The Landslide of Svinița

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Alunecarea de teren de la Svinița. Localitatea Svinița este situată în Defileul Dunării, pe malul stâng al fluviului, în sudul Munților Almăjului. Se dezvoltă pe o structură sedimentară ce se dezvoltă sub forma unui larg sinclinoriu a cărei orientare generală este nord-est – sud-vest. Depozitele sunt de vârstă permiană, jurasică și cretacică.

Alunecarea de teren de la Svinița afectează cea mai mare parte a intravilanului localității, între pârâul Iardumovacia și pârâul Țiganului, pe o suprafață de circa 1,4 km². Este o alunecare complexă, masivă și profundă, rotațională în cea mai mare parte și în mai multe trepte. Peste această alunecare se suprapun alunecări translaționale de dimensiuni mai mici, ce afectează deluviul treptelor majore ale acesteia. Masa alunecată, ce are grosimi de până la 25 m, este constituită din depozite superficiale de versant, slab coezive, alcătuite din fragmente de rocă de diferite dimensiuni, prinse într-o matrice argilo-nisipoasă.

Alunecarea este veche ca vârstă, dar în urma strămutării satului de pe vechiul amplasament ca urmare a construcției barajului hidrocentralei „Porțile de Fier" a fost reactivată parțial. Noua amplasare s-a făcut în cea mai mare parte pe vechea masă de alunecare ce nu a suportat însă presiunea exercitată de noile construcții, astfel încât, din anul 1970 și până în prezent au avut loc mai multe reactivări parțiale ale alunecării, cu consecințe directe asupra morfologiei reliefului, dar și asupra construcțiilor.

Pentru stoparea acestui fenomen și combaterea efectelor, în vara anului 1998 au fost demarate lucrări de refacere a zidului de sprijin de la baza versantului și de continuare a lucrărilor de drenaj a unor mici torenți ce secționează versantul. Acolo unde viteza de deplasare a masei de alunecare pe versant este ridicată, s-a trecut la construcția unor puțuri cu ancoraj ce depășesc 30 m în adâncime.

Svinița area is located on the left side of the Danube, in the canyon sector, in the southern part of Almaj Mts.

It is developed on a sedimentary structure, which forms a large syncline with a NE-SW general direction. In eastern part, Cioaca Borii – Svinița monoclyne layers declivity has 30° southwestern direction from the sedimentary-primary level contact line to Svinița. Deposit ages are Permian, Jurassic and Cretaceous. Permian forms Zeliste – Greben syncline, situated in western part, and Mesozoic deposits which deep to the southwest.

The landlside of Svinița affects the most part of the building area, between Iardumovacia and Tiganului rivers, on a 1,4 kmp surface (fig.1). It is a complex landslide, massive and deep, mainly rotational in many steps, overlapped by small translational landslides, which affects the major steps diluvium.

Slope surface deposits less cohesive, formed by rock parts included in a sandy-clay matrix represent the landslide mass (20-25 m thick). Those are the Permian, Jurassic and Cretaceous weathering products. Also the landslide include Badenian conglomerates, tuffs and coal schist's. The lowest landslide part shows a Barremian-Aptian complex.

The landslide is old and it was restarted after 1970, when the Svinița village had been removed because of Portile de Fier dam building. The old Svinița village location was to the south-west part with 20-30m down slope. The new location took place mainly on the old landslide mass which could not supports the new building pressure. The

counterpane deluvium moisturizing, The lake rising and the movement of the village to the slope were the main causes which determined the deluvial mass instability. We can also identify other causes for the producing and reactivating the landslide:

