

Environmental and Social Due Diligence, Impact
Assessment and Road Safety Audit for the Moldova
TEN-T Road Network Rehabilitation Project,
DTM 55768

Project No. P12002-106

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Road Safety Audit
Tranche 1: R7 Road
Lot 1, Lot 2, Lot 3

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1. Project sheet

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2. Background of the project

The European Bank for Reconstruction and Development (EBRD) is considering the provision of a sovereign loan to the Republic of Moldova to support the rehabilitation, upgrading, and construction of priority national road corridors. The investment is structured into four tranches under a wider national programme, with the current assignment focused on Tranche 1 (Category B) and Tranche 2 (Category A). These works are of strategic importance to Moldova's transport sector, as they aim to improve regional connectivity, enhance cross-border linkages with Romania and Ukraine, and contribute to safer, more reliable mobility for all road users.

Tranche 1: R7 Road (Category B)

Tranche 1 covers approximately **104.8 km of the R7 Road**, extending from the junction with the R14 to Costești at the Romanian border, and including a separate section from Soroca to the Ukrainian border. The tranche is divided into six lots:

- **Lot 1:** R14 – Drochia (29 km)
- **Lot 2:** Drochia – Rîșcani (27.4 km)
- **Lot 3:** Rîșcani – Costești (30 km)
- **Lot 4:** Drochia Bypass (6 km)

This tranche has been categorised as Category B under the EBRD Environmental and Social (E&S) Policy, as the expected environmental and social impacts are site-specific, temporary, and manageable with standard mitigation measures.

Note: This Road Safety Audit (RSA) has been undertaken for Tranche 1, covering Lot 1, Lot 2, and Lot 3, where sufficient design information was available to carry out a meaningful assessment. Lot 4 is not included in this audit, as no detailed drawings or related information have been produced for these sections to date. However, general safety recommendations for Lot 4 have been indicated based on the outcomes of the assessments for Lots 1–3 and observations made during the site visit, to guide future design development and ensure that road safety principles are considered early.

Tranche 2: M3 Road (Category A)

Tranche 2 addresses 70.9 km of the M3 Road, an essential north–south corridor linking Chișinău with Comrat, Giurgiulești, and the Romanian border. The tranche is divided into four lots:

- **Lot 1:** Airport Interchange – Porumbrei (34.4 km)
- **Lot 2:** Porumbrei – Cimișlia (19 km), involving rehabilitation and widening from 2 to 4 lanes (Category A)
- **Lot 3:** Cimișlia – Comrat (12 km)
- **Lot 4:** Giurgiulești Ring Road (5.5 km)

Due to the widening works over more than 10 km in Lot 2, Tranche 2 has been classified as Category A. This requires the preparation of a full Environmental and Social Impact Assessment (ESIA) and associated documentation, with public disclosure for a minimum of 120 days.

Note: Road Safety Audit (RSA) has been undertaken for Tranche 2, covering Lot 1 and Lot 2, where sufficient design information was available to carry out a meaningful assessment. Lots 3 and 4 are not included, as no detailed drawings or related information have been produced for these sections to date. However, general safety recommendations for Lots 3 and 4 have been indicated based on the outcomes of the assessments for Lots 1 and 2 and observations made during the site visit, to guide future design development and ensure that road safety

principles are considered early. Separate report has been prepared for the Road Safety Audit of Lot 1 and Lot 2 for Tranche 2.

Investment Structure

The total capital expenditure (CAPEX) for the two tranches amounts to EUR 403.6 million, with an additional EUR 20.18 million allocated for supervision and project implementation support (S&PIU), bringing the total programme value to EUR 423.78 million.

- **Tranche 1:** EUR 237.30 million (CAPEX + S&PIU)
- **Tranche 2:** EUR 186.48 million (CAPEX + S&PIU)

Strategic Importance

The Project will play a critical role in modernising Moldova's core road network, reducing travel times, supporting trade and regional integration, and improving accessibility to border crossings. The inclusion of a comprehensive RSA aligns with EBRD's commitment to embedding international best practices in road safety, ensuring that the upgraded corridors not only improve mobility but also contribute to the long-term reduction of road traffic collisions and fatalities.

Moldova's road network is a lifeline for economic development, given the country's lack of navigable waterways and limited railway coverage. The rehabilitation and modernisation of the road network, including the R7 and M3 corridors under the present project, will:

- Enhance cross-border trade and integration with the EU transport system.
- Support regional development and accessibility.
- Improve safety standards in line with international best practice.

3. Road network and safety performance in Moldova

The Republic of Moldova has a road network that plays a vital role in ensuring the country's economic activity, mobility, and regional integration. Positioned between Romania and Ukraine, Moldova's transport system provides a key transit corridor for trade flows between the European Union, the Commonwealth of Independent States (CIS), and the Black Sea region. The efficiency, safety, and reliability of the national road network are therefore of strategic importance not only to the domestic economy but also to regional connectivity.

According to Article 2 of the Law on Roads No. 509 (22/06/1995, last amended in 2020), the road network of the Republic of Moldova is classified into two main categories:

- Public roads, and
- Private roads.

From a functional perspective, public roads are further divided into:

- European roads,
- National roads, and
- Local roads.

Within the category of national roads, the following subtypes are distinguished:

- Highways,
- Express roads,
- Republican roads, and
- Regional roads.

Local roads are classified as:

- Roads of district (municipal) interest,
- Communal roads, and
- Streets.

European roads (E-roads) are defined as international transport corridors crossing the territory of the Republic of Moldova in accordance with the European Agreement on Main International Traffic Arteries (AGR), administered by the United Nations Economic Commission for Europe (UNECE). These roads may overlap with highways, express roads, or republican roads.

National roads are state-owned public roads that provide the main international connections, link the capital with municipalities and major cities, and connect places of republican significance. They fall into four categories:

- Highways (M): High-capacity, high-speed roads for motor vehicles only, with at least two lanes per direction, a median, a stopping lane, grade-separated intersections, and controlled access via junctions.
- Express Roads (M): Roads with two or more lanes, accessible only through grade-separated junctions or regulated intersections, where stopping and parking on the carriageway are prohibited.
- Republican Roads (R): Roads linking Chişinău with other cities, municipalities, industrial centres, cultural and natural landmarks, and major transport hubs such as railway stations, airports, and river ports.
- Regional Roads (G): Roads of regional importance, connecting settlements across two or more districts or at least four localities within one district.

The road infrastructure of the Republic of Moldova totals 10,680 km of public roads, of which:

- 5,952 km are national public roads,

- 3,708 km are local public roads, and
- 1,070 km are public roads located on the left bank of the Dniester River.

The network managed by the State Road Administration (SRA) consists of 5,951.9 km of national public roads, broken down as follows:

- Express roads (M): 631.1 km
- Republican roads (R): 1,995.6 km
- Regional roads (G): 3,304.1 km
- Local public roads (L): 21.1 km

Additionally, 3,708 km of local public roads are under the authority of regional and municipal administrations.

The detailed structure of the network under SRA management is presented in Table 1.

Road Category	Length (km)	Share of Network (%)
Express roads (M)	631,1	10,6 %
Republican roads (R)	1 995,6	33,5 %
Regional roads (G)	3.304,1	55,5 %
Local public roads (L)	21,1	0,4 %
Total	5 951,9	100 %

Table 3-1 Moldova road network managed by the State Road Administration¹

3.1. Road Surface and Condition

In 2020, approximately 46.8% of Moldova’s road network was assessed as being in poor condition. The country’s significant investment gap becomes evident when compared with international benchmarks. According to the 2019 Global Competitiveness Report, the quality of Moldova’s road infrastructure ranked among the lowest globally—126th out of 140 countries—and was identified as the poorest in the Europe and Central Asia (ECA) region².

The Republic of Moldova applies a systematic and continuous data collection process to monitor the condition and quality of its road pavement network on an annual basis. The assessment is based on the International Roughness Index (IRI), a globally recognized indicator used to quantify road surface roughness and overall ride quality. The IRI reflects the smoothness of the pavement, where lower values correspond to better surface conditions and higher values indicate increased deterioration and the need for maintenance or rehabilitation. This indicator enables the identification of specific road sections or categories that require timely interventions, supporting efficient asset management and investment prioritization. Figure 1 illustrates the evolution of the IRI across Moldova’s national public road network between 2018 and 2023, showing how pavement conditions have varied over time at the national level.

¹ The State Road Administration, 2023.

² Moldova Rural Connectivity Project (P180153), environmental and social management plan for C8.1&C8.2 (C8) corridor (G88 & G86 road) (Cornesti – M5-C8.3), 2024.

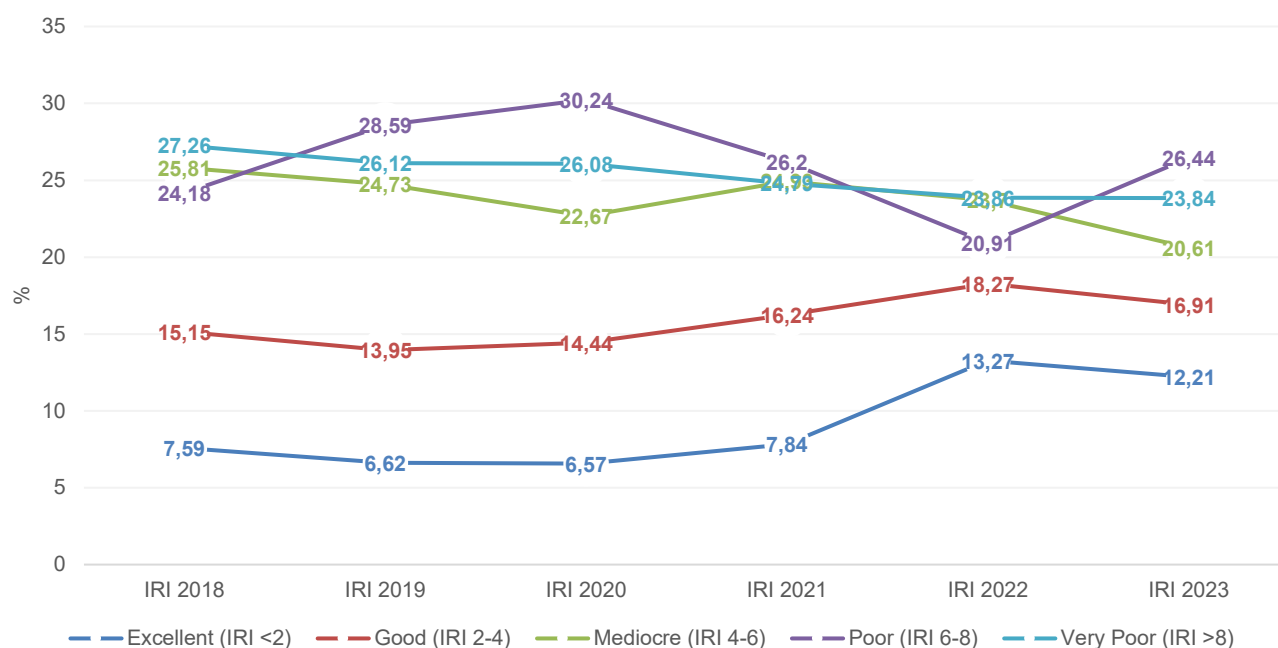


Figure 3-1. The evolution of road condition of national public roads according to the IRI index during the years 2018-2023

Source: Presentation of Ministry of infrastructure and regional development, S.E. State Road Administration, May 28, 2024 for Transport Community.

Between 2018 and 2023, the condition of Moldova's national public roads showed moderate fluctuations in surface quality. The share of "Excellent" (IRI <2) roads slightly increased—from 7.6% in 2018 to 12.2% in 2023, indicating some improvement in top-condition sections. "Good" (IRI 2–4) roads also grew modestly from 15.2% to 16.9%, suggesting gradual maintenance progress. However, the proportion of "Mediocre" (IRI 4–6) roads declined from 25.8% to 20.6%, while "Poor" (IRI 6–8) conditions fluctuated notably—peaking at 30.2% in 2020, then dropping in 2022 before rising again to 26.4% in 2023. The share of "Very Poor" (IRI >8) roads remained relatively stable, decreasing slightly from 27.3% to 23.8%.

Overall, the data show a modest improvement in the best-quality road segments, but a persistent share of deteriorated sections, highlighting the ongoing need for targeted rehabilitation and maintenance across the national road network.

3.2. Road vehicle fleet

Each year, thousands of new and used vehicles are registered in the Republic of Moldova, and this trend is expected to continue as economic conditions improve and the country's motorisation level remains comparatively low. The national vehicle fleet is now about twice as large as in the early 2010s, when around 610,000 vehicles were registered. According to the State Register of Transport (RST), Moldova exceeded 1,000,000 registered motor vehicles in May 2019. Overall, car ownership in Moldova doubles approximately every 15 years, illustrating a consistent rise in private mobility and vehicle use.

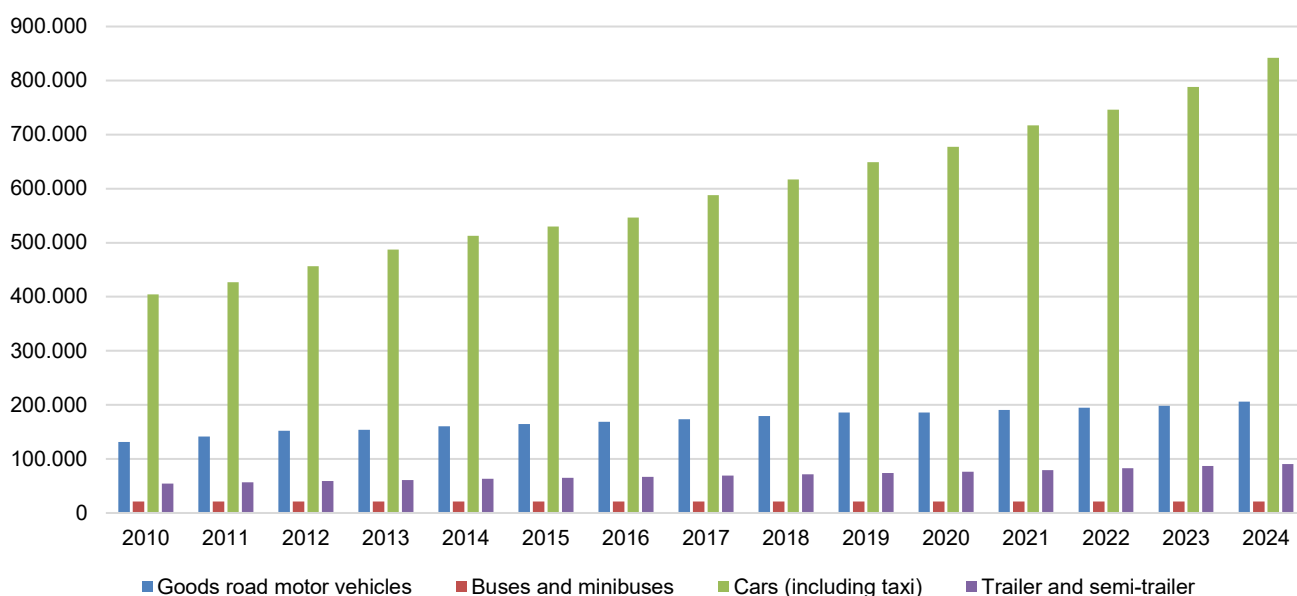


Figure 3-2. Number of registered motor vehicles

Source: Statistical databank (Biroul național de statistică al Republicii Moldova)

The structure of Moldova's transport fleet continues to evolve in line with economic growth, trade integration, and infrastructure improvements. The majority of vehicles are passenger cars, accounting for roughly 80 percent of the national fleet, while commercial vehicles—such as light vans, trucks, and buses—make up a smaller but steadily expanding share due to increasing demand for logistics and public transport services. The average vehicle age remains high, at around 15 years, reflecting the predominance of imported second-hand cars, primarily from the EU. Nonetheless, gradual fleet renewal is underway, supported by policies promoting energy-efficient and lower-emission vehicles. The consistent annual increase of approximately 4.7 percent in total registrations highlights both the growing importance of road transport in Moldova's economy and the need for continued investment in road safety, emissions control, and sustainable mobility initiatives.

3.3. Road accidents

A dedicated unit within the National Inspectorate for Public Security under the General Police Inspectorate (GPI), hereafter referred to as the Traffic Police, is responsible for collecting crash data. Traffic crash information is initially recorded on a paper-based form at the scene and subsequently entered into the central crash database—the Automated Information System “State Register of Road Accidents” (AIS RAR)—following a quality control process. This crash database has been in use since 2014 but has not undergone any upgrades since its implementation.

Based on the graph, the number of registered traffic accidents has generally decreased over the period 2017–2024, falling from 2,640 in 2017 to 1,986 in 2024, representing an overall reduction of approximately 24.8%. A notable drop occurred in 2020, when accidents fell to 2,003, likely influenced by reduced mobility during the COVID-19 pandemic. After a temporary increase in 2021 to 2,548, the numbers continued to decline, stabilizing around 1,976–1,986 in 2023–2024.

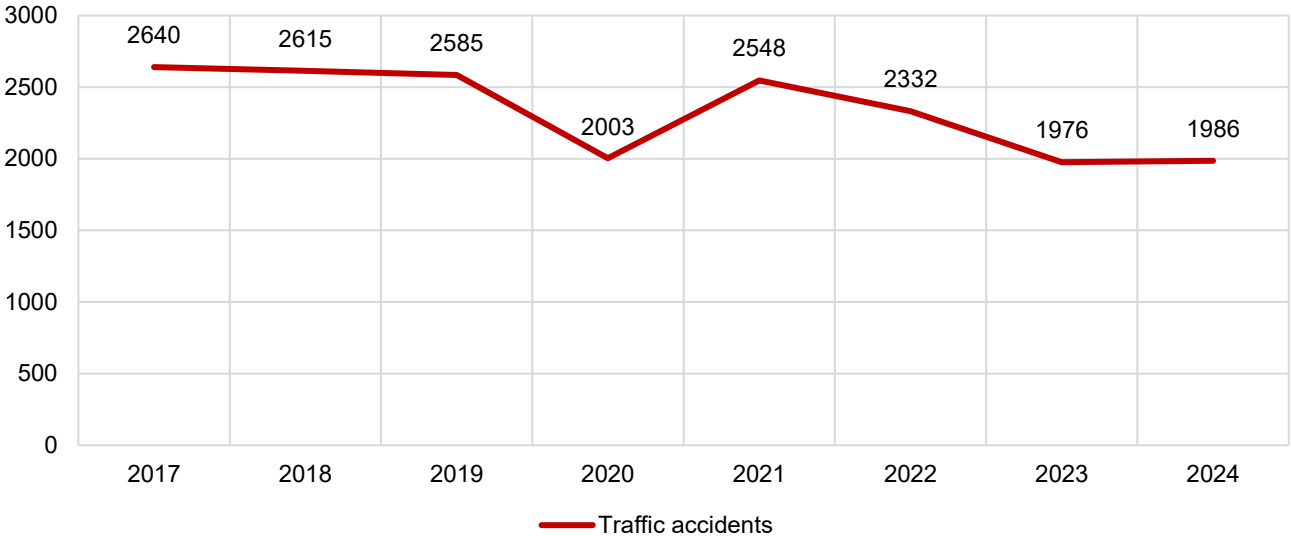


Figure 3-3. Number of registered road accidents

Source: Road Safety Performance Review Moldova (United Nations, 2024); Automobile Club of Moldova (ACM)

The trend in road accident fatalities in Moldova from 2005 to 2024 shows a significant overall decline, despite an initial surge. Fatalities peaked in 2008 at 509 deaths, up from 391 in 2005. Following this peak, the country achieved a major breakthrough in road safety, marked by a steep, one-year reduction from 445 fatalities in 2012 to 301 in 2013. This reduction suggests the successful implementation of new road safety policies or enforcement measures. The downward trend largely continued over the next decade, with the numbers stabilizing around 300 before entering a renewed decline. The lowest fatality count in the entire period was recorded in 2023 at 197. By 2024, the preliminary data indicates a slight increase to 202 fatalities. Overall, the reduction from the 2008 peak of 509 to the 2023 low of 197 represents a remarkable decrease of approximately 61.3%, demonstrating considerable long-term progress in making Moldova’s roads safer.

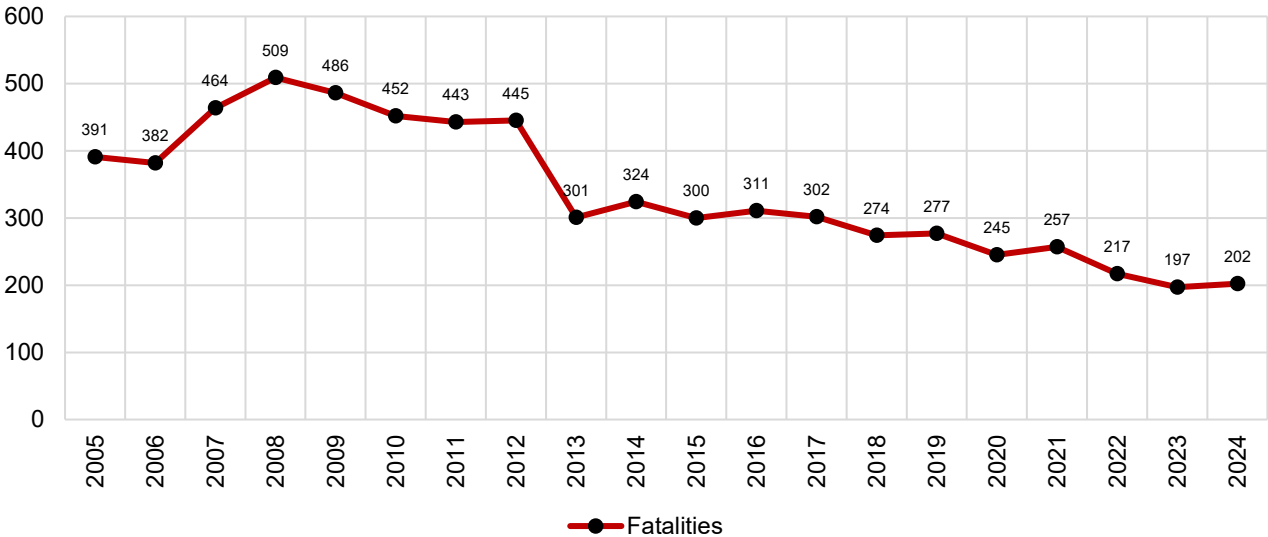


Figure 3-4. Number of fatalities in road accidents

Source: UNECE Transport Statistics Database, compiled from national and international official sources.

The analysis of persons injured in road accidents in Moldova from 2005 to 2024 shows a fluctuating trajectory with an overall moderate decrease. The number of injured initially surged, reaching its peak in 2010 at 3,745 individuals.

Following this high point, the figures entered a phase of gradual decline until 2019. A defining moment occurred in 2020, with the sharpest drop to 2,265 injured, an outcome strongly linked to reduced mobility during the COVID-19 pandemic. A post-pandemic rebound pushed the number back up significantly to 2,862 in 2021 before a renewed decline led to 2,289 injuries in 2023. The latest data for 2024 shows a slight increase to 2,375. Despite the volatility, the overall reduction from the 2010 peak to the 2023 low is significant. However, the sustained number of injuries indicates that while fatality reduction has been a major success, efforts to reduce the frequency of injury-causing accidents remain a persistent challenge for Moldovan road safety.

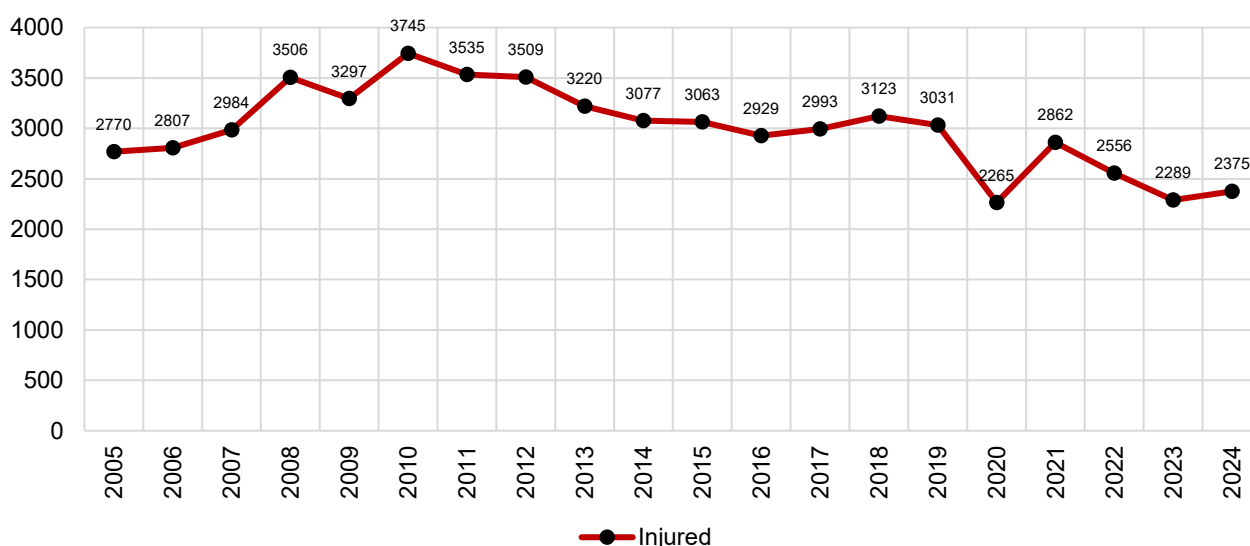


Figure 3-5. Number of injured in road accidents

Source: UNECE Transport Statistics Database, compiled from national and international official sources.

3.4. Project rationale

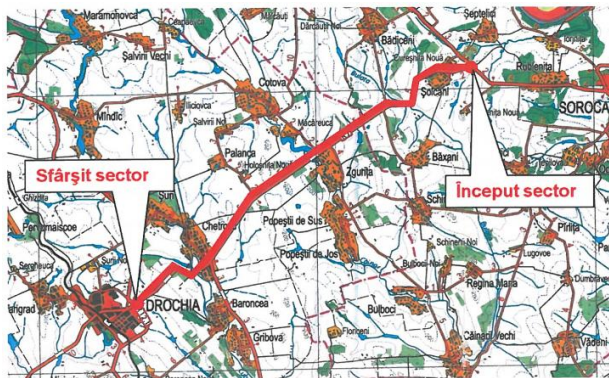
The R7 road represents an important national route in the Republic of Moldova, connecting several key districts in the northern part of the country. The road begins at the junction with R14, continues through Drochia and Rîșcani, and extends further to Costești, near the border with Romania. Functioning as a vital regional corridor, the R7 facilitates the movement of people, goods, and agricultural products between northern and central Moldova and provides a direct link to international trade routes through border crossings toward the European Union.

This corridor plays a significant role in supporting agricultural and industrial activities in the northern regions, particularly in Drochia and Rîșcani, which are among the country's most productive agricultural zones. Improved road infrastructure along the R7 would enhance regional accessibility, stimulate local economic development, and reduce travel times and transport costs for both passenger and freight traffic.

