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TECHNICAL AND ARCHITECTURAL HERITAGE ON THE RAILWAY MAJDANPEK – BOR

Abstract. The end of the 19th century and the first half of the 20th century were turbulent times for Serbia, characterized by numerous wars and significant changes in borders and state constitutions. During this period, the railway network in Serbia underwent substantial development. After the completion of the Belgrade-Niš railway, the Prahovo-Zaječar railway was finished before World War I. During the war in 1915, the railway extended to Knjaževac, and by 1922, the entire Prahovo-Niš railway was completed. The railway network in Eastern Serbia was fully realized in 1972 with the opening of the Majdanpek-Bor railway, which connected the Eastern Serbian railways with the Belgrade-Niš railway. This section was primarily constructed across challenging mountainous terrain and featured numerous bridges, tunnels, and viaducts that enhance its appeal to travellers. The focus of this paper is to present the railway and architectural heritage of the Majdanpek-Bor railway, as observed during our travels along this route.

Keywords: history of Serbian railways, railway infrastructure, railway heritage

1. Introduction

The development of the railway network in Serbia, south of the Danube, began at the end of the 19th century. Following the ancient *Via Militaris* (or *Via Diagonalis*) corridor, the Belgrade-Niš railway was completed quickly and opened to traffic in 1884. [1]

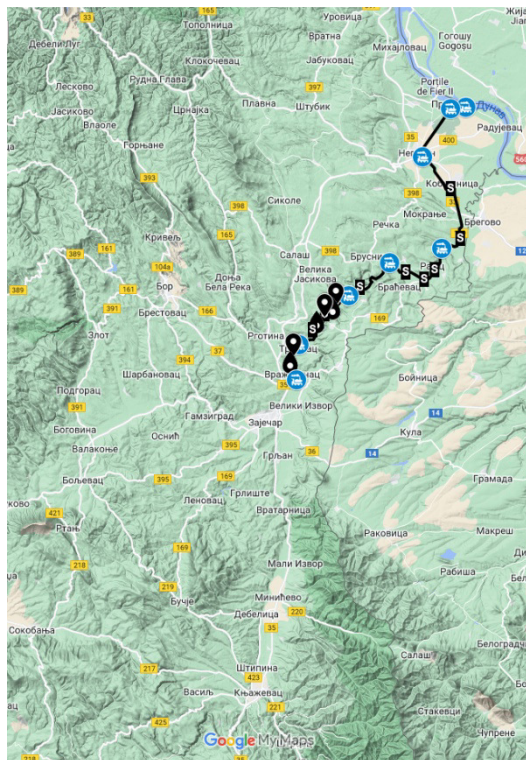
A few years later, in 1890, Serbia embraced Russia's proposal to construct the Trans-Balkan Railway, which would connect the Black Sea to the Adriatic Sea via Romania. The planned route for the railway through Serbia included Prahovo, Zaječar, Knjaževac, and Niš, extending onward to Kuršumlija, Kosovo, and Albania. [1]

Recognizing the importance of railways, Serbia has been planning to expand its railway network since the early 20th century. Among others, the focus was on constructing railways in Eastern Serbia. This development has always posed technical complexities, long timelines, and significant costs - challenges that remain relevant today.

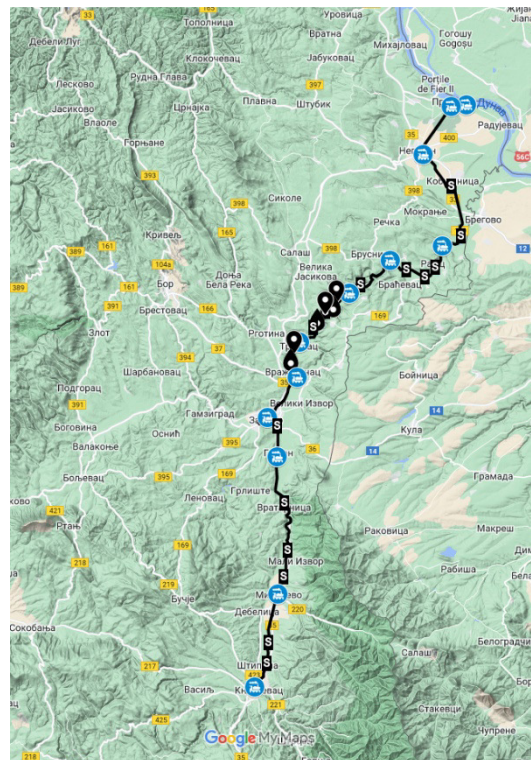
In addition to facing construction and financial difficulties, Serbia endured three wars during the first half of the 20th century: the Balkan Wars, World War I, and World War II. These conflicts resulted in the eastern railways being built in segments, often occurring during periods of peace or even amidst ongoing wars.

