

Vicinities between Specialty Cadastres

Ionita PADURE, Maricel PALAMARIU and Mircea PUSCAS, Romania

Key words: vicinity, specialty cadastres, land organization, safety and protection areas

SUMMARY

In cadastre design, plotting and other types of problems, there are vicinity connections between various specialty cadastres. From an expert's viewpoint, he/she only addresses the internal problem of his/her work. The aim of the paper is to make the planner look at the problem in a complex manner paying attention that in the boundary marking moment all external problems regarding spaces of vicinity safety and protection are solved.

Vicinities between Specialty Cadastres

Ionita PADURE, Maricel PALAMARIU and Mircea PUSCAS, Romania

Land organization and management is no doubt part of the most recent preoccupation of sustainable development, creating that structure that can support long-term super-structure projects implementation. However, the land management and organization is based on cadastre plans and maps grounded on major topographical works, which comprises geodesy, GPS, cadastre with specialty cadastres connected with GIS up to the smallest detail, GIS that has to be functional, accessible from the viewpoint of the user and that can be completed with information related to the registration and management of the entire land fund, pages in the general cadastre of a territory. This is where the link breaks and if every specialty cadastre (agricultural, forest, waters, land improvements, real estate and city networks) is elaborated and printed separately, then vicinities no longer fit – at the meeting point of specialty cadastres: for instance agriculture is indestructibly related to transportation means, as access, - and land improvement, as usefulness; therefore, the two different cadastres must be connected in a functional way when designed.

There are exploitation connections.

1. Environment protection;
2. Land protection;
3. Hunting;
4. Forest plants and fruit;
5. Wood production.

Shall we take these things into account or not? Only an irresponsible person would attack the forest functions on that which is most profitable, namely on point 5, wood production. Forests are cut although trees have not reached their optimum age of 90-110 years old, although the type of wood is not the right one.

This has the following consequences:

1. – detuning of climate cycles, of precipitations, floods, drying of ground water, lack of drinking water etc;
2. – land slides, lack of land stability, and especially of slopes, the immersion of land slides into lower lands, chaotic situations over large areas;
3. – destruction of forest life, loss of the budget money coming from hunting;
4. – no more free fruit and plants from traditional medicine and kitchen;
5. – re-construction of the forest through forest arrangements in a 100-year long investment (if the case!)

This is how an area can be turned into a desert through people's ignorance, for the sake of immediate yet unjustified and discontinuous profit through de-forestation .

Is this the only fundamental mistake in nature? This is where forest arrangements come in with the abundance by forestation cycles and cutting on due time and according to rational

needs; We think that the cadastre expert can help design, organize and systematize the land, introducing vicinities in cadastre.

Let us take the easiest way: urban public vicinities.

A house can be placed on the boundary between two neighbors if they tile-drain their rain water and does not build windows looking out to the neighbor's yard. If he intends to build air ends and light ends, he has to place the construction 30 cm. away from the fenced boundary. If he wants to build windows for watch, then he places the house 1.90 m. away (according to the Romanian Civil Code, valid since 1864).

Let us take the example of a land plotting: the cadastre project should provide access to the newly detached parcels through exploitation road works.

We design roads, we provide the road reservation but we believe that there must also be work roads so that the agricultural worker can access these roads and not directly the modern motorway. The danger of road circulation can be diminished through safety spaces – the work road under discussion – and protection spaces that lead to the house built that would keep it from being hit in car accidents, fire protection and access in case of fire etc.

