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PURPOSE OF FLOATING STRUCTURES FOR ALL TYPES OF WATER SUPPLYING STRUCTURES

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Abstract:

The stream, together with the water, carries suspended particles, particles, and fin; when water is directly drained from the river into the channels, sediments are also captured. In systems of machine water lifting, significant material costs are carried out to protect against sediment and fin. In the conditions of Uzbekistan, when taking water from surface sources, pumping stations are equipped with adjusting and trash control devices, which can be located at the water intake along the length of the water supply structures and in special trash holding structures. In recent years, new floating devices have been introduced, which use the principles of automatic regulation and flow control.

Keywords: Pumps, water intake, construction, construction, floating, work, pumping stations.

RESEARCH METHOD.

By the research method, protection of the equipment of existing pumping station systems from deposits, analysis of reducing energy costs when cleaning the filter cake to obtain a positive solution.

RESEARCH RESULTS AND ANALYSIS:

In the conditions of Uzbekistan, special attention should be paid to the operation of soil protection means. In practice, the fight against litter turns out to be one of the most difficult and time-consuming operational measures at all, without exception, water facilities.

When taking water from surface sources, the pump station is equipped with adjusting and trash protection devices, which can be located at the water intake along the length of the water supply structures and in special trash holding structures. In recent years, new floating devices have been introduced, which use the principles of automatic regulation and flow control.

The development of recommendations for the use of new floating structures is aimed at protecting water intakes, mainly for machine water lifting systems and a pumping station, from all types of sediment and driftwood. Figure 1. depicts a watercourse with a water intake and a drain, top view, section A-A, and node 1.

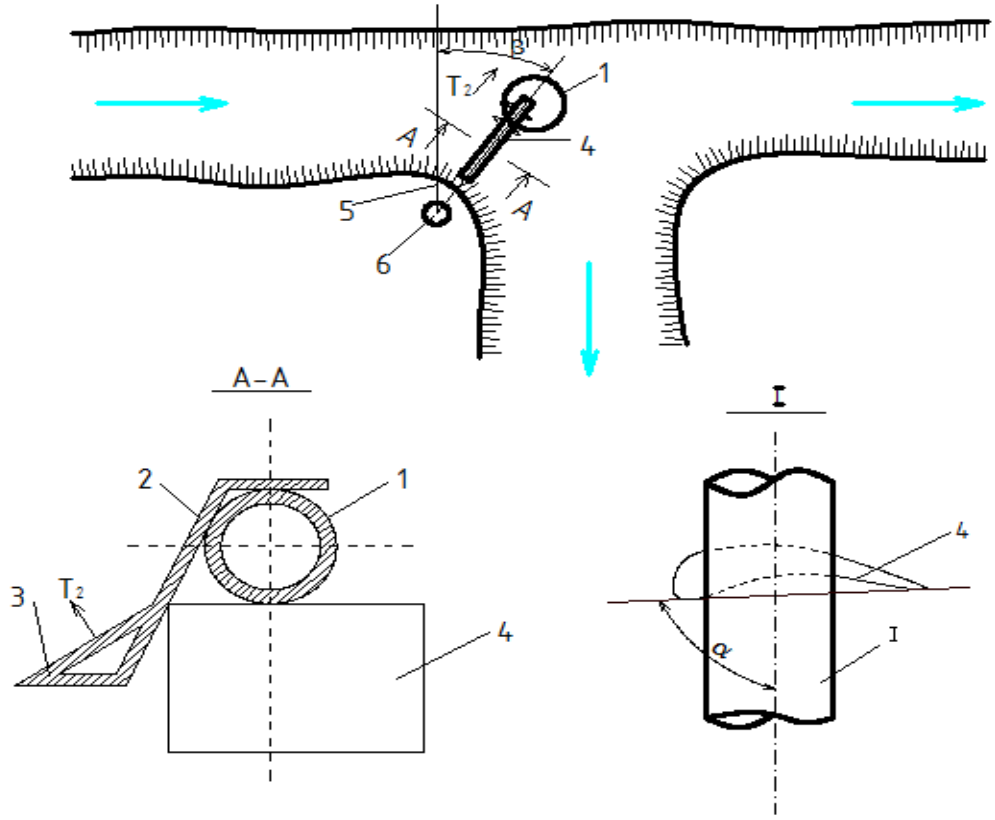


Fig. 1. Self-regulating watercourse:
1- float elements; 2-bumper visor; 3-shelf;
4-blade; 5-flexible connection; 6-bank support

