COMPLEX OF TOPO-CADASTRAL WORKS FOR THE EXTENSION OF THE QUARRY EXPLOITATION AREA

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***Abstract**: The importance of the excavations in the quarry and the proper functioning of the processes of extraction and transport of raw materials require adequate access roads. Thus due to the fact that the exploitation in the quarry expands its area of exploitation, the road that ensures the transport of raw materials must comply with the standards provided by the actual legislation. The paperwork is about the topo-cadastral works needed for the development of the quarry and extending the area of exploitation and all the activity involved, its legal regulation, the right of the municipality concerning real estate, but also the study of the related site area.*

***Keywords:** quarry – area of exploitation, transport, cadastral legislation, topo-cadastral works*

1. Introduction

The building on which this work was carried out is located in the North-Eastern part of Sibiu, in the locality of Gușterița, with the Cibin River to the South and the Galben Hill to the North (Fig. 1).

Fig. 1. The quarry exploitation area – Gusterita, Sibiu [1]

The paperwork issue is related to the legal regulation for the development of an operating transportation way, the transaction of the building on which the activity of transportation of raw materials extracted from the quarry was carried out, both for individuals and for the machinery handled in the industrial area. The situation provided by the designer formed the basis for the materialization of the exploitation road using GNSS technology on the background of the tracing operations corroborated with the retention of the access road alignments. Geomorphological profiles (longitudinal and transverse) were also produced on the basis of the field measurements [2].

2. Materials and Methods

For the topographic field works was used the GPS equipment Geomax Zenith 35 Pro (Fig. 2), and for data processing were used AutoCAD and ArcGIS softwares, in order to obtain an topographic plan, as well as in the extensive research [3].

Fig. 2. Geomax Zenith 35 Pro [3]

The Geomax Zenith 35 Pro instrument combines a full spectrum of satellite signals, unlimited connection and unique Tilt&Go function, working when needed. Points impossible to reach, with a vertical marker, such as corners, walls, lamp posts or gutters under parked cars can be easily surveyed with the Tilt&Go function. Integrating seamlessly with the specialist software, the Zenith35 Pro TAG offers two modes that adapt perfectly to the measuring situations. With a maximum number of channels, it is compatible with all frequencies and satellite systems through NovAtel® technology. Therefore, the chosen instrument was the most suitable for the topographic works in the field [3] (Fig. 3).

Fig. 3. Topographic works in the field

The first stage that was carried out for the beneficiary company consisted in tracing the operating route that the designer had foreseen (Fig. 4). For the second requirement of the beneficiary to collect the necessary data for the topographic profile, the operator has configured the equipment (location settings, observation rate, existence or non-existence of obstructions in order to set the reception threshold for the satellites) for GNSS observations. This is necessary in order to have the best possible accuracy, including elevation accuracy. Points have been surveyed (which will become contourable) at a 5 metre distance in the proximal area of the road, including its edges. This procedure will be carried out every 25 metres along the length of the road, as required by the designer [4], [5], [6].

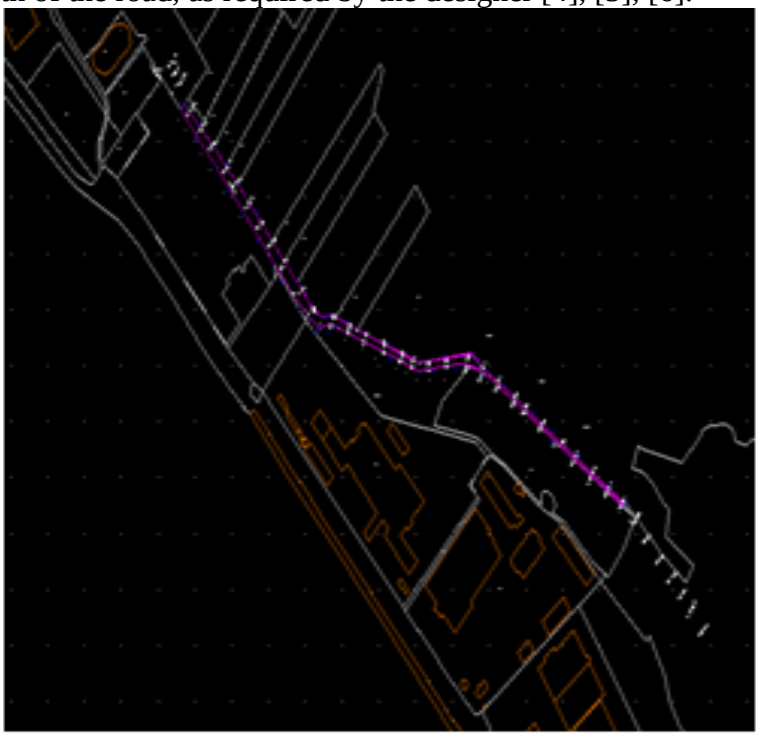
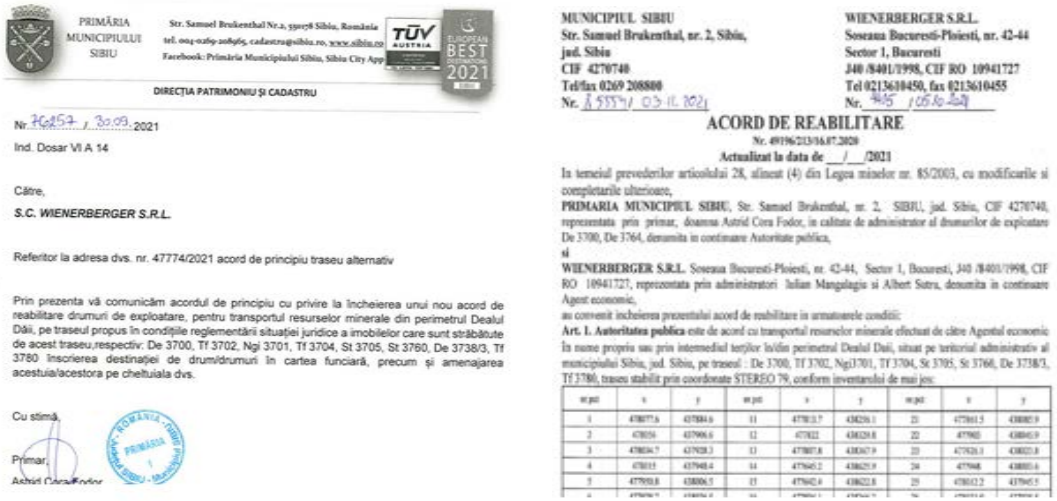