We wish to emphasize that preventively designed vicinity between various specialty cadastres can lead to the prevention of all shortcomings, avoiding destruction of constructions and land systemizations, dams, arrangements, etc. Because Romania has over 43% agricultural surfaces, with perspectives of increasing in the future years, with the accession of Romania into the European Union, let us give an example of vicinities between specialty cadastres with the Agricultural and the other cadastres, according to the following scheme:

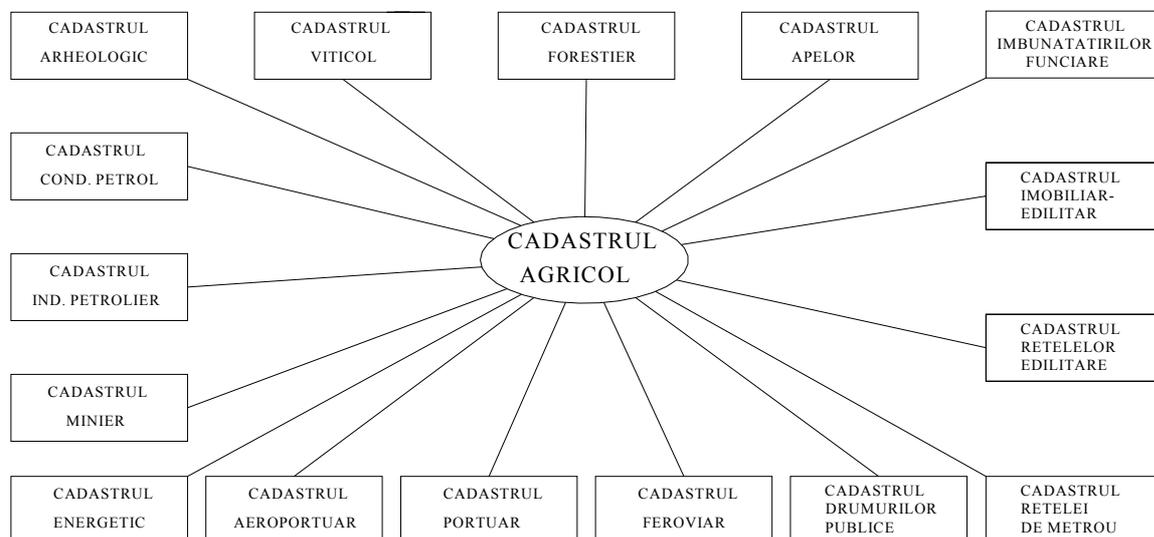


Fig. 1 Direct connection between the agricultural cadastre and the other specialty cadastres

There are obvious connections between the other cadastres such as the connection between the forest cadastre and the other cadastres, etc. However, there are circumstances when there are no vicinities to be taken under consideration.

By analyzing the specialty Forest cadastre, we can notice that forests are mentioned according to their importance.

1. FOREST CADASTRE

The National Forest Fund is made up of forests, lands for forestation, lands destined for cultivation, production or forest administration, ponds, small river beds and unproductive fields included in forest arrangements, irrespective of the nature of the property right. According to the Forest Code, forests are those surfaces covered with forest vegetation over more than 0.25 ha.

Some forest arrangements are based on cadastral plans that include forest roads, accesses, paths for electric power, separation aisles to avoid the extension of forest fires as well as safety and protection spaces of the forest towards the neighbors – specialty cadastres.

2. WATER CADASTRE

Water cadastre is formed of surface waters, works of protection, mastering and use of running and still water, underground water and the natural environment of waters.

Rational water management is fundamental and it means life. The main water-courses host water accumulations through dams, this water being used for household consumption, for balancing the eventual flood potential, for the set up of polders, rising the level of underground water and irrigations, electric power production, pisciculture and tourism, etc. Therefore, when designing hydrological works of construction, the vicinities in cadastre must be taken into account.

