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BASIC RULES OF CALCULATION OF BRIDGE NET SPACES

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Abstract: Bridge abutment washes affect the strength of the bridge and access risers, especially cones. To ensure stability, the supporting foundations are placed deeper than the depth of the wash, and the earth elevations are protected from washing. Smaller span sizes may be more cost-effective when washouts are larger. When the river bed is narrowed, the length of expensive intermediate devices replaced by cheap risers is reduced, but at the same time, the depth of the foundations is slightly increased.
Key words: Bridge, washes, elevations, cone, depth, elevations, span under the bridge, river bed, cost, foundation.
It is desirable to design the bridge crossing in the form of a complex of structures that do not or only slightly compress the flow of water. But there is only ship traffic without restricting the flow of water, and bridges are built on irrigation canals or canalized rivers in cities. It is better that the length of the bridge is much smaller than the width of the river at the time of flood; In a part of the width of the water spread of the ridge, flood-proof earth elevations are formed. A net span under the bridge is left to be covered by the bridge for the passage of water between the risers. The net span under the bridge between the risers is measured according to the calculated water level; this length includes the total width of the supports. The flood-proof embankments on the banks will be the access road from the banks of the river valley to the bridge, and will carry trains and cars over them. The risers end with cones that cover the shore supports of the bridge . The length of the bridge should not be less than L min, which is in accordance with the rules and norms of bridge design, that is, limiting the amount of narrowing due to non-uniformity of washing, placing lifting cones in the plain river bed. It is determined by the technical requirements of the flow of water under the bridge in the rivers with ship traffic, limiting the speed of the water flow under the bridge in the rivers with ship traffic, etc. If the minimum cost of crossing corresponds to such a length, the amount of L min should be accepted in the project. In order to evaluate the options of the bridge passage with different amounts of water transfer spans, it is necessary to determine the depth of the foundations, the series of foundations of the bridge supports and the height of the risers in each of them. The minimum settlement depth of the foundations is determined by the washes that can be formed due to the narrowing of the river and changes in the shape of the bed. The minimum height of risers is determined by the calculated water level at the time of flood, as well as the additional increase of the water level near the risers as a result of narrowing with the help of bridge crossing structures. The narrowing of the river by means of bridge access structures leads to an increase in the water flow rate in the section under the bridge and a general decrease in the river bed, and in some cases, a decrease in the surface of the bed under the bridge. Such deformations of Uzan and Khair are called general washing . As a stream of water hits a bridge abutment, it flows around it as it hits a barrier. Downward currents wash away the river bed in a limited area where the water flow hits. Such additional washings are called local . The lowering of the river bed level around the base as a result of three different factors affecting the base is called the total washout , and it is defined as the arithmetic sum of the three constituents of the washout. The depth formed around the support as a result of washing is found by the following expression:

$H_{t.yu} = h_{ch} + h_{u.yu} + h_{m.yu}$, (1)

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where x ч is the largest depth formed around the base as a result of natural changes (called domestic depth); h u.yu – the increase in depth caused by the narrowing of the river by the bridge access devices (general washing); h m.yu – additional depth increase caused by local washing around the support. The natural change of riverbeds occurs continuously and is not related to the rise of the high water level. The higher the water level during a flood, the greater the total washout volume. The calculated flood level corresponds to the greatest depth of general and local washout.
During the construction of the bridge, the largest domestic depth will be around one of the abutments. If a major flood occurs shortly after the bridge is completed, general and local washout will increase the depth around the same abutment and the foundation will be exposed. If there is no major flood for a long time after the bridge is completed, the domestic depth in front of this abutment may be reduced during this time by the natural changes of the riverbed; therefore, when a major flood occurs, the abutment base is less exposed. In such cases, the largest depression created by washing is in front of the abutment, which is another - the deepest domestic depression. Because the water level during floods varies randomly, and because it is not known which year the estimated flood will occur, each support is placed in front of the same support according to the type of river at the time of the highest flood. it is necessary to design assuming that the greatest depth will be created. Thus, at the time of the highest flood, the largest calculated depths are not formed in front of all supports at the same time, but in front of some (or one) of them. In some cases, in unfavorable geological conditions, the foundation depth of the foundation is taken to be greater than the minimum allowable amount. In this case, as a rule, all spans of the bridge have almost the same foundation depth. Most often, such cases occur when it is not possible to use unstable soil as a foundation, and when the base rocks are located deep in the foundations of the foundations. The cross-sectional area (surface) of the under-bridge channel is equal to will be: (2)
The area under the bridge can be given in the following form:
(3)
where Lo is the width of the net span under the bridge;
H ort – the average depth of the stream to the place of washing;
h u.yu - total washing depth.
(2) we make the formula look like this:
(4)
ort and L 0 can be changed when finding the optimal option . This method of calculating the net span under the bridge was developed by LLLishtvan. He proposed the formula for the average speed of the flow in the state of dynamic equilibrium. The certainty of Belelyubsky's axiom is reduced if the span of the bridge is the majority of the total net span. This is due to the fact that the flow at the average speed V h has different effects on the part of the core and the main core . The total washing depth and the width of the net gap under the bridge are interrelated, as can be seen from the formula (4). The smaller the net span under the bridge, the greater the overall washout depth. The value of the acceptable total washing coefficient should be justified by technical and economic calculations. This should take into account shipping requirements. In accordance with QMvaQ 2.05.03-97, the flow speed in the river bed is 20% at a natural speed of 2 m/sec and 10% at a speed of 2.4 m/sec. It is not allowed to exceed %. According to the method of determining the average speed of the current under the bridge V m, different methods of calculating the net span under the bridge have been proposed. NA Belelyubsky proposed the average speed of the flow in the natural and (domestic) state of the main riverbed when the water level is at a calculated height as the velocity V m
CONCLUSION
In order to determine the required minimum height of the entrances to the bridge, it is necessary to determine the change in water level when the river is narrowed by bridge crossing structures. The raised edge with the least height in the non-submersible area shall be above the standing water level. The method of calculating the net span under small bridges is based on the theory of water transfer with a wide threshold (threshold), and that of large bridges is based on the theory of stream flow. The idea of such calculations was first proposed by NA Belelyubsky, and became the basis for the methods of calculating the span of large bridges. Belelyubsky's postulate (axiom) can be described as follows:

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the bridge core stabilizes (stabilizes) after being dynamically stable. Therefore, the shape of the river does not change even in the conditions of the formation of water-bearing sediments.

REFERENCES

1. Design of bridge crossings on railways MI Voronin, NN Kantor, VA Kopylenko and others - M.: Transport, 1990.-287 p. (Bible Code 624.2/8, P791).
2. Rothenburg IS, Volnov VS, Polyakov MP Bridge transitions. -M.: Higher School, 1977.-328p.
3. Rotenburg IS, Volnov VS Examples of pavement design transitions. -M.: Higher School, 1969.- 284 p.
4. Babkov VF, Andreev OV Highway design part 2. M: Transport, 1979.-407 p.
5. Technical and economic bases of designing highways and bridge crossings (reference) / EV Boldakov, GA Fedotov, BF Perevoznikov and others - M.: Transport, 1981.-207p.