Currently, several segments of the R7 are in deteriorated condition, with uneven pavement, narrow carriageways, and insufficient safety infrastructure. These conditions limit travel speed, increase vehicle operating costs, and contribute to traffic safety concerns. The planned modernization of the R7—from R14 to Costești—is therefore of strategic importance for Moldova's transport network.

Rehabilitation of this route will not only improve national and regional connectivity but also strengthen Moldova's position as a transit corridor between Ukraine and the European Union, promoting cross-border trade and regional economic integration. The project aligns with Moldova's long-term infrastructure strategy and supports the country's

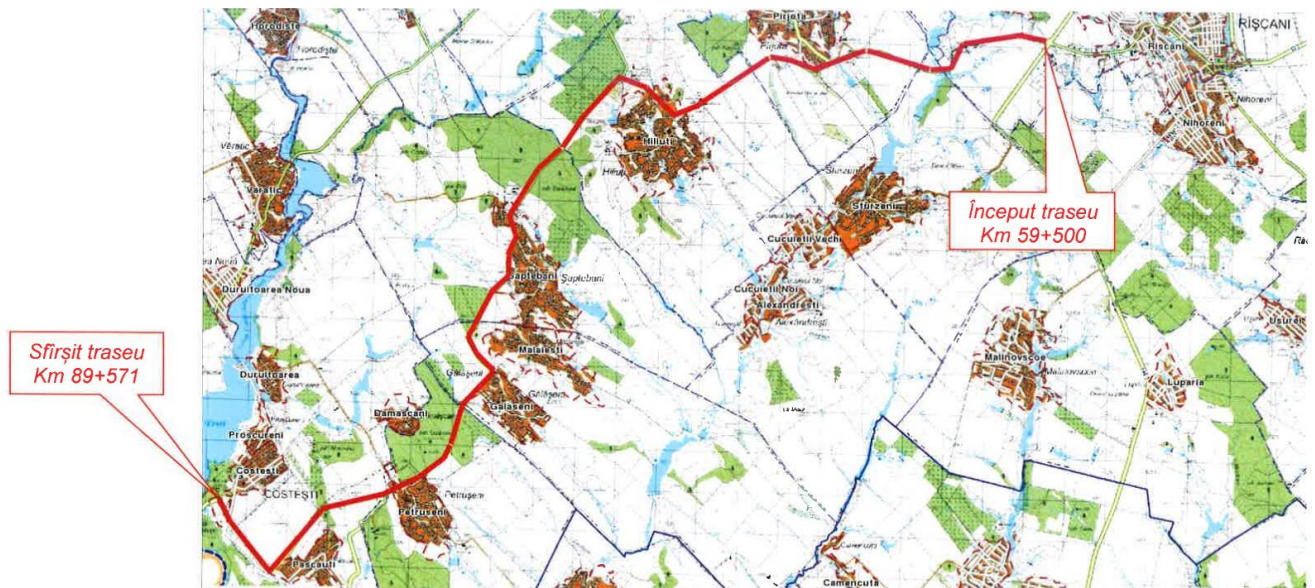
broader objective of fostering sustainable mobility, improving safety, and enhancing access to markets and services for local communities.



Lot 1 (R14 – Drochia, 29km)



Lot 2 (Drochia – Riscani, 27.4km)



Lot 3 (Riscani – Costesti, 30km)

Figure 3-6. R7 road construction lots which has been assessed

Source: Project documentation and traffic management plans for each section

4. Road safety audit

4.1. Road Safety Audit Methodology and approach

In accordance with international road safety audit standards and their intended purpose, the Consultant will study the purpose and function of the road in the hierarchy, route selection, applicable standards, number and types of intersections. In addition, the Consultant will evaluate the basic principles and design of the scheme and will include horizontal and vertical alignments, lines of sight, cross-slopes, vulnerable user needs, layout, connectivity, lighting, etc. An analysis of accidents will also be carried out to identify the most recurring problems that cause road users to be injured or killed on the roads. In the light of this analysis and the design solutions envisaged in this project, recommendations will be proposed for the improvement of the project in order to minimize the risk of accidents on this section of road in question. Most cost-effectiveness improvements and solutions will be recommended. The road safety audit reviews all the information received, assesses the geographical location of the road, traffic accident data and other relevant information. All provided information (toms of documentation) are taking into consideration and verification for best cost-effective solutions of the project design. The Consultant's auditors will provide an independent opinion and justification of the situation and a final report. The general process of RSA services of the Consultant is shown in the figure below. The final RSA report will consist of: general information about the project, such as the name of the project, the stage of the project at which the audit was carried out, the location of the facility on the site (map provided), a description of the road environment, traffic composition, traffic volume, road accidents and etc.; a narrative, ranged from high to low risk, which will contain and describe the weaknesses identified during the audit and unsafe elements of the road design, schemes with marked unsafe road elements, road safety goals and alternatives to achieve them, analysis results the influence of these alternatives, as well as photographs, graphics and other useful materials about the object in question; comments and suggestions on elimination of weak points and unsafe road elements identified in the rating of projects from high potential risk to low. Recommendations and suggestions for improvement will be provided for each identified problematic part in illustrative diagrams or pictures from best practice examples.

Road Safety Audit Process Timeline

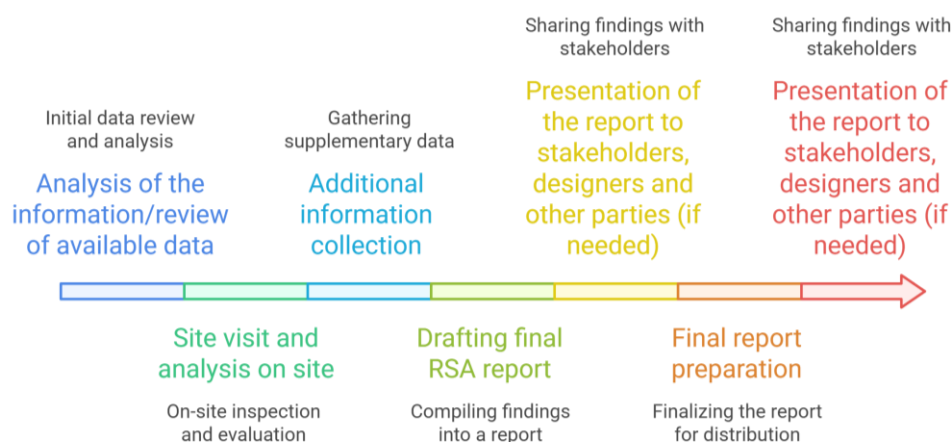


Figure 4-1. Road Safety Audit (RSA) process timeline

Source: The Consultant

In conducting Road Safety Audits (RSA), the consultants' approach is fundamentally centered on the human element, recognizing the cognitive and physical limitations of road users as the primary reference point. This perspective is grounded in an integrated understanding of the interaction between the human, the vehicle, and the infrastructure. The consultants acknowledge that road users are the most vulnerable component in the traffic system; therefore, the design and assessment of infrastructure must account for their capabilities and limitations. RSA methodology places strong emphasis on anticipating and mitigating potential risks by aligning infrastructure design with the real-world behavior and limitations of drivers, pedestrians, and other road users. The core objective is twofold: to prevent road traffic crashes, and where prevention is not possible, to minimize the severity of their consequences.

The Consultants advocate for a systemic approach to traffic safety, in which infrastructure, regulations, vehicles, and user behavior are treated as interconnected elements. Infrastructure should be designed to avoid conflicts between vehicles with large differences in speed, direction, and mass, and it should clearly communicate to users what behavior is expected of them. Within this framework, we stress that it is the road environment—and not the road user—that must compensate for human error by providing clear guidance, forgiving design, and safe operating conditions.

By adopting this user-centric and system-oriented approach, we aim to ensure that road safety is proactively built into the design and management of transportation systems, ultimately creating safer roads for all.

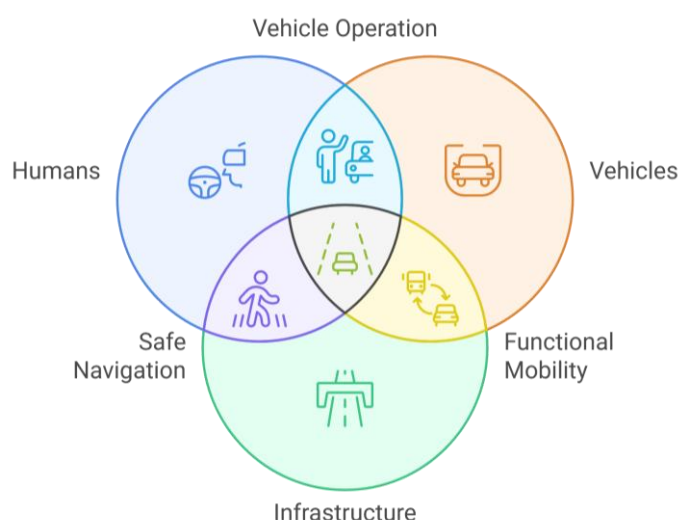


Figure 4-2. Road safety system

Source: The Consultant

When conducting an RSA, the process begins with a comprehensive review of all available documentation and site visit of the road section under analysis. The visual materials play a critical role in helping auditors form a holistic understanding of the road environment, including its physical layout, surrounding context, types and volumes of road users, and observable behaviors. Submitted documents, such as project proposals and technical plans, provide valuable insight into the scope of the project, its design intentions, and how it is expected to be implemented. Each section of the road is examined thoroughly—kilometer by kilometer—by correlating the existing conditions observed through footage with the proposed design plans. The analysis is grounded in the application of European Union best practices for road safety.

Based on this assessment, the audit team proposes the most suitable road safety interventions, often recommending modifications to the original design to enhance safety performance. These recommendations are

tailored not only to the existing traffic environment but also with a forward-looking perspective, taking into account expected increases in traffic volume. The ultimate goal is to support the development of road infrastructure that is both safe and sustainable under real-world conditions.

4.2. Functions of the road

Every road must ensure a certain level of traffic quality and correspond to three purposes/functions:

1. Freeway/transit purpose (transit roads): for fast and undisturbed traffic – roads of very high and high traffic quality and speed.
2. Collector and distributor purpose (distribution/regional roads): When the traffic at junctions is distributed between different territories and areas – roads of average traffic quality.
3. Local purpose (approach/local roads): When conditions to approach homesteads, fields and other territories using descents are created - roads of minimal traffic quality.

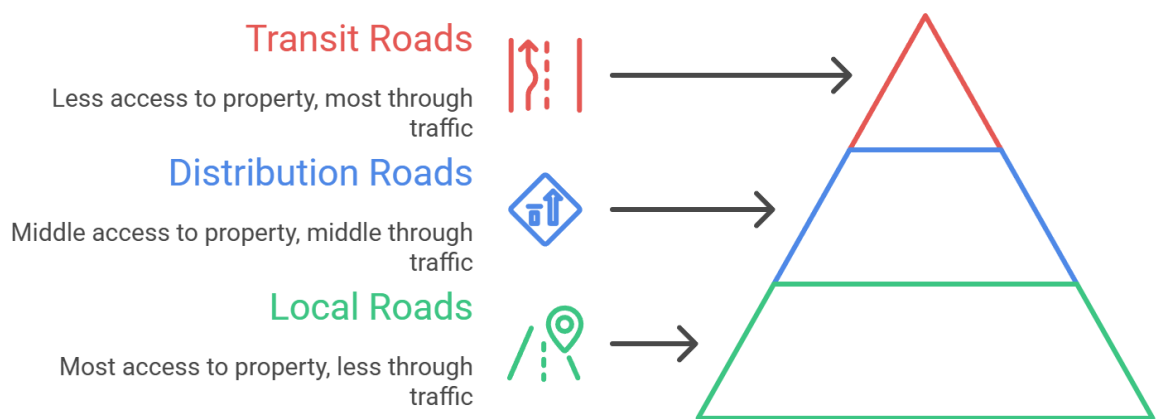


Figure 4-3. Functions of the road

Source: The Consultant

The R7 road serves two primary functions: Transit and Distribution. As a transit route, it is designed to facilitate efficient, high-speed, and secure travel between key destinations. However, given the scarcity of alternative routes in the region, the R7 must also operate as a distribution road, supporting local communities by linking major cities with smaller villages.

This dual role presents substantial road safety concerns. For instance, agricultural vehicles frequently lack alternative access routes, forcing them to cross or enter the road directly, which creates hazardous speed disparities with faster-moving traffic.

Vehicles for local usage (ex. Agriculture vehicles) could enter high speed road and decrease free flow speed or initiate unnecessary bypasses. It is proposed to review and reduce number of the accesses to the road. The approaches for the reduction can be used:

- Leave one access to one object;
- Join parallel accesses with parallel road;
- Analyse if it often used and guides to the object. If no, disconnect it.

Every road must ensure a certain level of traffic quality and correspond to three purposes/functions:

1. Freeway/transit purpose (transit roads): for fast and undisturbed traffic – roads of very high and high traffic quality and speed.
2. Collector and distributor purpose (distribution/regional roads): When the traffic at junctions is distributed between different territories and areas – roads of average traffic quality.

3. Local purpose (approach/local roads): When conditions to approach homesteads, fields and other territories using descents are created - roads of minimal traffic quality.

4.3. Technical Design Solutions for the R7 Road

LOT 1: Section R14 – Drochia

The information described below has been extracted from the project documentation: “R7 R14 – Drochia – Costești – Border with Romania, km 0.00 – 29.00,” Volume 1, Book 1.

Technical parameters

At the technical committee meeting on March 18, 2021, it was decided that the road parameters in plan and cross-section will be adjusted for technical category II, and in the longitudinal profile for category III, according to NCM D.02.01:2015.

This requirement stems from the perspective of including the R7 road in the international transport corridor Ukraine - Moldova – Romania. Thus, the following technical parameters were accepted for design in extra-urban areas:

- Minimum radius of curves in plan – 600 m.
- Minimum connection radii in profile: concave – 2000 m.; convex – 5000 m.
- Maximum slope in profile – 6 %.
- Road platform width – 13,0 m.
- Carriageway width – 7,0 m.
- Shoulder width, including framing strip – 0,5 m.
- Axle load for calculating the dimensions of the road structure – 115 kN.

Route layout

The planned route largely follows the existing axis and features alignments, curves, and counter-curves connected with the inclusion of transition curves in accordance with the regulations in force. The route has 44 angles connected with radii ranging from 600 to 25,000 m.

The necessary rectification of the route on sectors with a radius in plan below 600 m will be carried out with additional allocations of private land (see Volume 12 - AT: "Materials for land allocation for roads").

Longitudinal profile

Sectors that do not comply with minimum road safety standards are being rebuilt to ensure a minimum traffic speed of 80km/h, in accordance with NCM D.02.01:2015. On these sectors, the following solutions with minimum longitudinal profile parameters have been adopted:

- Convex radius – 5000 m.
- Concave radius – 2000 m.
- Maximum profile gradient – 6 %.

Through Zgurita village, the convex radius at PC 120 is maintained over a length of 2,500 m, with a profile gradient of -7%.

Road platform

The designed embankment is located within the existing right-of-way, except for the rectified sections.

The designed cross-section has the following parameters: platform width 13 m, shoulders 3.0 m, slope 1:1.5, 1:1.75. Where necessary, space arrangements are designed (turns); the cross slope, depending on the radius, is proposed from 3.0% to 4.0%. On the section with additional lanes for slow vehicles, the platform width is 16.5 m.

Through localities, the cross-section profile, in accordance with the requirements of CP D.02.11-2014, was

designed with curbs on both sides (see cross-section profiles V, Va, VI, VII, VIIa, VIII, IX in Volume 2, Book 1). Sidewalks were provided on both sides. Depending on the situation, the sidewalks were designed adjacent to the roadway or adjacent to the gutter. On the PC123+60-PC125+80 road section, on the right, a 3.5 m wide side access was provided (see cross-section type VIII).

Access to yards was provided with or without concrete slabs over the gutters.

Road structure

The road system dimensioning calculation was performed based on road traffic data, equivalent to the design load. Recent data from the traffic study conducted in September 2020 at km 23+150 was used.

According to the processed data, the MZA intensity was 2290 vehicles/day on the Solcani - Chetrosu sector and 3493 vehicles/day on the Chetrosu - Drochia sector.

To calculate the prospective traffic over the 15-year lifespan of the road surface, based on the optimization of various growth forecasts, an annual growth rate of 2.5% for medium and heavy trucks and 4% for light trucks and buses.

The following initial data were established for the calculation of the road structure dimensions:

No.	Name of Indicators	Technical Parameters
1	Road category	II
2	Number of traffic lanes	2
3	Number of traffic lanes for calculation	1
4	Load, kN / Pressure P, MPa / D, cm	115 / 0,6 / 37,83
5	Frost depth, m	0,8
6	Climate zone	III
7	Service life, years	15
8	Reliability grade, according to CP D.02.08-2014	0,95

Table 4-1. Geometric parameters and dimensions

Source: Environmental and Social Due Diligence, Impact Assessment and Road Safety Audit for the Moldova TEN-T Road Network Rehabilitation Project, DTM 55768, Design services for road repair "R7 – Drochia – Costesti – border with Romania, km 0.00 – 29.00", Volume 1, Book 1

Type I – New Construction

1. Drainage layer made of ballast, optimal mix 0–63, according to SM EN 13242 – **0.20 m**
2. Base layer of optimal aggregate mix 0–63 (crushed stone LA30), according to SM EN 13285 – **0.24 m**
3. Cold recycled asphalt mix type M, with addition of 30% new aggregates and cement, according to CP D.02.12-2014 – **0.15 m**
4. Binder layer of open-graded asphalt concrete with crushed stone (BAD 22.4 16), according to CP D.02.25:2021 – **0.06 m**
5. Wearing course of stabilized asphalt mixture MAS16, according to CP D.02.25:2021 – **0.04 m**.

Type II – Pavement Reinforcement

1. Cold recycled asphalt mix type M, with addition of 30% new aggregates and cement, according to CP D.02.12-2014 – **0.15 m**
2. Binder layer of open-graded asphalt concrete with crushed stone (BAD 22.4 16), according to CP D.02.25:2021 – **0.06 m**
3. Wearing course of stabilized asphalt mixture MAS16, according to CP D.02.25:2021 – **0.04 m**.

Type III – Foundation Layer Reinforcement

1. Base layer made of optimal aggregate mix 0–63 (crushed stone LA30), according to SM EN 13285 – **0.18 m**
2. Cold recycled asphalt mix type M, with addition of 30% new aggregates and cement, according to CP D.02.12-2014 – **0.15 m**
3. Binder layer of open-graded asphalt concrete with crushed stone (BAD 22.4 16), according to CP D.02.25:2021 – **0.06 m**
4. Wearing course of stabilized asphalt mixture MAS16, according to CP D.02.25:2021 – **0.04 m**.

Cross sections

The project documentation includes 15 distinct cross-section types to address different road conditions. The following illustrations highlight only the cross-sections most frequently applied.

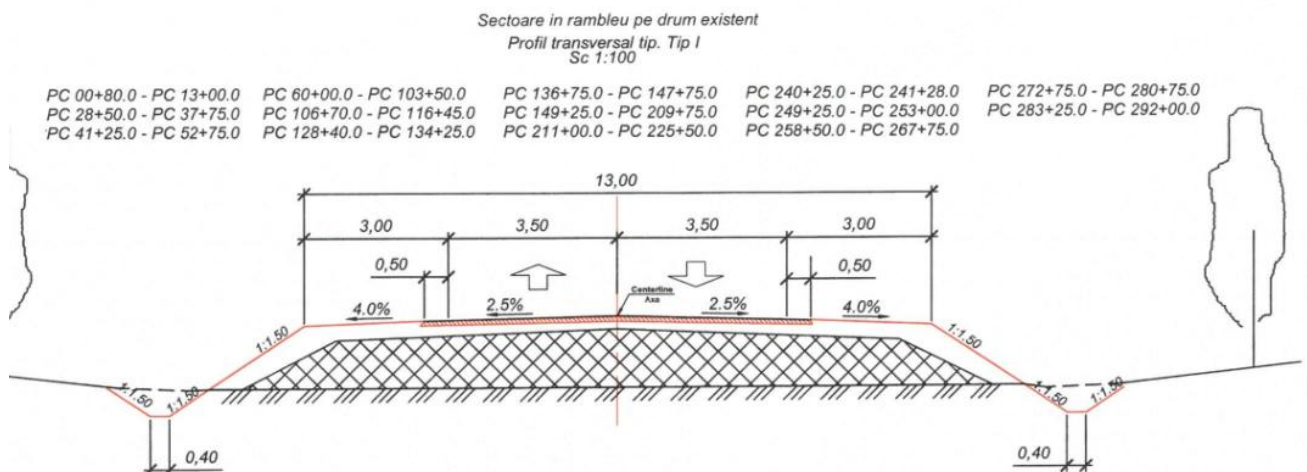


Figure 4-4. Type 1 cross-section

Source: R7 R14 – Drochia – Costești – Border with Romania, km 0.00 – 29.00,” Volume 2, Book 1, Road works

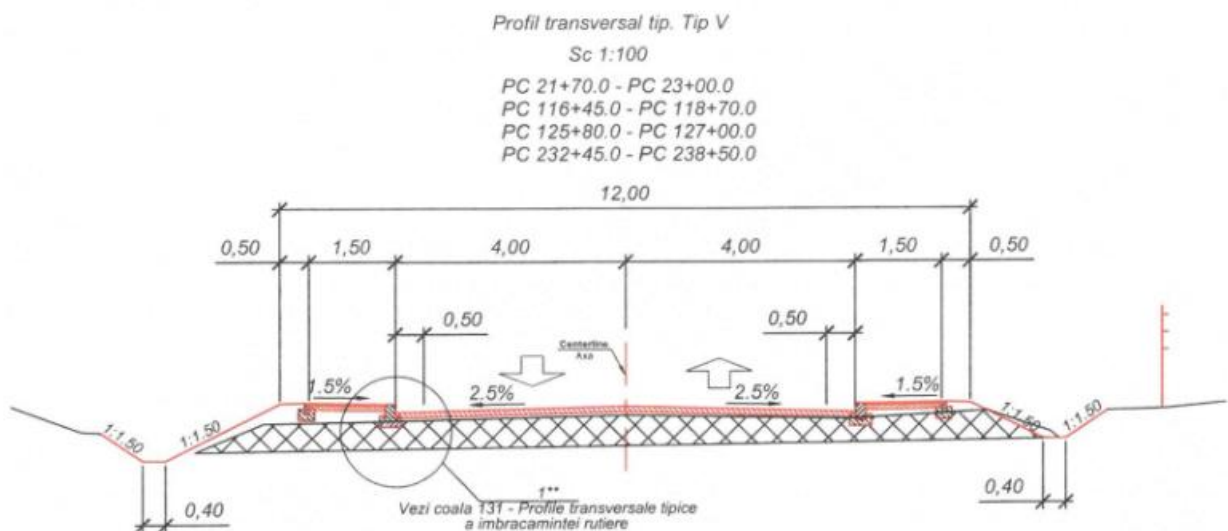


Figure 4-5. Type V cross-section (mostly applied in settlements or similar)

Source: R7 R14 – Drochia – Costești – Border with Romania, km 0.00 – 29.00,” Volume 2, Book 1, Road works

LOT 2: Drochia – Riscani

The information described below has been extracted from the project documentation: “R7 R14 – Drochia – Costești – Border with Romania, km 29.00 – 59.50,” Volume 1, Book 1.

Technical parameters

The technical parameters and load-bearing capacities of the road surface correspond to the design basis. The road

section is designed taking into account the following parameters:

PC 320+85.0 - PC 326+00 "Main road with controlled traffic" (according to CP D.02.11-2014 "Recommendations for the design of streets and roads in rural and urban areas"):

- The accepted design speed according to CP D.02.11-2014, p.5.1.2, tab 1 is 50 km/h;
- The number of lanes designed is 4 lanes throughout the entire section;
- The width of the road platform is 8.0 m;
- The width of the carriageway is 2x7.0 m;
- The width of the sidewalks is 2.25 m on both sides;
- The load applied to the dimensioning of the road surface is 115 kN.

PC 326+00.0 - PC 593+59.66 (Technical category II according to NCM D.02.1:2015):

- The acceptable design speed according to NCM D.02.1:2015, p.5.2., tab 2 is 100 km/h;
- The number of lanes designed is 2 traffic lanes throughout the entire section;
- The width of the road platform is 13.0 m;
- The width of the carriageway is 8.0 m;
- The width of the shoulder is 2x3.00 m, with a 2x0.50 m framing strip with the same type of road system as on the main road;
- The load applied to the dimensioning of the road surface is 115 kN.

Plan and longitudinal profile

The length of the planned route is 27,275 km

The route plan was designed taking into account the existing situation with minor improvements to the road axis in plan and longitudinal profile. During the design process, it was found that land expropriation was necessary due to the construction of embankments with h-7m.. The sector comprises 46 angle peaks with minimum radii in plan of 255 m (VU 42) and 200 m (VU 43). These parameters correspond to a design speed of 70 km/h and are exceptions due to the impossibility of large values (the sector corresponds to the Riscani bypass).

At PC 381+20.0, the axis was improved by increasing the radius from 500 m to 600 m (VU 8).

The designed longitudinal profile corresponds to the existing one with improvements on the following sections:

- PC 325+00.0 (existing R=2000.0m increased to 2200m);
- PC 375+00.0 (existing R=1500.0m increased to 6000m);
- PC 401+00.0 (existing R=1000.0m increased to 5000m);
- PC 411+00.0 (existing R=2300.0m increased to 5000m);
- PC 438+00.0 (existing R=1600.0m increased to 3000m);
- PC 450+00.0 (existing R=1200.0m increased to 5000m);
- PC 483+00.0 (existing R=3000.0m increased to 5000m);
- PC 504+00.0 (existing R=4000.0m increased to 5000m);
- PC 569+00.0 (existing R=4000.0m increased to 5000m);

Concave curves:

- PC 418+00.0 (existing R=800.0m increased to 3000m);
- PC 480+00.0 (existing R=1500.0m increased to 3000m);
- PC 574+00.0 (existing R=2000.0m increased to 3000m);

The maximum slope, taking into account the existing situation, is 7.8% (PC 418+00.0-PC 423+00.0), which corresponds to the decision of the minutes of the meeting of March 18, 2021, and the impossibility of reducing the

slope because the sector is located near the town of Nicoreni.

Road structure

The road pavement was dimensioned according to the design basis.

The designed road system consists of asphalt concrete pavement (see the graphic section "Cross-sections of road pavement") with a foundation layer of cement-stabilized aggregates (40 mm).

The layout of the road and its accesses were designed with the following pavement:

The road system is designed based on the transport and operational requirements established for the respective technical category, climatic and geological conditions, in accordance with CP D.02.08-2014 "Dimensioning of flexible road structures."

To calculate the prospective traffic over the 10-year service life of the road surface, an annual growth rate of 2.0% was used.