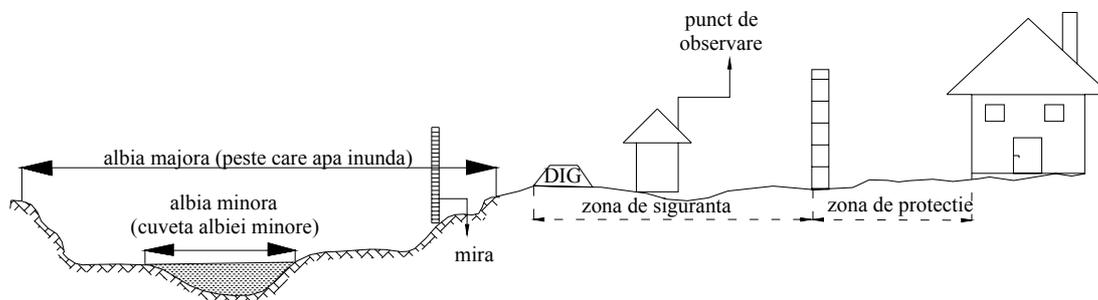


Fig. 2 The bed of a course of running water and safety and protection spaces

The figure above represents a watercourse protected against floods by dams, from which there are safety areas that can contain roads. Follow the fence built by the owner, a protection area that could be flooded and at last the construction.

3. CADASTRE OF PUBLIC ROADS

In this cadastre, any public road has a road territory – the land surface on which the road was built.

The expert in charge of the land survey takes for instance an area of 50 m. that contains land surfaces divided in categories according to their owners and types of use. The cadastral plan contains future allotments with property ends falling within road administration. We believe that the cadastre design should not stop here.

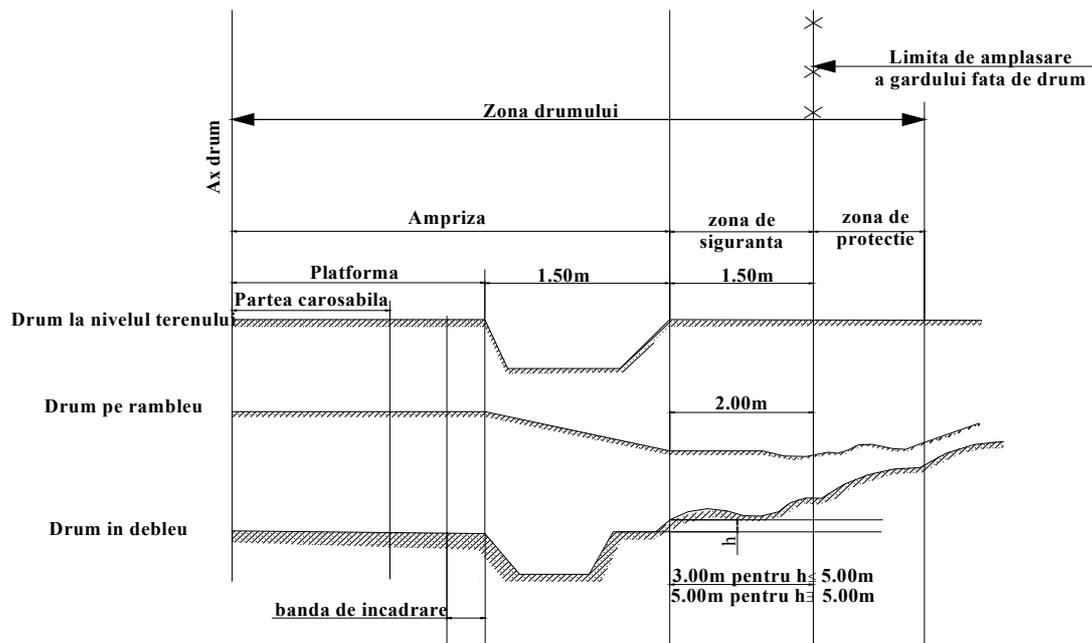


Fig. 3 Traverse sight line of a road

Norms require safety and protection spaces in case of accidents. But let us consider the most frequent case, that of infrastructure modernization in Romania, when motorways were designed. The figure shows the road territory, the safety space where exploitation roads could be built to allow access of carts, tractors and agricultural cars, etc. to various properties. In most cases, participants to traffic enter the asphalt sheet directly from the agricultural road, which can be avoided if the above note is taken into account.

In case of the cadastre of **public urban networks**, these networks could be buried underground like in figure no. 4, which would be very modern.