Before the onset of World War I, the Prahovo-Zaječar railway, measuring 76 km in length, opened for traffic on June 14, 1914. Following a brief interruption after the Battle of Kolubara on December 7, 1914 and ousting of the Austrians from Serbia, the Zaječar-Knjaževac railway was completed and opened for traffic on January 28, 1915. Finally, the Knjaževac-Niš railway began operations on August 15, 1922. [2]

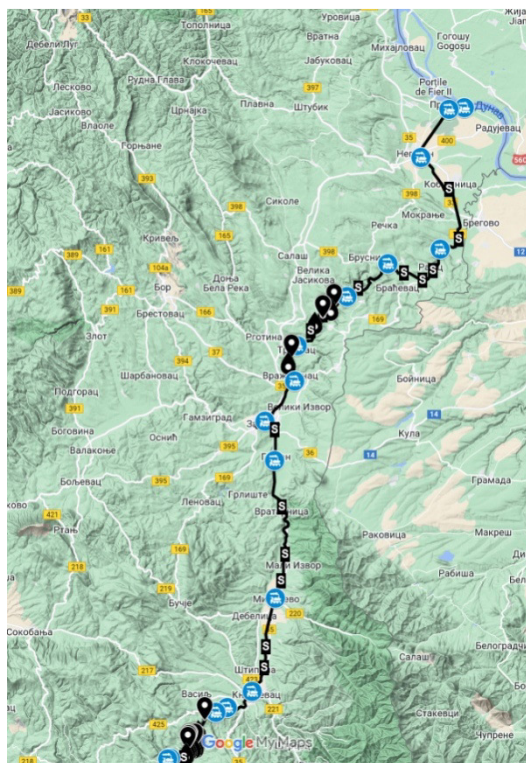
Figure 1 depicts the dynamics of constructing the railway network in Eastern Serbia [1]



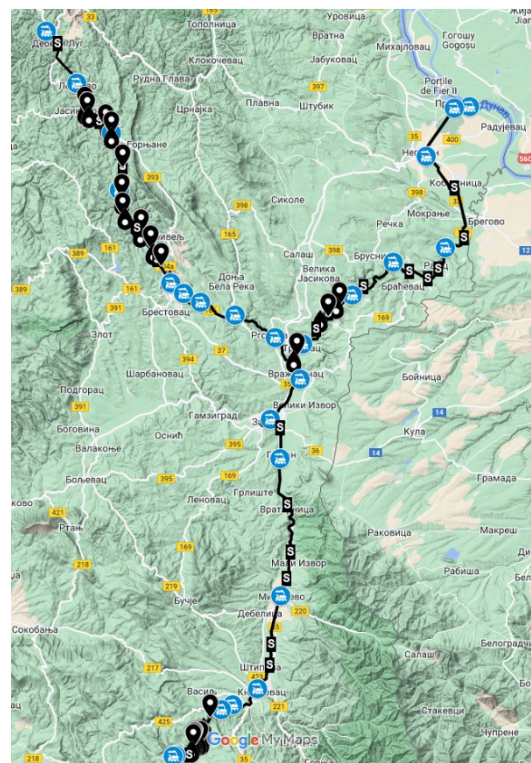
Prahovo - Zaječar, 1914, 80km



Prahovo - Zaječar - Knjaževac, 1915, 122km



Prahovo - Zaječar - Knjaževac - Niš, 1922, 188 km



Prahovo - Niš, Zaječar - Bor - Majdanpek, 1972, 287 km

Figure 1. The railway network in Eastern Serbia and its construction dynamics from 1914 to 1972 (Map data © 2024 Google)

