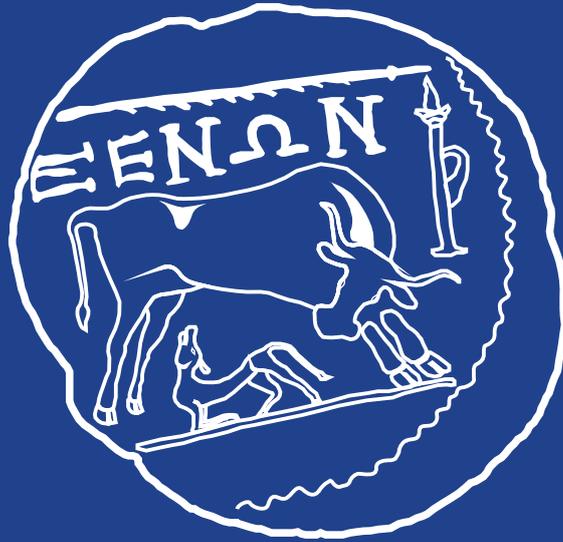


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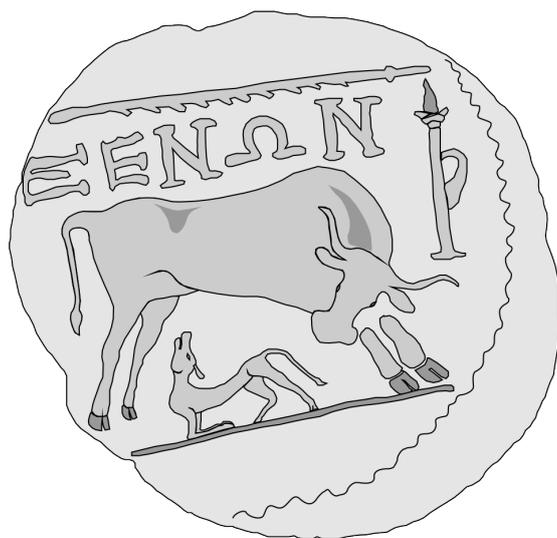
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This volume is dedicated to Florin Draşovean at 70 years

Acest volum este dedicat lui Florin Draşovean cu ocazia împlinirii a 70 de ani



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The Roman Roads South of Berzovia: Some Observations and the Results of New Research

Cătălin Dîscă, Iulian Leonti

Abstract: The roads examined in this paper were part of the main Roman route along the western *limes* of the province of Dacia. Known primarily from the information preserved in the *Tabula Peutingeriana*, this route has repeatedly attracted the attention of researchers over time. Such interest is well founded, given the strategic importance of the road, which connected not only the major Roman military camps north of the Danube (including *Berzobis*, *Apulum*, *Potaissa*, and *Porolissum*), but also the main urban centers in the region (such as *Viminacium*, *Tibiscum*, *Ulpia Traiana Sarmizegetusa*, and *Napoca*). However, despite centuries of research, large sections of this communication line are still poorly documented. For instance, for most of it is still not possible to indicate the exact route taken, nor is it possible to carry out a rigorous analysis of the topographical and technical parameters. In this context, a series of field surveys were recently conducted in the area south of Berzovia, resulting in the identification of several road segments. These segments were built on an embankment composed of clay, sand and gravel and were paved with dressed stones. Altogether, the road segments identified to date between Surducu Mare and Berzovia have a total length of around 12 kilometres, representing 46% of the entire length of approximately 26.5 km of this section. This study aims to present the results of the field surveys conducted between Surducu Mare and Berzovia. The first part of the paper will also provide an overview of the data available in the literature, while the last part will present some observations drawn from this research.

Keywords: Dacia; Roman Roads; *Berzobis*; *Tibiscum*; Surducu Mare; Fieldwalking; Archaeological Mapping.

General Framework

The roads that are the subject of this paper belong to one of the main Roman communication routes north of the Danube, namely the one running along the western *limes* of the province of Dacia¹ (Fig. 1).

Generally known primarily on the basis of data from the *Tabula Peutingeriana*, the roads that made up this route have been the subject of study by numerous scholars throughout the centuries. Their interest is justified by the role that the route in question played, as it provided a link not only between the most important Roman military bases north of the Danube (such as *Berzobis*, *Apulum*, *Potaissa*, and *Porolissum*), but also between the largest urban centres in the region (such as *Viminacium*, *Tibiscum*, *Ulpia Traiana Sarmizegetusa*, and *Napoca*)².

At the beginning of the last century, Konrad Miller synthesized, interpreted, and published the data from the *Tabula Peutingeriana* in a manner which, although subject to a series of critiques, has nonetheless influenced to this day the perception of ancient communication routes³. According to Miller, the route following the western *limes* of Dacia, from *Lederata* to *Porolissum*, measured approximately 270 Roman miles⁴.

Despite the continuous scholarly interest over the past centuries, for the greater part of this route it is still not possible to determine its exact course, nor to carry out a rigorous analysis of its topographical and technical parameters⁵.

Starting from these considerations, the present study aims, on the one hand, to present the results of recent research undertaken in the area of the settlement at Berzovia, and, on the other hand, to formulate several observations and conclusions emerging from these investigations.

¹ Christescu 1937, 104-114; Macrea 1969, 149-158; Fodorean 2006, 115-118; Breeze *et al.* 2021, 42-64.

² TIR L 34; Wilkes 2000, 310-332; Poulter 2000, 333-349; Barrington Atlas, Map 21, Map 22, Fodorean 2006.

³ Talbert 2010, 68-71.

⁴ Miller 1916, 540-556; <https://www.tabula-peutingeriana.de/index.html>.

⁵ Fodorean 2006, 227-232.



Fig. 1. A. The province of Dacia within the Roman Empire; B. The Roman roads in Dacia (after: Fodorean 2006, Harta 1) and neighbouring provinces (after: Barington Atlas, Map 21, Map 22); B.1. Outlined in black at no. 1: the Surducu Mare – Berzovia area.

Data from the Literature

Over time, information regarding the Roman roads of Dacia has accumulated from various sources, ranging from local toponymy and medieval documents to various cartographic materials and historical or geographical writings.

Local toponymy, in some cases preserved even in medieval documents, can provide valuable information concerning the routes of former Roman roads. For instance, a document issued in 1351 mentions among the estate boundaries the *cobblestone road* between Biniş and Bocşa⁶. Within the area under consideration, frequently attested toponyms related to the Roman road include: *Drumul Mariei Tereza* (Maria Theresa's Road), *Calea împărătească* (Imperial Way), *Drumu Irinii* (Irina's Road), *Drumul Roman* (Roman Road), and *Drumul lui Traian* (Trajan's Road)⁷.

Starting with the modern period, some of these toponyms, or even better-preserved segments of Roman roads, were represented on a series of maps and topographical surveys. A concrete example from the area in question is the road segment east of Bocşa, which appears on the Third Military Survey of the Habsburg Empire (*Franzisco-Josephinische Landesaufnahme*)⁸ and the Romanian Artillery Masterplan under "Lambert-Cholesky" projection system (*Planurile Directoare de Tragere*)⁹ as *Roman Ditch* (*Römer Schanze*; *Şanţ roman*; Pl. VII/2).

From the dawn of the modern era, information on Roman roads also began to multiply in historical and geographical writings¹⁰. At the end of the 17th century, the Venetian scholar L. F. Marsigli had already produced, based on the data from the *Tabula Peutingeriana*, his own field observations, and other sources, a topographical sketch of Dacia's Road network¹¹.

