integrate ideological and moral education, cultural knowledge education and social practice education. The ideological and political work shall be carried out throughout the whole process of education and teaching, and the ideological value shall be guided throughout the whole process and all links of education and teaching. This can form a long-term mechanism of teaching, scientific research, practice, management, service, culture and organization [5].

4.1 Strengthen control over the mixing operation of construction raw materials

To ensure the construction effect of highway engineering, relevant personnel should strengthen the mixing management of construction materials during actual operations. When materials are put into use, it is necessary to ensure that the mixing operation meets the construction needs, and also strengthen the utilization of construction equipment to scientifically control raw materials. During this process, special attention should be paid to not forcing construction personnel to perform the mixing operation of construction raw materials, as the forced mixing method will directly affect the stability of the operation, thereby invisibly increasing the mixing area and range. Therefore, strict control should be exercised over the mixing process of construction materials.

4.2 Control the water content well

Based on the analysis of the construction process of roadbed and pavement compaction, the control of moisture content is extremely crucial. According to the analysis of roadbed compaction mechanism in the engineering field, the maximum dry density of soil will also undergo significant changes synchronously with changes in moisture content. In the case of low moisture content, the friction between soil particles. The resistance will increase synchronously, and under the action of the same compactor, the pores will be relatively large, resulting in insufficient soil compaction; In the case of high water content, some of the pores between soil particles are occupied by water, and the properties of water are relatively special. Even in the presence of external forces, water will not undergo significant compression. During the rolling operation, the soil exhibits a clear "spring" situation, and the effectiveness of the rolling operation cannot be guaranteed [3]. Therefore, in the compaction construction of roadbed and pavement, it is necessary to control the water content index within a reasonable range and achieve the expected goals of compaction construction under the optimal water content conditions. Due to the layered and segmented filling method used in the construction of roadbed and pavement, in order to improve the filling effect, it is generally necessary to use the same material source from the same material yard and arrange a dedicated person to concentrate all the filling materials in the shortest possible time to maintain the moisture content of the filling materials in the working section under the same conditions. In the control of filler moisture content, the usual method is to add water or turn over the sun.

4.3 Choose appropriate roadbed and pavement compaction equipment and methods

When selecting compaction equipment, it is necessary to choose appropriate road compaction equipment based on

the natural environment and paving layer conditions of the construction site. Small rolling equipment has strong flexibility and is suitable for working in complex terrain environments, but its work efficiency is low. The compactness of the compacted roadbed and pavement layer is not enough, making it difficult to achieve the expected leveling effect. However, some large and medium-sized rolling equipment have high work efficiency and can achieve the compaction effect of the roadbed. However, cracks are prone to appear on the roadbed and pavement after rolling, which affects the overall structure of highway engineering and is suitable for use in situations with larger filler particle sizes. Therefore, when selecting compaction equipment, it is necessary to choose appropriate equipment based on the actual construction situation of the project to ensure the compaction effect of roadbed and pavement construction. In highway engineering construction, segmented construction can be carried out according to different construction conditions, and different compaction methods can be selected based on the construction situation of each section. For example, when carrying out compaction construction on the edge of the roadbed and road surface or the backfill of the bridge abutment, small rollers with strong operational flexibility can be selected; When compacting conventional roadbed and pavement, large and medium-sized rollers can be selected to ensure the overall stability and smoothness of the roadbed and pavement, and improve the durability of the entire highway project.

4.4 Effectively control the rolling temperature

In the compaction construction of roadbed and pavement, the control of compaction temperature will also affect the final construction effect. When there are differences in temperature conditions, the compaction effect cannot be guaranteed. Therefore, when carrying out on-site compaction construction, special attention should be paid to close monitoring of the surrounding weather, environment, etc. In order to achieve the best compaction construction effect, on-site construction should be carried out in low temperature and low wind conditions. When the temperature is low and the wind force is small, it is necessary to first select a small section of the construction section to carry out rolling. If the surface layer has not yet fully cooled, it is strictly prohibited for various impurities to fall on the road surface, and it is strictly prohibited for heavy machinery and equipment to stay. For special road sections on the construction site, if it is not possible to directly use a roller for rolling construction, other rolling methods should be selected based on the site conditions [4]. The road surface has its maximum rolling temperature that it can withstand, and once it exceeds Under this temperature condition, the effectiveness of rolling construction cannot be guaranteed. Therefore, during construction operations, the rolling temperature should be controlled within a reasonable range and high-quality rolling construction should be completed within the specified time.

4.5 Carry out quality inspection work well

Quality inspection is an important construction link to ensure that the quality of highway engineering meets relevant standards. After compaction construction is completed, engineering quality inspection should be carried out on the compacted road section in a timely manner. Common inspection methods include nuclear density meter method and sand pouring method, with sand pouring method being the most frequently used in the industry. The specific method is to select uniform sand according to the testing requirements and make it Free fall. At the same time, the tunnel test is carried out. Finally, the quality of compaction construction is judged by combining the above test results and the moisture content of subgrade filler. If the project uses asphalt mixture, the nuclear density meter method is more common for measuring the compaction construction quality. The specific method is to randomly select testing positions and place instruments, start the instruments and carry out measurements according to the usage specifications and engineering standards. Then, read the data of nuclear density meters at each position and record the measurement results displayed on the instruments in detail. Finally, compare the quantity of each instrument to determine the quality of compaction construction. After completing the retrieval, pay attention to placing the instrument properly to ensure the safety of the equipment.

5. CONCLUSION

In summary, in actual roadbed and pavement construction, it is necessary to better ensure the improvement of the implementation effect of highway engineering and enable the implementation technology of highway engineering to play an effective role. It is necessary to strengthen the utilization of construction technology, clarify the key points of construction technology, strictly control the construction process, and ensure that roadbed and pavement construction can meet the needs of social development. This paper investigates the lack of cultural self-confidence of foreign language majors in Colleges and universities. The results show that foreign language majors in Colleges and universities have a high sense of identity with traditional culture, but their practical efficiency is low and their awareness of cultural self-confidence is weak. Also, the paper puts forward the construction path of cultural self-

confidence, which provides a guiding direction for carrying out this practice.

ETHICAL APPROVAL

This article does not contain any studies with animals performed by any of the authors.

ETHICAL APPROVAL

This article does not contain any studies with human participants or animals performed by any of the authors.

CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

DATA AVAILABILITY STATEMENT

No data were used to support this study.

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