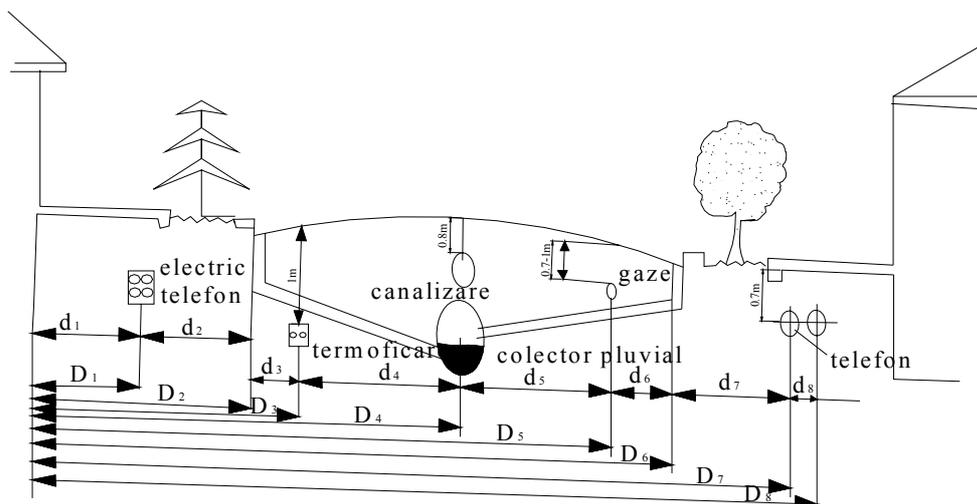


Fig. 4.1 A street section

If the location of networks would be as presented in figure no. 4, such situations as that of breaking the asphalt coverage in case of interventions could be avoided and the green area only would be uncovered. This is another vicinity between real estate cadastre and the cadastre of public urban networks, which must be abided by.

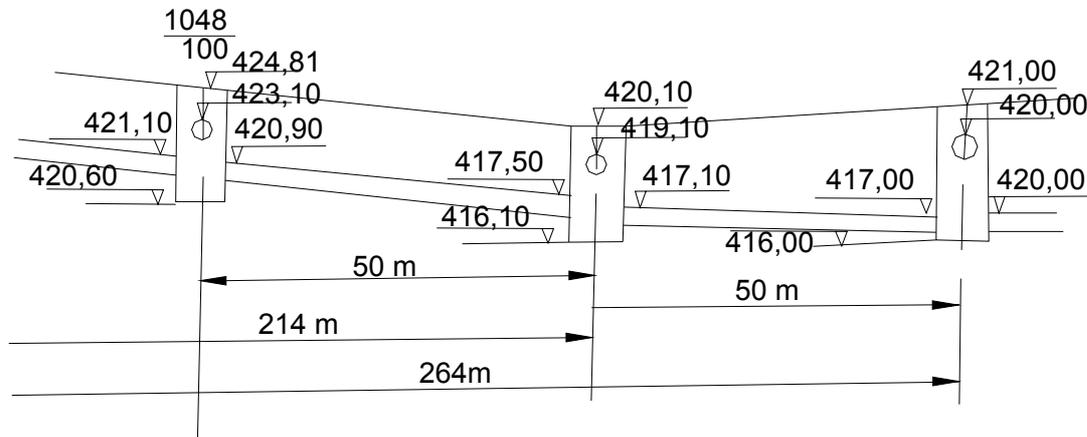


Fig. 4.2 Vertical alignment

On the vertical, sewer systems create vicinity problems with the cadastre of motorways due to the presence and alignment of street manholes.

In time, road structure changes, the cover of street manholes can get under the street level which generates a change in the structure of measurements and on the vertical position of access in manholes.

4. WATERSIDE CADASTRE

According to the definition, waterside cadastre must make an inventory and highlight land surfaces on which harbor activities take place. Also, water covered surfaces belong to the water cadastre and the harbor's activities have to use motorways, railways, electric power network, connections with the city, people and merchandise transportation. Therefore, in the case illustrated at figure no. 5, a river harbor is a complex structure located in the waterside cadastre with vicinities in other cadastres, which must be taken into account in the design and use. We cannot ignore the case of floods that can affect the harbor or can be used as a buffer area in certain cases. Therefore, waterside cadastre must be included in the natural calamities prevention plan.

