

Discussion on the Problems Existing in the Construction Technology of Municipal Road Engineering

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Abstract: Municipal road project is a very complex and high quality requirements of the project, the construction technology level straight connection construction quality and service life of road works and use period. This paper analyzes and discusses the problems existing in the application of the municipal road engineering construction technology in practical projects, and expounds the causes of the common construction technology problems. Combined with practical experience, the paper summarizes and puts forward some related measures and strategies to solve the problems in construction technology application. In order to achieve the strategic objectives of improving the level of municipal road engineering construction technology through the analysis of this paper.

Keywords: Municipal road; Engineering construction; Technology; Application problems

1. Introduction

Municipal road subgrade construction technology is not difficult, but because of the construction site is small, traffic flow, and the process is more complex, therefore, in the construction will encounter a variety of different environmental conditions. Therefore, some technical problems often occur in the construction, the following will analyze in detail.

2. Common Problems and Causes of Municipal Road Engineering Construction Technology

2.1. Common problems in road subgrade construction

Common municipal road engineering construction quality problems, mainly include: roadbed subsidence, pavement strength is insufficient, the flatness is not standard, etc.. The roadbed sinking is caused by the construction is not in place. In the construction of the channel and the sewer and the subgrade connection, because the construction material selection is improper, when the road subgrade compaction, the compaction density is not up to standard, causes the roadbed to sink. After the heavy load, the roadbed will appear to sink, in the roadbed construction, the soil moisture content, but also affect the roadbed compaction density, and then affect the subgrade settlement of the key factors. If too much water, road construction, it is unable to reach the channel construction requirements of the density, thus leaving the problem of security risks. Lead to another reason for the sinking,

may in the construction, of soft subgrade treatment is not reasonable, in front of the construction, there is no scientific and rational analysis, in the construction, use of incorrect process on the treatment of roadbed, there will be subgrade settlement.

Secondly, in the roadbed construction, roadbed filling width if not meet the requirements of the standard, it is easy to cause the problems of municipal road cracks. For the filling height control is not reasonable, construction inspection, did not discover the midline deviation, then in filling in the edge, there is no hierarchical compaction, lead the way to completion, edge settlement, road embankment longitudinal cracks appear. In cleaning up the vegetation, or roadbed excavation, not completely clean in place, piled up at the scene of the construction waste is not all clean, in filling, at the junction of cut to fill not in accordance with the provisions of digging step, resulting in crack problem of roadbed.

2.2. Road pavement engineering construction problems

The common construction quality of pavement is the lack of smoothness, and the strength of the road base is not enough. Pavement, if not enough scientific and rational design, construction organization and coordination of improper, road affiliated pipeline engineering in the construction of cross, random excavation cause local road is destroyed, the subsidence, eventually leading to poor smoothness of asphalt pavement in the use process, tolerance is poor, easily damaged, poor smoothness of asphalt or concrete, cracking, etc. over bad phenomenon. The main reason for the emergence of this kind of pavement

disease is due to improper construction process, the construction quality control is not in place, in order to catch the project duration, and ignore the quality of the project construction. Pavement longitudinal and transverse slope of the setting, but also the construction of a common problem, if the slope is not reasonable enough, after the completion of the road is not comfortable, and the pavement is prone to water phenomenon.

2.3. Peripheral inspection and construction technology defects

General municipal road facilities laying more, many of which are water wells is directly designed on the driveway, if there is no reasonable treatment of storm water wells surrounding the construction environment will lead to late roadbed, road surface water and other serious problems. For example in road construction, if well back width is relatively small, backfill compaction will become very difficult, on the compaction inspection difficulty is increased and the link easily by the construction technicians ignored, in the construction, negligence or management is not enough, there will be construction quality problems, resulting in municipal roads around the inspection well sinking problem, the jump phenomenon.

2.4. Soil roadbed compaction dressing is insufficient

Soil roadbed dressing if compaction is not up to standard, is likely to lead to pavement structure is not complete, if it is soft foundation section and soft foundation also exist many problems, after rain erosion, surface water, it will reduce the roadbed stability. Leading to the main reason for this problem is in construction, did not attach enough importance to dressing of soil roadbed compaction treatment, although compacting, but soil roadbed part has length of peak and valley of phenomenon, easily lead to uneven compaction, convex, causing the road structural layer density is not homogeneous. In addition, if the structure construction and the emergence of the phenomenon of "spring", it will cause a large area of the pavement depression, cause serious pavement structure construction, the construction of the thickness of the can and design standard agreement, smoothness of non-compliance issues occurring, then can not meet the requirements of mechanism design, pavement after load structures were damaged, lead to pavement damage. These problems are common problems in the municipal construction technology, which needs to be solved urgently.