By the late nineteenth and early twentieth centuries, the road network of Roman Dacia had begun to take shape in historical and archaeological literature. As an example of this, one may mention the maps produced by Heinrich and Richard Kiepert in the second part of the supplement to Volume III of the *Corpus Inscriptionum Latinarum*¹².

Contemporary literature usually indicates three routes coming from the south and heading towards Berzovia. From one author to another, the proposed paths may vary slightly; however, the main route (generally located to the west) has essentially been interpreted as the direct link between Surducu Mare and Berzovia. In addition to this main route, two secondary routes have also been proposed. The first of these has been interpreted as a branch diverging from the main road at Vărădia (usually identified with *Arcidava*)¹³, passing through the mining area of the Dognecea Mountains (rich in iron and lead deposits, as well as copper, zinc, and silver)¹⁴ and continuing toward Bocşa, where it entered the floodplain of the Bârzava River¹⁵. The second branch has been interpreted as a route departing from the main road at Surducu Mare, joining the route from Vărădia somewhere near Bocşa, and continuing together northward until near Berzovia, where they rejoined with the main road toward *Tibiscum*¹⁶.

The direct route from Berzovia to Surducu Mare is supported primarily by data from the *Tabula Peutingeriana*, which indicates a distance of 12 Roman miles between *Bersovia*¹⁷ and *Centum Putea* (generally identified with Surducu Mare)¹⁸. This value corresponds fairly closely to the actual straight-line distance of approximately 17 kilometers between the fort at Surducu Mare and the fortress of legio IIII Flavia Felix at Berzovia (Fig. 1/B/1; Fig. 2; Pl. I).

In addition to these data, several rather brief mentions appear in the archaeological literature referring to traces of a paved road observed at several points. As far as can be inferred from the texts,

⁶ DRH C, vol. X, no. 53.

⁷ Bóhm 1883, 54-57; Pesty 1884b, 321; Kematmüller 1892, 216-218; Milleker 1890, 217; Milleker 1892, 107-112; Răuţ et al. 1977, 140.

⁸ <https://maps.arcanum.com/en/map/thirdsurvey25000/?bbox=2411307.1438183235%2C5678741.351495189%2C2417909.3921364555%2C5681087.012800691&map-list=1&layers=129>.

⁹ <https://www.geo-spatial.org/harti/#/viewer/openlayers/10>.

¹⁰ Marsigli 1726a; Marsigli 1726b; Grisellini 1780a; Grisellini 1780b.

¹¹ Marsigli 1726a, 60, Fig. XXIX.

¹² CIL III, Suppl. II, Dacia.

¹³ Ptolem. III 8, 4; Tab. Peut. VII 3; Geogr. Rav. IV 14; TIR L 34, 30; Wilkes 2000, 313; Barrington Atlas, Map 21; Benea 2013, 143-148; TIR 2021, 450-451.

¹⁴ Borcoş et al. 1983, Fig. 11; Borcoş et al. 1984, 82-83, no. 271-275; Wollmann 1996, 151-155; 235.

¹⁵ TIR L 34; Răuţ et al. 1977, 135-159; Barrington Atlas, Map 21; Fodorean 2006, 227-241; Benea 2013, 138-141.

¹⁶ Ujvári 1972, 347-348; Badea, Berindei 1992b, 157-158.

¹⁷ Tab. Peut. VII 3; Prisc. VI 13; Geogr. Rav. IV 14; CIL III 8070; TIR L 34, 36; Wilkes 2000, 313; Barrington Atlas, Map 21; Benea 2013, 149-151; TIR 2021, 106-107.

¹⁸ Tab. Peut. VII 3; Geogr. Rav. IV 14; TIR L 34, 45; Wilkes 2000, 314; Barrington Atlas, Map 21; Benea 2013, 148-149; TIR 2021, 406.

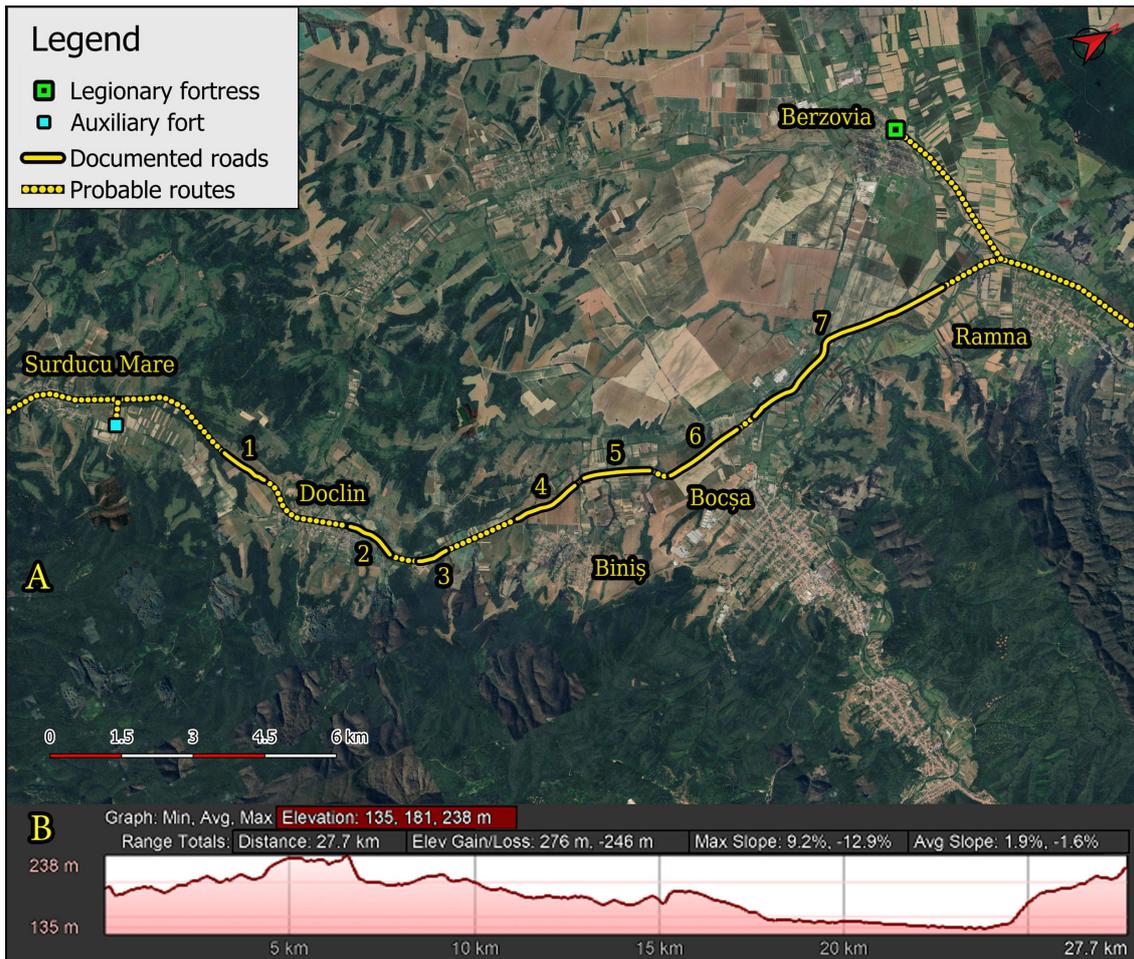


Fig. 2. A. The Road segments identified between Surducu Mare and Berzovia marked on a Google Earth satellite image. B. Elevation profile of the route.

the authors who made these references did not identify the remains of the road directly, but rather relied on information derived from various sources. Based on these accounts, it can only be stated that traces of a Roman road were reported in the area of Tirol village¹⁹, while on the lands of Fizeş village, in *Valea Popii* (the Priest's Valley), traces of a paved road approximately six meters wide were mentioned. In the 19th century the latter road was called *Drumu Irinii* (Irina's Road) by the local population²⁰.