The road system was calculated using the following data:

No.	Name of Indicators	Technical Parameters
1	Road category	II
2	Number of traffic lanes	2
3	Number of traffic lanes for calculation	1
4	Load, kN / Pressure P, MPa / D, cm	115 / 0,6 / 37,83
5	Frost depth, m	0,8
6	Climate zone	III
7	Service life, years	15
8	Reliability grade, according to CP D.02.08-2014	0,95
9	Service life, years	15
10	Reliability grade, according to CP D.02.08-2014	0.98

Table 4-2. Geometric parameters and dimensions

Source: Environmental and Social Due Diligence, Impact Assessment and Road Safety Audit for the Moldova TEN-T Road Network Rehabilitation Project, DTM 55768, Design services for road repair "R7 – Drochia – Costesti – border with Romania, km 29.00 – 59.50", Volume 1, Book 1

The rehabilitation of the road system will include the following works, which will be executed in the manner established:

Pavement Reinforcement

1. Milling of existing asphalt h(med) – **0.23 m** with transport to a 15 km storage facility.
2. Levelling layer made of an optimal mixture of aggregates 0-63 (LA30 crushed stone, GA), according to SM EN 13285, h(med) – **0.10 m**
3. Foundation layer made of an optimal mixture of aggregates 0-63 (LA30 crushed stone, GA), according to SM EN 13285, h – **0.18 m**
4. Cold recycled asphalt base layer type M, with 30% new aggregate and cement added, CP D 02.12-2014, h – **0.15 m**
5. Priming the road surface with bitumen using an asphalt spreader **0.81/m²**
6. BAD 22.4 leg. 50/70 open asphalt concrete binder course, according to CP D.02.25:2021 h – **0.06 m**
7. Priming the road surface with bitumen using an asphalt spreader **0.4 l/m²**
8. Wear layer made of MAS 16 rul. 50/70 stabilized asphalt mixture, according to CP D.02.25:2021, h – **0.04 m**.

New construction

1. Drainage layer, ballast, optimal mix 0-63, according to SM SR EN 13285, h – **0.20 m**
2. Foundation layer made of an optimal mixture of aggregates 0-63 (LA30 crushed stone, GA), according to SM EN 13285, h – **0.25 m**
3. Cold recycled asphalt base layer type M, with 30% new aggregates and cement added, CP D 02.12-2014, h – **0.15 m**
4. Priming the road surface with bitumen using an asphalt spreader **0.81/m²**
5. BAD 22.4 leg. 50/70 open asphalt concrete binder course, according to CP D.02.25:2021 h – **0.06 m**
6. Priming the road surface with bitumen using an asphalt spreader **0.4 l/m²**
7. Wear layer made of MAS 16 rul. 50/70 stabilized asphalt mixture, according to CP D.02.25:2021, h – **0.04 m.**

Cross sections

The project documentation includes 18 distinct cross-section types to address different road conditions. The following illustrations highlight only the cross-sections most frequently applied.

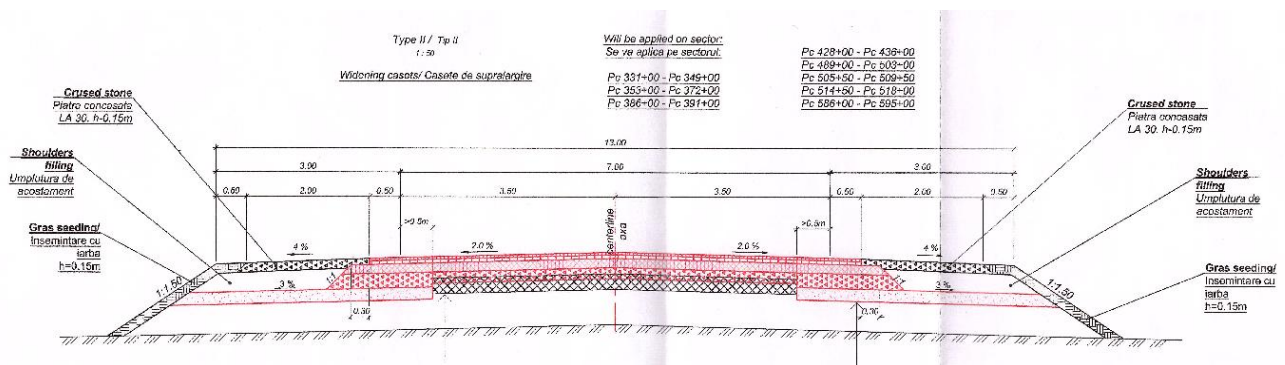


Figure 4-6. Type 2 cross-section

Source: R7 R14 – Drochia – Costești – Border with Romania, km 29.00 – 59.50, "Volume 2, Book 1, Road works

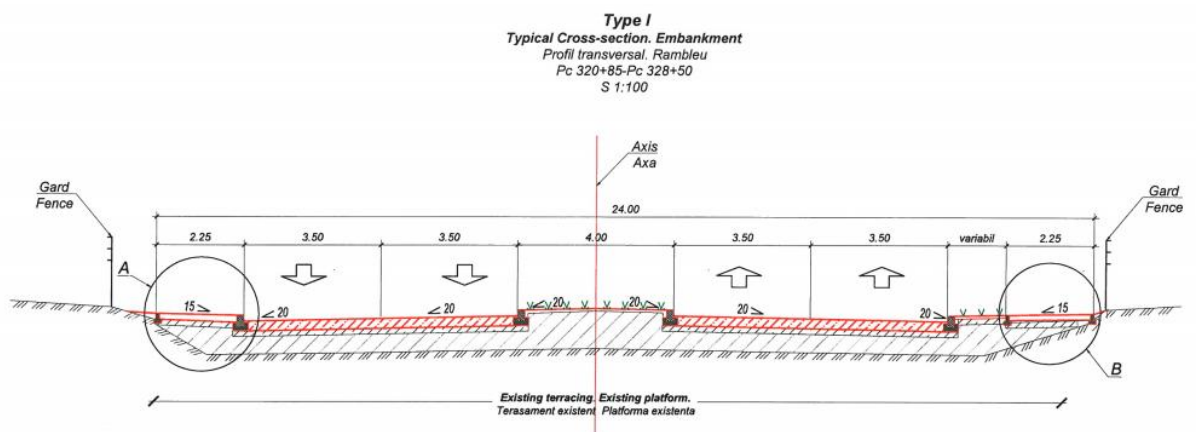


Figure 4-7. Type 1 cross-section (4 lanes road)

Source: R7 R14 – Drochia – Costești – Border with Romania, km 29.00 – 59.50, "Volume 2, Book 1, Road works

LOT 3: Riscani – Costesti

The information described below has been extracted from the project documentation: "R7 R14 – Drochia – Costești – Border with Romania, km 59.50 – 89.53" Volume 1, Book 1.

Route plan

The length of the planned road section is 30.617 km.

The route of the road is laid out with straight sections and connecting curves ranging from 50 m to 5000 m. A radius of 50 m is provided for access to the border crossing point. Minimum radii are provided in localities:

- 125 m in the village of Petruseni.
- 180 m in the village of Hiliuti.
- 200 m and 210 m in the village of Saptebani.
- outside localities radii greater than 250 m are provided.

In general, the designed road section is included in the existing road and street alignment, with the exception of VU 2, PC 600+95.71, where the existing radius of 105 m was increased to 250 m, VU 4, PC 614+81.59 the existing radius of 115m was increased to 250m, VU 5, PC 621+7.94 the existing radius of 105m was increased to 250 m, VU 26, PC 711+48.72 the existing radius of 170 m was increased to 250 m, VU 62, PC 798+47.78 the existing radii of 110m and 150 were replaced with a radius of 250m, VU 72, PC 822+5.28 the existing radius of 185 m was increased to 250 m, VU 86, PC 875+33.13 the existing radii of 130 m and 150 m were replaced with a radius of 250 m.

Following the redesign of the road axis in plan and longitudinal profile, the project provides for land expropriations. The streets and side roads have gravel, earth, and degraded asphalt concrete road surfaces, which will be redesigned in accordance with the design basis.

The project involves the construction of sidewalks in towns and at public transport stations.

It also involves the refurbishment and repair of public transport stations, the construction of new pavilions, and the repair of existing pavilions.

Longitudinal profile

The slope of the road on some sections meets the requirements for a technical category III road, according to NCM D.02.01-2015 standards, with a design speed of 90 km/h, on some sections the slope exceeds 60 ‰ (the maximum slope on some sections is 80-117.8 ‰).

In the longitudinal profile, the road gradient was designed in accordance with the requirements for technical category III, with a design speed of 90 km/h in built-up areas and some sections reduced to 50 km/h, taking into account the reconstruction solutions, the redesign of the new road system, the surface water drainage system and measures to ensure the stability of the embankments.

Following the meeting with the beneficiary, the State Road Administration, a decision was made to reduce the existing slope in the longitudinal profile on some sections to:

- 67 ‰, PC 621+20.13 - PC 622+80.70, L=160.56 m, (existing maximum - 81.0 ‰); bridge connection PC 624+96.50.
- 70 ‰, PC 643+98.54 - PC 648+90.86, L=492.32 m, (existing maximum - 92.3 ‰);
- 75 ‰, PC 656+23.15 - PC 658+40.71, L=217.56 m (existing maximum - 117.8 ‰), sector involved in landslides;
- 85 ‰, PC 693+ 72.73 - PC 697+7.11, L=334.48 m, (existing maximum - 104.5 ‰), in the locality of Hiliuti without buildings along the road, PC 697+7.11 - PC 698+21.03 – 95 ‰ - existing, with buildings along the road.
- 75 ‰, PC 704+ 3.86 - PC 709+75.06, L= 571.20 m, (existing maximum - 105.5 ‰), sector involved in landslides;
- 70 ‰, PC 772+76.11 - PC 774+36.88, L=160.77 m, (existing maximum - 82.8 ‰);

Cross-sectional profile

The embankment is designed to ensure the stability of the slopes of the embankments and cuttings, the need to improve road parameters, avoid snow drifts, including traffic safety, effective drainage of surface water, in accordance with the requirements of NCM D.02.01:2015, SNiP 2.07.01-89; CP D.02.11-2014.

The width of the road carriageway in accordance with the requirements of NCM D.02.01:2015, SNiP 2.07.01-89; CP D.02.11-2014 and the design basis is set for the third technical category, including in the locality - rural transport-pedestrian street of 8.0 m. The width of the road platform is 11.0-12.0 m.

The shoulders are 2x2.0(2.5) m wide, including a 2x0.5m framing strip. Sidewalks are built on the left or right side of the route, depending on the location of buildings in the locality and at public transport stations, with a width of 1.0-1.5m.

The roadway is equipped with transverse slopes from the centreline to the edge of the roadways.

The transverse slope of the roadway is 20 ‰, the green area at the curb, sidewalks 15 ‰, shoulders 40 ‰. The slope in curves is 40 ‰.

Road system

The road system is designed based on the transport and operation requirements established for the third technical category, in the locality - rural road for transport and pedestrians, in accordance with the requirements of local regulations NCM D.02.01:2015, SNiP 2.07.01-89; CP D.02.11-2014 and Eurocodes SM EN 13108-1:2016, SM SR EN 14023, SM SR EN 12591, SM SR EN 13043:2010 and SM SR EN 12620+A1:2010 with a load of 11.5 tons per axle, according to the design basis, traffic component and intensity, minimum modulus of elasticity calculated according to traffic 297.90 MPa, climatic conditions and hydrological conditions, according to ODN 218.046-01.

To determine the thickness of the road system, cores were taken at intervals of ± 100 m and at a distance of 1.0 - 2.0 m from the road axis, depending on the width of the carriageway.

The bituminous and base layers were measured following geological tests and core sampling.

For the calculation of prospective traffic over the 16-year life of the road surface and an annual growth rate of 3.0 %.

According to annual daily data, the two lanes constitute 4015 vehicles/standard.

The average traffic equivalent units/hour per lane constitutes 84 vehicles/standard.

The road system calculation was performed using the following data:

No.	Name of Indicators	Technical Parameters
1	Road category	II
2	Number of traffic lanes	2
3	Number of traffic lanes for calculation	1
4	Traffic lane width, m	3.50
5	Settlement, m	2.0
6	Load A2 kN / Pressure P, MPa / D, cm	115 / 0.6 / 39
7	Humidity regime	1
8	Frost depth, m	0.70
9	Climate zone	III
10	Service life, years	16
11	Reliability grade, according to ODN 218.046-01	0.95

Table 4-3. Geometric parameters and dimensions

Source: Environmental and Social Due Diligence, Impact Assessment and Road Safety Audit for the Moldova TEN-T Road Network Rehabilitation Project, DTM 55768, Design services for road repair "R7 R14 – Drochia – Costesti – border with Romania, km 59.50 – 89.53", Volume 1, Book 1

Several variants of the road system construction were developed and calculated. Therefore, the following road system construction, which meets all requirements, was approved and coordinated with the beneficiary.

Type 1 – New construction

1. Wearing course made of stabilized asphalt mixture MAS 11.2 rul., SM EN 13108-5:2016, modified bitumen class 4, SM SR EN 14023 – **50 mm**
2. Binding layer of open asphalt concrete with crushed gravel BAD 22.4 leg SM SR EN 13108-1:2016, bitumen 50/70 SM SR EN 12591 – **70 mm**
3. Granular materials 0-63 mm according to SM SR EN 13043:2010, GA85, LA30 stabilized with 4-5% cement, CEM I 42.5R according to SM SR EN 197-1:2014, shall be executed in accordance with SM SR EN 14227-1 – **220 mm**
4. Granular materials 0-63 mm according to SM SR EN 13043:2010, made of crushed stone GA85, LA₃₀ – **160 mm**
5. Polyfelt TS 60 SM SR EN 13249:2005 geotextile
6. Drainage layer made of natural sand in accordance with SM SR EN 13242+A1:2010 – **150 mm**.

Type 2 – New construction, widening of the existing road system

1. Wearing course made of stabilized asphalt mixture MAS 11.2 rul., SM EN 13108-5:2016, modified bitumen class 4, SM SR EN 14023 – **50 mm**
2. Binding layer of open asphalt concrete with crushed gravel BAD 22.4 leg SM SR EN 13108-1:2016, bitumen 50/70 SM SR EN 12591 – **70 mm**
3. Cold recycled asphalt concrete foundation layer, addition of new granular materials according to SM SR EN 13043:2010, GA85, LA30, (up to 30%), mixed with milled asphalt (70%) and stabilized with cement, according to CP D. 02.12 .- 2014, in station – **160 mm**
4. Materiale granulare fr. 8-63mm, conform SM SR EN 13043:2010, din pietris concasat, LA30 – **250 mm**
5. Drainage layer made of natural sand, in accordance with SM SR EN 13242+A1:2010 – **150 mm**.

Type 3 – Reinforcement construction

1. Wearing course made of stabilized asphalt mixture MAS 11.2 rul., SM EN 13108-5:2016, modified bitumen class 4, SM SR EN 14023 – **50 mm**
2. Bonding layer of open asphalt concrete with crushed gravel BAD 22.4 leg SM SR EN 13108-1:2016, bitumen 50/70 SM SR EN 12591 – **70 mm**
3. Cold recycled asphalt concrete foundation layer, addition of new granular materials according to SM SR EN 13043:2010, GA85, LA30, (up to 30%), mixed with milled asphalt (70%) and stabilized with cement, according to CP D. 02.12 .- 2014, in station – **160 mm**
4. Granular materials fr. 8-63mm, according to SM SR EN 13043:2010, from crushed stone, LA₃₀ – H>140mm – **variable**
5. Existing road system. Variable – **220-300 mm**.

Cross sections

The project documentation includes 15 distinct cross-section types to address different road conditions. The following illustrations highlight only the cross-sections most frequently applied.

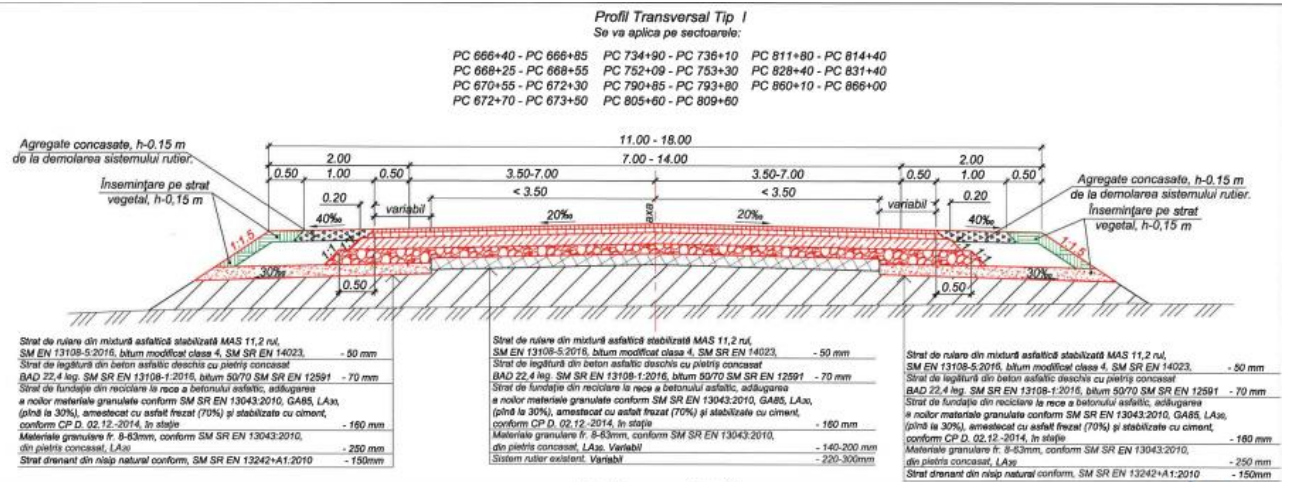


Figure 4-8. Type 1 cross-section

Source: R7 R14 – Drochia – Costești – Border with Romania, km 59.50 – 89.53” Volume 2, Book 1, Road works

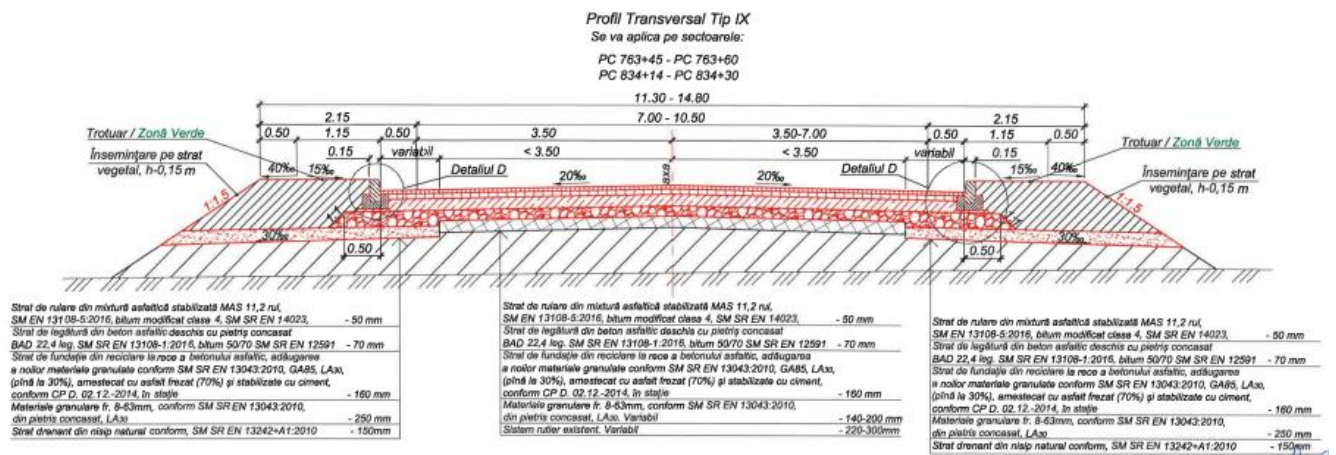


Figure 4-9. Type 9 cross-section

Source: R7 R14 – Drochia – Costești – Border with Romania, km 59.50 – 89.53” Volume 2, Book 1, Road works

4.4. Traffic Accident analysis on R7 road

The analysis of traffic accidents on the R7 road is based on data from the last two years (2023–2024). At the national level, the Republic of Moldova recorded 1,976 traffic accidents in 2023, resulting in 2,289 injuries and 197 fatalities. In 2024, these numbers slightly increased to 1,986 accidents, 2,375 injuries, and 202 fatalities, reflecting a modest upward trend in road traffic incidents and casualties.

In comparison, the R7 road accounted for a very small share of national accidents, representing approximately 0.6% of all reported accidents in 2023 and 0.2% in 2024. Correspondingly, injuries on the R7 road made up about 0.6% of all road injuries in 2023 and 0.17% in 2024, while fatalities represented around 1.5% of all road deaths in 2023 and 1.0% in 2024.

These figures indicate that, while the total number of accidents on the R7 road remains low compared to national statistics, the relative share of fatalities is disproportionately high. The decrease in the number of accidents from 12 in 2023 to 4 in 2024 suggests a potential improvement in road safety performance along this corridor; however, the persistence of fatal outcomes highlights the need for continued monitoring and implementation of targeted safety measures to further reduce severe crashes.

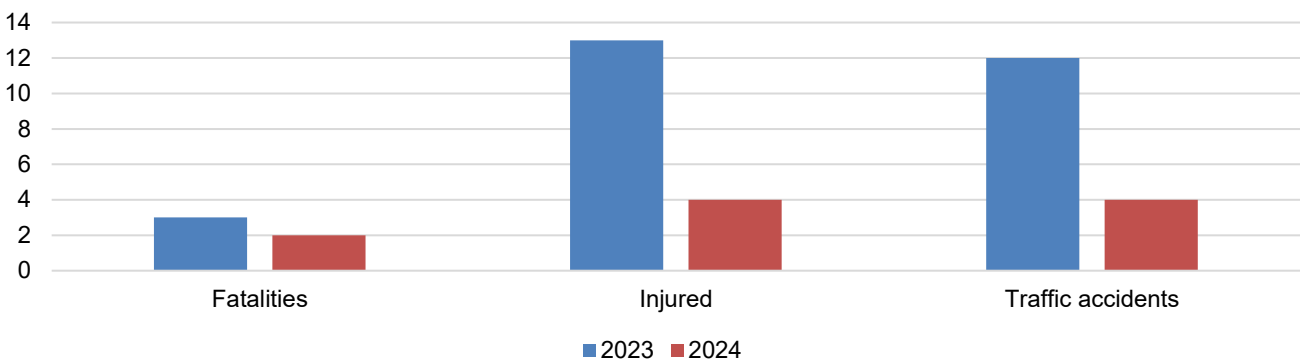


Figure 4-10. Number of traffic accidents, injuries, and fatalities on the R7 road during the 2023–2024 period

Source: compiled from national and international official sources.

Based on the provided chart, there are no clearly defined locations along the R7 road where traffic accidents tend to cluster. The distribution of incidents appears to be scattered and irregular, with accidents occurring sporadically at various points rather than being concentrated in specific segments of the route. This pattern suggests that no particular section of the R7 road consistently presents a higher risk, and that accidents may be influenced more by random factors such as driver behavior, weather conditions, or temporary roadway circumstances rather than inherent geometric or infrastructural deficiencies.

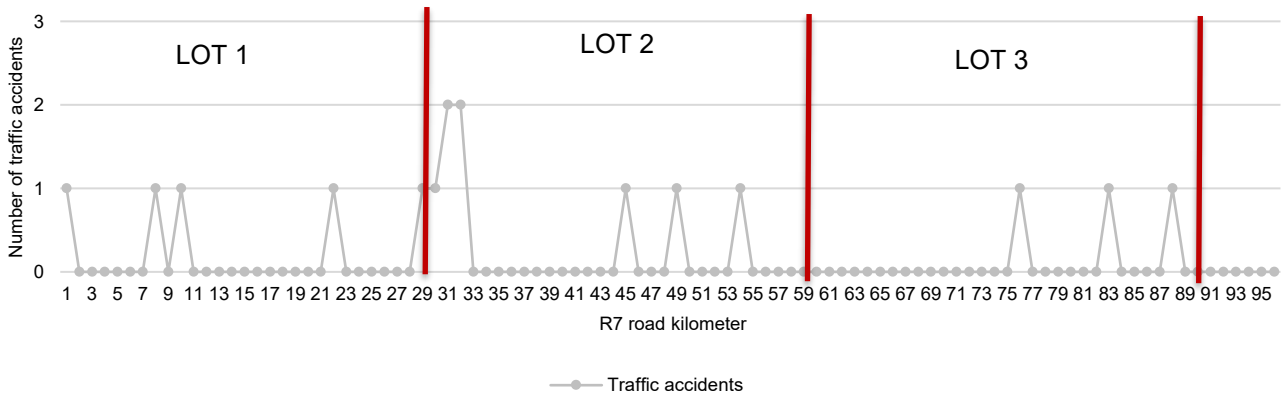


Figure 4-11. Number of traffic accidents on the R7 road during the 2023–2024 period

Source: compiled from national and international official sources.

Based on the chart, the most frequent types of traffic accidents on the R7 road are vehicle reversals and side or rear-end collisions, which indicate potential issues related to driver inattention, unsafe maneuvering, or insufficient visibility. Reversal accidents, being the most common, suggest possible road geometry challenges, such as narrow lanes or inadequate turning areas, particularly near intersections or residential access points. Additionally, collisions involving pedestrians and animals appear repeatedly, though at lower frequencies, highlighting concerns about insufficient pedestrian infrastructure, limited lighting, or lack of protective barriers in rural or mixed-use areas.

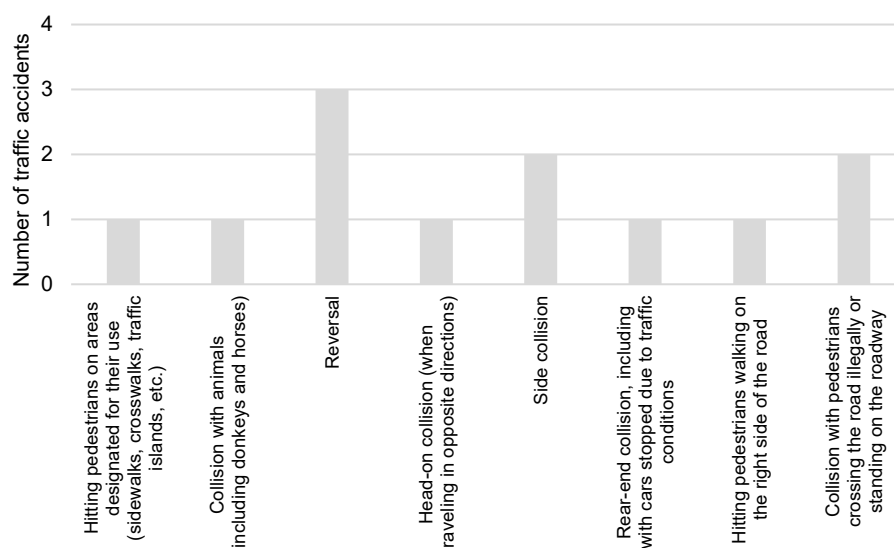


Figure 4-12. Types of traffic accidents on the R7 road during the 2023-2024 period

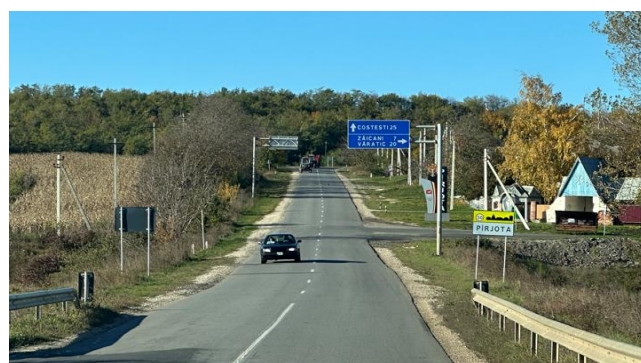
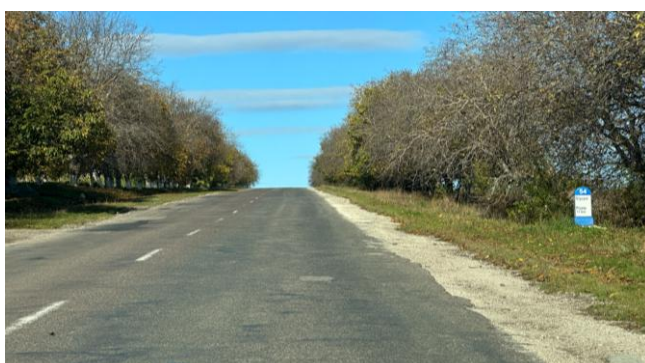
Source: compiled from national and international official sources.

