

Analysis of The Technical Condition of Water Pipes in The Railway Network of JSC "Uzbek Railways"

**Abdualiyev Elyorbek Begali o'g'li, Embergenov Avezmurat Bekmuratovich,
O'ralov Akmal Shakarovich**

Tashkent State Transport University, Uzbekistan

ABSTRACT: At present, there are a lot of waterproofing pipes that make up more than half of all artificial structures located in the railway network. The technical condition is the main characteristic of the ability of the pipes to provide a normal operating regime, which is associated with the safe passage of trains at the specified speed and the continuous passage of water flow through the body of the water-conducting pipe. It is indicated that there are malfunctions in the current technical condition of artificial structures located on railways under real conditions.

KEYWORD: Artificial structures, water-conducting pipes, technical condition, operational reliability

Introduction. Currently, many waterproofing pipes are working in the railway network. Waterproofing pipes make up more than half of all artificial structures. Many of them require reconstruction due to their technical condition, water holding capacity or other reasons. The predominance side of the pipes is provided by the simplicity of the construction and its low cost compared to the bridges[1].

However, due to the effectiveness of these structures can increase costs if inadequate maintenance is not provided. Rationality of technical solutions is formed not only at the stage of design, construction, but also at the stage of using pipes [2]. The rational choice of organizational and technological solutions that ensure an increase in the life span of pipelines should guarantee the safety of trains at a specified speed. In this regard, the role of assessing the technical condition of the structures increases, which does not remain unchanged with an increase in the working life. It leads to a decrease in the volume of transport and the cessation of speed during the reconstruction (reconstruction) of the water pipeline, which has become unusable.

Materials and Methods. During the repair of the pipes, the inlet and outlet parts and the body along the length of the pipe are inspected. It is necessary to timely clean the pipes from sedimentary rocks, identify and eliminate the causes of their formation. It is necessary to timely clean the water-conducting pipes that pass through the railway tracks.



1- figure. The state of the waterproofing pipes located on the railway.

It is also necessary to monitor the condition of the protective coating in the aggressive environment and inside the pipe, in which cracks may appear on the pipes. Identified defects must be eliminated in a timely manner. The purpose of the article is to analyze the technical condition of artificial structures on Uzbek Railways.

$$Q_c = \varphi_{\theta} * \omega_c * \sqrt{2 * g * (H - h_c) - (i_w - i)}$$

$\Phi_H=0,95$ – pressure mode speed coefficient

l and i – pipe length and slope

i_w – friction slope

$i_w=Q_0^2/K_0$

K_0 – flow characteristics of a fully filled pipe.

Results. Based on the conducted research, the following conclusions and suggestions will be made.

To assess the technical condition of the waterproofing pipes, the most characteristic malfunctions that can be systematized by deformation, damage, deformation and other violations of working functions have been identified. According to field research, The Tashkent-Sirdarya railway network, which is owned by The Tashkent railway PCH-2, analyzed the condition of the water-conducting pipe elements and the ability to conduct cracks and water in it.

We can see the case of artificial structures in the railway network from the tables below[3,4,].

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Table -1

| № | Types of pipe material | Quantity | % |
|----|---------------------------|----------|-----|
| 1) | Concrete | 3 | 5% |
| 2) | Bett | 3 | 5% |
| 3) | Reinforced concrete | 46 | 75% |
| 4) | Reinforced concrete brick | 6 | 10% |
| 5) | Stonett | 3 | 5% |

Table -2

| № | Types of pipes | Quantity | % |
|----|-------------------|----------|-----|
| 1) | Round | 25 | 41% |
| 2) | Straight triangle | 20 | 33% |
| 3) | Firstly | 16 | 26% |

Table -3

| № | Working condition of waterproofing pipe | Quantity | % |
|----|---|----------|----|
| 1) | Without pressure | 2 | 3 |
| 2) | Half-baked | 36 | 59 |
| 3) | Pressurized | 23 | 38 |

Discussion. Over time, the deterioration of the properties of materials is associated with the formation of sediment in the water more often. This factor reduces the ability of the Earth's polotnos to load and increases its deformability. The main reasons for the operation of the waterproofing pipe can be the following: pus clogging in the pipe, sediment deposition in the pipe, cracks in the pipe, absorption of the casing of the pipe.

Conclusions. The technical condition is the main characteristic of the ability of the pipes to provide a normal working regime, which is associated with the safe passage of trains at the specified speed and the continuous passage of water flow through the water-conducting body. The main indicators of the technical condition are the actual water holding capacity of the pipe elements, as well as the degree of development of various disturbances in the porosity and other functions of the structures. The current technical condition of artificial structures working on railways in Real conditions is characterized by the presence of signs that limit the possibility of increasing cargo cargoes. This, in turn, prevents the increase in the capacity of railway stations.

It should be noted that in modern conditions, existing regulatory and technical documents reflecting the issues of choice of working methods for capital repair and reconstruction of artificial structures do not fully cover the required large-scale measures. The development of methods for assessing the technical condition ensures a safe passage of the composition in the current full-time work and movement. According to the above, further scientific research is necessary to solve the problems that arise in the production of waterproofing pipes.

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