For the route from Surducu Mare through Doclin, Biniş, and Bocşa, considerably more substantial information has accumulated over time. Along this route, at Doclin, traces of a paved road have been mentioned, likewise known to the locals as *Drumu Irinii*²¹. Further north, within the boundaries of Biniş, the remains of the Roman road were reported heading toward Berzovia²². As noted earlier, a 14th century land demarcation document also recorded traces of a paved road in this area²³. Also, along this route, east of Bocşa, lies the segment of the road depicted on the Third Military Survey of the Habsburg Empire²⁴ and the Romanian Artillery Masterplan under "Lambert-Cholesky" projection system²⁵ as *Roman Ditch* (*Römer Schanze*; *Şanţ roman*; Pl. VII/2). Starting from the data available in the literature, O. Răuţ, O. Bozu, and R. Petrovszky identified a segment of nearly six kilometres of this route through fieldwalking, as reported in a study published in 1977²⁶.

¹⁹ Kematmüller 1892, 216-218; Milleker 1892, 110-112.

²⁰ Pesty 1884b, 321; Kematmüller 1892, 216-218; Milleker 1892, 110-112.

²¹ Milleker 1892, 107.

²² Pesty 1884a, 51-52; Milleker 1892, 103.

²³ DRH C, vol. X, no. 53.

²⁴ <https://maps.arcanum.com/en/map/thirdsurvey25000/?bbox=2411307.1438183235%2C5678741.351495189%2C2417909.3921364555%2C5681087.012800691&map-list=1&layers=129>.

²⁵ <https://www.geo-spatial.org/harti/#/viewer/openlayers/10>.

²⁶ Răuţ *et al.* 1977, 148.

For the branch passing through the Dognecea Mountains, no conclusive data are currently available²⁷. This route was very likely proposed on the basis of numerous Roman finds that have appeared along this corridor²⁸ and on the assumption that the Romans must have built a road to exploit the rich mineral deposits of iron, lead, copper, and silver in the Dognecea Mountains²⁹.

Results of Field Surveys

Based on the data available in the historical sources and the archaeological literature, a series of field surveys were conducted focusing on the area delimited by the settlements Surducu Mare to the south and Berzovia to the north. As a result of these investigations, seven segments of a former road were identified. This road had been constructed on an embankment composed of clay, sand and gravel, and was paved with dressed stone. Cumulatively, these segments extended over a total length of approximately 12 kilometres and were distributed as follows:

1) *Between Surducu Mare and Doclin* – In this section, the road's route, oriented in a southwest–northeast direction, passes over the first terraces on the right side of the Ciornovăț stream. The length of the identified segment is approximately 1 km. The width of the road could not be determined precisely due to dense vegetation, which only occasionally allowed observation of the structure consisting of gravel, boulders and dressed stone. In this area, the embankment does not stand out clearly in the landscape. Only in certain spots does the road rise about 0.20 – 0.30 metres above the surrounding ground level. On several sets of satellite images from Google Earth, however, the road's footprint is quite clearly visible. Among these images, the clearest are those published in March 2005 and January 2021 (Fig. 2/1; Pl. I/1; Pl. 2; Table 1).



Fig. 3. Traces of the road segment identified west of Biniș (north-south perspective).

²⁷ Răuț *et al.* 1977, 135-159; Fodorean 2006, 227-241.

²⁸ TIR L 34, 37, 54; Milleker 1892, 103-107; Pesty 1884a, 57 -58; TIR 2021, 111, 303.

²⁹ Borcoș *et al.* 1983, Fig. 11; Borcoș *et al.* 1984, 82-83, no. 271-275; Wollmann 1996, 151-155; 235.

Table 1. Geographical coordinates of the road segment identified between Surducu Mare and Doclin.

Pct.	UTM coordinates		Stereo 70 coordinates	
	N	E	X	Y
1.	45.293537	21.631218	427096.08	235977.47
2.	45.293367	21.630887	427078.33	235950.75
3.	45.293207	21.630513	427061.84	235920.72
4.	45.293127	21.630262	427053.74	235900.68
5.	45.293009	21.629916	427041.83	235873.00
6.	45.292894	21.629720	427029.68	235857.11
7.	45.292707	21.629501	427009.58	235839.05
8.	45.292534	21.629285	426991.15	235821.30
9.	45.292423	21.629066	426979.50	235803.63
10.	45.292329	21.628759	426970.03	235779.10
11.	45.292246	21.628318	426962.32	235744.14
12.	45.292150	21.627906	426953.01	235711.37
13.	45.292131	21.627830	426951.13	235705.31
14.	45.292014	21.627367	426939.71	235668.52
15.	45.291858	21.626956	426923.69	235635.54
16.	45.291686	21.626578	426905.81	235605.08
17.	45.291499	21.626218	426886.26	235575.99
18.	45.291336	21.625848	426869.40	235546.28
19.	45.291146	21.625424	426849.66	235512.11
20.	45.290856	21.624692	426819.87	235453.40
21.	45.290536	21.623803	426787.28	235382.20
22.	45.290063	21.622452	426739.21	235274.08
23.	45.289766	21.621535	426709.25	235200.80
24.	45.289551	21.620851	426687.67	235146.17
25.	45.289426	21.620434	426675.22	235112.84
26.	45.289285	21.619913	426661.28	235071.34

2) *Northwest of Doclin* – In this area, the road crosses the Fizeş stream and continues northeast toward the Gârlişte (Copaci) stream. Since most of this segment lies on agricultural land, the traces of the road, consisting of gravel, boulders and dressed stones are quite well visible in this section. The length of the segment identified northwest of Doclin is 1.05 km. The width of the embankment at the top measures, on average, around 6.5 m, while the preserved height is approximately 0.4 – 0.5 m (Fig. 2/2; Pl. I/2; Pl.V/1; Table 2).

3) *Between Doclin and Biniş* – After crossing the Gârlişte (Copaci) stream, the road turns north, following the first terraces on the right side of this stream. The length of the segment identified here is 0.65 km. Although most of this segment also lies on agricultural land, during the field surveys the traces of the structure were only faintly visible, as these fields have not been cultivated in recent years. For this reason, the width of the road could not be precisely determined, as the gravel, boulders and dressed stones were scattered over a corridor of approximately 15 – 20 meters wide. Similarly, the embankment does not stand out clearly in the landscape, with the road rising only about 0.20 – 0.30 m above the surrounding ground level (Fig. 2/3; Pl. I/3; Table 3).

Table 2. Geographical coordinates of the road segment identified northwest of Doclin.

Pct.	UTM coordinates		Stereo 70 coordinates	
	N	E	X	Y
1.	45.307992	21.664525	428592.22	238655.38
2.	45.307455	21.660238	428546.59	238316.91
3.	45.307356	21.659749	428537.27	238278.17
4.	45.307209	21.659247	428522.61	238238.11
5.	45.306805	21.658079	428481.48	238144.74
6.	45.306613	21.657627	428461.64	238108.36
7.	45.306435	21.657303	428443.00	238082.15
8.	45.306215	21.656983	428419.52	238056.09
9.	45.305921	21.656627	428388.07	238026.82
10.	45.305628	21.656160	428357.09	237988.81
11.	45.305421	21.655708	428335.50	237952.48
12.	45.305186	21.655075	428311.57	237901.75
13.	45.304995	21.654611	428291.87	237864.50
14.	45.304732	21.654139	428264.18	237826.31
15.	45.304382	21.653685	428226.75	237789.11
16.	45.304143	21.653376	428201.29	237763.76
17.	45.303836	21.652951	428168.50	237729.05

Table 3. Geographical coordinates of the road segment identified between Doclin and Biniş.