Fig. 4. Tracing the operating route

Once the field phase has been completed, the office part of the project is continued in order to process the data previously collected. The last problem to be solved is the legal regulation and the registration of the road in the Land Register, more precisely the beneficiary together with the Municipality of Sibiu (which has made the land available for the construction of the road) and with the owners of the properties (to whom a part of the area will be dismembered for the realization of the project) (Fig. 5).



PRIMĂRIA MUNICIPIULUI SIBIU

DIRECȚIA PATRIMONIU ȘI CADASTRU

Nr. 76457 / 30.09. 2021

Ind. Dosar VI A 14

Către,

S.C. WIENERBERGER S.R.L.

Referitor la adresa dvs. nr. 47774/2021 acord de principiu traseu alternativ

Prin prezenta vă comunicăm acordul de principiu cu privire la încheierea unui nou acord de reabilitare drumuri de exploatare, pentru transportul resurselor minerale din perimetrul Dealul Dăii, pe traseul propus în condițiile reglementării situației juridice a imobilelor care sunt străbătute de acest traseu,respectiv: De 3700, Tf 3702, Ngi 3701, Tf 3704, St 3705, St 3760, De 3738/3, Tf 3780 Înscrierea destinației de drum/drumuri în cartea funciară, precum și amenajarea acestuia/acestora pe cheltuiala dvs.

Cu stimă,

Primar,

MUNICIPIUL SIBIU
Str. Samuel Brukenthal, nr. 2, Sibiu,
jud. Sibiu
CIF 4270740
Tel/fax 0269 208800
Nr. 8 55571 / 03.11.2021

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Nr. 495 / 05.10.2021

ACORD DE REABILITARE

Nr. 49196/213/06.07.2020

Actualizat la data de __/__/2021

În temeiul prevederilor articolului 28, alineat (4) din Legea minelor nr. 85/2003, cu modificarile si completarile ulterioare,

PRIMARIA MUNICIPIUL SIBIU, Str. Samuel Brukenthal, nr. 2, SIBIU, jud. Sibiu, CIF 4270740, reprezentata prin primar, doamna Astrid Cora Fodor, in calitate de administrator al drumurilor de exploatare De 3700, De 3764, denumita in continuare Autoritate publica,

si

WIENERBERGER S.R.L. Soseaua Bucureşti-Ploieşti, nr. 42-44, Sector 1, Bucureşti, J40 /8401/1998, CIF RO 10941727, reprezentata prin administratori Iulian Mangalagiu si Albert Sutru, denumita in continuare Agent economic,

au convenit incheierea prezentului acord de reabilitare in urmatoarele conditii:

Art. 1. Autoritatea publica este de acord cu transportul resurselor minerale efectuat de către Agentul economic În numepropriu sau prin intermediul terților în/din perimetrul Dealul Dăii, situat pe teritoriul administrativ al municipiului Sibiu, jud. Sibiu, pe traseul : De 3700, Tf 3702, Ngi3701, Tf 3704, St 3705, St 3760, De 3738/3, Tf 3780, traseu stabilit prin coordonate STEREO 70, conform inventarului de mai jos:

