RESEARCH ON BEHAVIOR OF TORRENTIAL CORRECTION WORKS IN THE ANIEŞ HYDROGRAPHIC BASIN

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Abstract. In Anieş basin, first torrential correction works were carried out in 1988, on Butucilor Stream, with waiver of narrow gauge forest railways and open forest road Anieş. This work consisted of two thresholds in performance with a height of 2 meters, connected together by trapezoidal drains and the upstream side of a dam with a height of 6 feet with 2 drain holes that could close using metal gates. The works were made of stone masonry with cement mortar. In the next phase, the years 1988-1997 were executed torrential correction works upstream the Butucilor Stream, on the streams Deluţului, Brazilor and Lupilor, consisting of a dam with a height of 3 meters and a channel connection. These works were well behaved, but after repeated floods in the basin, silt transported have exhausted retention capacity and currently works cross some channels are clogged drain, sometimes being destroyed masonry, is even installing vegetation on the shoulders dams. Currently, due to dynamic torrential processes, torrential correction action on Anieş basin, continuous, Mihăiasa Valley is a complex process of restoration and is running a number of 5 dams with heights between 2 and 3.5 meters, from which 2 filterable, 6 thresholds and 9 sleepers.

Keywords: torrent, hydrographic basin, hydraulic works, damage

INTRODUCTION

In the prewar period, action planning and management of degraded forest bazinetelor was held on "Law and Enhancement of degraded torrential correction" published in 1930. So start now well regulated action afforestation of eroded building slopes, ravines and torrents of the specific works of wood or stone. It built the first stone work with cement mortar or concrete. After 1948, they set up "centers torrential correction", but will enable more sustained in 1951, after the establishment of the Institute of Forest Engineering, where efforts to combat the effects of torrents and their arrangement were organized on river basins and State invested heavily in projects initiated. Orographic conditions, topographic, hydrographic, combined with the importance of objectives defended these works required the integration planning systems. We had to ensure, in the first instance, Section optimal drainage to protect forest roads. Where possible, were made recalibration of bed, the lower slope sections and thalweg stabilization was performed using sleepers buried at 2.0 or 1.5 meters deep, in order to maintain a constant longitudinal profile. Planning scheme used was that of mutual support work, most torrents being arranged through a duct that connects the paper and the interception of a paper target and cross ravines or valleys where secondary or system works for main torrential valleys.

MATERIAL AND METHOD

To ensure drainage section and protect the forest road slopes were made of white calibration on two areas located on the main thread of Anieşul Mare.

The total area of the torrential river sub-basins in which were performed works is 3458 m² (0.27%) of the total area of the basin Anieş, the whole surface being in the forest fund.

The main works used Anies Basin torrent planning are cross thresholds and dams with height up to 5 meters and channel management and sewage.

After planning system type there are the following works:

- Sleepers, 11 in number of which: 8 performed at 2 meters deep in the thalweg and 3 at 1.5 meters. They represent 36% of all works;

- Thresholds are 24 in number, representing 10% of the work, all provided with foundation, walls and spur guard terminal. Of these 13 have a height of 1.5 meters and 11 have 1.0 meter high.

- Dams, a total of 13, representing 35% of all works of which 2 were 2.0 meters, 4 were 2.5 meters, 2 were 3.0 meters, 3 were 4.0 meters and 2 were 5.0 m height.

- Discharge channels, the number 15, representing 19% of all works. They are made with or without falling into step falls and linking upstream dam foundation plate and collected footbridge crossing the forest road.

RESULTS AND DISCUSSION

Damage recorded in torrential correction works in the Anieş basin were grouped according to the nature of their impairment, factors that led to their occurrence and frequency in which they or their parts were affected.

Have been identified and investigated, damage that affected the sustainability work, their safety and their functionality. Identification codes used were those used by Clinciu (2003) and LUPAŞCU (2009), namely cracks (F), rupture (R), infiltration (I), degradation (De), disintegration (Dz) and undermining the slab (Sr).

For faults that disrupt the functionality works, we used the same methodology of coding, namely: blocking the spillway (Bdv), blocked sinks teeth Energy (Bdi), clogging slab/channel (Cr), failure aterrisment (Nat), overcoming the aterrisment slope and therefore burial in certain parts of the work (In), deepening the riverbed downstream of the work (Aa).

In the same category were included deficiencies due to poor execution of the works, such as total failure of parts of the work (embedding, wings) (Ne), making the body uncharged barbacanes area or their poor placement in the dam body (Bczn), broken sinks teeth missing due to their connections with the deck plate (RDD), gaps in concreting appearance (DTB).

Damage frequency is shown below, indicating the number of jobs affected, the number of shares constitutive affected the relationship between the two parameters and the most affected by correlations picture (fig. 1, 2, 3). They studied the faults that affect the durability and safety of the works, and those affecting their functionality.

After the number of jobs affected, most (24 in number) are affected by clogging slab, the following being affected by rupture (15 in number). After the number of constitutive parts affected by the number of failures is as follows: 25 parts are affected by cracks, 24 parts by tearing or warping and 22 the lack of constructive elements.