Pct.	UTM coordinates		Stereo 70 coordinates	
	N	E	X	Y
1.	45.317681	21.670527	429648.83	239170.54
2.	45.316895	21.670552	429561.45	239168.89
3.	45.316394	21.670629	429505.56	239172.56
4.	45.315309	21.670817	429384.38	239182.28
5.	45.315011	21.670850	429351.22	239183.53
6.	45.312875	21.670112	429116.37	239115.81
7.	45.312223	21.669678	429045.39	239078.80

4) *West of Biniş* – In this section, the road continues northward over the first terraces on the right side of the Gârlişte (Copaci) stream. Except for the first 0.3 km to the south, which lies in a grassy area, the remaining 1.15 km extends over agricultural fields. As a result, the traces of the structure are very well visible in this area. The road's footprint is also visible on several sets of satellite images from Google Earth, the clearest being those published in April 2014 and July 2017. The width of the structure measures around 6 m at the top, and its imprint is visible in the July 2017 images due to the much higher density of sand, gravel, boulders and dressed stones along the carriageway (Fig. 6; Pl. IV/1). In horizontal plan, the route has the appearance of a slightly broken line that oscillates a few degrees on the east-west axis. Along this segment, the embankment traces are relatively modest, rising only about 0.30 – 0.40 m above the surrounding ground level (Fig. 2/4; Fig. 3; Fig. 6; Pl. I/4; Pl. III/1; Pl. V/2; Pl. VI/1; Table 4).



Fig. 4. Traces of the road segment identified west of Bocșa (south – north perspective).

Table 4. Geographical coordinates of the road segment identified west of Biniș

Pct.	UTM coordinates		Stereo 70 coordinates	
	N	E	X	Y
1.	45.344894	21.670962	432669.98	239330.34
2.	45.344590	21.671045	432635.99	239335.42
3.	45.343478	21.671366	432511.41	239355.44
4.	45.343174	21.671470	432477.32	239362.18
5.	45.342759	21.671649	432430.62	239374.31
6.	45.342189	21.671900	432366.55	239391.34
7.	45.341691	21.672108	432310.57	239405.28
8.	45.340994	21.672350	432232.30	239421.04
9.	45.340114	21.672594	432133.83	239436.07
10.	45.339726	21.672719	432090.30	239444.07
11.	45.339231	21.672752	432035.27	239444.42
12.	45.338729	21.672677	431979.67	239436.18
13.	45.338275	21.672556	431929.65	239424.66
14.	45.337226	21.672120	431814.57	239385.63
15.	45.336996	21.672063	431789.22	239380.10
16.	45.336495	21.671996	431733.79	239372.53
17.	45.335885	21.671902	431666.41	239362.33
18.	45.335483	21.671809	431621.96	239353.22

19.	45.335174	21.671732	431587.91	239345.79
20.	45.334836	21.671652	431550.70	239337.92
21.	45.334616	21.671610	431526.37	239333.63
22.	45.334366	21.671590	431498.65	239330.94
23.	45.334101	21.671613	431469.14	239331.48
24.	45.333833	21.671645	431439.26	239332.73
25.	45.333455	21.671726	431397.05	239337.38
26.	45.333199	21.671773	431368.43	239339.89
27.	45.332940	21.671789	431339.67	239339.93
28.	45.332355	21.671747	431274.75	239333.94

5) *Between Biniş and Bocşa* – After crossing Valea Satului stream, the road’s course changes orientation once again toward the northeast, continuing over the first terraces on the right side of the Gârlişte (Copaci) stream. The length of the segment identified in this area is 1.40 km. The embankment does not stand out clearly in the landscape. Only in certain places does the road rise about 0.20 – 0.30 m above the surrounding ground level. The width of the structure could not be determined precisely, as the gravel, boulders and dressed stones were scattered over a corridor about 15 – 20 m wide. However, the footprint of the road is fairly well visible on the ground, since most of this segment lies on agricultural land. The traces of the structure could even be detected on Google Earth images published in July 2017 (Fig. 2/5; Pl. I/5; Pl. III/2; Pl. VI/2; Table 5).

Table 5. Geographical coordinates of the road segment identified between Biniş and Bocşa.

Pct.	UTM coordinates		Stereo 70 coordinates	
	N	E	X	Y
1.	45.358673	21.676634	434181.79	239838.10
2.	45.357522	21.675800	434056.61	239767.50
3.	45.356714	21.675255	433968.67	239721.13
4.	45.354947	21.674091	433776.19	239621.80
5.	45.353235	21.673051	433589.43	239532.45
6.	45.350445	21.671539	433284.45	239401.16
7.	45.349295	21.670982	433158.58	239352.27
8.	45.348379	21.670664	433057.89	239323.11
9.	45.347656	21.670466	432978.20	239304.25
10.	45.347096	21.670367	432916.32	239293.91

6) *West of Bocşa* – After crossing Valea Mare stream, the road turns again toward the north, continuing over the first terraces on the right side of the Gârlişte (Copaci) stream. In this section, the road passes through both grassy and arable land, but the traces of the structure, consisting of gravel, boulders and dressed stone are clearly visible along its entire length. The segment identified in this area is 1.70 km long. The road embankment is relatively well preserved, reaching heights of + 0.90 – 1 m above the surrounding ground level. Because of these features and the ditch visible especially to the west, it was considered by modern topographers who carried out the Third Military Survey of the Habsburg Empire as a *Roman Ditch*. The road’s footprint is visible on several sets of images from Google Earth and the National Agency for Cadastre and Land Registration (*Administrația Națională de Cadastru și Publicitate Imobiliară*). In the first group, the clearest are those published in September 2006, June 2023, and June 2025. In the second group, the clearest are those published in 2018. The width of the embankment at the top measures, on average, around 6 meters, being clearly visible on

Google Earth images from September 2006 and June 2025, especially towards the northern end of the segment, after the intersection with the DC 84 local road (Pl. VII/1). As can be determined from the same images and field surveys, the footprint left by the entire structure measures approximately 30 meters (Fig. 2/6; Fig. 4; Pl. I/6; Pl. IV; Pl. VII; Table 6).

Table 6. Geographical coordinates of the road segment identified west of Bocşa.

Pct.	UTM coordinates		Stereo 70 coordinates	
	N	E	X	Y
1.	45.376863	21.677720	436198.50	240007.02
2.	45.375925	21.677883	436093.76	240015.49
3.	45.374629	21.678048	435949.38	240022.40
4.	45.373347	21.678281	435806.13	240034.76
5.	45.372074	21.678590	435663.78	240053.09
6.	45.369926	21.679231	435423.11	240093.31
7.	45.368302	21.679656	435241.35	240119.14
8.	45.366530	21.680007	435043.44	240138.41
9.	45.365272	21.680170	434903.14	240145.41
10.	45.364268	21.680220	434791.50	240144.68
11.	45.363598	21.680312	434716.80	240148.81
12.	45.362232	21.680471	434564.60	240154.99
13.	45.361767	21.680415	434513.12	240148.46



Fig. 5. Traces of the road segment identified between Bocşa and Berzovia (south – north perspective).