The development plans for the railway network in Serbia included the construction of a transverse connection between the Eastern Serbian railways and the Belgrade railway junction. This railway route was intended to start at the Mala Krsna station on the Belgrade - Niš railway and connect to the railway junctions in Majdanpek, Bor, and Zaječar.

Before World War II, from 1920 to 1939, sections from Mala Krsna to Kučevo were completed, covering a distance of 78 km. After World War II, between 1948 and 1958, an additional 46 km of railway was built to reach Majdanpek. Finally, the most challenging section, from Majdanpek to Bor, was completed in 1972. Figure 2 illustrates the connection of the Eastern Serbian railways with the Belgrade - Niš railway at the Mala Krsna junction.

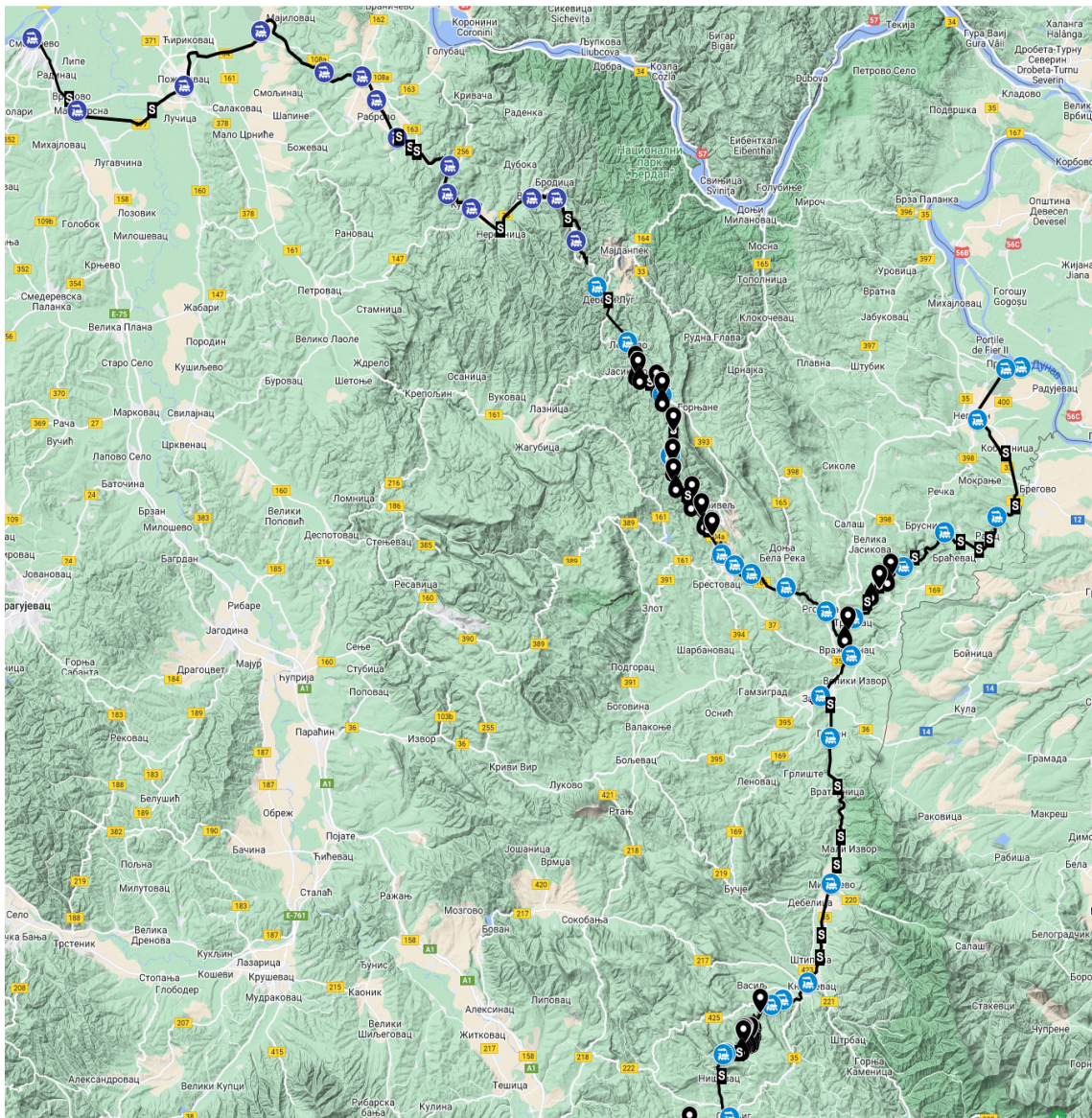


Figure 2. The connection of the Eastern Serbian railways with the Belgrade - Niš railway at the Mala Krsna junction (Map data © 2024 Google)

