analytically calculate the transition from laminar to turbulent water flow using the Reynolds formula.

The methodology for performing laboratory work on the modes of fluid movement in pipes has been improved, which is used in the educational process in the laboratory of hydraulics in the study of the discipline "Technical mechanics of fluid and gas".

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BRICK WORK DESTRUCTION STAGES UNDER THE COMBINED ACTION OF VERTICAL AND HORIZONTAL FORCES

Vertical and horizontal loads act together on any building. Vertical loads include the own weight of the building, people, and furniture (or equipment). Horizontal loads include wind loads with dynamic and static components. Its value depends on the gustiness of the wind and its speed. In modern combat conditions, one should also take into account the dynamic load on the building from explosions and from blast waves.

The piers of the bearing walls under the action of a horizontal seismic force are in loading conditions that are close to those that appear in the frame when it is skewed.

In the first stage of masonry deformation (Fig. 1), when the horizontal forces (from seismic load or blast wave) are small, the partitions work together with the entire contact area above the window belt. The vertical load is transferred from the upper partitions to the lower ones at all levels along the entire horizontal section.

In the second stage, cracks form in the stretched zones of the horizontal

section of the walls in the levels of the upper and lower parts of the slots adjacent to them, and the contact between the masonry is broken. At this stage, the transfer of vertical and horizontal loads in the mentioned sections is carried out only along with the length $a_c < 2a$ (where a is half the width of the partition). With a sign-variable horizontal load, the adhesion in the masonry is broken at the contact of the top of the partition and the bottom of the belt due to the formation of cracks.

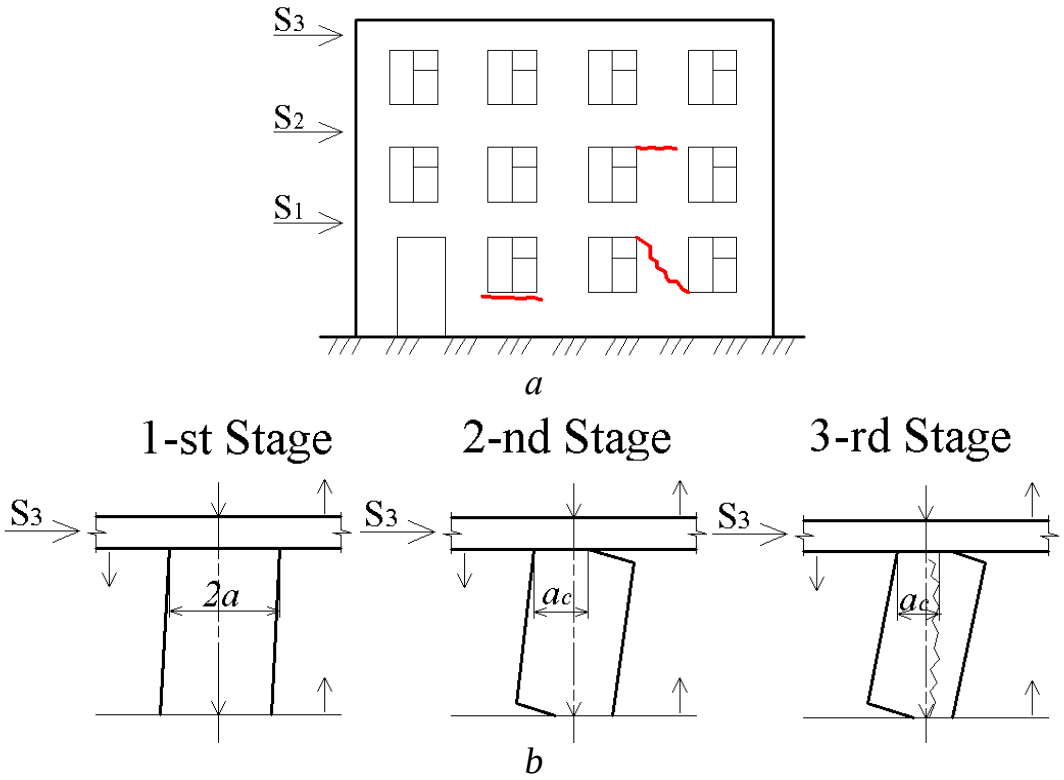

Figure 1 - The work of the walls of the bearing walls under the action of a horizontal seismic force:
a - scheme of crack formation; b – stages of wall deformation

The third stage is characterized by a reduction in the length of the compressed zone and the formation of a diagonal crack in the wall. The same partition on different floors of the building may be at different stages of deformation, which is associated with a change in the values and the ratio of vertical and horizontal forces, as well as with possible differences in the strength and rigidity of the walls.

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