When interacting with the flow of water, the zapan turns out to be under the influence of the force of the frontal resistance of the baffles 2 and the hydrodynamic lateral force that arises when the flow is asymmetric, for example, in the form of a wing profile of the blades 4. Under the action of the resultant of these two forces, the bath is squeezed out from the coastal support 7 and turns at an angle of $\beta = 40 - 70^0$ to the transverse plane of the watercourse 5 to a position corresponding to the equilibrium of the acting forces for given flow kinematics.

The shut-off is in this position until the flow kinematics changes, for example, a decrease in the flow rate in the watercourse 5 causes a decrease in the frontal resistance of the canopies 2 and the blades themselves 4, as a result of which the shut-off turns towards the flow to a position in which the balance of the acting forces is restored [7].

Similarly, with an increase in the flow rate, the drag of the visors 2 and the blades 4 themselves increases, as a result of which the fan is deflected along with the flow to a position in which equilibrium is restored. Thus, with all changes in the kinematics of the flow in the watercourse 5 and the content of floating debris in it, the pan automatically maintains the optimum angle of inclination for cleaning.

Floating debris and fish fry, which are predominantly in the surface layers of water, having reached the bumper gates 2, change their direction and are carried away past channel 9. Shelves 3 in the form of an isosceles triangle create a compression of the surface flow intensifying the flow component that transports the floating debris along the dam.

The technical solution of the floating device, made in the form of a rigid truss, is advisable to use to protect the dreamless water intakes of various machine channels.

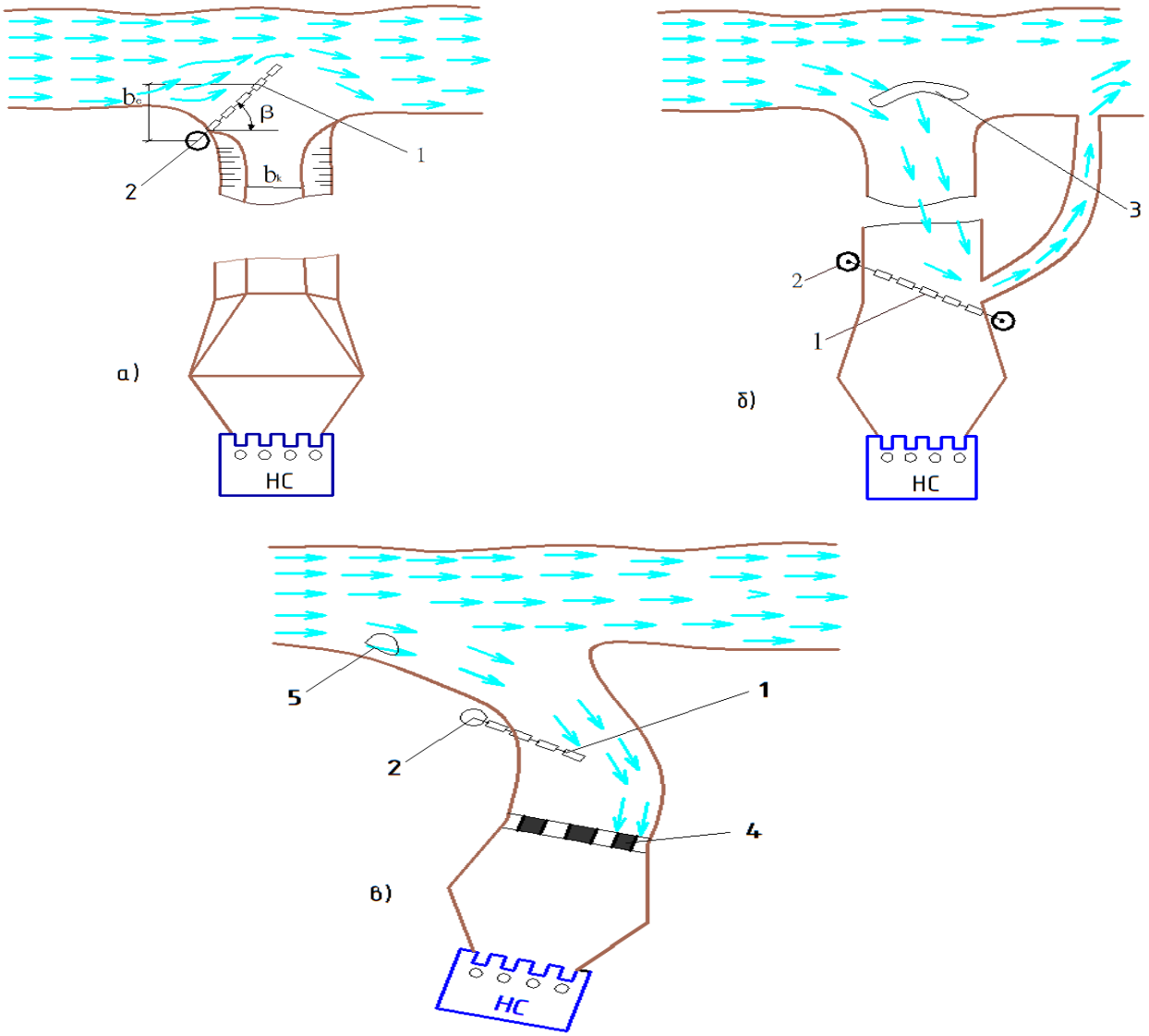
In the course of the experiments, the hydrodynamic pressure on the shut-off was measured on the model. It turned out to be equal to 3-5 tons. This force must be taken into account when calculating trusses (as a uniformly distributed load), shields, cables, and devices for their fastening.