- the different lithology, characteristic for this region. Permian is represented by a various lithology having terigene, pyroclastic and volcanoes origins. Terigene origin rocks are represented by the black schist's level with basal plants rest, the red sandstone's level and that of the red conglomerates in the upper part. Pyroclastic origin rocks are represented by agglomerate, volcanic tuffs strongly diagenised. Volcanic types (basic represent effusive rocks to acid) from melaphire to quartz porhire. Owing to these rocks features we can consider that a norma Paleozoic volcanism followed by a subsequent Permian one, took place. Jurassic rocks are represented by tuffs, limestone with corals, with jasps and fine limestone) having a rich fossil fauna Ammonites, Aptychus) and marls. Cretaceous is formed by limestone, marl-limestone, marls, siliceous sandstone and conglomerate.
- The counterpane diluvium permeability, caused by the weathering products included in a sandy-clay matrix, resulted from the Zeliste cuestas front, which has developing in the upper part of the village with north-west direction.
- The slope declivity where the village was build with 15° in the lower sector and 45° on the cuesta front
- The lake rising with over 30 m and also the rising of phreatic level, which affects the old lanslides
- The moisturizing of counterpane diluvium because of strongly rainfalls (1970-1974, 1984, 1996-1998) when the amount was over 1000 mm/year
- The deforestation caused by the building necessities and agriculture activities
- The buildings number increasing
- The vibrations produced by the road traffic (on the national road Orşova-Moldova Nouă)

In the 1996 springtime the old landslide was reactivated and it was produced a slow mass movement.

The speed was characteristic for each sector from a few cm/year to 1m/24hours especially on the basal slope where the landslide had an breaking down character. The access road to Svinița was completely destroyed.

This phenomenon has a new extension between February and June 1998, when much careful management was affected, the safety structure had been strongly diminished. That could happen because of stooping the improving works. In the school and cultural house area because of the ameliorative works the landslide wasn't felled.

In the 1998 summer begin the works to establish the basal slope and to rebuild the old wall. In the mean time in the areas where the landslide speed movement was high drawing-off wells was building to ensure a great stability.

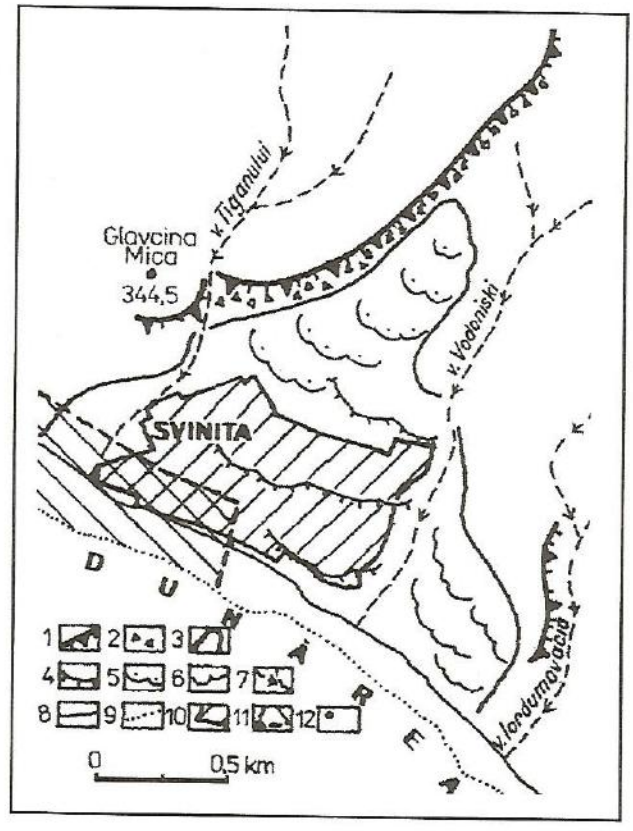

Fig. 1. The landslide of Svinița: 1. cuesta, 2. slide rocks, 3. landslide margin, 4. main landslide ridge, 5. unstable land-mass, 6. relative stable landslide mass, 7. torrent, 8. Danube River bank, 9. former Danube River bank, 10. present-day village configuration, 11. former village configuration, 12. peak

References

Mihăilescu V. (1963), *Carpații sud-estici*, Editura Științifică, București.

Sencu V., Băcănaru I. (1976), *Județul Caraș-Severin*, Ed. Academiei, București.

xxx (1961), *Ghidul excursiilor – Carpații Meridionali*, Asociația Geologică Carpato-Balcanică.