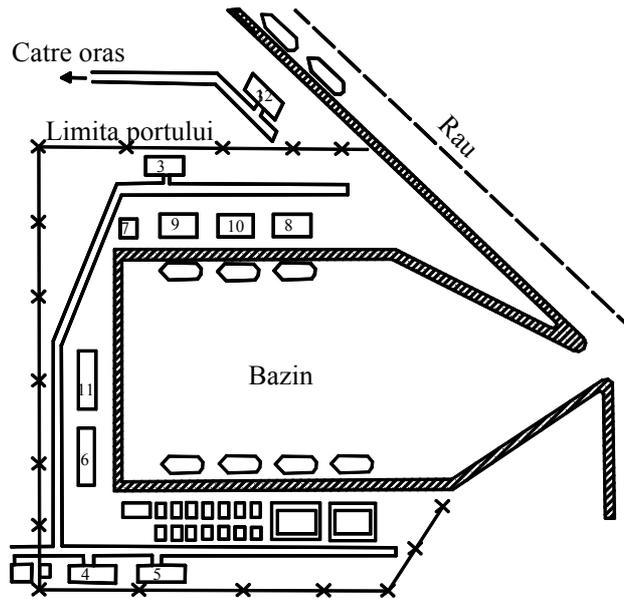


Fig. 5 Harbor

1. harbor administration, 2. control, 3. warehouse and loading point, 4. electrical substation,
5. canteen – restaurant, 6. docker room, 7. mass merchandise, 8. granary,
- 9 and 10. general goods, 11. materials warehouse, 12. station.

5. ENERGY CADASTRE

Its object is to record land surfaces where hydro-electrical activities take place but the surfaces are used in small percentage. Power production in hydro-electrical power plants is part of a complex where water is collected for household activities, watercourses are balanced, the level of underground water increases, there are hydrological works. Therefore, this type of cadastre also presents a series of activities.

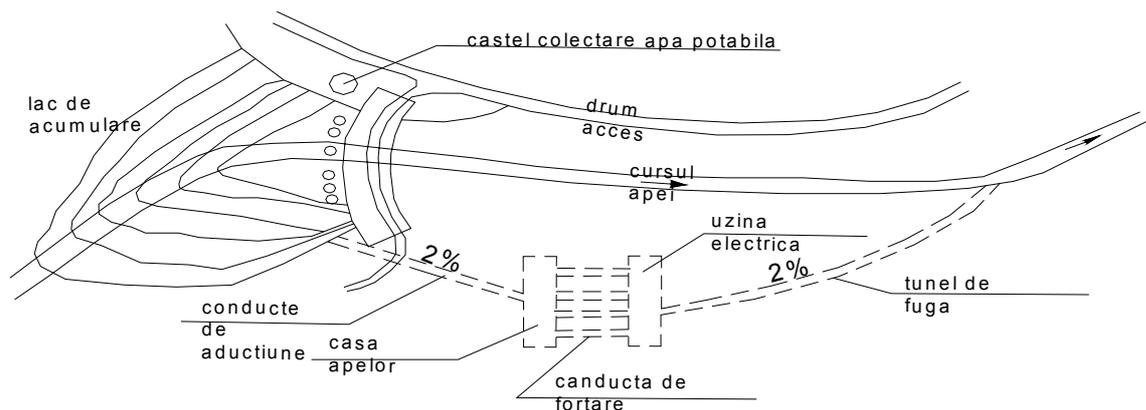


Fig.

6 Underground hydroelectric power plant

The cadastre of electric power networks above the ground only highlights the layout of power cables and the surfaces with poles. The design of the cable layout should be accompanied by safety-protection areas in case of accidents and routes for instruments (intervention in case of accidents).