Pontoons should ensure the immersion of shields by 1.5-1.8 m. Sections of pipes with a diameter of 300-800 mm can serve as pontoon bodies. In this case, the length of the pontoon should be within 6-8 m.

These designs, developed in Uzbekistan, confirm the priority and superiority of the Republic not only in terms of energy supply but also in terms of pioneering devices for changing the structure of the flow.

With the curvature of the channel of the supply channel, it is possible to install a heat seal of a similar design on the last bend in front of the pumping station (Fig. 2).

Fig. 2. The layout of combined devices at the pumping station:
1. Zapan, 2. Coastal support, 3. Bottom sill,
4. Trash containment with grate cleaning machine,



5. Device for changing the structure of the stream

In this case, the shutdown without disturbing navigability enhances the natural transverse circulation of the surface, waste-bearing layers, directing them to the edge of the extreme section of the trash-retaining grid. This combination of damper and trash grate will provide effective cleaning of the flow across the entire cross-section with one operating section of the grate cleaner.

The kinematic parameters of various types of trash-holding structures are indicated in the table. 1.

Table 1. The optimal flow rate in the section of protective devices, m/s

Water intake protection devices	**Linking structures**	
	watercourse	**water tank**
Screen cleaning machine		
discrete action	0,25-0,40	0,40-0,55
continuous action	0,35-0,50	0,50-0,75
Floating device	0,25-0,8	0,25-0,85
Contact Zapani	0,70-0,95	0,8-1,0
Combined devices (zapani, grabs)	0,9-1,2	0,8-1,1

Floating dams are designed depending on the following types of dreamless structures (Fig. 2):
- with standard shore caps;
- with special water intake structures (bottom devices for changing the flow structure);
- with tops located outside the coastline (combined diffusers and nano protection devices).

CONCLUSION.

The design of floating dams used in the development of floating structures for the SMV of the Republic is considered. At the same time, the purpose of floating structures for all types of water intake structures was clarified, a hydraulic calculation of head regulators and floating diffusers was carried out, an analysis of the shape of the interface with a density flow in water supply structures was carried out, determination of dynamic forces on fender plates of floating structures, determination of the vertical component of velocity in currents along with the floating structures.

The analysis of the application of various types of water intakes and water supply structures to machine water lifting systems is applied to the theoretical foundations of calculating a family of floating structures. At the same time, the purpose of floating structures for all types of water intake structures has been clarified, hydraulic calculations of head regulators and floating diffusers have been performed.

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