Unlike the Belgrade - Niš railway, most railway corridors in Eastern Serbia traverse extremely difficult terrain, primarily following river courses and often crossing from one side of a river to the other. The section between Majdanpek and Bor is particularly notable. This paper presents the results of research on the railway and architectural heritage of the Majdanpek - Bor railway.

2. Majdanpek - Bor railway

The Majdanpek-Bor (Figure 3) railway spans 64 km and was opened to traffic on April 3, 1972. Its completion established a connection between the Eastern Serbian railways at the Mala Krsna junction and the Belgrade-Niš railway via a transverse link (Figure 3). The railway was constructed through extremely challenging and inaccessible terrain, incorporating numerous bridges, viaducts, and ten tunnels. The longest of these tunnels is Šušulajka, which measures 2.1 km in length.

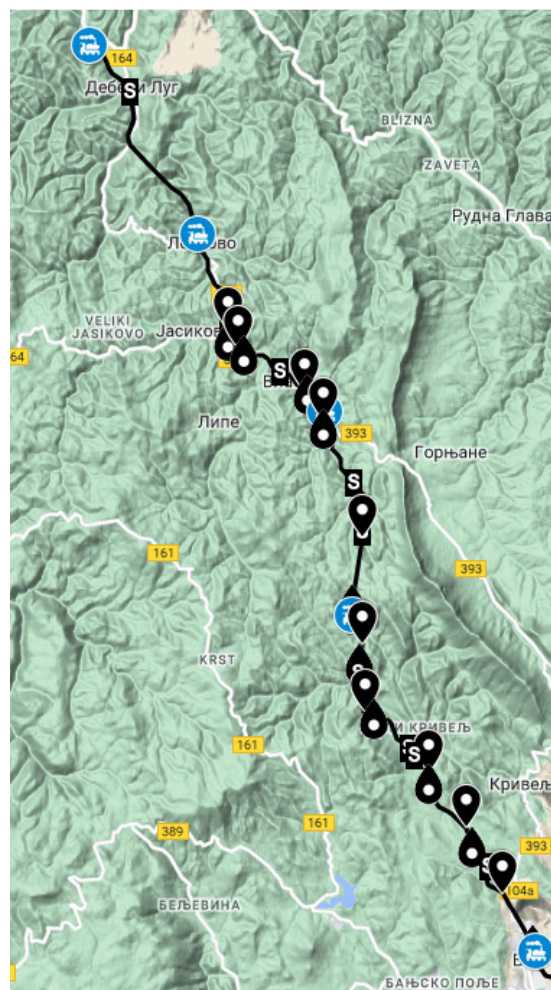


Figure 3. Majdanpek – Bor (Map data © 2024 Google)

Table 1 provides data about the stations and stops, their operational status, and details regarding the station buildings.