A resembling case is that of **the gas network cadastre** (figure 7) which should contain outside the route safety and protection areas as well as areas for intervention. In the fiscal file of the tax assessment of the owner of the field crossed by gas pipes, there should be indemnities regarding the hardships that these pipes produce in the organization of the agricultural arrangement, as well as intervention indemnities that the owner of the gas pipes must incur.

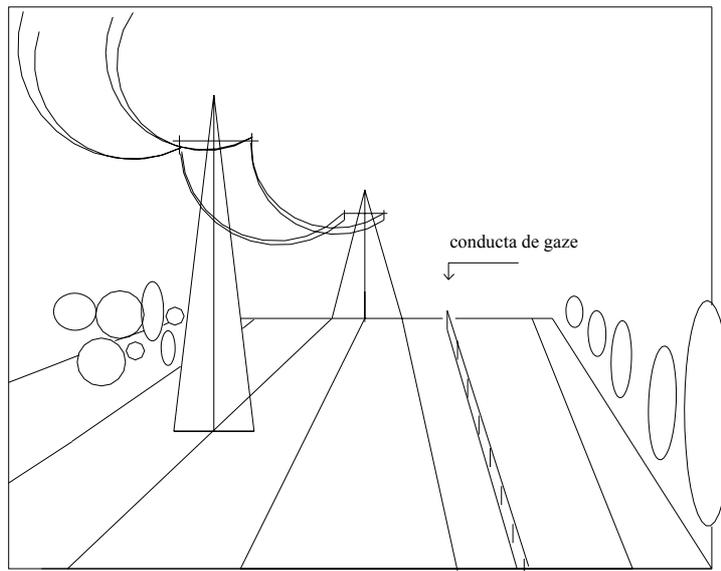


Fig. 7 Power cables and gas pipes located above the ground

The future shows that pipes should be completely located under ground, where intervention cases could come up: digging, occupation of the agricultural field with the removed earth, intervention of machines, covering of pits and indemnities regarding agricultural production if affected.

A special problem is that of simple or double rails, with or without electricity, which do not have protection and safety areas along them and the safety space does not have exploitation roads, for instance when a railway is in the vicinity of an agricultural field.

There are special problems at the vicinity of airport cadastre with other cadastres especially in the vicinity of the real estate and public urban cadastre, when the direction of tracks cannot be optimum with the wind regime because of the constructions already built – industry, monuments, sites etc.

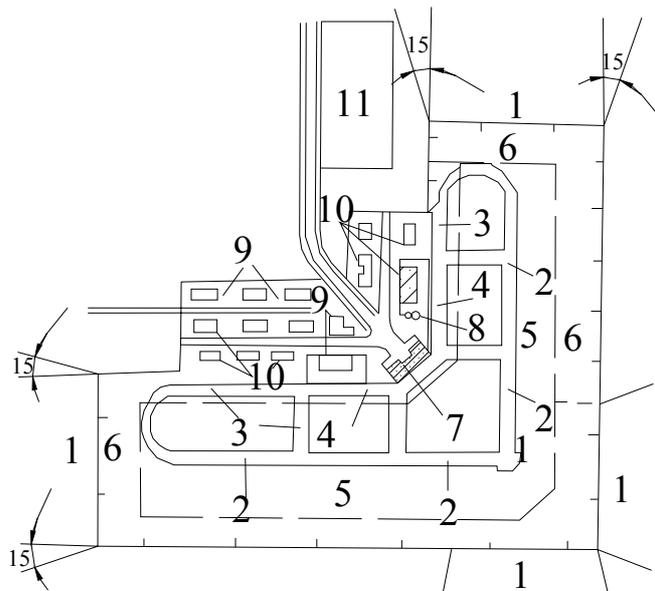


Fig. 9 Airport

Figure no. 9 shows:

1. An aerial access aisle;
2. Take off/landing track;
3. Rolling track;
4. Boarding platforms;
5. Flight field;
6. Safety area;
7. Plain station;
8. Control tower;
9. Areas of technical and administrative buildings, warehouses, etc;
10. Hangars, workshops;
11. Hotel-restaurant-clubs for passengers and airport personnel.