7) *Between Bocșa and Berzovia* – In this area, the longest segment of the road was identified, extending for nearly 5 km (more precisely 4.95 km), between the DN 58B road to the south and the Bârzava River to the north. Based on the visibility of the road in the field, this segment was divided into two parts: a southern section, 2.2 km long, located between the DN 58B and Valea Moscodin, and a northern section, 2.75 km long, between Valea Moscodin and the Bârzava River (Fig. 2/7; Fig. 5; Pl. I/7; Pl.VIII; Table 7).

Table 7. Geographical coordinates of the road segment identified Between Bocșa and Berzovia.

Pct.	UTM coordinates		Stereo 70 coordinates	
	N	E	X	Y
1.	45.423674	21.669269	441425.17	239561.96
2.	45.421646	21.669377	441199.52	239561.05
3.	45.419329	21.669457	440941.97	239556.60
4.	45.415998	21.669505	440571.84	239544.96
5.	45.413451	21.669450	440289.11	239528.85
6.	45.412354	21.669126	440168.31	239498.42
7.	45.411789	21.669040	440105.89	239489.09
8.	45.410910	21.669031	440008.29	239484.34
9.	45.410112	21.668970	439919.80	239475.86
10.	45.409126	21.668855	439810.68	239462.31
11.	45.406683	21.668482	439540.60	239421.84
12.	45.403383	21.667723	439176.50	239347.15
13.	45.402720	21.667595	439103.36	239334.12
14.	45.401370	21.667519	438953.63	239321.92
15.	45.400226	21.667470	438826.69	239312.78
16.	45.399989	21.667538	438800.19	239317.05
17.	45.399651	21.667696	438762.12	239327.83
18.	45.399307	21.667961	438723.09	239346.97
19.	45.398956	21.668469	438682.45	239385.10
20.	45.398675	21.669177	438648.89	239439.19
21.	45.398481	21.669609	438625.92	239472.09
22.	45.398262	21.669974	438600.43	239499.61
23.	45.397976	21.670395	438567.30	239531.22
24.	45.397635	21.670726	438528.31	239555.59
25.	45.397259	21.671004	438485.64	239575.59
26.	45.396818	21.671260	438435.83	239593.55
27.	45.396304	21.671471	438378.07	239607.69
28.	45.395564	21.671756	438294.94	239626.63
29.	45.394677	21.672131	438195.19	239651.88
30.	45.394258	21.672321	438148.03	239664.79
31.	45.393537	21.672701	438066.79	239691.16
32.	45.392799	21.673086	437983.57	239717.93
33.	45.392015	21.673530	437895.07	239749.06

34.	45.391447	21.673889	437830.83	239774.53
35.	45.391000	21.674261	437779.93	239801.55
36.	45.390702	21.674562	437745.80	239823.70
37.	45.390285	21.674913	437698.43	239849.28
38.	45.389875	21.675136	437652.18	239864.81
39.	45.389572	21.675231	437618.21	239870.87
40.	45.389326	21.675234	437590.82	239869.98
41.	45.388948	21.675189	437549.03	239864.71
42.	45.388473	21.675037	437496.70	239850.62
43.	45.388157	21.674977	437461.87	239844.49
44.	45.387551	21.674950	437394.60	239839.52
45.	45.386886	21.674951	437320.70	239836.53
46.	45.386004	21.674991	437222.60	239835.62
47.	45.385497	21.675049	437166.17	239837.84
48.	45.384982	21.675136	437108.64	239842.26
49.	45.383510	21.675492	436944.05	239863.28
50.	45.383339	21.675516	436924.97	239864.39
51.	45.383180	21.675529	436907.27	239864.67
52.	45.383006	21.675553	436887.90	239865.77
53.	45.382886	21.675603	436874.35	239869.09
54.	45.382815	21.675663	436866.33	239873.52
55.	45.382757	21.675723	436859.69	239877.94
56.	45.382676	21.675841	436850.28	239886.80
57.	45.382578	21.675923	436839.14	239892.71
58.	45.381835	21.676300	436755.39	239918.86
59.	45.380992	21.676727	436660.38	239948.32

The southern section begins near the confluence of the Gârliște (Copaci) stream with the Bârzava River, on the first terraces on the right side of the stream, which the road crosses after approximately 0.40 km. After crossing the Gârliște stream, the road turns slightly northwest and continues through the Bârzava floodplain for about 1.8 km. For most of this southern section, the road crosses a low-lying area, frequently exposed to erosion, flooding, and alluvial deposition, making the road traces less visible on this segment. The only segment of the southern section where the road's course could be easily determined extends for 0.40 km and lies immediately north of DN 58B. In this area, the road begins to descend from the terrace on the right side of the Gârliște (Copaci) Valley toward the Bârzava River.

In contrast to the southern part, the northern section has a very good degree of visibility along almost its entire length. This part begins after the road crosses Valea Moscodin and turns again toward the north – northeast, in the direction of Ramna. Its course closely follows the contact zone between the Bârzava floodplain and the first terrace on the left side. Most of this section currently lies on agricultural land. As observed during the field investigations, in this portion the width of the embankment at the top measures, on average, around 6 m and in many places, it still rises +0.70 – 0.80 m above the surrounding ground level. The traces of the road, consisting of gravel, boulders and dressed stone, “disappear” about 0.5 km south of the point where the Bârzava bends westward to enter the plain bearing the same name. This disappearance was most likely caused over the centuries by the repeated flooding of the river in this area.

Observations and Interpretations Concerning the Presented Road Segments

The seven segments of this road identified so far between Surducu Mare and Berzovia amount to no less than 12 kilometres, representing approximately 46% of the entire route's length, estimated at about 26.5 kilometres.

Based on the information available in the specialized literature, topographical features of the area in question, and the results of field research, it can be argued that the seven segments identified between Berzovia and Surducu Mare belong to the Roman imperial road along the western *limes* of Dacia, which connected *Lederata* and *Tibiscum*.

In addition to the historical arguments that can be brought in support of this hypothesis, equally important are those derived from the analysis of the topographical and technical parameters of the road segments identified in the field. As indicated by both literary sources and archaeological research, in the case of major roads, used primarily for the movement of troops (such as those along the western *limes* of Dacia), there were a number of regulations in the Roman world that established the parameters they had to meet. These regulations concerned, among other things, the stability of the structure, the degree of inclination for ascents and descents, the alignment of the route, the composition of the embankment, the technique employed in constructing the carriageway, and the system of road marking³⁰. As will become evident in the following lines, these regulations are reflected in the layout of the road identified during the fieldwalking conducted between Berzovia and Surducu Mare.



Fig. 6. Traces of the road segment west of Biniş captured by a Google Earth satellite image published in July 2017.

With regard to the stability of the structure, it should be emphasized that, beyond the actual construction technique, the two determining factors are the geology and the topography of the area it crosses. For this reason, in the case of Roman roads, where possible, higher areas were chosen, since these areas were less exposed to the risk of landslides, flooding, or waterlogging. However, where roads had to cross or follow the course of a valley, the route generally avoided the lowest areas, preferring terraces or gentle slopes instead.

