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WATER LEVEL VARIATION DUE TO BRIDGES OR OTHER RIVERS CONSTRICTION

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Abstract

At the construction of a bridge in the riverbed, the water flow section is usually reduced due to the placement of the piles and abutments of the bridge between the banks. How the water flow change depend on the flow regime (fast-supercritical or slow-subcritical) existing in the river in the absence of the bridge. Of interest is the change of the water level in the section of the bridge and upstream of the bridge. The water level may rise or fall depending on the flow regime (slow or fast) and the size of the channel narrowing.

Romanian hydraulic bridge calculation standard states that the water level upstream of the bridge increases under any conditions. Other technical prescriptions distinguish between different changes in water level at bridges depending on the flow regime existing on the river before the bridge is placed. The frequent situation in which the flow regime on the river is slow is of great interest because they are the most common. The calculation schemes that describe this situation have the premise that the water level upstream of the bridge increases. In most situations this is what happens but not in any situation. The article aims to identify situations where, in a slow flow regime, the water level upstream of a bridge does not increase but decreases, even if the presence of the bridge means the narrowing of the water flow section. This clarification is very important for the agencies that issue the bridge construction permits, for which the specifications in the regulations are important landmarks. The same situation can be encountered in the case of levees that obstruct the major riverbed. And in this case the water level may decrease or increase under the narrowing of the riverbed.

Keywords: afflux at bridges, backwater, calculation standard, construction permit, river constriction

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