Fig. 5. Documents for legal regulation

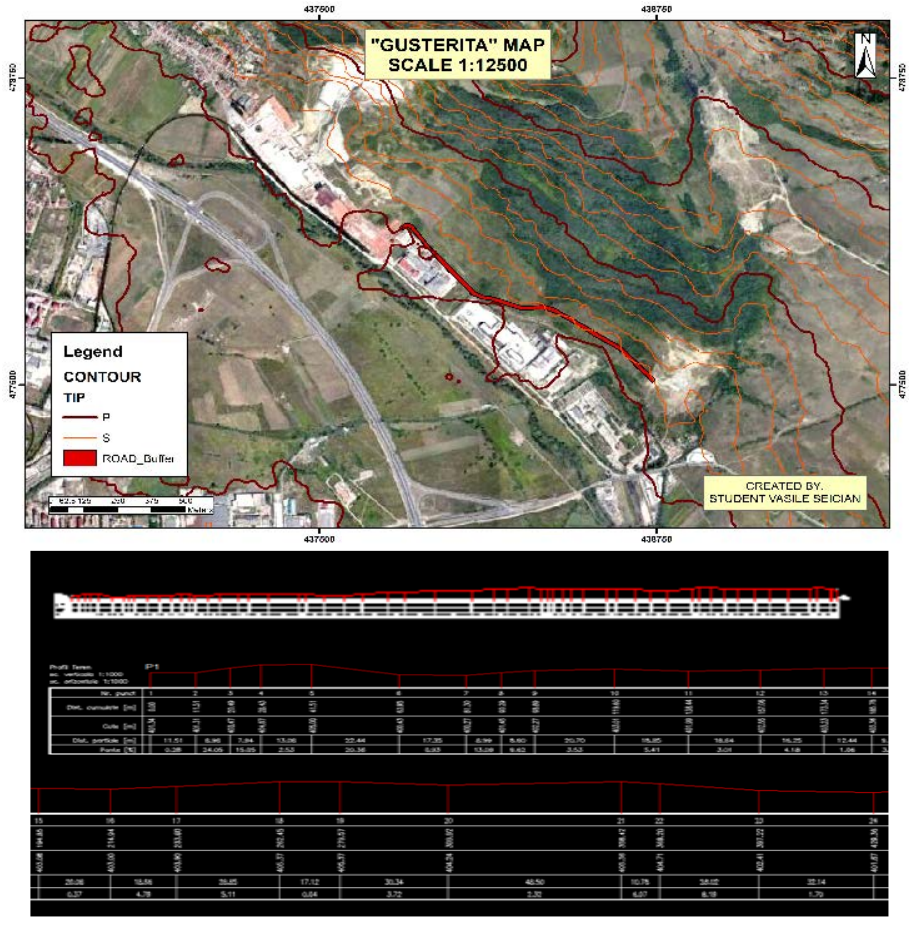

Fig. 6. Quarry area map and profiles [1]

The office topographic works involves a data transfer of the field measurements and data processing, obtaining the topographic plan, data extraction and geometries download of the neighbouring plots, generation of the longitudinal and transversal profiles and establishing the areas where the alcoves could be designed (Fig. 6). The results can be sent further to the beneficiary and the designer [7], [8].

3. Results and Discussion

For achieving the objectives of the work presented in this paper, some certain steps need to be accomplished, divided into two categories [2], [7]:

- field topographic works – involving field measurements and data acquisition, using specific instruments and suitable methods, according to the field conditions;
- office topo-cadastral works:
    - topographic measurements and data processing, obtaining the quarry area map, ortophotoplan, topographic profiles, analytical data and other graphical representations used for the design of expanding the exploitation area of the quarry and the road modernisation in order to ensure the transport of raw materials;
    - cadastral works, involving the regulation of the legal situation of the real estate goods in the considered area.

After all the designed plans and documentation are approved, a new step should be carried out: stake out the new limits of the extended exploitation area of the quarry and the elements needed for the road rehabilitation and modernisation (Fig. 7).

Fig. 7. The current status of the field works

4. Conclusions

Considering all the aspects presented in the paperwork, it is necessary to insist on some elements, such as the documentation part, the legal situation part and the technic project. The road to be built is of great importance for the development of the quarry and for that reason some elements have to be strictly respected: technical project, water drainage, consolidation walls, embankment etc [2].

The complex of topo-cadastral works, in the field and at the office, is extremly important to be carried out as accurate as possible, in order to achieve accurate technical and legal data, as these data represents the basis for further design works. The design project should be staken out in the field [4].

Moreover, should be considered the envoronmental legislation, in order to ensure a proper sustainable development of the area, a sustainable exploitation in the quarry and an envoronmental friendly transportation of raw materials extracted from the quarry [5].

5. References

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