For example, in the section between Surducu Mare and Berzovia, most of the route crosses the Dognecea Hills. These hills, composed of marl, sand, and Pannonian gravel, are characterized by

³⁰ Chevallier 1976, 86-93; Fodorean 2006, 29-48; Bekker-Nielsen 2012, 5852-5857.

smoothed ridges covered with Pleistocene clays³¹. In this section, for most of its length, the road followed the first terraces on the right side of the Ciornovăț and Gârliște streams (Pl. I/1-6). North of Bocșa, up to Berzovia and Ramna, the road enters the Bârzava Plain, crossing the floodplain of the river of the same name. This area, geologically composed of fluvial deposits covered by Pleistocene clays, is marked by the fragmented terraces of the Bârzava, cut by numerous small streams³². In this sector, the course of the paved road follows a line close to the contact zone between the river's floodplain and the first terrace on its left side (Pl. I/7).

With the same concern shown for ensuring terrain stability, the surveyors took into account the slope of the chosen routes (road gradient), not only to maintain optimal values for ascent and descent, but also to reduce repeated fluctuations. As a result of these concerns, only three significant changes in the vertical profile were required along the entire section under consideration. Thus, after rising from about 190 to 238 meters in altitude between Surducu Mare and Doclin, the road then descends fairly gradually to around 137 meters before intersecting the Bârzava River, only to rise again to approximately 200 meters north of Berzovia. In statistical data, these values show that although the maximum gradient reaches nearly 13%, the average slope remains close to 2% (Fig. 2/B).

A constant concern can also be noticed with regard to the alignment of the route. As a rule of thumb, it can be said that the road generally follows its main direction of advance. Changes in direction occur primarily on heights, from where the line of advance can be easily followed over long distances³³. Most often, the route follows long alignments extending for several kilometres. However, where the terrain required more frequent changes of direction, these were replaced with shorter alignments linked together by broad, gently connecting curves. One such case, documented along the route in question, is the segment between Bocșa and Berzovia. Thus, immediately after the intersection with national road DN 58B, the Roman road continues northward for approximately 0.40 km, reaching the Gârliște stream. After crossing this stream, the road turns slightly northwest and continues in this direction for about 1.80 km, until it meets Valea Moscodin. Upon crossing this valley, the road turns again toward the north – northeast and continues in this direction for 2.75 km, before it “fades out” approximately 0.5 km south of the point where the Bârzava River bends westward to enter the plain bearing the same name (Fig. 2/A/7; Pl. I/7).

Regarding the structure of the embankment, it is important to emphasize that the dimensions and characteristics of such a structure could vary not only according to the category of road but also depending on the topographical features of the areas crossed by the road. Between Bocșa and Berzovia, for instance, in the area where the road crossed the Bârzava floodplain, the height of the embankment still reached around 2 meters during the second half of the last century. Fieldwalking have shown that west of Bocșa, in certain points, the embankment still exceeds 1 meter in height (Fig. 4; Pl. VII). In this area, the road's footprint was captured in several sets of images available through the *Google Earth* application (Pl. IV/1-2), as well as in the database of National Agency for Cadastre and Land Registration (*Administrația Națională de Cadastru și Publicitate Imobiliară*)³⁴.

At the upper part of the embankment lay the carriageway surface, which could essentially be paved or cobbled. In some cases, the carriageway of Roman roads is still preserved in fairly good condition, even at ground level. Very often, however, the former roads can now be observed only as strips of gravel, boulders and dressed stone, distinguishable across meadows or arable lands. Depending on the conditions of the terrain, these strips (ranging between 10 and 20 meters in width and extending over several hundred or even thousands of meters) may be more or less visible. This is the case for most segments of the road identified between Berzovia and Surducu Mare (Fig. 3-6; Pl. II-VIII).

Based on both the data provided in specialized literature and that obtained during the present field surveys, it can be stated that the width of the road between Berzovia and Surducu Mare measured, on average, around 6 meters at the top (Fig. 6; Pl. IV/1). The actual carriageway surface measured slightly more than 4 meters in width and was built from a pavement of dressed stone, as reported both by Bőhm Lénárt (who measured it at several points between Comorăște and Forotic during surface

³¹ Badea, Berindei 1992a, 86-87.

³² Badea, Berindei 1992b, 157-158.

³³ Răuț *et al.* 1977, 150-152.

³⁴ The clearest images from the latest dataset mentioned are those taken during the year 2018: <https://geoportal.ancpi.ro/portal/home/webmap/viewer.html?webmap=4822662dd8b54652a68b6cb06d956837>.

surveys carried out in the area by Károly Torma in the early 1880s)³⁵ and by Octavian Răuț, Ovidiu Bozu, and Richard Petrovsky (who documented it during a test excavation conducted between Bocșa and Berzovia in the 1970s)³⁶.

Final remarks

Among the persistent issues concerning Roman roads in Dacia in general, and those examined within this study in particular, are insufficient research and a lack of protective measures at the administrative level. In this respect, it should be emphasized that the absence of essential data in the National Archaeological Repertory (*Repertoriul Arheologic Național*), the List of Historical Monuments (*Lista Monumentelor Istorice*)³⁷, and in the *General Urban Plans* of the administrative-territorial units for some of the segments already known for several decades in the archaeological literature represents a serious threat to the preservation of these archaeological sites and monuments.

On another note, regarding the roads that are the subject of this study, the current stage of research raises the question of whether several Roman roads were indeed constructed south of Berzovia. Taking into account both the data available in the literature and the results of the present investigations, a plausible hypothesis that should not be overlooked is that all recorded mentions actually refer to one and the same road.

Due to a lack of knowledge about the realities on the ground and the fact that information was often quite incomplete, most researchers have generally proposed two or three Roman roads south of Berzovia in order to reconcile the data from various available sources. The main inconsistencies that needed to be reconciled were twofold. First, the distance of 12 Roman miles mentioned in the *Tabula Peutingeriana* corresponds to a straight-line route from Berzovia toward the south-southwest, in the direction of Surducu Mare. Second, over time, several segments of paved road and various archaeological discoveries have been reported, particularly to the southeast of Berzovia, toward the Dognecea Mountains and Bocșa. The fragmentary nature of the information has led to confusion and generated alternative interpretations.

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³⁵ Bóhm 1883, 57.

³⁶ Răuț *et al.* 1977, 152-153, Fig. 2.

³⁷ RAN; LMI-CS.