	Name	Station/stop	Operational status	Actual state
1.	Majdanpek	station	possessed	maintained
2.	Debeli Lug	stop	without staff	renewed
3.	Leskovo	station	without staff	damaged
4.	Jasikovo	stop	without staff	damaged
5.	Vlaole Selo	stop	without staff	damaged
6.	Vlaole	station	without staff	damaged
7.	Gornjane	stop	without staff	damaged
8.	Šušulajka	stop	without staff	unreachable
9.	Cerovo	station	without staff	damaged
10.	Kriveljski Most	stop	without staff	maintained
11.	Kriveljski Potok	stop	without staff	damaged
12.	Mali Krivelj	station	without staff	damaged, burnt
13.	Brezonik	stop	without staff	destroyed, burnt
14.	Bor	station	without staff	severely damaged, burnt

Table 1. Stations and stops

The railway is a single-track line and not electrified. Train intersections are at Majdanpek, Leskovo, Vlaole, Cerovo, Mali Krivelj, and Bor stations. This railway was constructed by companies exclusively from the former Yugoslavia.

3. Viaducts

The configuration of the terrain has required the railway route to traverse multiple tunnels, bridges, and viaducts. The viaducts in particular are impressive, offering expansive views of the surrounding mountains. The longest and tallest viaducts include Debeli Lug (Figure 4), Vlaole Selo (Figure 5), Vlaole (Figure 6), and Kriveljski Most (Figure 7).

3.1. Viaduct Debeli Lug. Viaduct Debeli Lug is situated between Majdanpek and Debeli Lug, right in front of the Debeli Lug stop (Figure 4).



Figure 4. Viaduct Debeli Lug

3.2. Viaduct Vlaole Selo. Viaduct Vlaole Selo is located between Jasikovo and at the entrance of the Vlaole Selo Stop. (Figure 5).



Figure 5. Viaduct Vlaole Selo

3.3. Viaduct Vlaole. Viaduct Vlaole is located between the Vlaole Selo Stop and the entrance of the Vlaole station. This viaduct crosses the village, elevating the railway above the rooftops of the houses (Figure 6).



Figure 6. Viaduct Vlaole

3.4. Viaduct Kriveljski Most. Viaduct Kriveljski Most is the most prominent structure along the Majdanpek - Bor railway line. It is located in the village of Valja Mare, between the Cerovo and Kriveljski Most stations. The viaduct is supported by eight pillars and stands approximately 85 m tall, with a length of about 430 m (Figure 7).



Figure 7. Viaduct Kriveljski Most

In recent years, passenger trains have only travelled along the Majdanpek - Bor railway line twice a day [3]. As a result, capturing images of a passenger train crossing the bridge is a rare occurrence (Figure 8).



Figure 8. Passenger train crossing the Kriveljski Most

The eastern section of the viaduct was constructed above the rooftops of houses in the village of Velja Mare (Figures 9.1 and 9.2).



Figure 9. Viaduct Kriveljski Most

A pedestrian path has been constructed on the bridge beside the tracks (Figure 10).



Figure 10. Bridge construction

4. Stations and stops

The Majdanpek - Bor railway consists of five stations and nine stops, as listed in Table 1. Some of these stations and stops, specifically Gornjane, Šušulajka, Cerovo, Kriveljski Most, and Kriveljski Potok, are located far from the nearest settlements and can only be accessed on foot.

In recent years, the railway has primarily been utilized by cargo trains, while passenger traffic has decreased to just two departures per day. As a result, passengers are rarely seen at the stations. Additionally, passenger trains do not operate on holidays. [3]

The station buildings along the railway reflect the architectural style of the period when the railway was built. There are four distinct types of station buildings.

4.1. Moravian Style. The station building in Majdanpek was designed in the Moravian architectural style by architect Ljubomir Kalužević. It was completed in 1969 coinciding with the opening of the Mala Krsna - Majdanpek railway line (Figure 11).



Figure 11. Majdanpek Railway Station

4.2. Bor Station. The beautiful and large station in Bor was built in the city centre in 1972 (Figure 12). In recent years, it has been closed, so it has remained unsecured and exposed to vandalism of all kinds. The result is the total destruction of the building. Bor station burned down in a fire that occurred on the night of July 23-24, 2023 [4] (Figure 12).