All faults identified were analyzed in detail, showing first work injury frequency by type of work and constructive solutions, after which they started to analyze and display

the most commonly affected parts using standard scales for assessing the intensity damage recorded.

Later solutions have been suggested to remedy deficiencies and failures encountered, after which drew some conclusions and have expressed a number of measures to prevent the future of these types of failures.

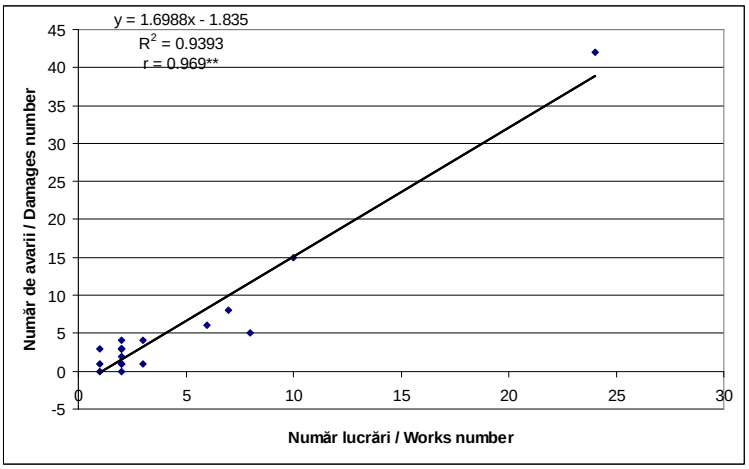

Fig. 1. Correlating the number of works by the number of failures recorded

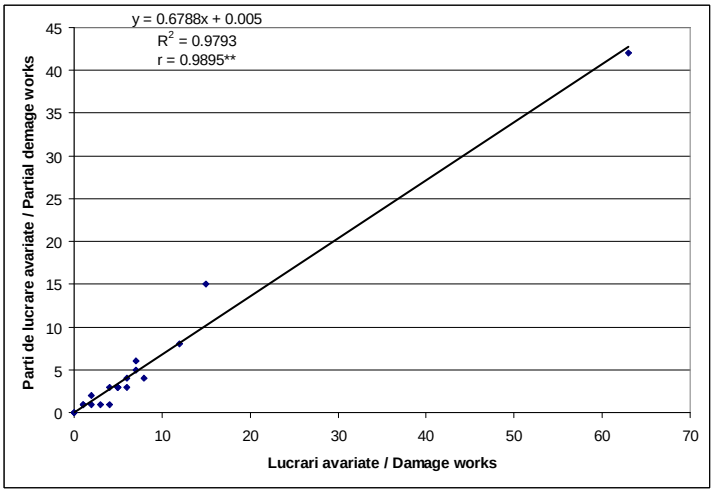

Fig. 2. Correlation number of works damaged by the number of parts of the work damaged

Decommissioning, partial or complete works of correction torrents, is due to summation of damage or malfunction arising from them over the arrangement of these valleys. These works cannot achieve some or all functions that have been assigned (sediment retention, strengthening bed, barring or directing water flow, etc.).

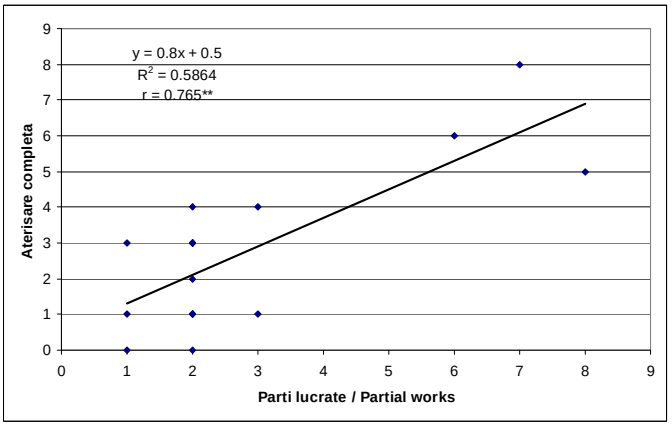

Fig.3. Correlation of number parts of the work carried out by the number of fully formed aterrisments

CONCLUSIONS

In recent years took place across the territory studied several powerful flash floods, which led to strong deterioration of the road network. The main objective is requiring defense of the axial forestry road Anieşul Mare and the forest roads on the Mihăiasa Valley and Butucilor Stream.

Correlation between the number of faults recorded and number of shares affected constitutive of work is very close, because the variation in the number of technical works from one valley to another and torrential constitutive parts affected are also different in number from one valley to another arranged in its basin.

For an assertion of statistical regularities in the first phase was investigated correlation between the number of faults recorded and the number of jobs performed on each valley rainfall. Subsequently passed to correlate the number of damages caused by each valley partly constitutive part number of affected work.

Aterrisments formation, strengthens the hydrographic by decreasing slopes and bed expansion due to raising thalweg. Due to irregular intervals of time that a work clogging occurs, it may be influenced by existing vegetation in the basin during heavy intensity or uniformity of soil and substrate petrographic crossed the torrent respectively.

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