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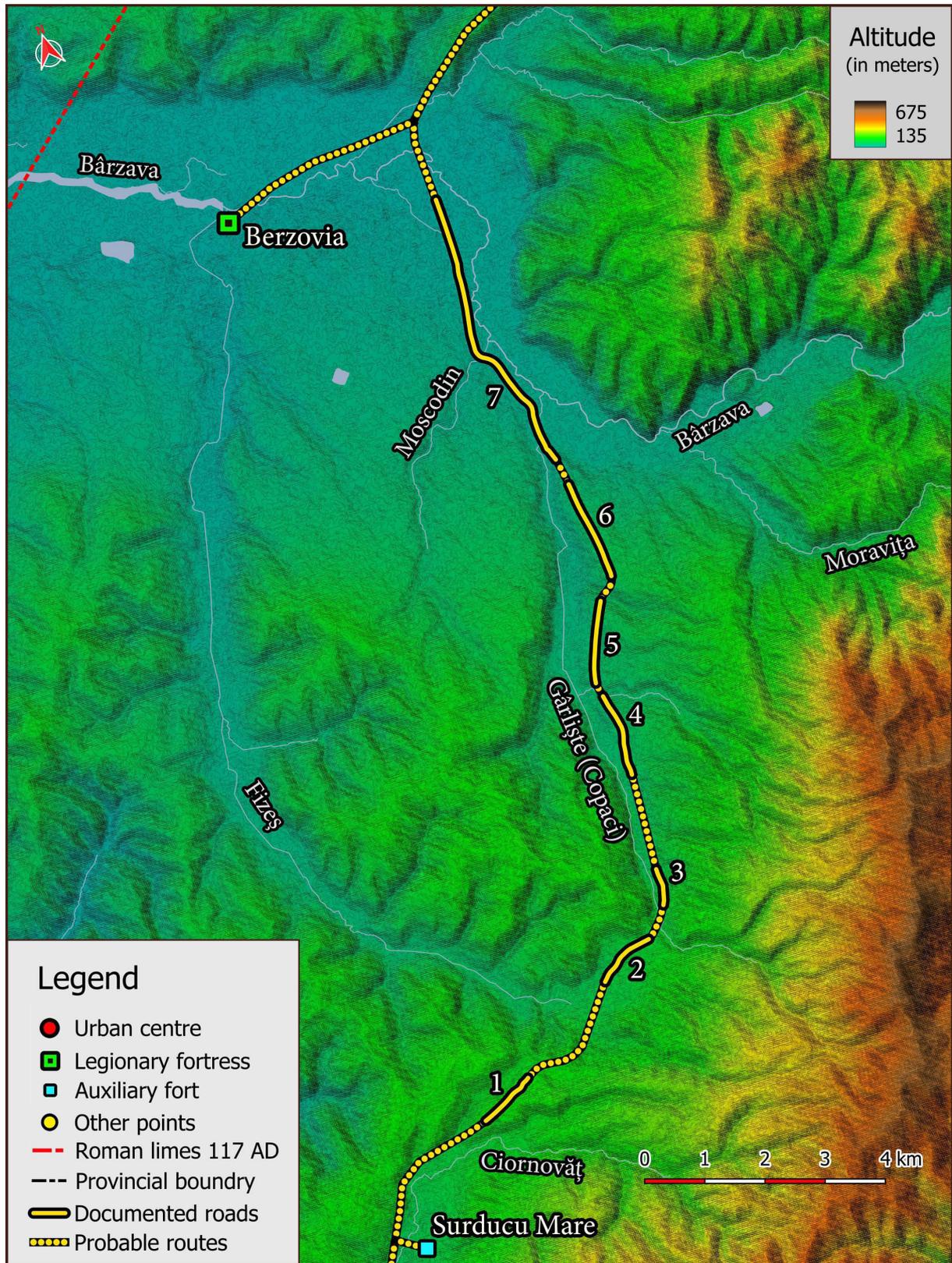


Plate I. The Road segments identified between Surducu Mare and Berzovia marked on a digital elevation model of the area.



1



2

Plate II. Traces of the road segment between Surducu Mare and Doclin captured by Google Earth satellite images: 1. published in March 2005; 2. published in January 2021.

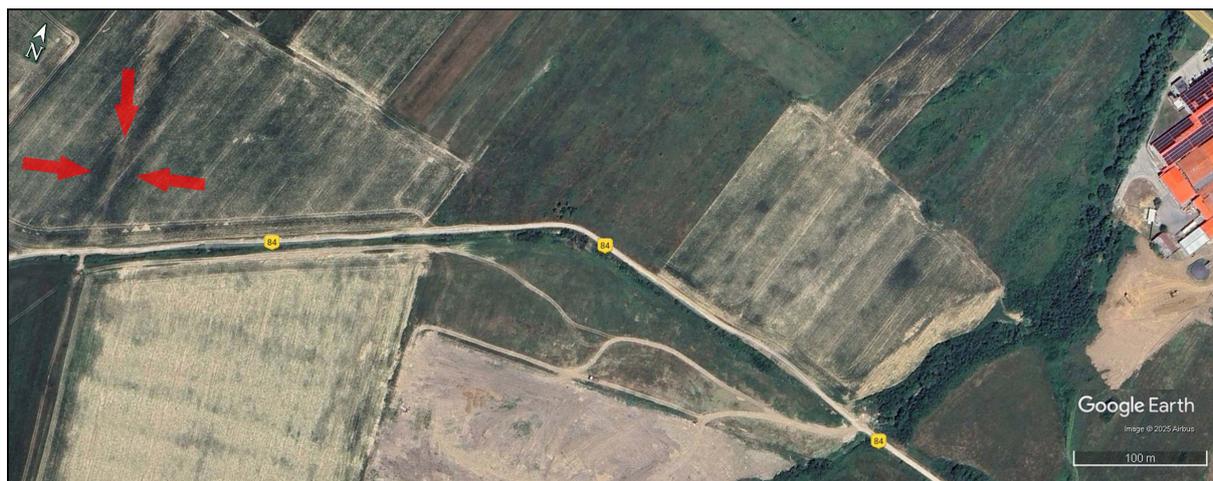


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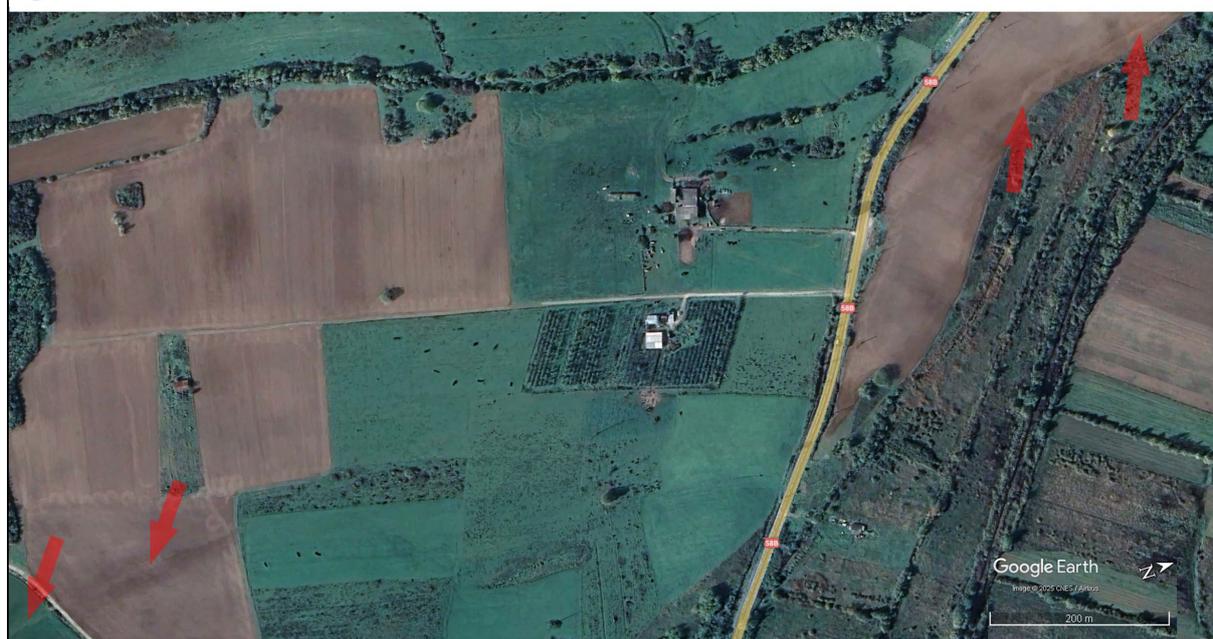


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Plate III. 1. Traces of the road segment west of Biniş captured by a Google Earth satellite image published in April 2014; 2. Traces of the road segment between Biniş and Bocşa captured by a Google Earth satellite image published in July 2017.