3. Municipal Road Engineering Construction Technical Problems of the Solution

3.1. Engineering survey

The length of a municipal road project is about 2210km, the red line width of 40m, the main road. In the construc-

tion of the project, the surface layer is artificial soil, and there is no underground water in the surface layer. Road intersection, and a high degree of change, flat edge stone construction and mechanical construction of the road is difficult, mainly in the slope of the effective control, road elevation, road and the intersection of the intersection, etc.. In order to ensure the smooth construction of the project and the quality of the project construction, the project department to strengthen its construction technology control, mainly the following points.

3.2. Construction process control

In this project, before the construction of the vegetation, weeds and other obstacles to conduct a thorough clean-up, finishing the construction site, transported roots, grass, tree stump, and according to the construction drawings were pile measurement lofting, determining road grade, and repeatedly check, ensure that the slope is correct. At the time of excavation, the protective layer, which is reserved for 15cm, is used to carry out the artificial cleaning, which can effectively reduce the disturbance to undisturbed soil of the soil layer. Before the excavation repeatedly check the control survey of the original pile in construction supervision, quality inspection confirmed the signing of rear earth.

3.3 .Construction process management

Each construction technology in the practice of application needs to be carried out in accordance with certain procedures, must be carefully in accordance with the requirements of the organization to carry out the work. In the construction site, mainly is the small bridges and culverts, retaining walls, a rain water collecting well and subgrade and several links of construction, in this part, should avoid Subgrade after, after the excavation, this will affect the project progress and quality of the whole. Construction and technical personnel should be strictly in accordance with the construction standards, combined with construction organization design, under the guidance of supervision engineer, serious work, according to the construction process of embankment fill, namely the embankment base processing, selection of media -- Determination of fill subgrade compaction.

In this project, in the road structure layer construction to the acceptance of the subgrade soil, qualified rear started construction of pavement structure layer, layer structure of construction and of lime soil foundation treatment, then using cement stabilized gravel pile, followed by the installation of the flat edge of stone, step by step, the work place to next step of construction, to ensure the quality of the project.

3.4. Roadbed filling quality control

The introduction shows, if the embankment is not qualified, prone to settlement and other quality problems, the

pavement strength unqualified, compaction of non-compliance will affect the overall quality of construction. Therefore, when the roadbed fill should strictly control the unqualified construction phenomenon, the subgrade soft soil foundation survey, different soil using different filling materials, and to ensure the compaction of embankment, the shop building test and obtain the guidance parameters related construction technology, to ensure the quality of compaction. In the construction process, also need to check the vertical and horizontal slope, to ensure that the thickness of each layer is uniform, so as to ensure the flatness. If there is a section of the bridge culvert construction, should be fully filled, ensure the compaction standard. The project of roadbed filling construction using stratified operation method, to calculate the virtual shop with the amount of soil, then according to vehicle load to determine the amount of truck, in filling construction, to fill out the lowest, transition layer by layer to the plane, in original soil and backfill connected with little gradient, excavator will be connected at dug into a step shape, overlap compaction of backfill. Try to form a large area of the rolling construction, and the corner is not compacted backfill layer by tamping machine.

3.5. Construction quality control of raw materials

The construction of raw material control is to ensure the roadbed, pavement construction quality of the fundamental guarantee. Therefore, we should strengthen the control of raw materials, engineers should personally do a good job of quality control, the raw materials for experimental sampling inspection, signed by the supervision engineer after approval before entering. After entering the construction site, also need to be audited by the quality inspection personnel, material management personnel classification for storage and stacking.

3.6. Peripheral inspection and supervision and management

Municipal road construction, the construction on the surrounding rain water is the key, in the pre construction to do the inspection work, for construction work environment is a special place, should backfill, for small well back slot can be filled with masonry and each layer of backfill thickness should be $> 100\text{mm}$. In the stratified compaction, well back slot should use water stable aggregate fill, fill thickness $> 100\text{mm}$ to ensure compaction in place, engineering supervision should increase the intensity of inspection and review, to prevent the construction of non-compliance and other quality problems.

3.7. Road construction soil roadbed compaction control dressing

In the roadbed soil dressing pressure in real time, in front of the construction, units and technical personnel should study of technical standards and relevant theoretical knowledge, and participate in the discussion during the work, construction and pay more attention to the details of the construction, check and supervision. In the construction, and strictly control the quality of the construction of the earth roadbed dressing compaction, cross-sectional elevation and construction flatness control, be sure to reach the standard. At the same time to the construction to fill sections of roadbed under $0 - 80\text{cm}$ range compaction control, ensure the roadbed compaction density, avoid sinking or settlement.

4. Concluding Remarks

In summary, in recent years, the rapid development of urban road construction, road construction technology and the level of construction technology has also greatly improved. However, due to the increasing number of road construction projects, the number of enterprises involved in the construction and also increased. Because of its uneven level, the construction operation is not very standardized, the quality of the construction supervision system is not perfect, many factors have caused a series of quality defects. So as a technical personnel should take the work seriously, improve their level of technical operations, starting from the work practice, pay attention to all aspects of the construction quality control, and ultimately ensure the overall quality of municipal road construction and plan.

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