4.5. Current situation

The analyzed R7 road is a crucial corridor connecting the borders of Romania and Ukraine. Nevertheless, the reconstruction of this road would provide an opportunity and open the way for more convenient, safer, and faster connection not only for national carriers, but would also have significant economic benefits for the development of economic relations with neighbouring countries. Based on obtained information from site visit, it can be concluded that the existing road:

- Is frequently winding, with several sharp curves.
- Passes through numerous settlements, often crossing their central areas; in some cases, it runs close to residential neighborhoods.
- Currently has poor pavement quality, with an uneven carriageway and lacking essential road safety elements.
- Is used by both heavy vehicles and passenger cars. Nearby quarries generate significant heavy traffic.

Regarding the Figure 4 – Process of Road Safety Audits and following the methodology – site visit is crucial. For this reason, the site was visited by our expert on 2025 October 20th. The pictures of current road are listed below in Figure 18. In next subsections, common risks and deficiencies will be detailed:



KM 54



Settlement of Hiliuti

Entering the settlement of Pirjota



KM ~76+50



Settlement of Galaseni



End of Lot 3 – near the customs border to Romania



KM ~47



Settlement of Nicoreni

Figure 4-13. Current situation of the road

Source: The Consultant, 2025 October.

To date, only minor maintenance works have been undertaken, mainly limited to filling and eliminating deep ruts on certain sections. Overall, the technical condition of the road section can be described as good, mediocre, or poor, depending on the specific locality. Approximately 10% of the total surface shows visible defects such as potholes, ruts, waves, and cracking. Transverse cracks occur at intervals of 2 to 6 meters, providing clear evidence that the pavement structure has exceeded its service life and no longer meets the requirements of current traffic volumes and loads.

The section currently lacks adequate road safety infrastructure. There are insufficient road signs, and no safety barriers are installed along hazardous segments. Traffic bollards and road markings are missing, reducing driver

awareness and guidance. Furthermore, additional climbing lanes for slow-moving vehicles are absent on uphill gradients exceeding 4%. In general, the technical condition of the road section is unsatisfactory across all key parameters, posing a potential risk to road users due to geometric deficiencies, pavement deterioration, and the absence of essential safety features.

4.6. Meetings with stakeholders

As part of the Road Safety Audit process, a series of meetings were held with local communities and various stakeholders, including representatives from local authorities, transport operators, and residents. These consultations provided a valuable platform for discussing the current challenges and safety concerns associated with the road. Participants shared their firsthand experiences, highlighting specific locations prone to accidents, traffic congestion, or conflicts between different road users. The discussions also offered insights into behavioral patterns, local traffic practices, and the impact of heavy vehicles on road conditions. This engagement allowed the audit team to better understand the context in which the road operates and to incorporate community perspectives and stakeholder feedback into the overall assessment and recommendations.



Meeting with community representatives from the Drochia region



Meeting with representatives of Road Transport Agency



Meeting with representatives of Administratia Nationala A Drumurilor

Figure 4-14. Photos from various meetings with stakeholders

4.7. Project documentation

LOT 1: Section R14 – Drochia

Consultants analyzed the documents related to Lot 1 – Section R14 – Drochia, which provided a comprehensive overview of the planned road. The review offered detailed insights into the project's scope, design considerations, and anticipated infrastructure requirements. This analysis served as a key reference for understanding the technical, environmental, and logistical aspects of the planned development.

Volum	Index	Carte	Titlul volumului/capitolului
Volume 1	510/2020 - ME	Book 1	Explanatory memorandum and lists of quantities. Road
		Book 2	Explanatory memorandum and lists of quantities. Bridge
Volume 2	510/2020 - DA	Book 1	Road works
		Book 2.1	Transverse profiles, PC1+00 – PC144+00
		Book 2.2	Transverse profiles, PC144+25 – PC290+00
Volume 3	510/2020 - LA		Art works. Bridge, PC 241+51
Volume 4	510/2020 - LEA		Overhead power lines for electricity transport
Volume 5	510/2020 - IEE		Exterior lighting
Volume 6	510/2020 - TSE		Telephone and external communication
Volume 7	510/2020 - AE		External water supply networks
Volume 8	510/2020 - AGE		Gas supply. External pipes
Volume 9	510/2020 - OCR		Organization of road traffic
Volume 10	510/2020 - POC		Project for organizing and executing construction works
Volume 11	510/2020 - PM		Environmental impact assessment
Volume 12	510/2020 - AT		Materials for land allocation for the road
Volume 13	510/2020 - DVL	Book 1	General budget. Car road
		Book 2	Detailed budgets. Utilities
Annex	510/2020 Annex 1		Report on the examination of an existing road system
	510/2020 Annex 2		Topo-geodetic report
	510/2020 Annex 3		Geotechnical study
	510/2020 Annex 4		Hydrometeorological report
	510/2020 Annex 5		Technical expertise report. Bridge, km 24+151

Table 4-4. List of documents analysed for Lot 1 – Section R14 – Drochia

Source: Project documentation

LOT 2: Drochia – Riscani

Consultants analyzed the documents related to Lot 2 – Section Drochia – Riscani, which provided a comprehensive overview of the planned road. The review offered detailed insights into the project's scope, design considerations, and anticipated infrastructure requirements. This analysis served as a key reference for understanding the technical, environmental, and logistical aspects of the planned development.

Volum	Index	Carte	Titlul volumului/capitolului
Volume 1	509/2020 - ME	Book 1	Explanatory memorandum and lists of quantities. Road
		Book 2	Explanatory memorandum and lists of quantities. Bridge
		Book 3	Technical Specifications
		Book 4	Bill of Quantities
Volume 2	509/2020 - DA	Book 1	Road works
		Book 2	Culverts
		Book 3.1	Cross profiles
		Book 3.2	Cross profiles
Volume 3	509/2020 - LA	Book 1	Art works. Bridge, PC 384+26.84
		Book 2	Art works. Bridge, PC 418+82.00
		Book 3	Art works. Bridge, PC 556+79.46
Volume 4	509/2020 - LEA		Overhead power lines for electricity transmission
Volume 5	509/2020 - IEE		Exterior lighting
Volume 6	509/2020 - TSE		Telephone and external communication
Volume 7	509/2020 - REAC		External water supply and sewerage networks
Volume 8	509/2020 - AGE		Gas supply. External pipes
Volume 9	509/2020 - OCR		Organization of road traffic

Volume 10	509/2020 - POC		Project for organizing and executing construction works
Volume 11	509/2020 - PM		Environmental impact assessment
Volume 12	509/2020 - AT		Materials for land allocation for the road
Volume 13	509/2020 - DVL	Book 1	General estimate. Local estimates. Roadway
		Book 2	Local estimates. Bridges. Roadway
Annex	509/2020 Annex 1		Report on the examination of an existing road system
	509/2020 Annex 2	Book 1	Topo-geodetic report km 29+000 – km 39+500
		Book 2	Topo-geodetic report km 39+500 – km 59+500
	509/2020 Annex 3		Geotechnical study
	509/2020 Annex 4		Hydrometeorological report
	509/2020 Annex 5	Book 1	Technical expertise report. Bridge, km 384+26.85
		Book 2	Technical expertise report. Bridge, km 418+82.00
		Book 3	Technical expertise report. Bridge, km 443+00.00
		Book 4	Technical expertise report. Bridge, km 479+74.00
		Book 5	Technical expertise report. Bridge, km 556+79.46

Table 4-5. List of documents analysed for Lot 2 – Drochia – Riscani

Source: Project documentation

LOT 3: Riscani – Costesti

Consultants analyzed the documents related to Lot 3 – Section Riscani – Costesti, which provided a comprehensive overview of the planned road. The review offered detailed insights into the project's scope, design considerations, and anticipated infrastructure requirements. This analysis served as a key reference for understanding the technical, environmental, and logistical aspects of the planned development.

Volum	Index	Carte	Titlul volumului/capitolului
Volume 1	Technical Report. Quantity Lists	Book 1	Road
		Book 2	Bridge PC 624+96.5
Volume 2	Execution Drawings	Book 1	Road PC 595+00 – PC 695+60
		Book 2	Road PC 695+60 – PC 796+40
		Book 3	Road PC 796+40 – PC 895+71
		Book 4	Bridge PC 624+96.50
		Book 5	Road Traffic Organization (Road PC 595+00 – PC 895+71)
		Book 6	Organization of the Construction works
Volume 3			Overhead power lines for electricity transmission 10–0.4 kV
Volume 4			Overhead power lines for electricity transmission 110 kV
Volume 5			Exterior lighting
Volume 6			Telephone and external communication
Volume 7			Gas supply. External pipes
Volume 8	Estimates	Book 1	Road. Cost Estimate Calculation. Centralized and local estimates
		Book 2	Bridge PC 624+96.5. Local estimates
Annex 1			Geotechnical Report
Annex 2			Topo-geodetic Studies
Annex 3			Hydrometeorological Report
Annex 4			Technical Expertise Report – Road construction
Annex 5			Technical Expertise Report – Bridge PC 624+96.5
Annex 6			Technical Expertise Report – Bridge PC 754+59
Annex 7			Land Expropriation
Annex 8			Testing report. Measurement of Bearing capacity

Table 4-6. List of documents analysed for Lot 3 – Riscani – Costesti

Source: Project documentation

5. Recommendations

5.1. General recommendations

The road under analysis, as previously noted, performs a dual role—serving both as a transit corridor and as a distribution route that directs traffic into nearby settlements or through them. This dual functionality introduces specific challenges for road safety planning. In its physical and operational characteristics, the road largely resembles a transit route, featuring two traffic lanes—and up to four at intersections—designed to accommodate high traffic volumes and speeds. However, the presence of residential areas along the corridor requires a more nuanced, context-sensitive approach to infrastructure development and safety measures.

Numerous settlements are located along this road, and pedestrian infrastructure is in place within these populated areas. While transit roads typically prioritise higher speeds and uninterrupted vehicle movement, it is essential to recognise that this route also includes intersections and stopping zones—locations where the likelihood of traffic conflicts and accidents increases due to intersecting flows and variations in driving speed. Consequently, the road infrastructure must be adapted to achieve both objectives: maintaining efficient traffic flow while ensuring the safety of all road users.

The following sections present a range of proposed measures based on best practices implemented internationally. These include both physical and organisational interventions that have proven effective in improving safety, particularly in situations where high-speed corridors intersect with urban or semi-urban environments or where intersections are present. The aim is to identify practical and cost-effective solutions that preserve the road's function as a transit route while making it safer and more accommodating for all users.

5.2. Elevated traffic islands

Designed

Horizontal road markings alone are not sufficient to reduce speed in junction areas, as drivers often disregard or drive over them. Over time, these markings tend to wear out and lose visibility, especially if they are not regularly maintained or refreshed, making them ineffective in signaling caution or guiding traffic. Similarly, painted safety islands provide limited effectiveness; they are frequently driven over and can even encourage risky maneuvers, reducing their intended safety benefits.

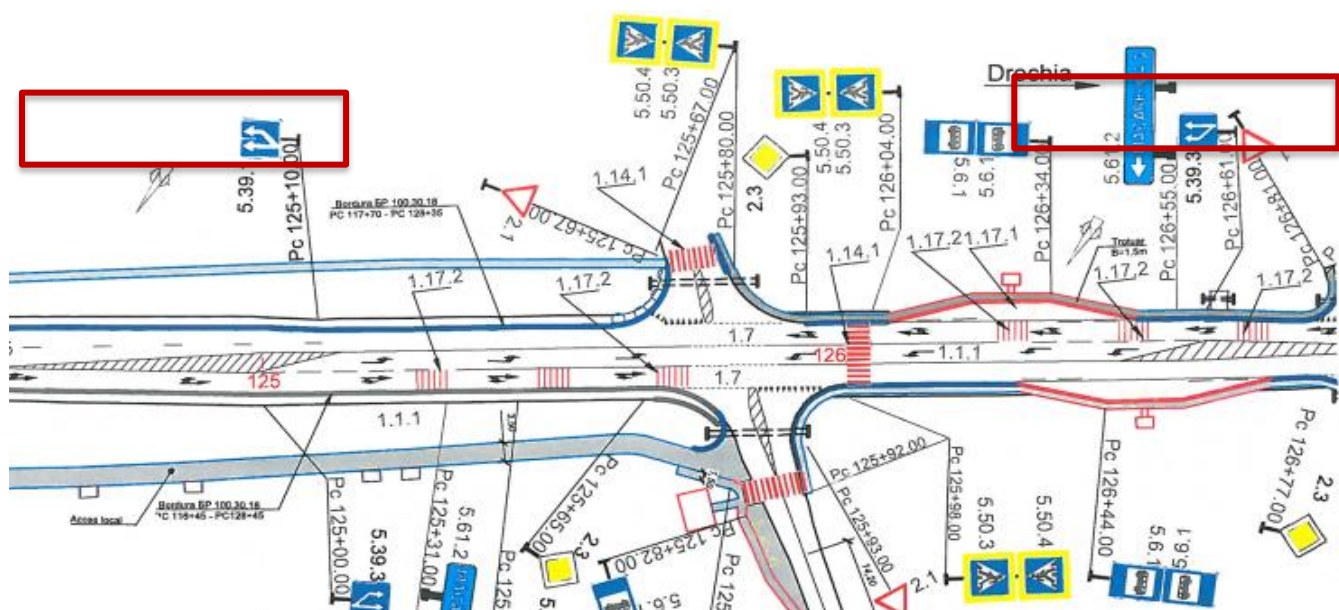


Figure 5-1. Traffic island marked with horizontal marking (~PC 126+00)

Source: R7 R14 – Drochia – Costești – Border with Romania, km 0.00 – 29.00," Volume 9, Organization of road traffic.

Recommended

The purpose of elevated safety islands (Pictures below) is to:

- Separate opposing traffic flows;
- Ensure that pedestrians safely cross a road in junction areas;
- Reduce the permitted speed from 90 to 70 km/h (in junction areas mostly);
- Maintain 70 km/h speed;

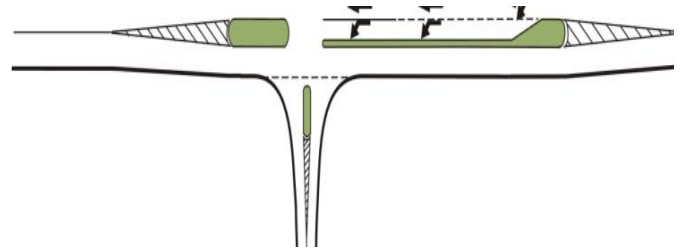


Figure 5-2. Traffic island example and scheme

Source: The Consultant

Elevated safety islands are:

- Left-turn separation islands;



Figure 5-3. Traffic islands for the left turn separation

Source: The Consultant

- Simplified safety islands;



Figure 5-4. Simplified Traffic islands

Source: The Consultant

- Special purpose safety islands:

- Safety islands where the pedestrian and bicycle traffic cross a road (mostly arranged in junction areas);
- Safety islands in a zone of bus stops;

Elevated safety islands	Length L , m	Width b , m	Height h , m	Notes
Left-turn separation safety islands	Depending on a situation	1,30–3,00	0,07–0,15	It is recommended that kerbs of a safety island next to a path intersection point are lowered to a pavement level so that there are no obstacles to pedestrians and cyclists.
Special-purpose safety island in the point of intersection of a pedestrian and bicycle path and a road	$\geq 10,00$	2,50 (2,00)	0,07–0,15	
Special-purpose safety island in a zone of bus stops	$L \geq L_{veh.}$	1,30–3,00 ¹	0,07–0,15	If bus stops are not arranged one opposite sides, then it is recommended to arrange a safety island next to both stops and at a sector between stops.
Simplified safety islands	5,00–10,00 ²	1,30–3,00	0,07–0,15	The length of a safety island can be different taking into account a specific situation. A safety island can be arranged between adjacent junctions, in areas where pulling off to an opposite traffic lane must be limited, etc.

(2.00) – applicable in exceptional cases;

$L_{veh.}$ – length of a bus stop;

¹ – if an island is crossed by a pedestrian crossing, then the width of an island must be $b \geq 2.00$ m;

² – this distance can be extended in accordance with a specific situation. (2,00) – aplicabil în cazuri excepționale;

Table 5-1. Geometric parameters and dimensions of elevated safety islands

Source: The Consultant

A safety island transition is designed taking into account the permitted driving speed (see Table below). Main permitted speed limits in junction areas are 90 and 70 km/h.

Driving speed, km/h	Road widening i , m	Length of a curve L_z , m	Transition of a road curvature
90	$\leq 1,50$	60	

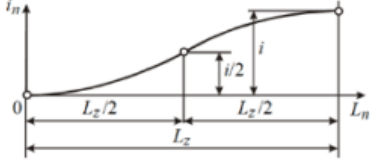
70	$\leq 2,50$	80	
	$\leq 3,50$	100	
	$> 3,50$	140	
	$\leq 1,50$	50	
	$\leq 2,50$	60	
	$\leq 3,50$	70	

Table 5-2. Geometric parameters and dimensions of elevated safety islands

Source: The Consultant

Various types of granite, concrete road kerbs and paving stones are usually used for the arrangement of elevated safety islands. Safety islands can also be assembled from elements made of rubber, plastic, concrete and other materials and installed on the pavement.

- It is recommended that white-coloured light-reflecting elements are installed at an island in order to improve the visibility of elevated safety islands at night, in winter or under bad meteorological conditions.
- It is recommended that distinct flexible light-reflecting studs are installed every 1—2 m. The distance between distinct flexible light-reflecting studs from the end of a safety island can be smaller in order to accentuate forms of a safety island. Distinct flexible light-reflecting studs are especially recommended at junctions without lighting.
- It is recommended that distinct flexible light-reflecting studs are installed directly on the pavement of a marked safety island.



Figure 5-5. Materials for elevated safety islands

Source: The Consultant

5.3. Safety barriers

Designed

The type of road safety barriers shown in the provided design significant safety deficiencies. Their exposed and unprotected terminal ends pose a severe hazard to road users, particularly at higher speeds. In the event of a collision, these barrier ends can function as rigid, penetrating objects, increasing the likelihood of catastrophic vehicle damage and potentially leading to fatal or life-threatening injuries. Such configurations do not meet modern road safety standards, which require barrier terminals to be designed in a way that absorbs impact energy and prevents spearing, overturning, or abrupt vehicle deceleration.

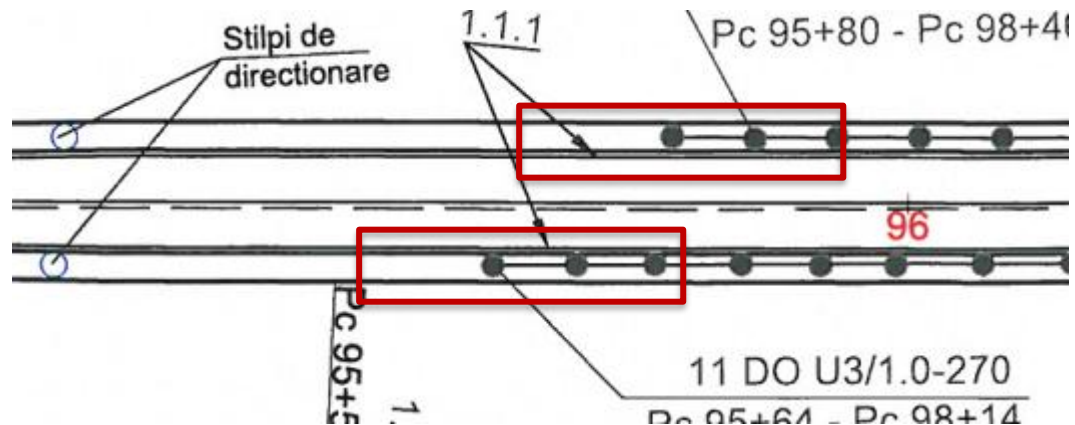


Figure 5-6. Currently designed road safety barriers

Source: R7 R14 – Drochia – Costești – Border with Romania, km 0.00 – 29.00," Volume 9, Organization of road traffic.

Recommended

To ensure compliance with recognised safety principles and to minimise the risk of severe injuries, all barrier terminal ends should be properly treated. Specifically, the ends of the barriers must be embedded into the ground (anchored or buried) and curved or rotated away from the carriageway. This configuration prevents direct frontal impact with a rigid barrier end and substantially improves overall roadside safety.

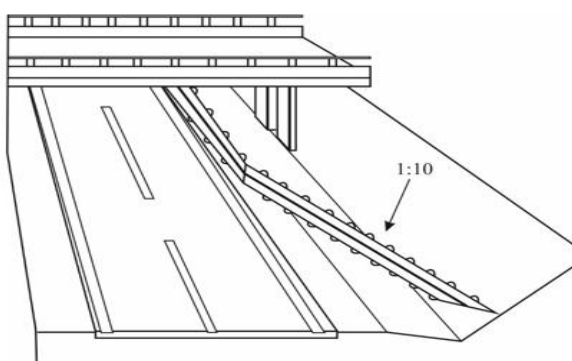


Figure 5-7. Recommended design for road safety barriers

Source: The Consultant

5.4. Roundabouts

Designed

Roundabouts are widely recognised as one of the safest types of at-grade intersections due to their substantially lower number of conflict points compared with conventional junction designs. For example, a typical four-leg intersection contains 32 potential conflict points, while a single-lane roundabout reduces this number to just 8—representing a fourfold improvement in safety.

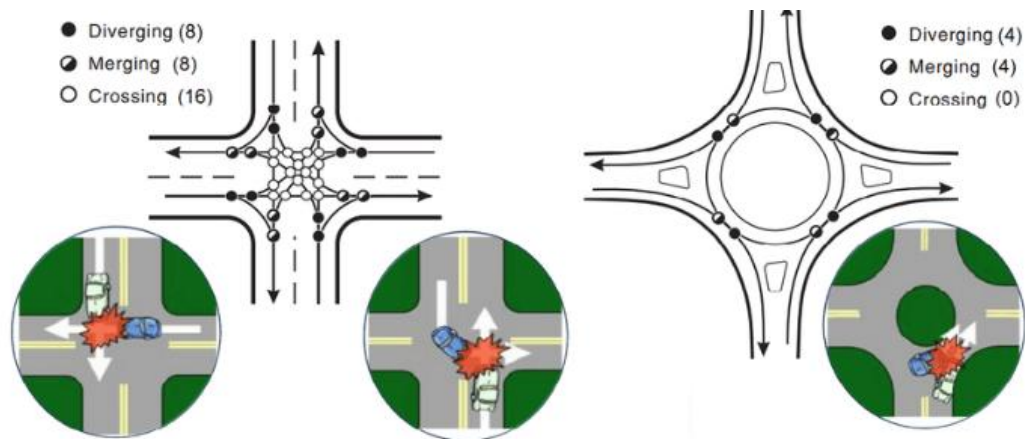


Figure 5-8. Simplified illustrations of potential vehicle conflict points at a basic roundabout (8) vs. a 4-leg intersection (32)

Source: Dupuis, Yohan & Subirats, Peggy & Vasseur, Pascal. (2016). A Survey of Vision-Based Traffic Monitoring of Road Intersections. IEEE Transactions on Intelligent Transportation Systems. 17. 1-18. 10.1109/TITS.2016.2530146.

However, the safety performance of a roundabout is strongly influenced by its internal configuration, particularly the number of circulating lanes. A standard single-lane roundabout has 8 conflict points, whereas a two-lane roundabout increases this number to 24, and a turbo roundabout features approximately 14 conflict points due to its guided lane structure.

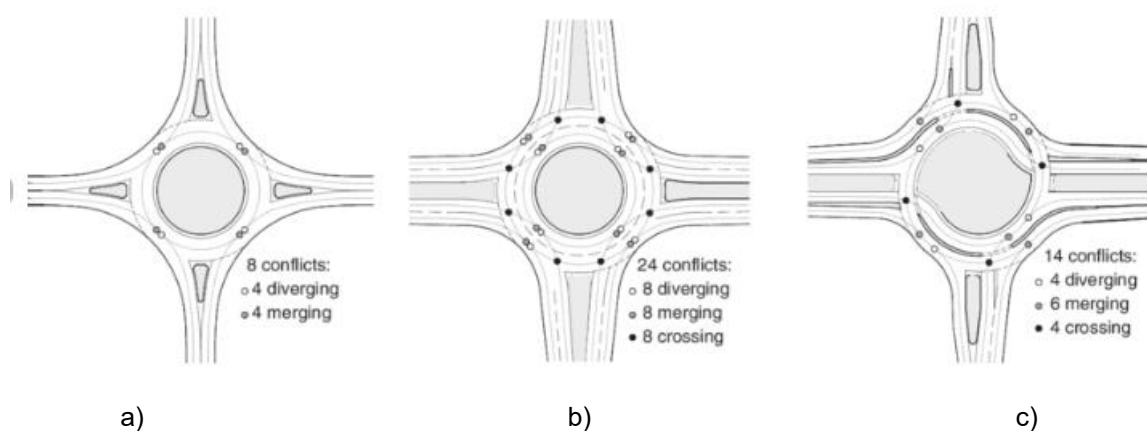
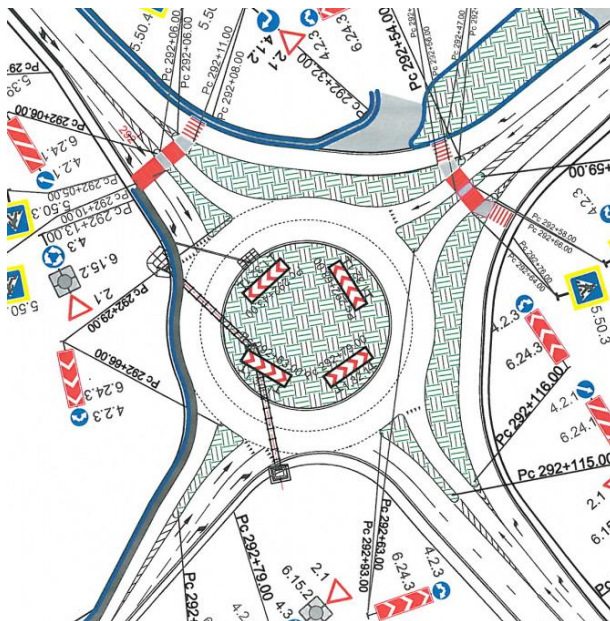


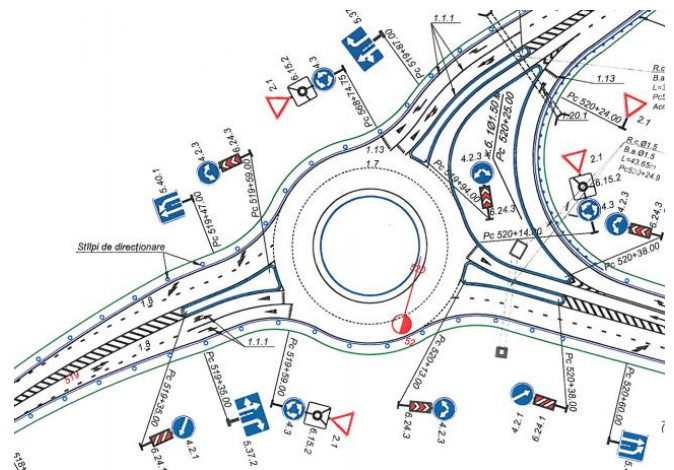
Figure 5-9. Types of conflicts at (a) single-lane roundabouts, (b) two-lane roundabouts, and (c) turboroundabouts.