Figure 12. Bor Railway Station

4.3. Typical Buildings of Larger Stations. The station buildings in Leskovo (Figure 13), Vlaole (Figure 14), Cerovo (Figure 15), and Mali Krivelj (Figure 16) are designed in a style typical of the second half of the 20th century.



Figure 13. Railway Station Leskovo



Figure 14. Railway Station Vlaole



Figure 15. Railway Station Cerovo



Figure 16. Railway Station Mali Krivelj

4.4. Typical buildings of stops. The simplest station buildings are small, single-room structures. These stations can be found in Debeli Lug (Figure 17), Jasikovo (Figure 18), Vlaole Selo (Figure 19), Gornjane (Figure 20), Kriveljski Most (Figure 21), Kriveljski Potok (Figure 22) and Brezonik (Figure 23). Buildings serve as both a waiting area and a ticket office.



Figure 17. Stop Debeli Lug



Figure 18. Stop Jasikovo



Figure 19. Stop Vlaole Selo



Figure 20. Stop Gornjane



Figure 21. Stop Kriveljski Most



Figure 22. Stop Kriveljski Potok



Figure 23. Stop Brezonik

Typical examples of station waiting rooms and ticket offices can be found at the Kriveljski Most Stop (Figure 24) and the Vlaole Stop (Figure 25).



Figure 24. Kriveljski Most



Figure 25. Vlaole

Conclusion

The Majdanpek-Bor railway stretches 42 km and was opened to traffic on April 4, 1972. Our field research was carried out in August 2024. This railway comprises five stations and nine stops. Due to the mountainous terrain, ten tunnels were constructed, with the longest tunnel, named "Šušulajka," measuring approximately 2.1 km in length. Along the railway route, numerous bridges and several viaducts have been built. "Kriveljski Potok" and "Vlaole" viaducts are particularly notable due to their impressive length and height.

The period following the completion of this railway and extending to the end of the 20th century was marked by significant passenger and freight traffic. Although some stops and stations, such as Šušulajka, Cerovo, Kriveljski Most, and Kriveljski Potok are located far from settlements and in hard-to-reach areas, the train remained the primary mode of transport between Majdanpek and Bor until the 1980s. However, with the constitution of bus lines, passenger rail service on this route has now been reduced to just two departures per day.

The findings of this research, although without available information about any existing revitalization or modernization projects, indicate that the future of the railway is uncertain.

The objective of this project was to identify and document artefacts related to the railways of Eastern Serbia. Throughout our journey, we followed the railway lines, explored numerous stations, and identified and photographed existing construction facilities, technical devices, signalling systems, and more.

The results from our field research, which include photographs, GPS tracks, and records about the railways, have been permanently archived. Selected materials from this research have been published on the website of the Magazine for National Geography, Culture, and Tradition (<https://www.srbijaplus.net>). Authentic and new photographs of railway facilities and technical devices in Eastern Serbia represent a significant outcome of our research, particularly in light of the anticipated changes in the future development of railways in Serbia.

The railway Majdanpek - Bor holds significant importance for the local area and also could be aligned with the global trend of revitalizing old railway lines for travel. Additionally, our findings emphasize that the Majdanpek - Bor railway deserves recognition as one of the beautiful, historic railways often featured on satellite TV channels.

Without dealing with the development strategy of Serbian railways, economic and technical limitations, it is essential to re-establish direct passenger service from

Belgrade to Bor, Majdanpek, Prahovo, Zaječar, Knjaževac, and Niš. Apart from the local importance, the establishment of effective traffic would support the general world trend of traveling on old railways.

Additionally, the railway section between Majdanpek and Bor is an exceptional engineering achievement that deserves recognition. Therefore, the Majdanpek-Bor railway represents an important part of the cultural and technical heritage in Serbia that should be preserved.

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Notes

- The authors' conclusions do not necessarily reflect the attitudes of the Ministry of Culture and Information of the Republic of Serbia and the Serbian Railways Infrastructure.

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