



Features of Road Reconstruction in the Republic of Uzbekistan

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Annotation: The article presents the main requirements and information on the reconstruction of roadbed roads in arid areas.

Key words: road transport corridors, roadbed, protective structures, embankment slopes, slope steepness, depth formation.

The density of highways in the Republic of Uzbekistan is sufficient to provide pass ability for local and transit vehicles at this point in time – for this reason, the road network requires more reconstruction and repair of existing highways, and the increase in the number of heavy-duty vehicles forces to strengthen existing road surface structures.

From an economic point of view, it is advisable to bring all existing road corridors of the Republic to meet modern requirements, convenient for road users (drivers and passengers) condition.

It is for this reason that 95% of construction and installation works consist of reconstruction and repair works, which indicates the need to pay more attention to the design of reconstruction and repair works and bring them to international requirements.

According to climatic characteristics, the territory of the Republic is located in a zone with frequent changes in weather conditions, it is easy to witness sharp heavy rain, snowmelt and sharp dry frosts. Unadjusted and worn-out irrigation and storm drainage systems. They led to the depletion of the roadbed and road surface, the formation of depths that destroy existing road networks.

The complexity of survey work in the design of reconstruction and repair works lies in the lack of accurate data on underground utilities and their working condition, civil buildings on allotment lanes, which complicates the expansion of roads.

The introduction of more accurate methods for solving these problems will significantly increase the quality of the project[1].

The slopes of the roadbed may be damaged by wind, water, freezing and thawing. The most common and economical type of reinforcement is the creation of turf cover by sowing grasses. This type of reinforcement is often combined with the device of a lattice reinforcement made of precast reinforced concrete elements. This design is usually used to strengthen the slopes of deep recesses and high embankments. Creating continuous protective layers of precast or monolithic reinforced concrete is usually used in floodplain areas, on approaches to bridges.

Several transport corridors pass through the territory of Uzbekistan, connecting neighboring countries with China, Russia and European countries. The growth of international transport flow according to the Statistics Committee of the Republic of Uzbekistan is 57% in 2022 compared to previous years and is dynamically increasing, by 2025 it is expected to double the flow of transport by improving the condition and convenience of highways and simplifying customs control.



Road reconstruction is always associated with earthworks. The roadbed is widened; when removing unnecessary tortuosity, it is necessary to build a new roadbed on straightens and carry out dusting on areas of small displacements of the road axis. When correcting the longitudinal profile, fill up the embankments and deepen the recesses[2].

Earthworks during road reconstruction have a number of features that make it difficult to perform and organize them: the amount of work carried out along the length of the road is not constant, the need to ensure proper coupling of newly filled-in soil with the old compacted roadbed and filling out thin layers on slopes, the difficulty of compacting the ground to be filled in, etc. quarries, since it is rarely possible to place new reserves near the existing road[3].

The designer who plans to correct the road route, taking into account the noted difficulties in the production of earthworks, should always strive to provide for the laying of a new route in such a way that, using the existing road to the maximum extent, the work of builders should not be complicated by the need to perform relatively thin powders on both sides of the roadbed.

In places where there is no need to change the route or longitudinal profile and only need to widen the roadbed and road surface, several solutions are possible. The choice of the best one depends not so much on the convenience of earthworks, but on the accepted design of the road surface and the planned method of its widening, since the latter is especially labor-intensive. In all cases, the sprinkled part of the roadbed should not worsen the water and heat regime of the existing part[4].

The following ways of widening embankments and recesses are possible:

Two-way widening, where the axis of the reconstructed road is aligned with the axis of the existing road. At the same time, you have to fill in side ditches or reserves on both sides, fill up the slopes of embankments or cut off the slopes of recesses fixed with turf. The only advantage of this method is that the road clothing remains on a strong, compacted base. The method is most suitable for low embankment heights.

One-way widening, in which the axis of the reconstructed road is shifted away from the axis of the existing road. The disadvantage of this method is that the new part of the road surface is partially located on freshly filled ground, which is difficult to give the same degree of compaction as the old roadbed. The axis of the gable roadway shifts, which increases the amount of materials required for covering. However, the widening of the roadbed in this case is easier to implement and perform efficiently due to the fact that earthworks are concentrated on one side of the road and large volumes of them have to be performed in one place. Sometimes, to ensure the possibility of high — quality construction work, the amount of widening of the roadbed is increased in comparison with the calculated amount to the amount necessary for the possibility of working



with road vehicles-motor graders and ice rinks. This allows you to arrange a reliable cutting of steps on the slopes and well compact the poured soil.

In all cases where this does not cause excessively large amounts of work, it is advisable to move the road axis to the slope on sloping sections, so that the roadbed widens due to excavation. Although cutting a slope involves performing large earthworks, the resulting roadbed is more stable. Widening of the roadbed due to the bulk part can be difficult due to the complexity of ensuring the connection of the new bulk part with the existing embankment, and in many cases with the need to build retaining walls.

The possibility of cutting the slope should be justified by checking the stability of the cut slope against landslide. In some cases, it may be appropriate to divide roadways on a sloping section according to the direction of traffic and place them at different levels along the slope of the hill. In this case, the existing road is used for traffic in one direction, and for oncoming traffic above or below the slope, a new road is being built. When designing such sections, the requirements for smooth interfacing of the tracks of both sections must be met, so that the position of the axis of separate sections is a natural continuation of adjacent sections of the combined road.

In some cases, it is advisable to build in a separate roadbed and on Category I highways, especially in saline and artificial areas of excessive moisture. Arguments in favor of this decision mainly arise from considerations of the organization of construction works - the possibility of their implementation without interruption of traffic on the road, greater convenience of performing earthworks and ensuring the proper quality of the roadbed.

The chosen method of widening the roadbed inevitably requires a similar method of widening the roadway. Therefore, the issue needs to be addressed comprehensively, establishing the most profitable method of widening the roadbed by technical and economic comparison of options, taking into account the costs of reconstruction of both the roadbed and the roadway.

With any method of widening the roadbed, a good coupling of the sprinkled soil with the caked soil of the embankment should be achieved, ensuring the joint operation of the old and new parts of the roadbed. The lack of communication between them can lead to the sliding of a new part of the roadbed under the influence of penetrating water and the dynamic impact of passing cars. The processes of natural compaction of powdered soil can cause a loss of evenness of the coatings.

A special case is the widening of the roadbed during the reconstruction of a road with two lanes of traffic into a highway. The existing road becomes one of the carriageways for one-way traffic, and a dividing strip is arranged in place of the shoulder and side ditch. The need to give the roadway a single-pitched transverse slope requires a significant addition of soil to the place of the dividing strip device. Careful backfilling and compaction of the soil is necessary when sealing the ditch, so that no stagnation of seeping water can form in it.

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