Source: Vasconcelos, António & Silva, Ana & Seco, Álvaro & Fernandes, Paulo & Coelho, Margarida. (2014). Turboroundabouts: Multicriterion Assessment of Intersection Capacity, Safety, and Emissions. Transportation Research Record Journal of the Transportation Research Board. 2402. 28-37. 10.3141/2402-04.

During the field visit in Moldova, it was observed that the majority of roundabouts—both in urban and rural areas—are designed uniformly, frequently applying two-lane or even three-lane configurations regardless of traffic demand or safety considerations. While the roundabout form itself is inherently safer, an unsuitable design with too many circulating lanes can significantly reduce these benefits. Multi-lane roundabouts require more complex decision-making, increase the likelihood of lane-changing conflicts, and create higher stress levels for drivers, particularly in environments where lane discipline may be inconsistent. As a result, instead of improving safety, an overly complex roundabout layout can actually elevate crash risk and create confusion among road users.



~ PC 292+00 from LOT 1



~ PC 520+00 from LOT 2

Figure 5-10. Currently designed layouts of roundabouts

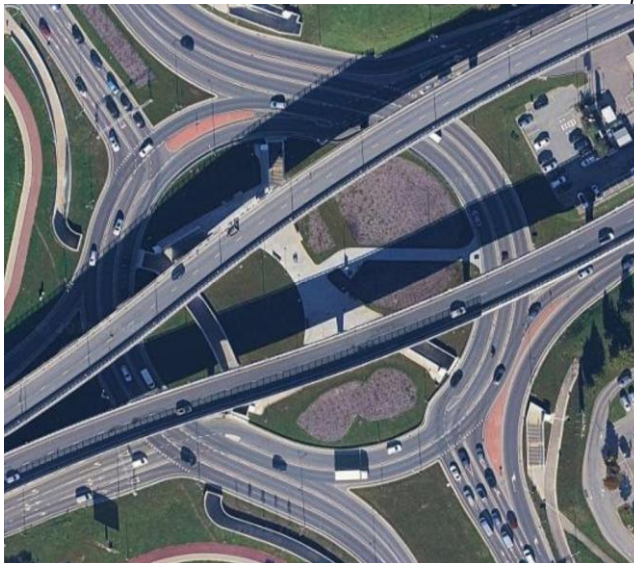
Source: Project documentation

Recommended

It is strongly recommended to revise the current approach to roundabout design and adopt safer, more modern configurations—especially turbo roundabouts, which provide clearer traffic guidance and significantly reduce the number of conflict points compared to conventional multi-lane roundabouts. Turbo roundabouts are designed with physically or visually enforced lane separation, guiding drivers into dedicated paths and preventing dangerous lane-changing maneuvers within the roundabout. This design not only improves safety performance but also reduces driver stress, particularly in locations with high traffic volumes or complex turning movements. By limiting conflict zones and ensuring predictable vehicle trajectories, turbo roundabouts offer a safer and more intuitive alternative to traditional two- or three-lane roundabouts commonly observed in Moldovan cities and rural areas.



Example of typical roundabout reconfiguration to turbo-roundabout while using only horizontal marking without physical lane separation



Example of typical turbo-roundabout with physical lane separation

Figure 5-11. Example of roundabout transformed from typical 2 lane roundabout to turbo-roundabout and typical turbo-roundabout

Source: The Consultant

In addition, it is essential that drivers are properly informed about the required lane selection before entering the roundabout. This should be achieved through a combination of clear advance signage, pavement markings, and lane-assignment diagrams placed at an adequate distance from the roundabout, corresponding to the local design speed. Advance information enables drivers to choose the correct lane early, reducing last-minute lane changes and minimizing the likelihood of collisions inside the roundabout. Consistent and unified signing and marking

standards across the national road network would further enhance comprehension and predictability for all road users.



Figure 5-12. Examples of road signs to inform about lane selection in roundabouts

Source: The Consultant

Implementing these recommendations—transitioning to turbo roundabout configurations and improving advance driver information—will significantly enhance the safety, efficiency, and user-friendliness of roundabouts. Such measures would help ensure that these intersections function as intended: as one of the safest forms of at-grade junctions, adapted to real-world traffic patterns and aligned with international best practices.

5.5. Rumble strips

Recommended

As a recommendation for improving safety on the R7 road in Moldova—particularly given its significant number of horizontal curves—it is advisable to incorporate rumble strips along the corridor. Both milled rumble strips and thermoplastic transverse or edge-line rumble strips are suitable options, depending on the pavement condition and available maintenance capacity. These treatments are widely recognised as effective, low-cost measures for reducing run-off-road and head-on collisions, especially in areas where drivers may fail to anticipate curvature changes or where visibility conditions vary. Installing rumble strips on curve approaches, within curve sections, and along road edges can provide strong tactile and audible feedback to drivers, encouraging timely speed reduction and lane discipline. To maximise effectiveness, placement should be paired with appropriate signage and road markings, ensuring that the countermeasure integrates well with the overall safety strategy for the R7 corridor.



Figure 5-13. a) milled rumble strip; b) thermoplastic rumble strip

Source: The Consultant; Tapconet

5.6. Road lightning

Recommended

Insufficient road lighting is a critical road safety deficiency affecting several settlements within the Rîșcani District,

particularly in villages such as Hiliuți, Pîrjota, Șaptebani, Gălășeni, and Petrușeni, where limited visibility during nighttime and adverse weather conditions increases crash risk. The installation and modernization of road lighting should therefore be considered a priority safety intervention, especially at settlement entrances, pedestrian crossing points, intersections, bus stop areas, horizontal and vertical curvature sections, and other locations with elevated conflict potential.

Adequate lighting significantly improves drivers' ability to identify road geometry, vulnerable road users, roadside obstacles, and approaching manoeuvres in sufficient time to react safely. This is particularly important on local road sections where geometric inconsistencies, reduced delineation, and mixed traffic conditions require enhanced visual guidance. Improved illumination contributes to reducing run-off-road crashes, vehicle-pedestrian conflicts, and night-time collision severity, while also creating a more predictable and comfortable driving environment.

For these rural settlements, modern solar-powered lighting systems represent a particularly suitable and sustainable solution. Such systems utilize integrated photovoltaic panels to capture solar energy during daylight hours and store it for night-time operation, enabling reliable illumination without dependence on conventional electrical grid infrastructure. This approach offers substantial advantages for dispersed village environments by reducing installation complexity, minimizing operational costs, and ensuring long-term functionality even in areas with limited utility access. The implementation of energy-efficient LED solar lighting would provide an effective, resilient, and cost-efficient measure to improve night-time road safety across the targeted villages.



Figure 5-14. Solar powered road lightning posts

Source: Hei Solar Solutions

5.7. Infrastructure for vulnerable road users

Considering the existing road safety deficiencies identified across all project lots, the needs of vulnerable road users should be addressed as a fundamental design priority rather than as a secondary infrastructure element. The upgraded road sections will pass through or adjacent to settlements where pedestrians, schoolchildren, elderly residents, cyclists, public transport users, agricultural workers, and other non-motorized users regularly interact with vehicular traffic. Without dedicated and well-designed infrastructure, these interactions create significant

conflict points and substantially increase the risk of severe or fatal crashes.

The final road design should therefore incorporate a comprehensive and continuous network of pedestrian safety measures within all built-up areas and locations with observable pedestrian activity. This should include the provision of sidewalks or physically separated pedestrian pathways of adequate width, designed to ensure safe movement independent of motorized traffic. Particular care should be taken to maintain continuity of pedestrian routes, avoiding interruptions caused by drainage structures, utility poles, roadside barriers, or abrupt changes in elevation. Pedestrian crossings should be strategically located based on natural movement patterns and key destination points such as schools, local shops, health centres, public institutions, and bus stops. These crossings should be clearly visible, appropriately illuminated, and supplemented with warning signage, reflective elements, and, where justified by traffic speed and volume, raised platforms or refuge islands to enhance pedestrian protection.

Special attention should be given to school access routes and areas with frequent child movement, where enhanced protective measures may be required, including traffic calming treatments, reduced speed zones, high-visibility markings, and additional roadside safety features. Bus stop infrastructure should be designed as an integrated part of the pedestrian system, ensuring safe and direct access from nearby residential areas without requiring users to walk along carriageway edges or cross at unsafe locations. Waiting areas should be adequately protected, visible, and positioned to minimize exposure to traffic conflicts.

In rural and semi-rural sections where formal pedestrian infrastructure may not be continuously feasible, alternative safety measures should be considered, including widened paved shoulders, pedestrian refuge areas, improved roadside delineation, and targeted crossing facilities at known desire lines. Where cycling activity or mixed agricultural and local traffic is expected, sufficient lateral space and clear operational separation should be provided wherever possible to reduce interaction with faster-moving vehicles.

The design should also account for accessibility and universal mobility principles, ensuring that infrastructure is usable by persons with reduced mobility through the provision of appropriate gradients, tactile paving where relevant, curb ramps, and obstacle-free circulation paths. Overall, the integration of high-quality vulnerable road user infrastructure is essential not only to address the current safety shortcomings identified across the project corridor, but also to ensure that the upgraded road functions as safe, inclusive, and sustainable transport infrastructure for all users throughout its operational life.

5.8. Road safety at settlements

Road safety through settlements must be treated as a highly important and clearly expressed component of road design and traffic management, as these areas typically present the highest risk of traffic accidents. In rural or non-urbanized sections, the primary risk factors are generally related to driver behaviour, vehicle condition, and road infrastructure itself. However, once entering urbanized or semi-urbanized environments, the traffic situation becomes significantly more complex due to the introduction of additional and less predictable conflict points, including pedestrians, cyclists, local traffic movements, property access points, intersections, roadside activities, and changes in driver expectations and behaviour.

For this reason, drivers approaching settlements must be clearly informed that they are transitioning into a different driving environment requiring increased attention and reduced speed. This transition should not rely solely on traffic signs, but also on physical and psychological traffic calming measures that naturally encourage drivers to adapt their driving behaviour before entering the settlement area. The objective is to create a self-explaining road environment where the driver intuitively understands that traffic conditions, risks, and expected behaviour have changed.

Various measures can be applied to address this situation. However, considering that the R7 functions primarily as a transit and interurban corridor connecting major cities, the selected measures must remain balanced and proportionate, ensuring both safety and driving comfort for different categories of road users. The measures should provide a clear physical and psychological indication of settlement entry while avoiding sudden or hazardous manoeuvres for drivers entering the area. In this context, both enforcement-based and infrastructure-based measures can be effectively applied.

One of the commonly used infrastructure measures is the physical deflection of the road alignment at settlement entrances, often referred to as “village gates” or “gateway treatments.” These geometric modifications visually and physically emphasize the beginning of a settlement area and require drivers to perform a slight steering manoeuvre. As a result, drivers are naturally forced to reduce their speed in order to comfortably and safely navigate the alignment change.

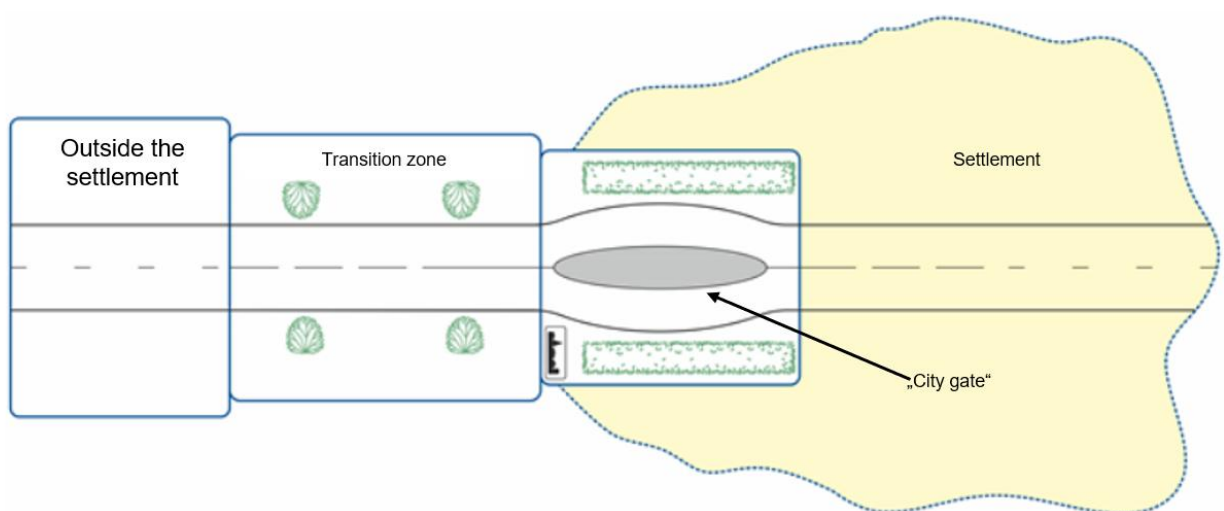
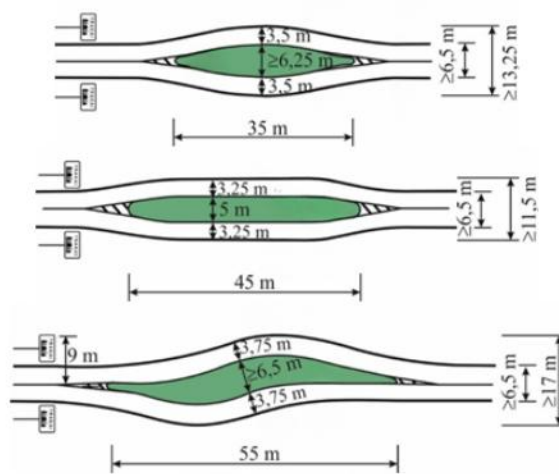


Figure 5-15. “City gates” scheme

Source: Consultant



a)



b)

Figure 5-16. a) “City gates” dimensions b) Real example of “city gates”

Source: Consultant

Enforcement measures may include speed cameras and radar systems, which can generally be divided into point-speed enforcement and average-speed enforcement systems. In settlements where significant traffic pattern changes are expected — for example, where vehicles are likely to turn onto local roads or where multiple intersections are present — point-speed cameras may be more appropriate. However, in settlements where traffic primarily continues in transit along the main corridor, with limited side friction, few intersections, and minimal interruptions to traffic flow, average-speed enforcement is generally recommended. Such systems ensure that transit vehicles maintain a safe and compliant speed throughout the entire settlement section, rather than only reducing speed at isolated enforcement points.



a)



b)

Figure 5-17. a) Warning about point-speed enforcement b) Warning about average-speed enforcement

Source: Consultant

Another measure already reflected in the proposed design solutions is the use of transverse rumble strips or milled noise markings at settlement entrances. Although these measures may not significantly reduce vehicle speed from a physical perspective, they create psychological discomfort and increase driver awareness, clearly indicating the transition into an area with different traffic conditions, increased roadside activity, and lower speed expectations.



Figure 5-18. Example of rumble strips

Source: Consultant

Another measure that may be applied at the entries of settlement areas is the installation of dynamic speed display signs. These devices function as preventive speed management measures rather than enforcement tools, as they do not perform speed control or issue penalties. Instead, they provide a psychological effect on drivers by displaying the actual travelling speed of approaching vehicles and, in some cases, the applicable speed limit within the section.

Such systems are intended to increase driver awareness and encourage voluntary speed reduction, particularly at settlement entrances, near pedestrian crossings, schools, bus stops, or other sensitive roadside environments. Experience shows that immediate visual feedback regarding driving speed can positively influence driver behaviour and contribute to lower operating speeds without creating significant discomfort for road users or nearby residents.



Figure 5-19. a) Warning that the current driving speed is exceeding the speed limit b) Indication that the driving speed is below the speed limit

Source: Consultant

Within settlement areas, additional engineering measures may be applied to manage vehicle speeds; however, such measures should be selected logically and in a balanced manner, considering speed control effectiveness, driving comfort, and the overall quality of life for nearby residents.

One of the most commonly used measures is the speed hump, which may be designed in different forms and therefore influence vehicle speeds differently. Circular-profile speed humps are generally the most effective in physically reducing speed, but they also have notable disadvantages, including increased vibration and noise levels, which may negatively affect nearby residential environments. For this reason, depending on the characteristics of the settlement, trapezoidal or sinusoidal speed humps are often more appropriate, particularly in areas with increased pedestrian activity or near intersections, where additional driver attention and lower approach speeds are required.



Figure 5-20. Types of speed humps

Source: Consultant

Trapezoidal speed humps are typically not recommended on roads outside settlement areas or on streets that do not exhibit characteristics of an urban or residential environment, such as the absence of sidewalks, buildings, pedestrian activity, or where the road primarily passes through forested or undeveloped areas. In parallel, raised pedestrian crossings may also be applied as an effective traffic calming measure. These consist of pedestrian crossings installed on trapezoidal speed tables and are intended to improve pedestrian visibility, increase driver

awareness, and enhance overall pedestrian safety.



a)



b)

Figure 5-21. a) Trapezoidal speed hump in the settlement b) Raised pedestrian crossing at the settlement

Source: Consultant

5.9. Road infrastructure arrangements nearby country border

The existing border crossing point near Costești is frequently congested with heavy goods vehicles travelling toward Romania. As a result, the single traffic lane on the R7 road is often occupied by stationary trucks waiting to cross the border, while road shoulders are, in many cases, either structurally incapable of accommodating such volumes or entirely absent. This situation creates significant operational and safety problems for other road users. Farmers experience difficulties accessing agricultural land adjacent to the corridor, while local residents and drivers travelling toward Costești — rather than toward the border crossing itself — are often unable to pass safely or are forced to temporarily use the opposing traffic lane.

Considering the scale and recurring nature of this issue, it would be reasonable to address not only road safety measures, but also the broader traffic organization and border management system at the Moldova–Romania border near the Costești crossing point. One potential solution would be the development of a dedicated truck waiting and parking area outside the main carriageway, combined with a more advanced border crossing management system. Such a system could allocate scheduled border crossing time slots for freight vehicles, reducing the need for “live queueing” directly on the roadway and significantly improving both traffic safety and operational efficiency along the R7 corridor.

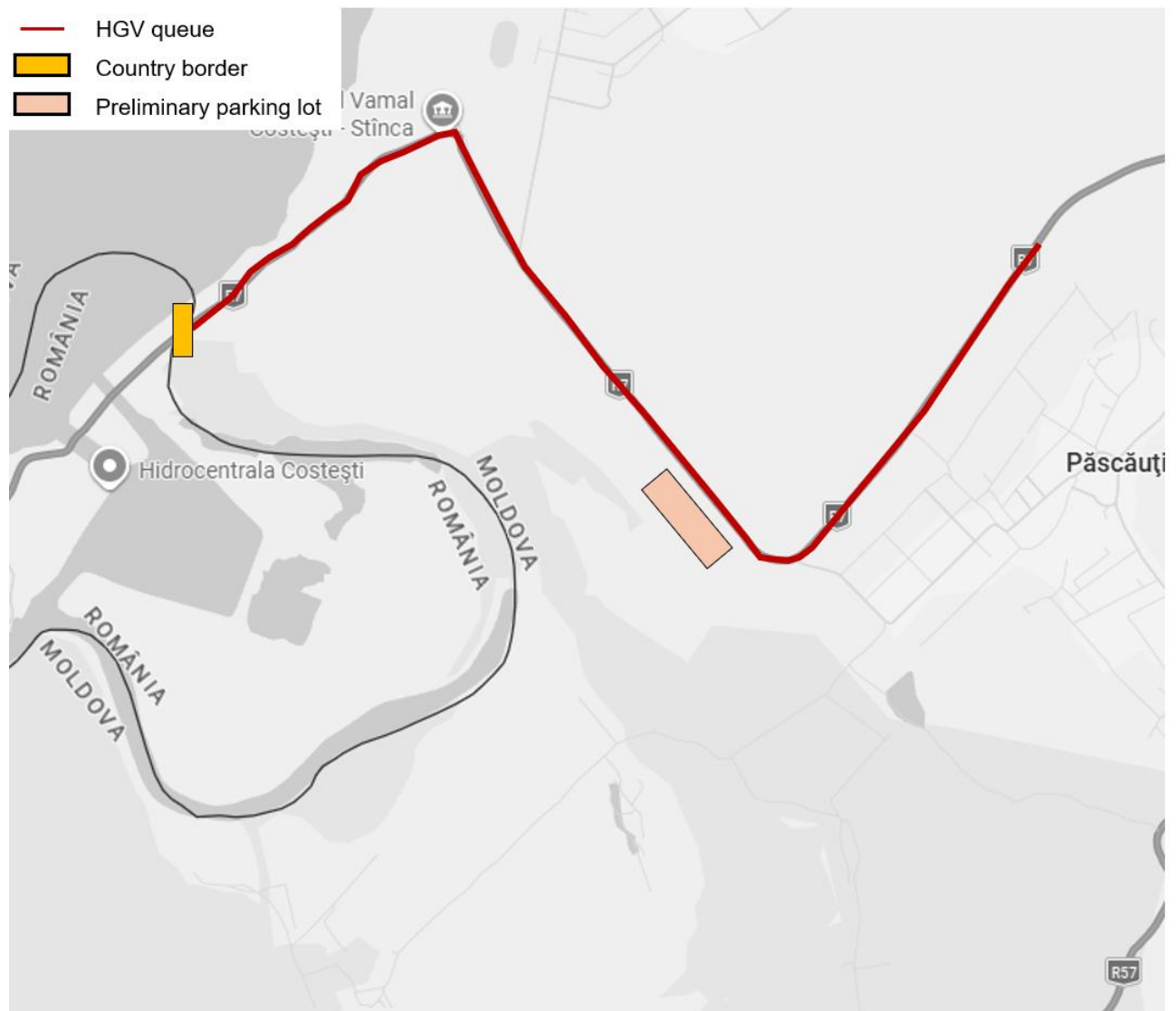


Figure 5-22. Current traffic issues at Romania – Moldova border

Source: Consultant

5.10. Alternative route of R7 near Hiliuti

Following the public consultation process and meetings with local communities, representatives of the Hiliuți community expressed concerns regarding the current alignment of the R7 corridor through the settlement. According to the community representatives, the existing transit traffic volumes, combined with unfavourable geometric conditions at the entrance to the settlement — particularly sharp horizontal curves with limited visibility — create safety risks, discomfort for residents, and operational difficulties for transit traffic.

As a result, the community proposed considering a realignment of the R7 route to bypass the Hiliuți settlement entirely, while also avoiding the existing sharp curves. Such a bypass solution could provide multiple benefits for both transit users and local residents. From the transport network perspective, transit traffic would be able to move more efficiently and at more consistent operating speeds by avoiding another settlement section with reduced speed limits, local access movements, pedestrian activity, and geometric constraints. This would improve overall corridor functionality, travel time reliability, and driving comfort for long-distance traffic, including freight transport.

At the same time, removing heavy transit flows from the settlement would significantly improve living conditions for local residents. The reduction of through traffic would decrease noise levels, vibration, dust, and vehicle emissions within the village environment, while also improving pedestrian safety and overall quality of life. Reduced traffic exposure would be particularly beneficial for vulnerable road users, including children, elderly residents, cyclists, and pedestrians moving within the settlement area. In addition, the removal of transit traffic could create opportunities for a more community-oriented street environment with safer local access and improved conditions for future local infrastructure development.