1



2



3

Plate IV. 1. Footprint of the embankment and carriageway surface west of Bocşa (Google Earth image, June 2025);
2. Footprints of the road segments west of Bocşa and between Bocşa and Berzovia (Google Earth image, June 2023);
3. Dressed stone west of Bocşa.

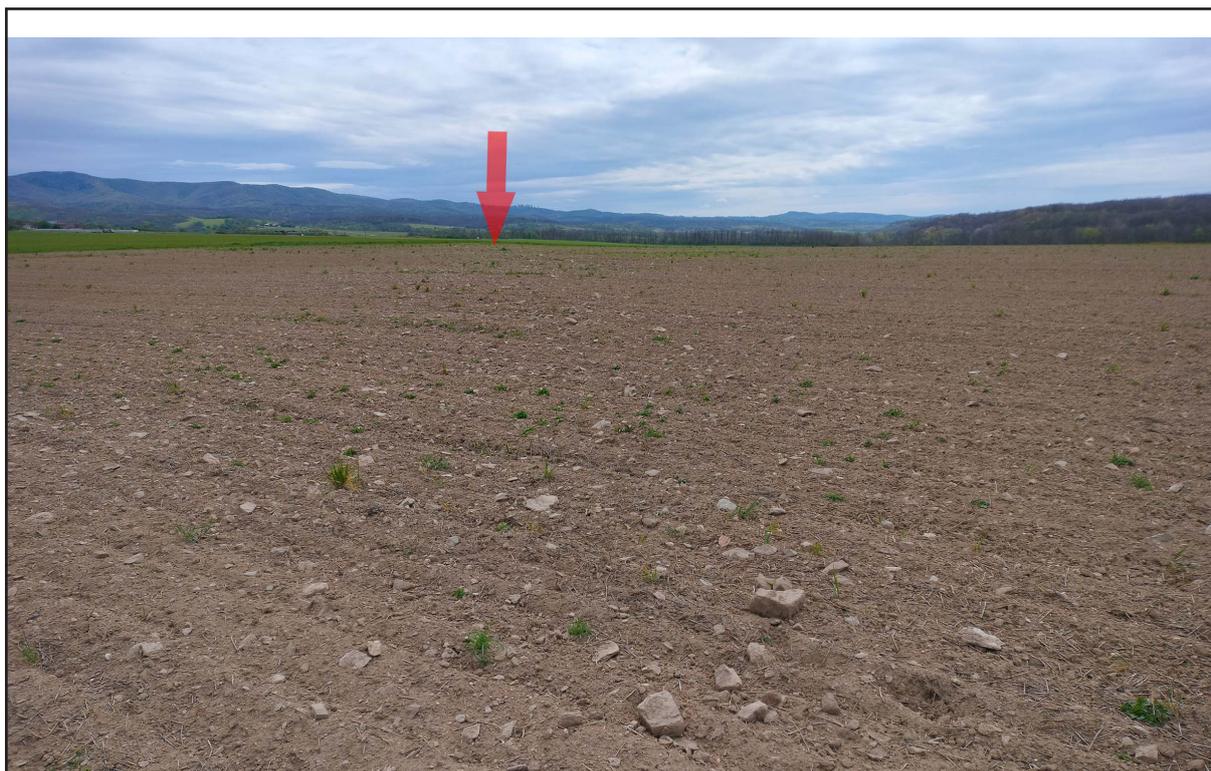


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Plate V. 1. Traces of the road segment identified northwest of Doclin (southwest – northeast perspective);
2. Traces of the road segment identified west of Biniș, visible on the grass-covered surface.



1

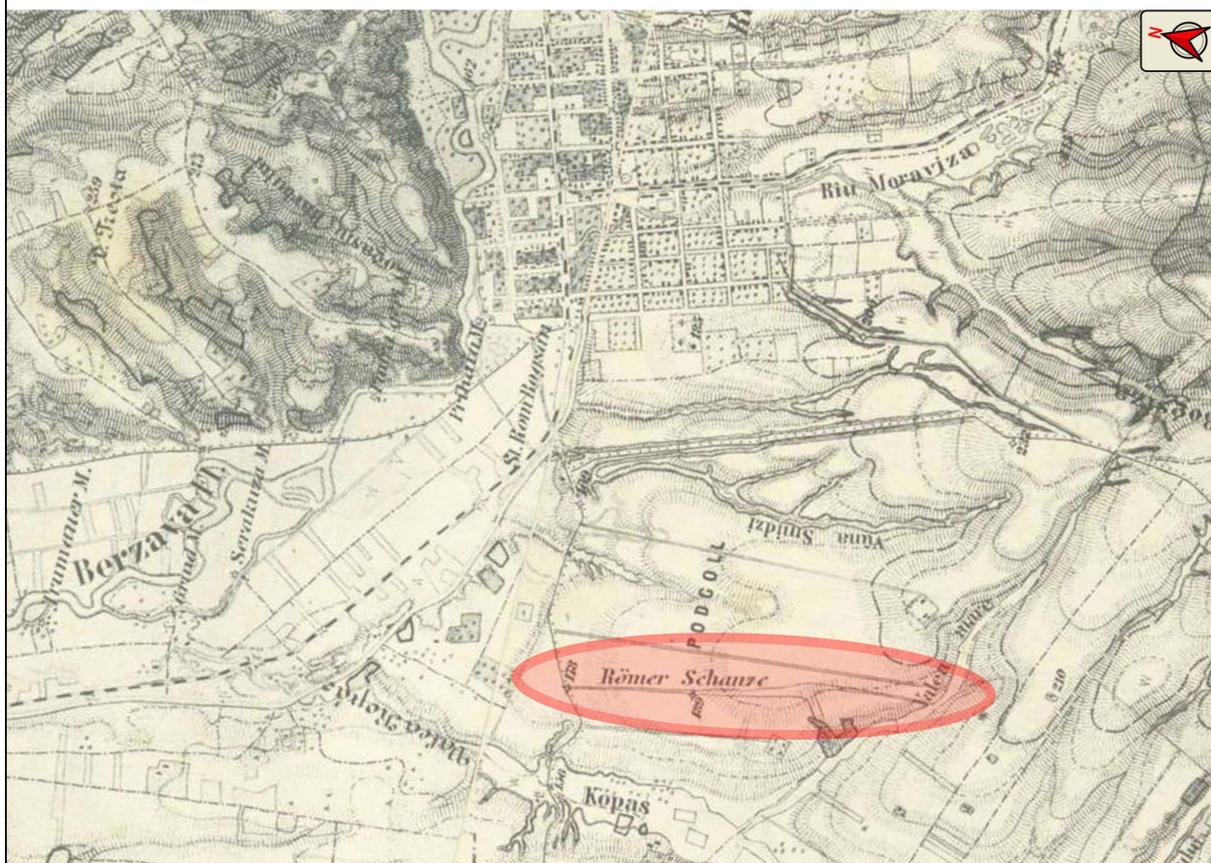


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Plate VI. 1. Traces of the road segment identified west of Biniş (north – south perspective);
2. Traces of the road segment identified between Biniş and Bocşa (northeast – southwest perspective).



1



2

Plate VII. 1. Traces of the road segment identified west of Bocşa (north – south perspective);
2. Road segment west of Bocşa depicted on the Third Military Survey of the Habsburg Empire
as Roman Ditch (Römer Schanze).



Plate VIII. 1. Footprint of the road segment between Bocşa and Berzovia observed on the ground; 2. Traces of the road segment identified between Bocşa and Berzovia (south – north perspective).