Industrial mining cadastre raises special problems for surface management after the prospecting, exploring and exploitation licenses are obtained, especially as regards the rightness of surfaces where geological and mining works take place.

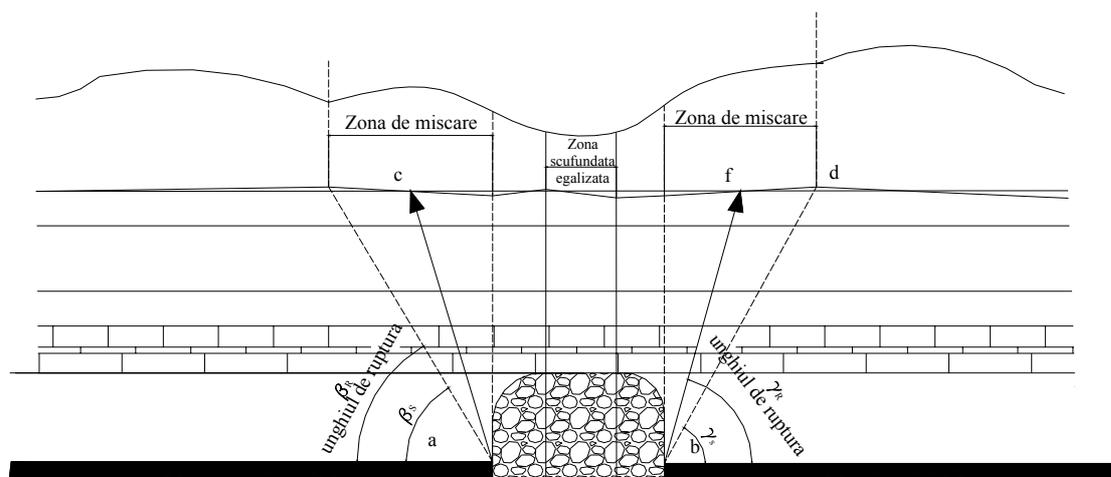


Fig. 10 Underground mining exploitation

The end of a mining exploitation would be the works of closing the mining exploitation above or under ground. As regards a mining exploitation under ground it should be noted that the re-building of areas affected by the underground mining exploitation should be made after the end of the sinking of strata covering the exploited ore, at the same time with the re-fertilization of the area and the use of the remade surface to other economic activities such as agriculture or forestry.

6. CONCLUSIONS AND PROPOSALS

The paper shows the serious problems that may occur at the vicinity of various specialty cadastres. The record of vicinities could avoid incidents especially due to dynamic, natural, chemical accidents. If safety and protection areas were taken into account at the vicinity of different cadastres, thus ensuring sustainable development. The calamity plans could delimit areas that could be affected by natural calamities such as floods. These phenomena could be decreased by avoiding irrational exploitations in the case of certain cadastres. More than that, the cadastre plans could comprise protection curtains, the necessary volume of forests, the presence of hydrological improvement works, irrigations, stabilizing running water courses so as to increase the underground water level.

In conclusion, the paper intends to draw attention to the defective way in which two institutions with different specialty cadastres work and proposes that when the projects that use specialty cadastres are approved, one should take into account vicinities, the manner in which the two institutions will function and live together in view of increasing the quality of ecology, life conditions, functional conditions self-defense conditions for a sustainable development.

REFERENCES

Pădure I., Ungur A. – Cadastre de specialitate (Specialty Cadastres), Publishing House Risoprint, Cluj-Napoca, 2006

CONTACTS

Prof. PhD. Maricel Palamariu
University “1 Decembrie 1918” Alba Iulia
11-13 Nicolae Iorga Street
RO-510009 Alba Iulia
ROMANIA
Tel. + 40 258 811512 ext. 171
Fax + 40 258 812630
E-mail: mpalamariu@uab.ro
Web site: www.uab.ro