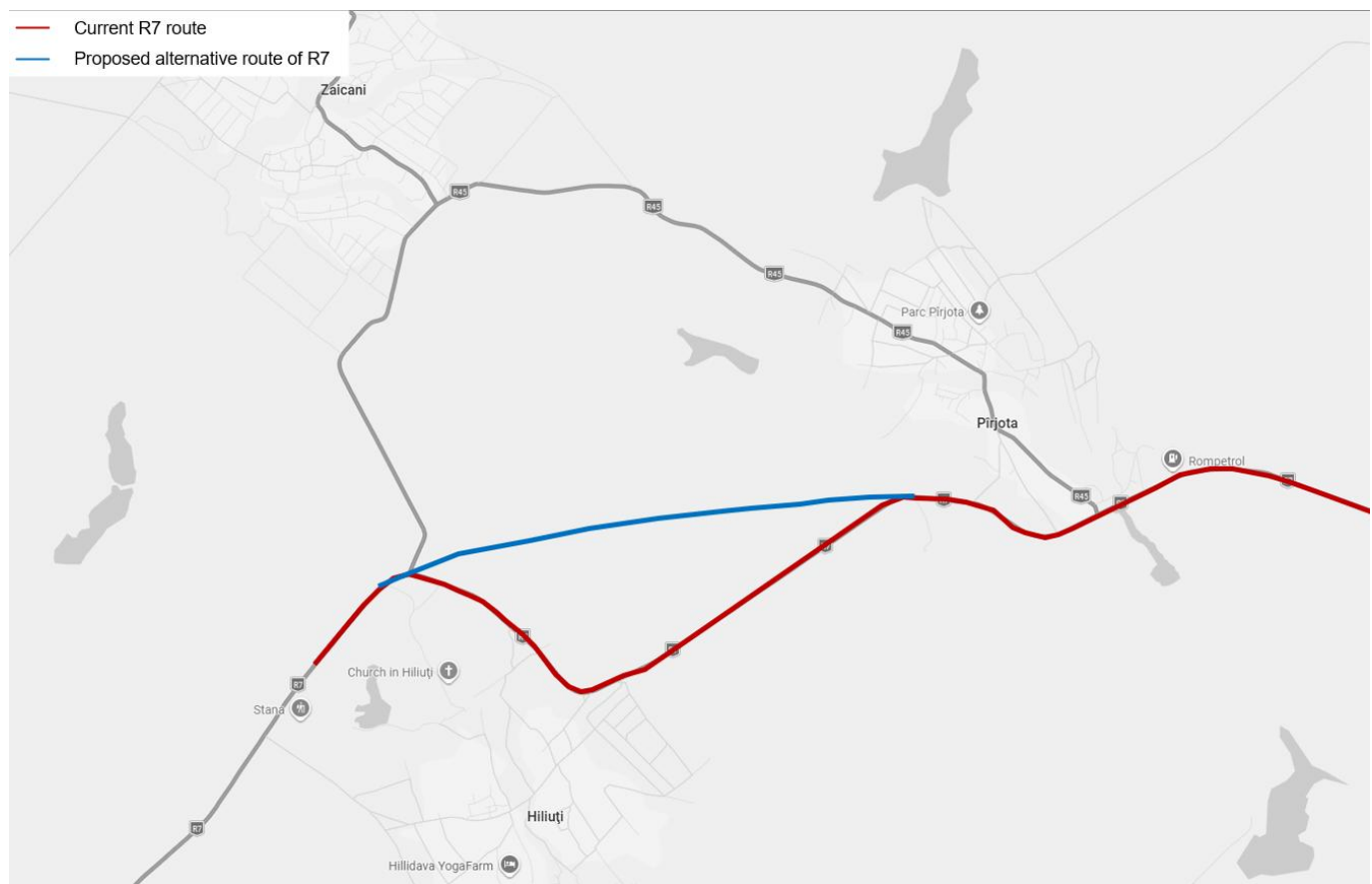
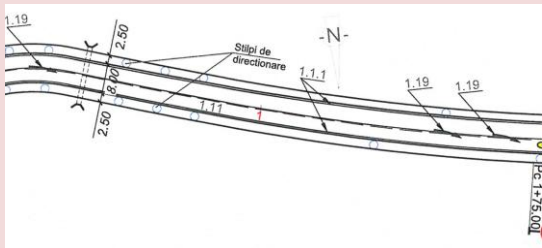


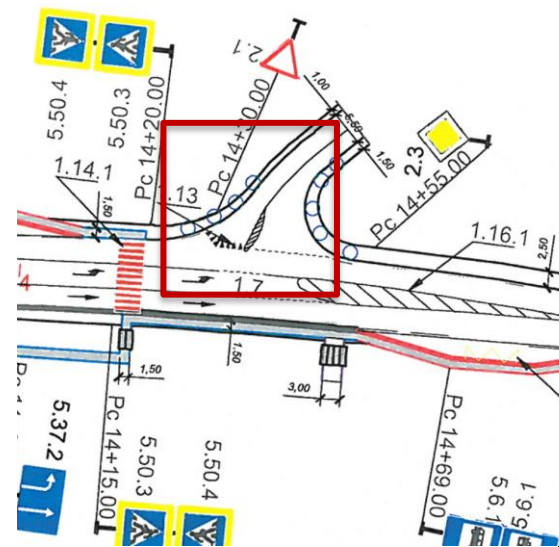
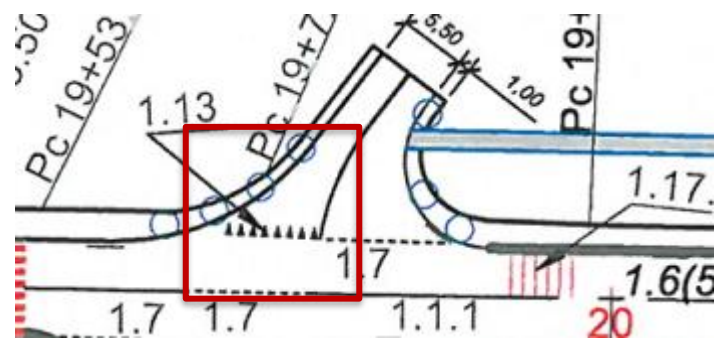
Figure 5-23. Alternative route of R7 nearby Hiliuti

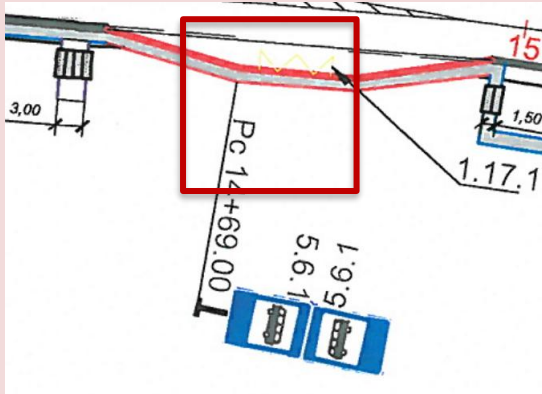
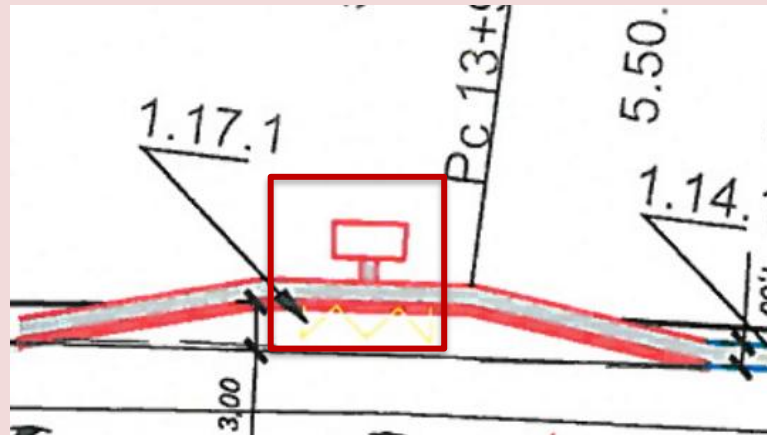
Source: Consultant

5.11. Detailed recommendations:

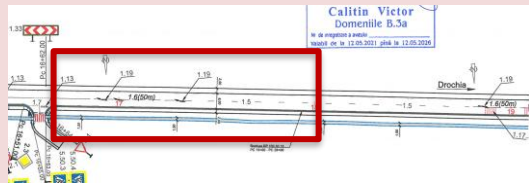
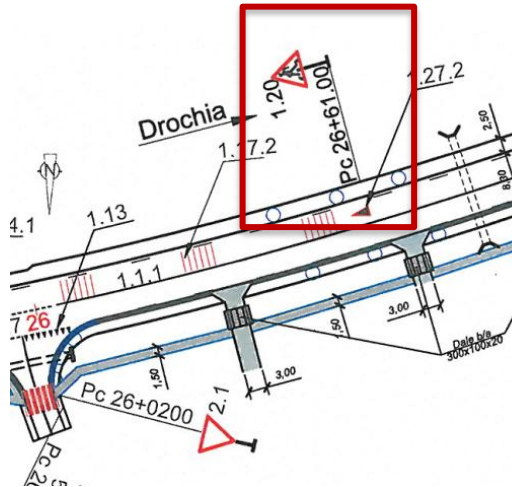
LOT 1 R14 – Drochia

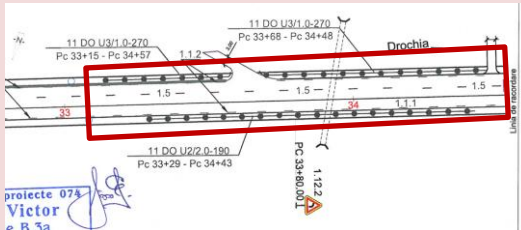
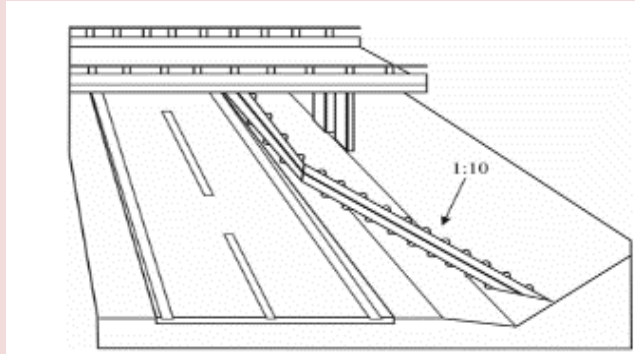
Item	Location	Deficiency	Ranking (H/M/L)	Recommendation
1.	PC ~0+50 – 1+75 PC 2+65 – 3+60 PC 40+50 – 41+50 PC 43+50 – 44+50	The project includes overlapping horizontal road markings 1.1.1, 1.19, and 1.5 within a short road section. A high density of different markings over a limited distance may confuse drivers. Additionally, the 1.19 directional arrows are placed irregularly — for example, near chainage PC ~0+50 only a single arrow is shown, suggesting a return to the lane after overtaking, yet the pattern of arrows is inconsistent and only reappears around PC 1+50 – 1+75. This irregularity may lead to unclear lane-use interpretation. 	L	It is recommended to remove the 1.19 markings or adjust their layout so they do not intersect with lines 1.1.1 and 1.5. The arrows in this context may confuse road users rather than assist them. Instead, it would be more appropriate to permit overtaking only in one direction while restricting it in the opposite direction to enhance clarity and safety.
2.	PC 14+30 PC 19+66 PC 28+00	At the intersection, the horizontal road marking 1.13 on the minor road is curved. As a result, drivers are prompted to stop at	L	It is recommended to extend the 1.13 stop line marking consistently up to the intersection edge so that all drivers stop at the same location — directly at the junction — regardless of their

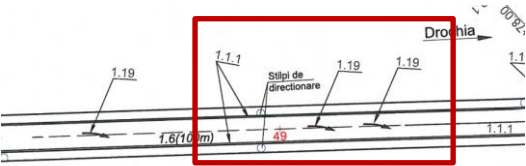
PC 31+53 PC 40+31 PC 90+60 PC 98+26 PC 125+67 PC 161+27 PC 166+50 PC 174+18 PC 177+98 PC 179+19 PC 185+16 PC 189+27 PC 191+04 PC 191+64 PC 210+77 PC 215+24 PC 215+50 PC 222+36 PC 222+83 PC 228+10 PC 258+08 PC 261+90 PC 262+06 PC 264+90 PC 283+13 PC 286+90	varying distances from the intersection — in some parts farther from the junction, and in others directly at the crossing point. This inconsistency may cause uncertainty about the correct stopping position and reduce intersection safety. 	intended direction of travel. This will ensure uniform driver behavior and improved safety at the intersection. 
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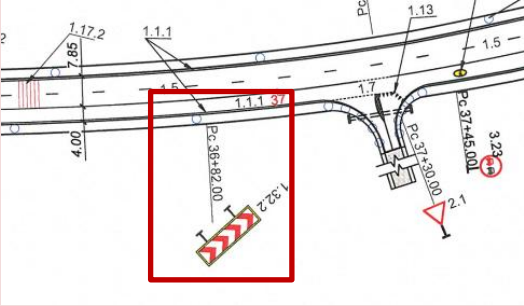
3.	PC 14+69	The project includes pedestrian infrastructure around the intersection — such as sidewalks and a platform on the opposite side of the street. However, at the reviewed location, no passenger platform is planned at the bus stop. This omission may lead to unsafe or uncomfortable waiting conditions for pedestrians and public transport users. 	L	It is recommended that when developing new infrastructure, favorable and comfortable conditions be ensured for all road users, including pedestrians, by providing designated waiting platforms at bus stops. Such platforms help keep passengers safely within a defined area rather than dispersed around the stop or waiting directly on the roadway, thereby improving both safety and comfort. 
4.	PC 14+55 PC 15+65 PC 16+50	At some intersections, priority signs are not installed for all traffic directions. This inconsistency may lead to driver uncertainty	L	It is recommended to maintain uniformity and ensure that drivers are properly informed about the right-of-way by installing traffic sign 2.3 at the intersections in both driving directions. This will

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6.	PC 13+25 – PC 35+71	Within the village of Solcani, road sign 1.20 — warning drivers about pedestrians on the carriageway — is used irregularly, which may mislead drivers about the actual presence or likelihood of pedestrians. 	L	It is recommended either to discontinue the use of road sign 1.20 within the village altogether or to install it consistently before each pedestrian crossing to ensure clear and predictable driver awareness.
7.	PC 33+15 – 34+50 PC 38+10 – 40+00 PC 54+40 – 59+20 PC 70+80 – 72+00 PC 80+50 – 84+70	Straight ends of safety barriers are unsafe because a head-on collision with them is likely to result in serious consequences for the road user's health. Such design solutions should be replaced with safer, impact-	M	Lower the ends of the barrier, rotate them away from driving direction and carriageway, dig them into the ground. The design of turned off the road, lowered to the ground level and dig into the ground barriers ensures less severe consequences in terms of accidents. Also, this design of barriers can help the vehicle get

	PC 95+64 – 98+40 PC 129+00 – 133+00 PC 175+20 – 176+00 PC 181+64 – 182+22 PC 198+80 – 199+66 PC 241+75 – 246+10	absorbing terminal ends or different layout of barriers. 	back on the road instead of overturns or crashes to surroundings.  
8.	PC 43+50 – 44+50 PC 48+50 – 49+50 PC 50+20 – 51+20 PC 51+40 – 52+40 PC 79+50 – 89+50 PC 83+20 – 84+00 PC 89+20 – 90+10 PC 91+50 – 92+50 PC 96+20 – 97+10	Horizontal road markings 1.6 and 1.19 intersect, which may create visual clutter and confuse drivers about the relevance or meaning of the markings. Overlapping line types can reduce clarity and lead to uncertainty regarding lane guidance and overtaking regulations.	L It is recommended to position the 1.19 arrows between the 1.6 lines rather than directly on top of them. This approach will ensure that the markings remain clear, visually consistent, and easily interpretable for all road users, minimizing any potential misunderstanding about their purpose and validity.

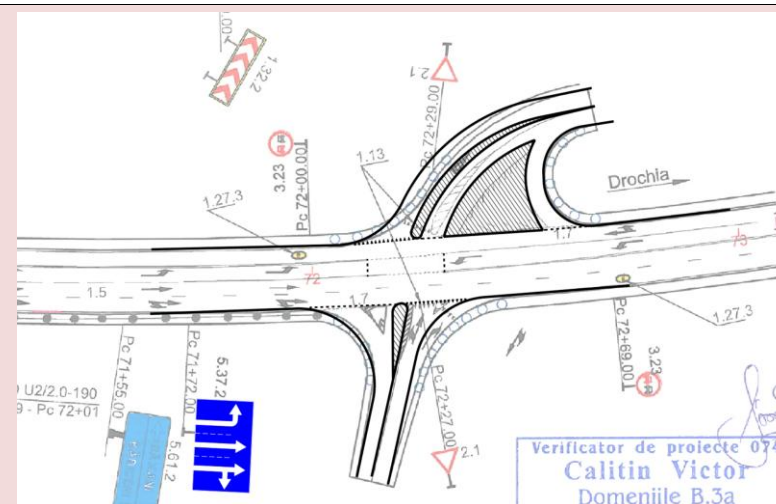
PC 107+40 – 108+20 PC 114+60 – 115+60 PC 147+15 – 148+30 PC 147+20 – 148+20 PC 161+60 – 162+60 PC 164+60 – 165+50 PC 183+00 – 184+00 PC 184+25 – 185+25 PC 189+55 – 190+55 PC 199+35 – 200+35 PC 204+00 – 204+60 PC 211+20 – 212+20 PC 215+85 – 216+85 PC 262+50 – 263+40 PC 263+50 – 264+40 PC 265+60 – 266+50 PC 283+80 – 284+50 PC 285+60 – 286+40 PC 287+60 – 288+50 PC 288+60 – 289+40	  Example of horizontal marking
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9.	PC 36+82 PC 68+00 PC 71+00	The purpose of road sign 1.32.2 at this location is unclear, as there is no sharp curve present. Moreover, the sign is placed at the beginning of a relatively smooth bend. The excessive number of signs in this area not only contributes to visual clutter but may also give drivers an inaccurate impression of the road geometry and surrounding environment. 	L	It is recommended to remove the 1.32.2 or 1.32.1 signs at this specific location.
10.	PC 53+09 PC 242+59 – 244+50 PC 254+00 – 257+50	Using only a single road sign to warn about a curve may provide insufficient information for drivers. Continuous driver awareness is essential, especially along longer or gradually bending sections.	L	For curved sections, the use of segmented warning signs such as 1.34.1 or 1.34.2 is advised instead of single-symbol curve warning signs (e.g. , 1.32.1 or 1.32.2). This approach provides clearer visual guidance to drivers while reducing unnecessary sign density. 

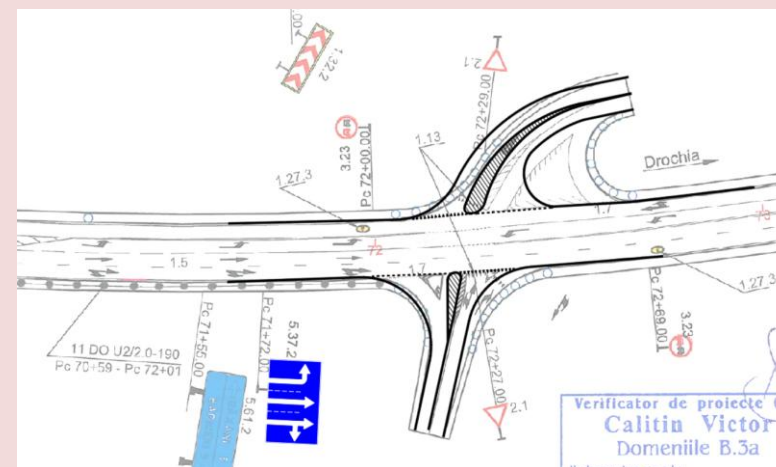
				Example of 1.34.2 signs in Moldova
11.	PC 72+27	Several inconsistencies have been identified in the design of the proposed intersection: 1. The intersection geometry is misaligned, which may affect driver visibility—particularly for those turning left from the minor roads. In the current design, drivers would need to turn their heads significantly to observe approaching vehicles on the main road, which can compromise safety and comfort. 2. The horizontal road marking 1.13 is not applied consistently throughout the project; its layout varies across different locations, leading to non-uniform driver expectations. 3. The advance direction sign (No. 5.37.2)	L	1. Where possible, the intersection geometry should be adjusted to form a regular four-leg layout, improving visibility and maneuvering conditions for all directions of travel. 2. Ensure consistency in the application of horizontal marking 1.13, always positioning it at the junction between the main and side roads. 3. Revise road sign No. 5.37.2 so that it correctly represents the number of lanes and their corresponding directions within the intersection, ensuring coherence between signage and pavement markings. 4. It is recommended to designate a single traffic lane at the junction with the main road, without dividing it into separate lanes for different turning movements. Maintaining one shared lane for all directions will simplify the intersection layout, reduce marking clutter within the confined area, and improve the overall functionality and clarity of the junction.

does not accurately reflect the actual lane configuration and turning directions at the intersection. The information presented on the sign is inconsistent with the horizontal markings.

4. The proposed small traffic island on the minor road (approaching from the direction of Badiceni) will not effectively serve its intended purpose. Vehicles waiting to turn right and those intending to go straight or turn left will obstruct each other due to the limited available space. This design may lead to operational conflicts and unnecessary delays at the intersection.

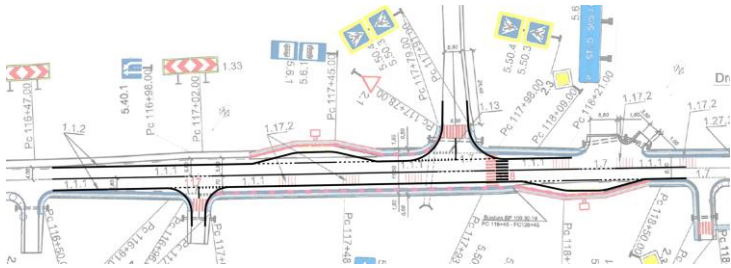
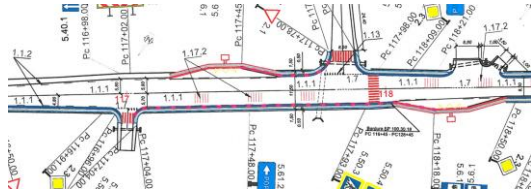


Option No. 1 (see enlarged in Annex C)



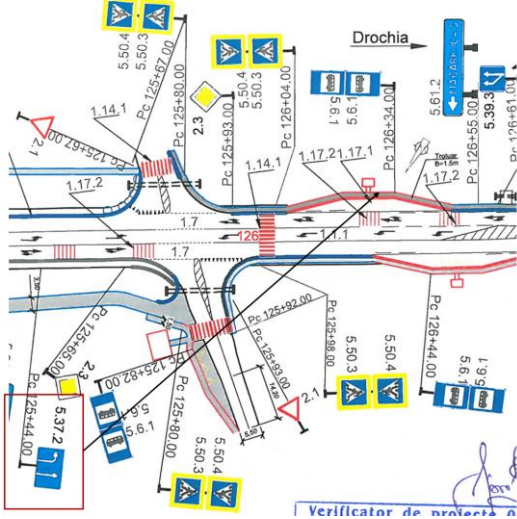
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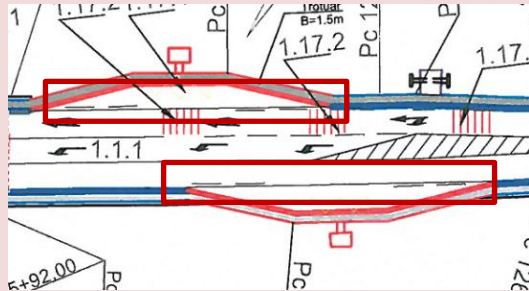
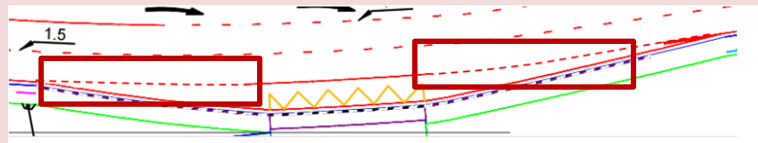
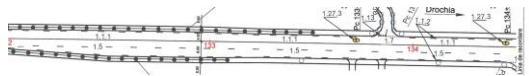
12.	PC 116+50 – 118+50	In the settlement of Zgurita, the traffic lane has been significantly widened to approximately 5.70–5.80 m for unclear reasons. Within this widened section, there is no horizontal marking indicating the presence of two separate lanes, even though road sign 5.40.1 (located at approximately PC 116+98) suggests a lane reduction ahead. However, prior to this point, there is no clear separation or indication of distinct lanes. The purpose of such a widening within a built-up area—particularly near a pedestrian crossing (around PC 117+98)—is unclear and may create confusion among drivers and unsafe conditions for pedestrians.	M	1. Standardize the traffic lane width to match the consistent width used along the rest of the road section. 2. If an additional lane is necessary in this segment, proper lane markings should be introduced—one lane designated for left-turn movements (approaching from Soroca) and the other for through movements toward Drochia. It is not logical to widen the carriageway for opposing traffic flows over a short 200 m section. 3. Additionally, it is recommended to install a raised pedestrian refuge island. In the current design, pedestrians are required to cross approximately 11.5 m of carriageway in a single movement. Introducing a refuge island would not only visually and physically narrow the roadway but also improve pedestrian safety by allowing them to cross in two stages.
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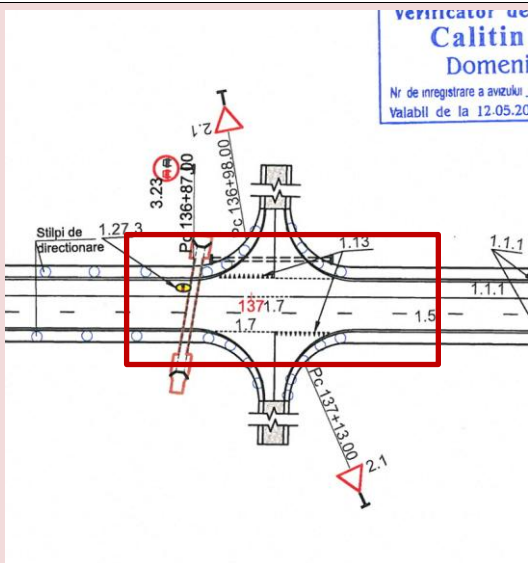
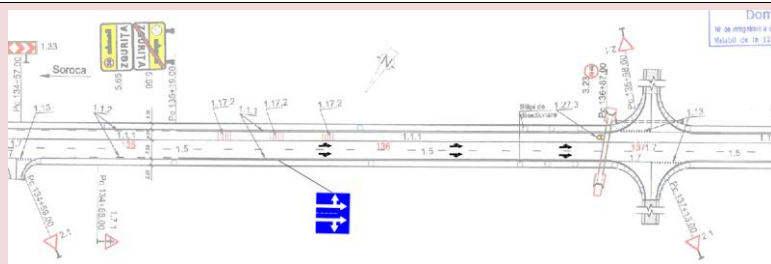
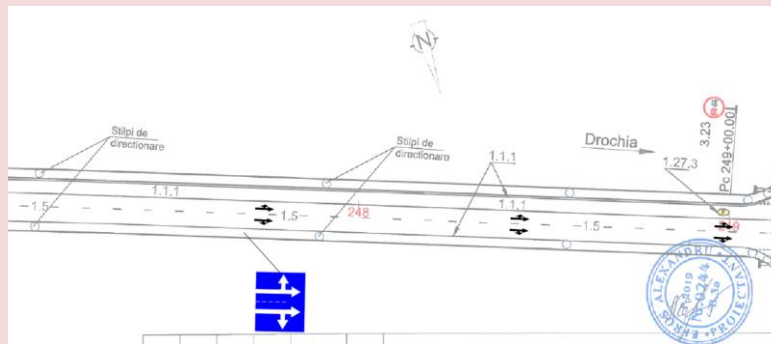


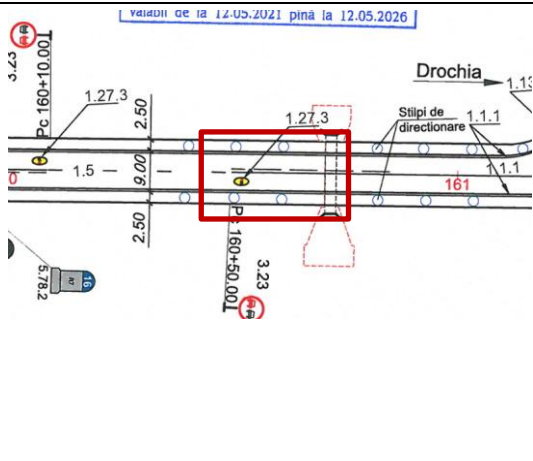
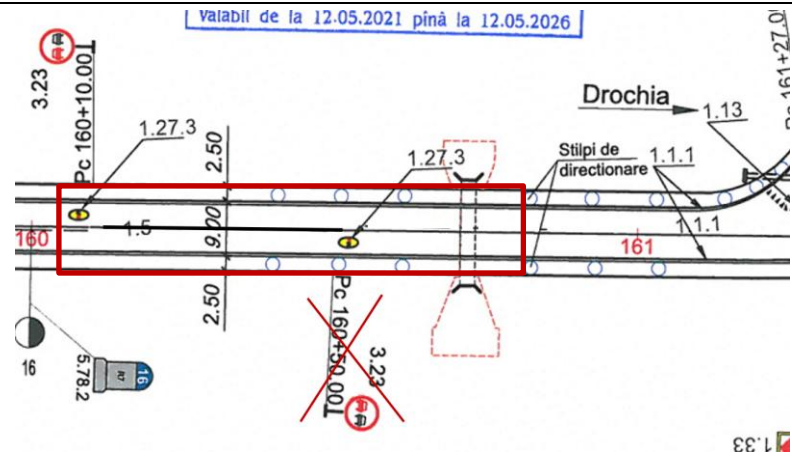
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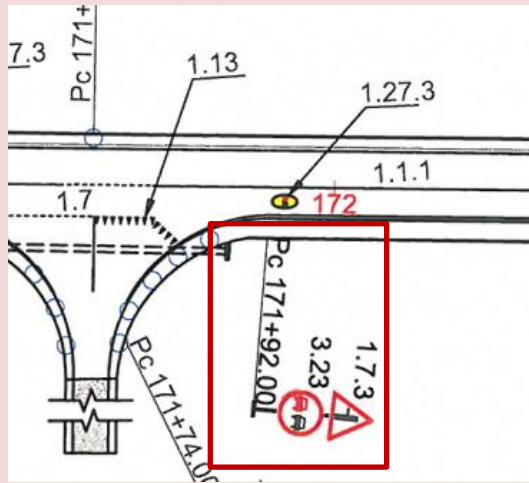
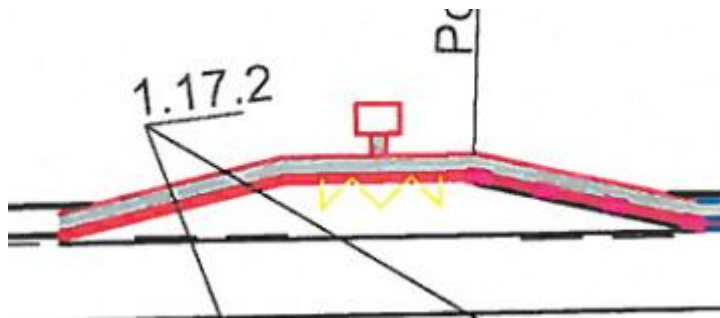
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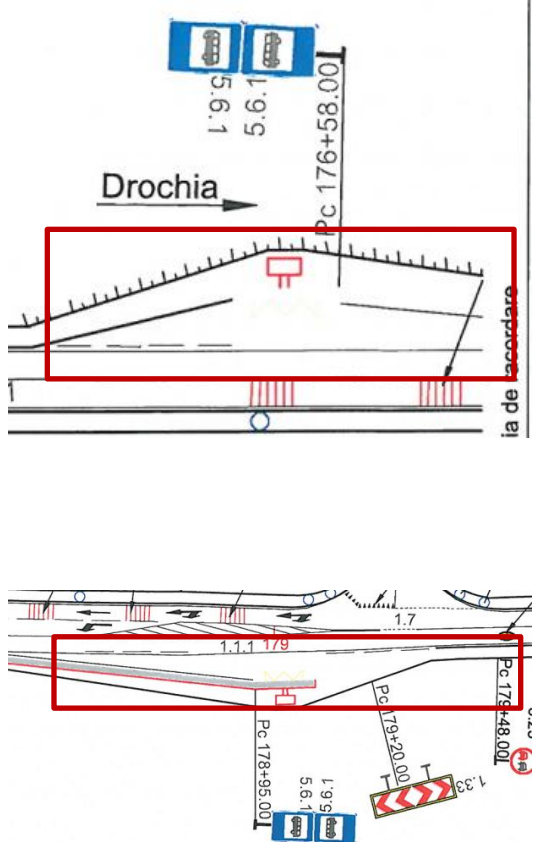
14.	~PC 126+30	When approaching the intersection, road sign No. 5.37.2 — indicating the permitted directions of travel for each traffic lane — is missing. In conditions of poor visibility (e.g., during snowfall, rain, or low light), horizontal markings may become unclear or worn out over time. Without supporting signage, drivers may be uncertain about the correct lane usage and turning movements at the intersection. 	L	It is recommended to install road signs No. 5.37.2 in the intersection area to clearly indicate the permitted directions for each lane. These signs will ensure that drivers understand the traffic organization even when horizontal markings are not visible, thereby improving clarity and safety in all weather and lighting conditions.
15.	~PC 126+10 – 126+50	Double horizontal road markings may wear off over time—especially the dashed line, which is more likely to be driven over by vehicles in the first lane. If only the solid line remains visible, buses entering the stop	L	It is recommended to mark the entry and exit points of public transport stops with only a dashed line. This reduces the risk of markings wearing off unevenly and helps minimize the potential for chaotic or uncertain driving behavior.

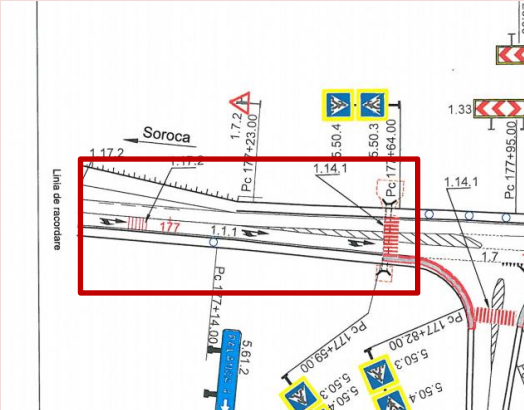
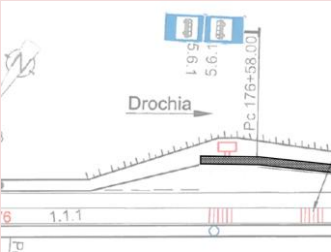
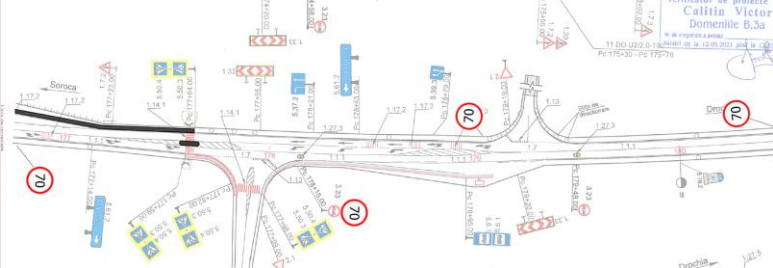
		would technically be violating traffic rules. This could create uncertainty among drivers about the correct trajectory for entering the bus stop. 		
16.	PC 128+46 – 135+19	The use of both horizontal markings 1.1.2 and 1.1.1 within the built-up area appears unclear and redundant. The double line configuration in this context does not serve a clear functional purpose and may confuse drivers regarding overtaking or lane boundary interpretation. 	L	In accordance with local horizontal marking regulations, it is recommended to retain only marking 1.1.2 to delineate lane boundaries within the settlement area, avoiding duplication with marking 1.1.1. This will simplify the visual environment, enhance driver understanding, and ensure consistent application of road markings.
17.	PC 137+00 PC 249+00	When approaching the intersection, it is unclear which directions of travel are permitted from each lane. The lack of clear lane guidance and directional information may lead to confusion among drivers, resulting in disorganized or unsafe maneuvers within the intersection area.	L	It is recommended to mark directional arrows on the pavement and install appropriate road signs in advance of the intersection to inform drivers about the permitted movements from each lane. This will improve traffic organization, reduce uncertainty, and enhance overall safety and efficiency at the intersection.

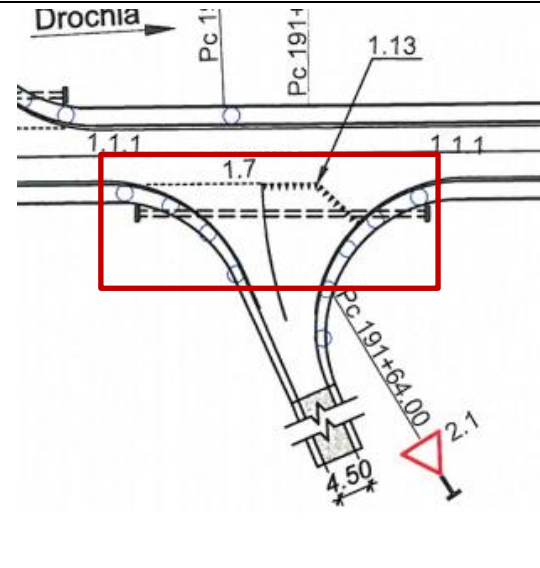
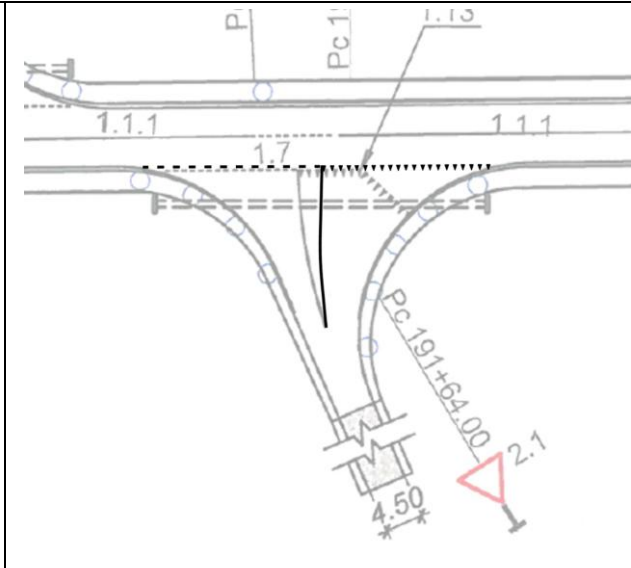
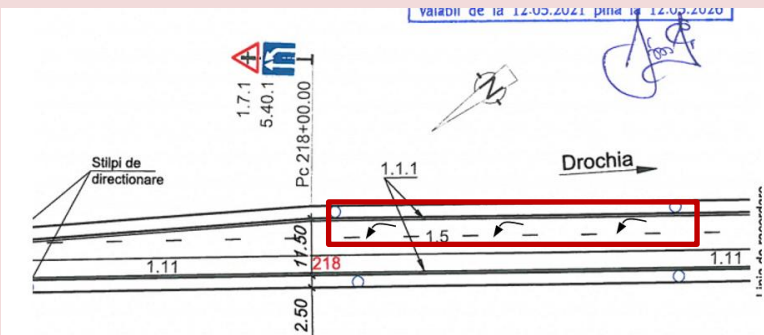
				 PC 137+00 (see enlarged in Annex C)  PC 249+00 (see enlarged in Annex C)
18.	PC 160+50 PC 196+65 – 197+30	A passing maneuver is permitted within a very short road section. Given the limited distance, drivers are unlikely to have sufficient time to safely enter the opposite lane, complete the overtaking maneuver, and return to their own lane. Allowing overtaking in such a short segment may mislead drivers and create unnecessary safety risks.	L	It is recommended to maintain a no-overtaking restriction in both directions throughout the entire section from PC 160+10 to PC 160+80. This will eliminate misleading signals to drivers and ensure consistent and predictable traffic behavior, thereby improving overall road safety.

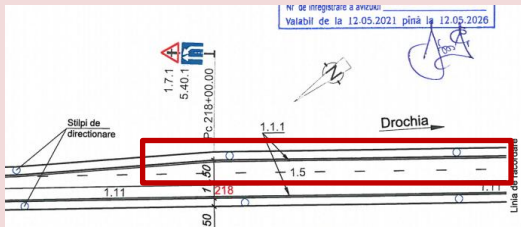
				
19.	PC 171+92	The placement of road sign No. 1.7.3 is misleading. This sign is intended to warn drivers about an upcoming side road and indicate on which side it is located. In the current design, the sign suggests a junction on the left, while the actual side road at approximately PC 171+74 is on the right side. This inconsistency may confuse drivers and reduce the clarity of information provided.	L	It is recommended to replace road sign No. 1.7.3 with sign No. 1.7.2 to correctly indicate that the side road is located on the right. This adjustment will ensure accurate driver information and improve the overall coherence of road signage.

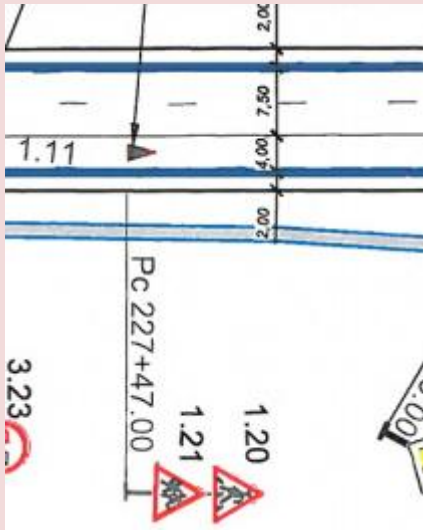
				
20.	PC 176+58 PC 178+95	The design solutions for the bus stop areas are incomplete. It is not clearly defined where the pedestrian platform ends, where the carriageway begins, the location of the curb, or the exact area designated for bus stopping. This lack of clarity may lead to confusion among both drivers and pedestrians, as well as inconsistent use of the space.	L	It is recommended to finalize the design of the bus stop areas to clearly define all functional zones — including the pedestrian platform, carriageway, curb line, and bus stopping area. The layout should follow the same level of clarity and organization applied to other sections of the road to ensure safe and comprehensible traffic arrangements.  <i>Example of other bus stops on R7 road</i>

				
21.	PC 177+59	The planned pedestrian crossing does not connect to any pedestrian-friendly infrastructure. Furthermore, it is unclear whether the proposed crossing includes any protective elements, such as a raised refuge island or similar safety features to shield pedestrians from vehicle traffic. This design may expose pedestrians to unnecessary risk	L	1. Provide continuous pedestrian infrastructure connecting the crossing to the nearby bus stop and other pedestrian destinations. 2. Consider installing a raised refuge island or similar physical safety feature to protect pedestrians while crossing the carriageway. 3. Introduce a speed reduction measure (e.g., speed limit signage or traffic-calming elements) on the approaches to the

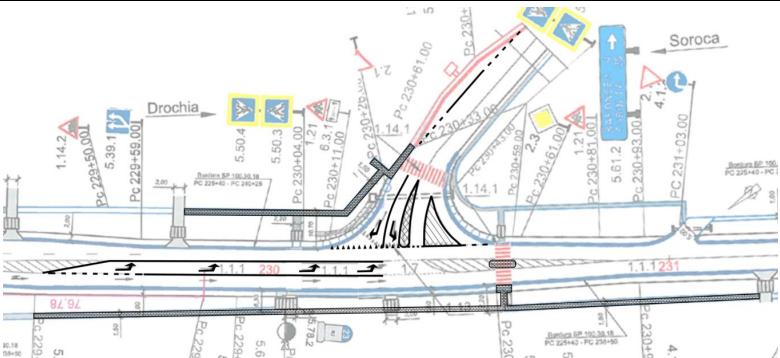
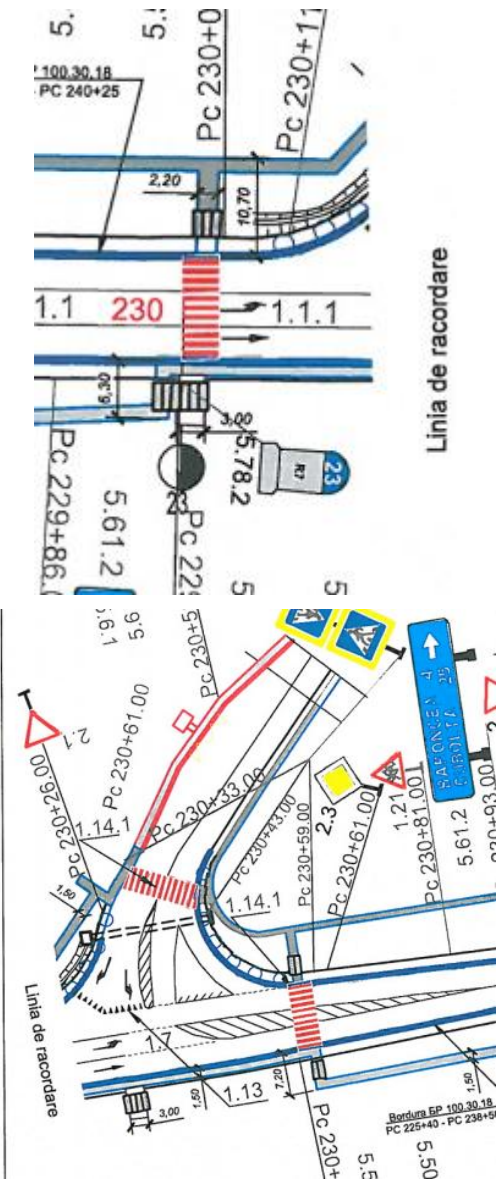
		and reduce the functionality of the crossing. 		pedestrian crossing to enhance overall pedestrian safety.   <i>Example of continuation of pedestrian path (see enlarged in Annex C)</i>
22.	PC 191+64	In the intersection area, the lane widths on the minor road vary significantly, which may lead to irregular vehicle positioning and disorganized traffic movements within the intersection. Such inconsistencies can create uncertainty for drivers and reduce overall traffic safety.	L	It is recommended to standardize the lane widths on the minor road to ensure consistent and orderly vehicle movement both when entering and exiting the intersection. Uniform lane dimensions will improve traffic flow, enhance driver comfort, and contribute to safer intersection operations.

				
23.	PC 218+00 PC 259+50	In the proposed design, two lanes are provided in one direction; however, at the specified chainage, one lane terminates, leaving a single lane for each direction of travel. While road sign No. 5.40.1 correctly indicates the lane reduction, such signs are typically supplemented with horizontal markings to warn drivers about the approaching end of the lane and the need to merge safely. Without these markings, drivers may be less aware of the upcoming change, increasing the potential for sudden or unsafe lane changes.	L	It is recommended to complement the existing road sign No. 5.40.1 with horizontal markings 1.19 (directional arrows) on the pavement. These arrows will draw greater driver attention to the lane reduction ahead, clearly indicating the need to merge and thereby enhancing traffic safety and smoothness of flow. 

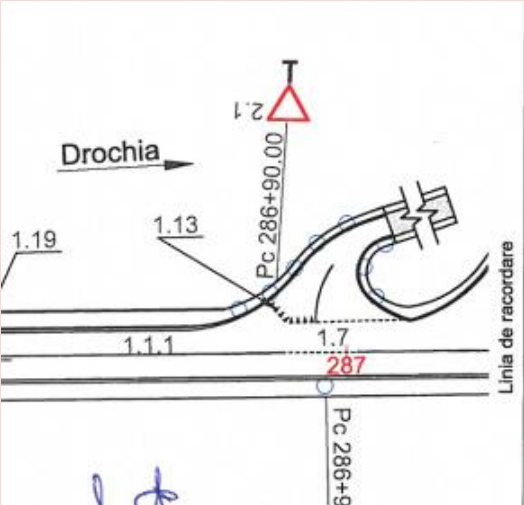
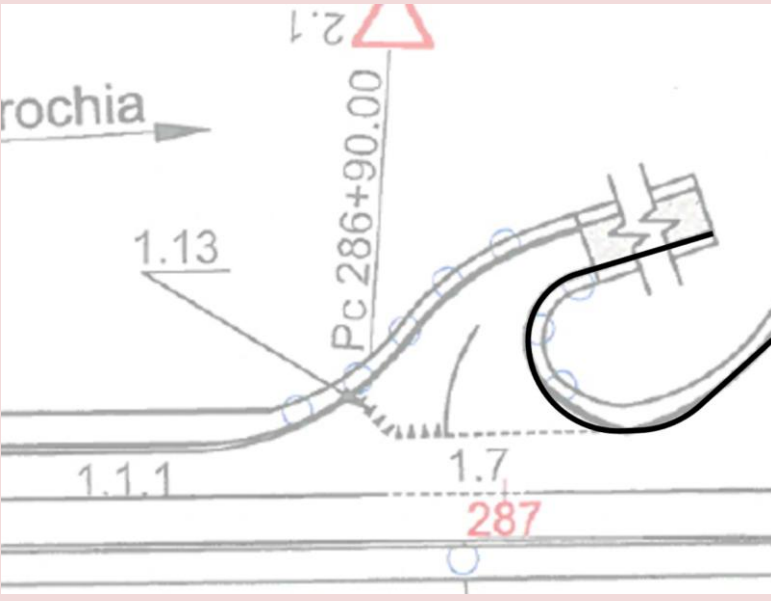
				
24.	PC 228+28 PC 230+59	At the reviewed location, an uncontrolled pedestrian crossing is proposed across three traffic lanes, with a total carriageway width of approximately 11.5 meters. For pedestrians—particularly elderly individuals—it may be difficult and unsafe to cross such a wide roadway in a single movement, increasing exposure time to vehicle traffic and overall risk. 	M	To improve pedestrian safety, it is recommended to install a raised refuge island at the pedestrian crossing. This would provide pedestrians with a protected midpoint where they can cross one or two lanes first (depending on the direction of travel) and then assess traffic conditions before completing the crossing. The refuge island would not only enhance safety but also help visually narrow the roadway, encouraging drivers to reduce speed near the crossing.  <i>Example of traffic island for pedestrians</i>
25.	PC 227+47	The design includes two similar road signs (1.21 and 1.20(approaching the pedestrian	L	It is recommended to remove one of the duplicate signs, retaining a single sign per approach. Additionally, ensure that an

		crossing, which may create visual clutter and reduce the clarity of information for drivers. Excessive signage in close proximity can distract drivers rather than enhance safety. 		appropriately selected sign is provided for the opposite direction of travel to maintain clear and consistent guidance for all road users.
26.	PC 230+04	Within a 300-meter section, three uncontrolled pedestrian crossings are planned. One of these crossings is located directly at an intersection, where drivers may be focused on executing turning maneuvers. The intersection is relatively wide, with both main and minor roads, and its geometry is not a typical T-junction, which may increase the likelihood of driver inattention and the need to consider multiple surrounding factors simultaneously. This configuration	M	It is recommended to eliminate the planned crossing at the intersection and retain only the nearby crossing at approximately PC 230+59. This adjustment would reduce the number of lanes pedestrians need to cross from three to two, enhancing safety. Additionally, drivers approaching the intersection are likely to be more focused, as they will only encounter one lane per direction rather than two, improving both driver awareness and overall traffic safety.

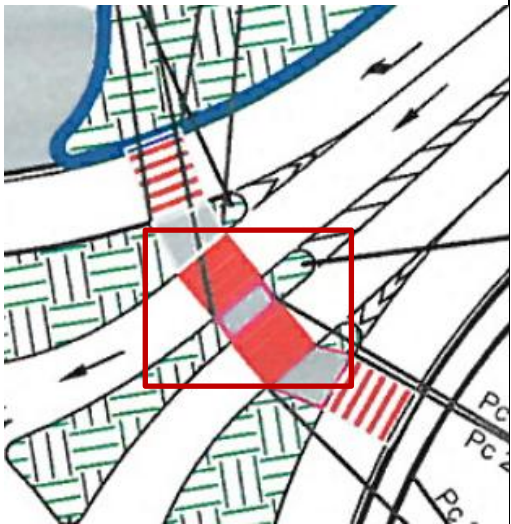
could compromise pedestrian safety.



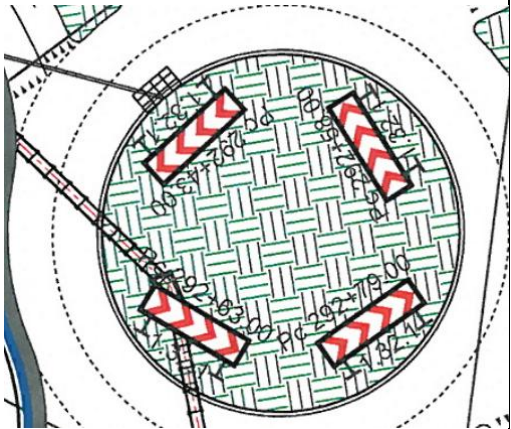
Example (see enlarged in Annex C)

27.	PC 286+90	The designed curve near the turn is irregular and angular. In real-world conditions, such a sharp or unrefined curve may cause abrupt vehicle movements and lead to disorganized driving behavior near the intersection. The lack of smooth alignment can also reduce driver comfort and predictability of maneuvers. 	L	It is recommended to avoid sharp or non-rounded curves in the road design. The curve should be smoothed and properly aligned to ensure that turning movements are natural, continuous, and clearly understandable for drivers. A smoother geometric transition will enhance vehicle stability, improve driver comfort, and increase overall intersection safety. 
28.	PC 292+00 (roundabout)	1. The proposed design includes a two-lane roundabout, which may be confusing and unsafe for drivers. Vehicles entering the second lane within the roundabout are required to perform a lane-change maneuver in order to exit, increasing the likelihood of conflict points and unsafe	H	1. The roundabout should be designed with clearly defined directional lanes that allow drivers to follow a single lane throughout the roundabout and exit without performing lane changes. Such a layout is known as a <i>turbo-roundabout</i>, which minimizes conflicts and improves safety.

	interactions. 2. There is insufficient advance information about the travel directions prior to the roundabout — drivers are not clearly informed about which exits lead to Drochia or other destinations. 3. The pedestrian crossings are marked using a red-colored surface instead of the standard 1.14.1 marking defined in regulations. This non-standard marking may confuse both pedestrians and drivers as its meaning is unclear.	<i>Example of turbo-roundabout layout</i> 2. Install directional guidance signs clearly indicating which exits lead to Drochia and other key destinations. Additionally, provide advance lane selection signs before entry to the roundabout, showing which lane drivers must choose to reach their intended destination. <i>Example of directional guidance signs (Lithuania)</i> 3. Use only legally approved pavement markings for pedestrian crossings — specifically, marking 1.14.1 as prescribed by national regulations.
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4. Large 1.32.1 directional segments are used within the roundabout to indicate turning directions; however, these may not be suitable for a roundabout of larger diameter.



5. The internal layout of the roundabout is

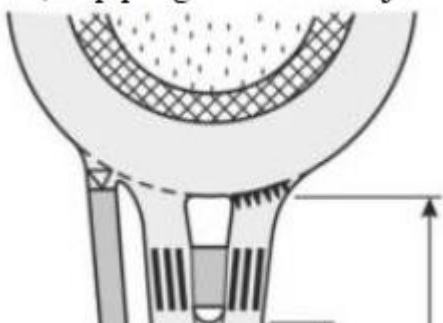
4. Use appropriately sized and separated directional segments within the roundabout to ensure clarity and visibility.



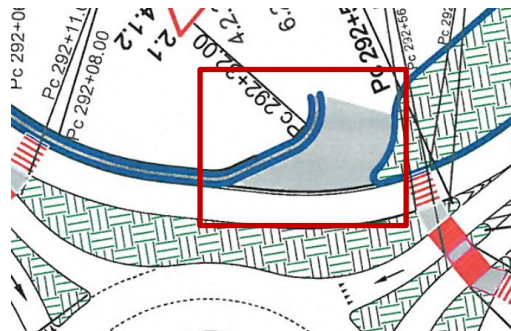
Example of directional segments (Lithuania)

5. The roundabout's central area should not allow vehicle access; entry should only occur through designated connecting arms. The hatched area within the roundabout should be physically separated if necessary to prevent misuse.

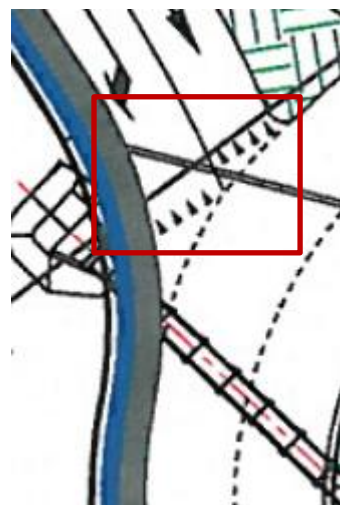
6. Correct the alignment and placement of marking 1.13 so that it follows the geometry of the inner carriageway, ensuring consistent and clear stop-line visibility.



unclear — it is not evident whether the hatched central area allows vehicle entry or will be physically separated with curbs, prohibiting access.



6. The 1.13 marking at the intersection is applied incorrectly.



Example of 1.13 marking in roundabouts (Lithuania)

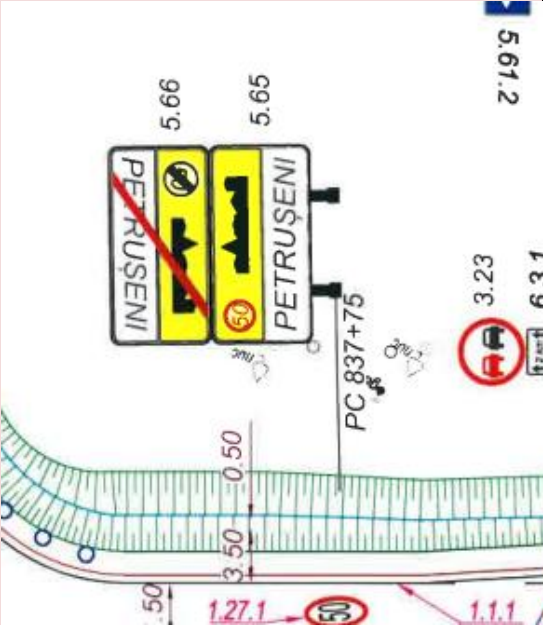
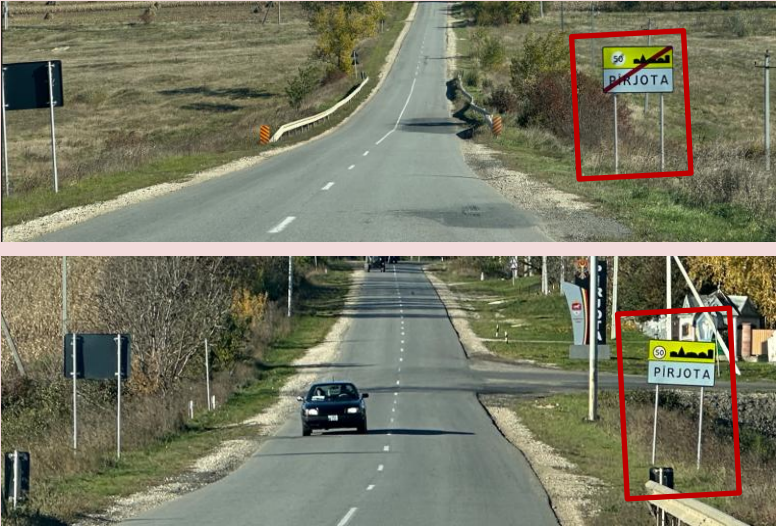
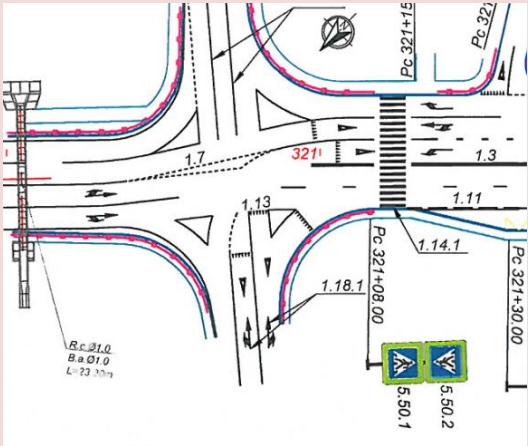
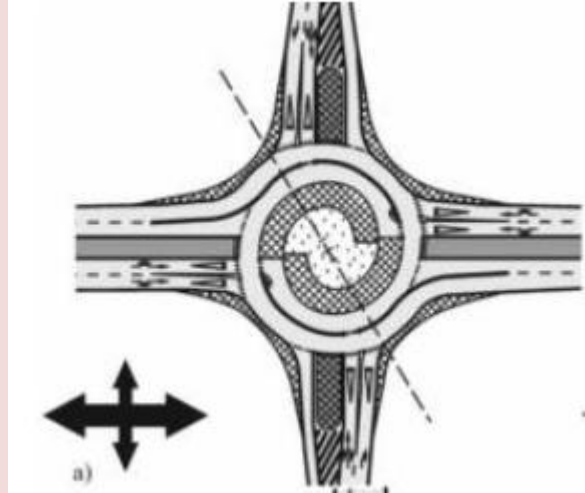
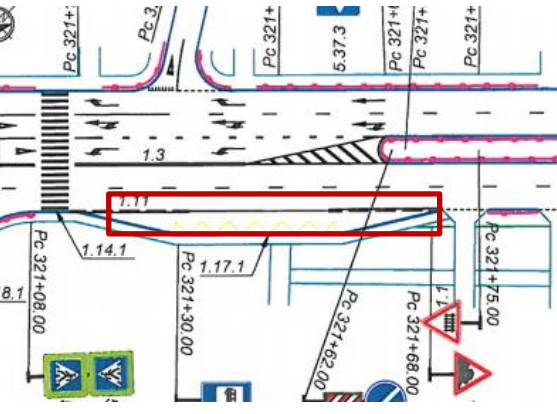
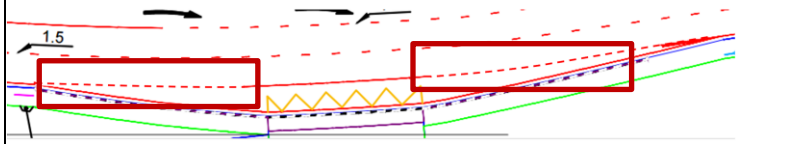
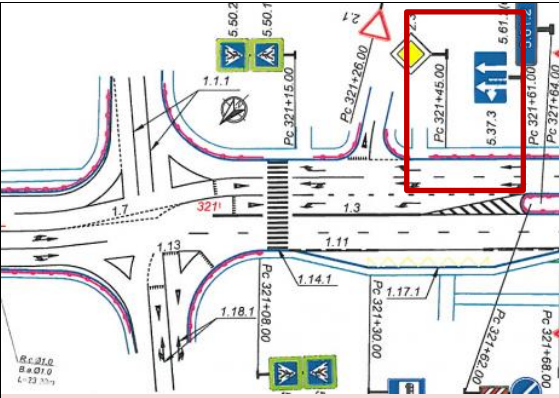
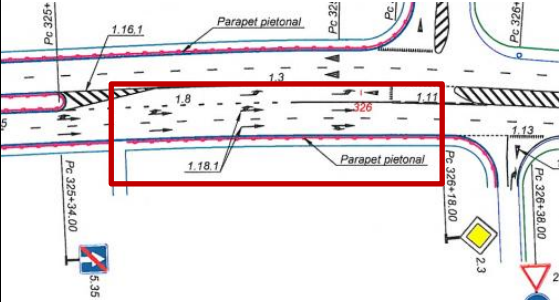
29.	PC 13+25 PC 31+53 PC 115+56 PC 135+19 PC 224+09 PC 242+08	The signs indicating the start and end of the settlement are planned only on one side of the road. As a result, road users—especially when exiting the settlement—may not notice the signs, since they are located on the opposite side. 	L	Install settlement start and end signs on both sides of the road. One side should indicate the end of the settlement, and the other side should indicate the start, consistent with the current practice on the R7 road.  Example of road signs to inform about start/end of settlement currently on R7 road
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Table 5-3: Recommendations Lot 2

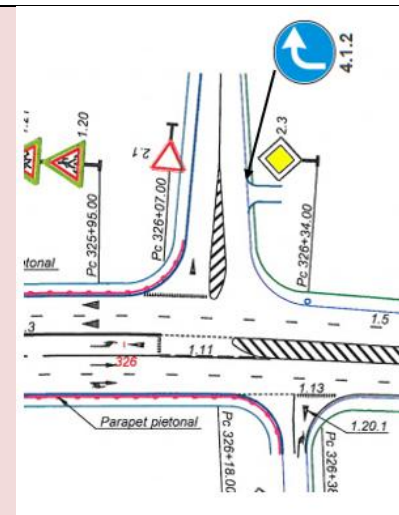
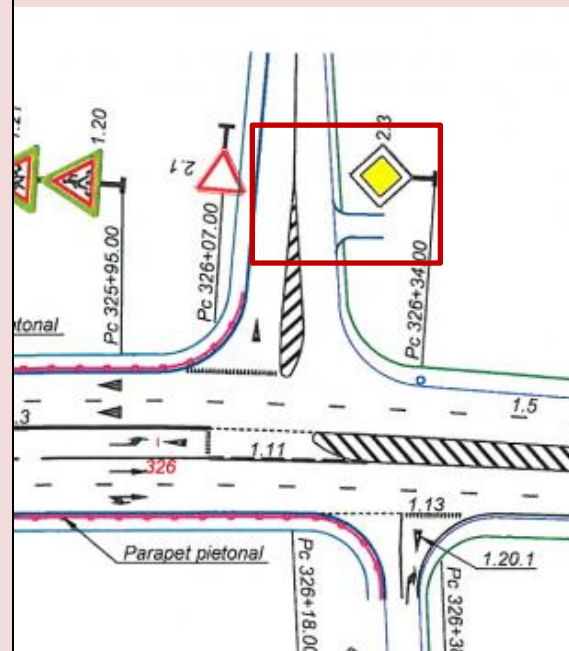
LOT 2 Drochia - Riscani

Item	Location	Deficiency	Ranking (H/M/L)	Recommendation
1.	PC 321+00	The intersection is large and wide, with two dominant directions (the main road), but the side streets are also quite intensively used. Additionally, there are several points of attraction nearby, such as cafés and shops. The current intersection geometry and traffic organization do not effectively address potential conflict points — a non-signalized four-way intersection is being designed. Moreover, a non-signalized pedestrian crossing over five traffic lanes is planned at the intersection. 	H	Considering the available land area, it is recommended to redesign the traffic organization by implementing a roundabout. This would improve traffic safety for all road users in all directions and enhance pedestrian safety as well. 

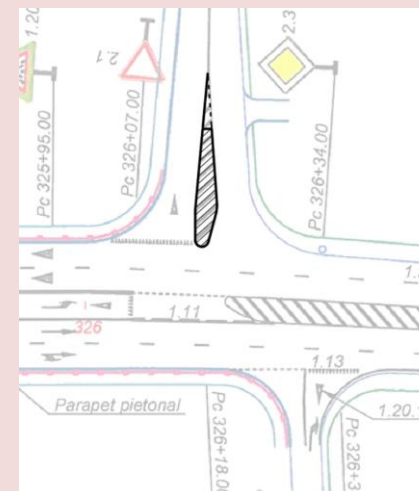
2.	PC 321+30	Double horizontal road markings may wear off over time—especially the dashed line, which is more likely to be driven over by vehicles in the first lane. If only the solid line remains visible, buses entering the stop would technically be violating traffic rules. This could create uncertainty among drivers about the correct trajectory for entering the bus stop. 	L	It is recommended to mark the entry and exit points of public transport stops with only a dashed line. This reduces the risk of markings wearing off unevenly and helps minimize the potential for chaotic or uncertain driving behavior. 
3.	PC 321+61 PC 470+16	The proposed road sign No. 5.37.3 does not correspond to the horizontal road markings. This inconsistency may create confusion for drivers approaching the intersection and potentially lead to conflicting maneuvers or hesitation in decision-making.	L	It is recommended to ensure full consistency between horizontal road markings and road signs by adjusting one or both elements as needed. Harmonizing these traffic control features will improve driver understanding, reduce uncertainty, and enhance overall intersection safety.

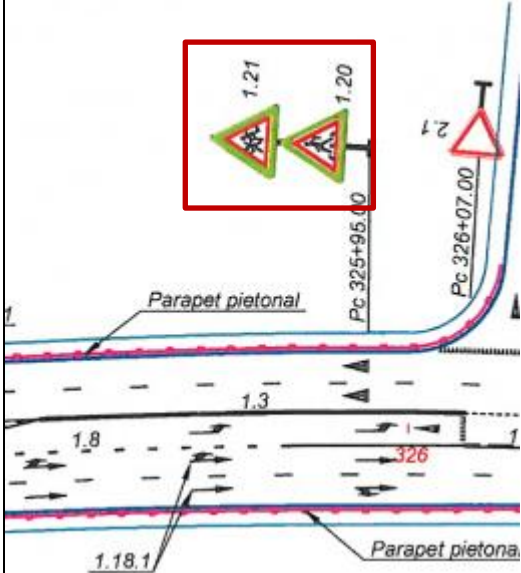
				
4.	PC 326+00	Approaching the intersection, there is a lack of road signs informing drivers about the possible traffic directions within the intersection. As a result, drivers may be uncertain about which directions are allowed from each traffic lane, potentially leading to disorganized maneuvers and unclear traffic movement within the intersection area. 	L	Install road sign No. 5.37.2, indicating the permitted traffic directions at the intersection, ensuring that the sign corresponds with the designed horizontal road markings and the planned traffic organization scheme. This will help drivers choose the correct lane in advance and reduce the likelihood of conflict situations at the intersection.
5.	PC 326+40	At this junction exit, there is no indication of mandatory driving directions at the intersection. This allows drivers to perform all possible	L	1. Install a road sign 4.1.2 indicating a mandatory right turn at the junction exit.

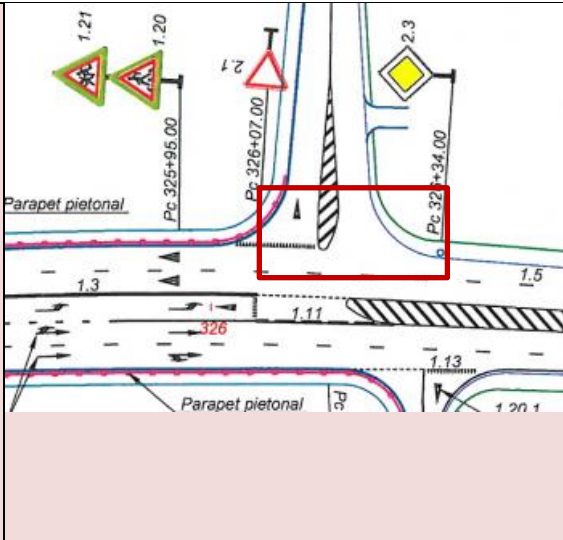
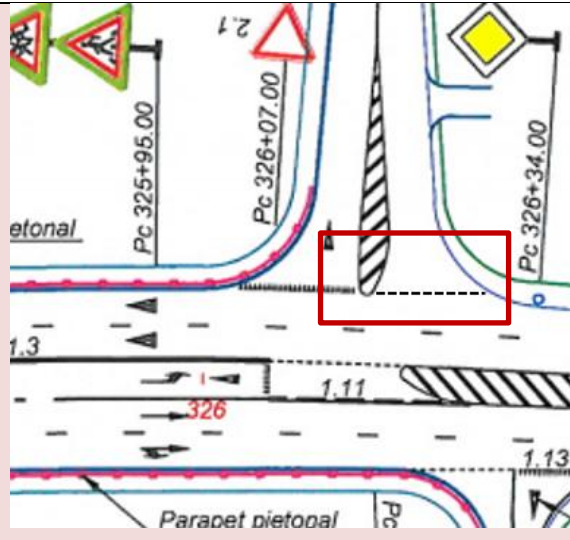
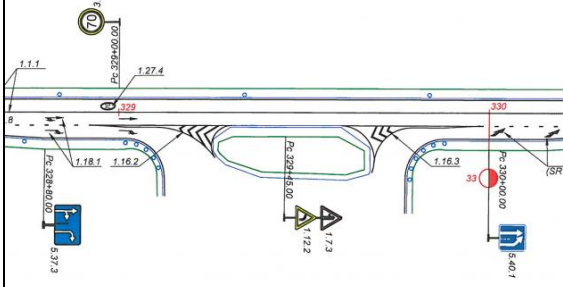
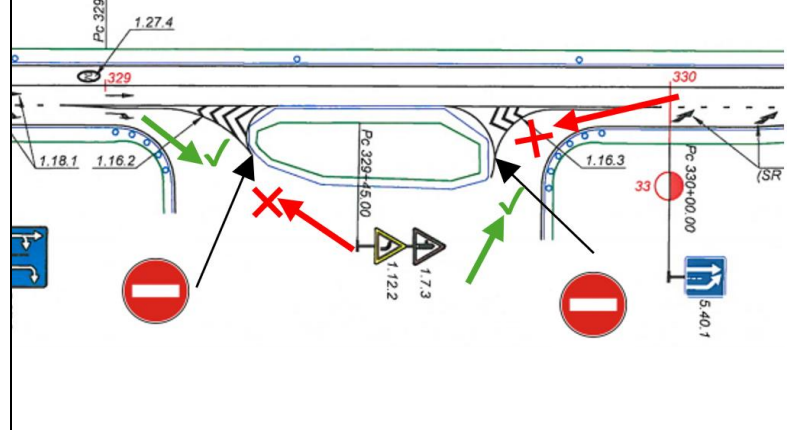
maneuvers, although they may currently be limited only by horizontal road markings, which can fade over time, become covered by snow, or otherwise be obscured due to weather conditions.

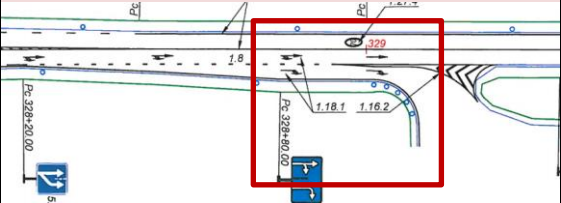
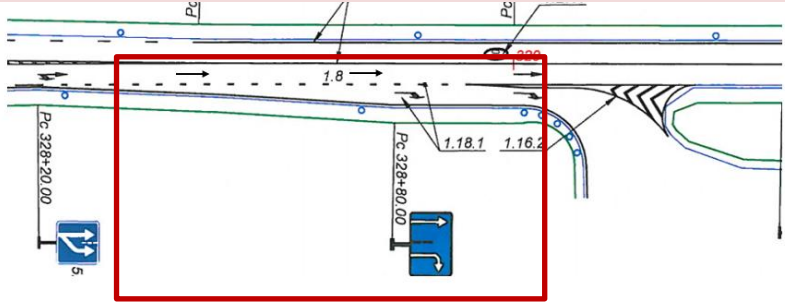
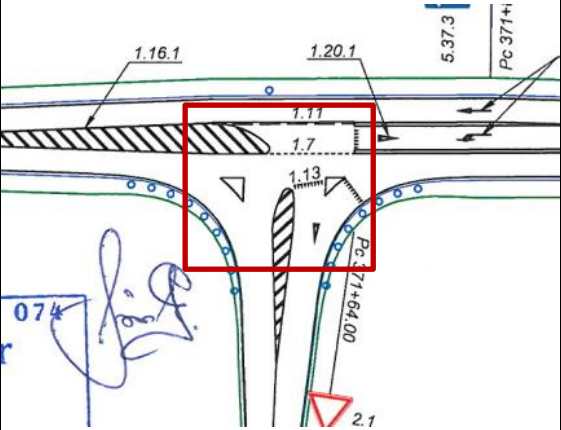


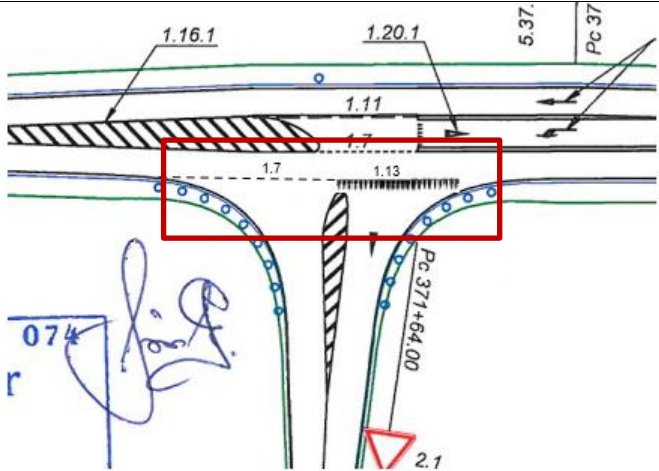
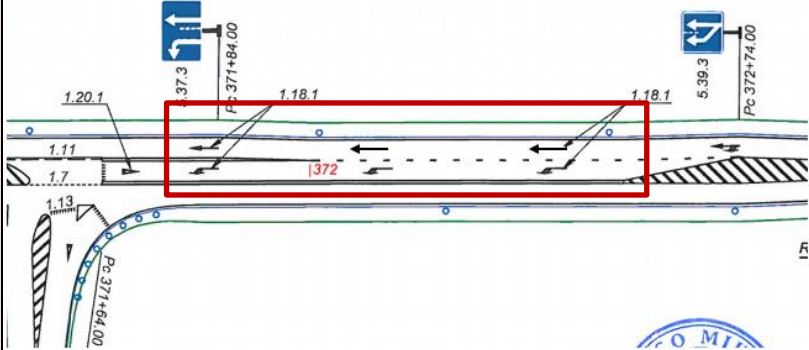
2. Modify the horizontal road markings on the traffic island to allow vehicles to turn left from the exit as well. However, before implementing this solution, it is recommended to evaluate the expected traffic volume and frequency of left-turn movements to ensure safety and efficiency.

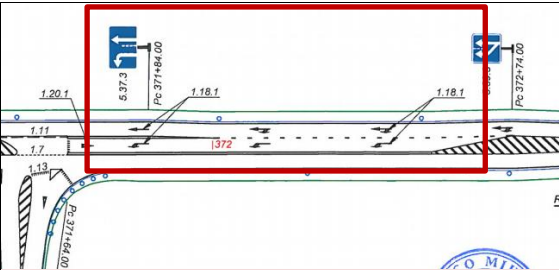
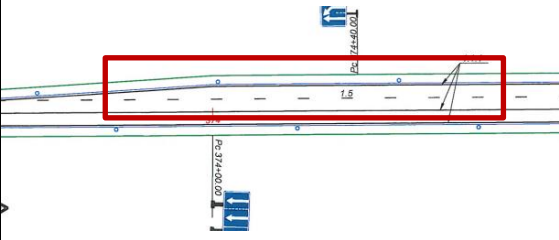
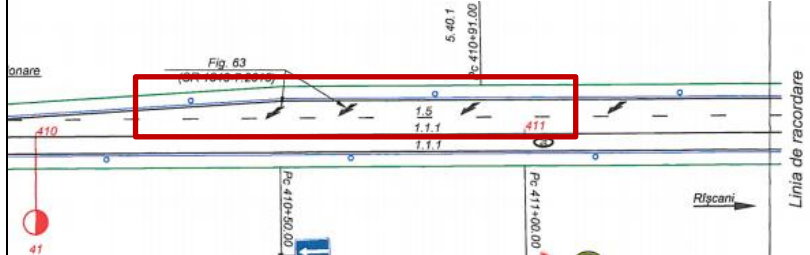


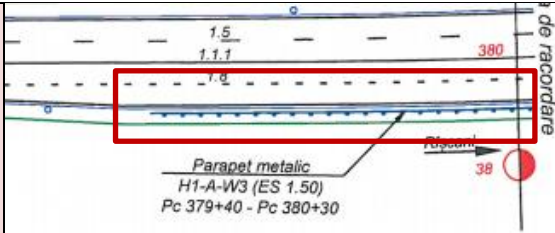
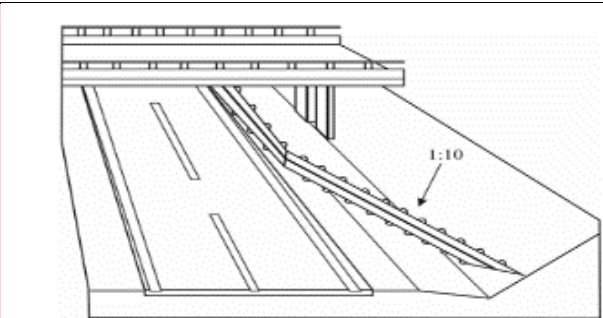
6.	PC 323+79 PC 325+95	The design includes two similar road signs (1.21 and 1.20) (approaching the pedestrian crossing, which may create visual clutter and reduce the clarity of information for drivers. Excessive signage in close proximity can distract drivers rather than enhance safety. 	L	It is recommended to remove one of the duplicate signs, retaining a single sign per approach. Additionally, ensure that an appropriately selected sign is provided for the opposite direction of travel to maintain clear and consistent guidance for all road users.
7.	PC 326+00	The 1.7 horizontal road marking is missing at the side road. It is very important to maintain consistency (homogeneity) throughout the project and on all roads so that drivers can always understand what to expect and how traffic is organized at intersections.	L	Apply the 1.7 horizontal road marking at the side road to ensure uniform traffic organization and clarity for drivers.

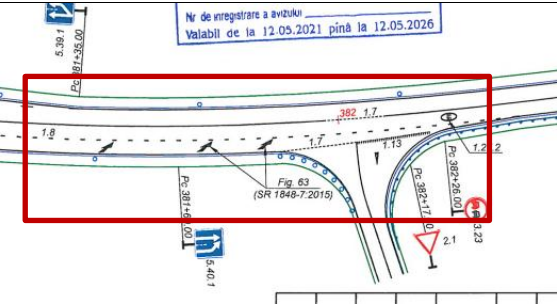
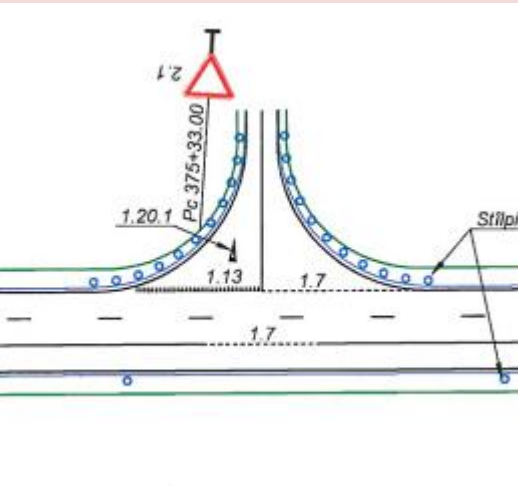
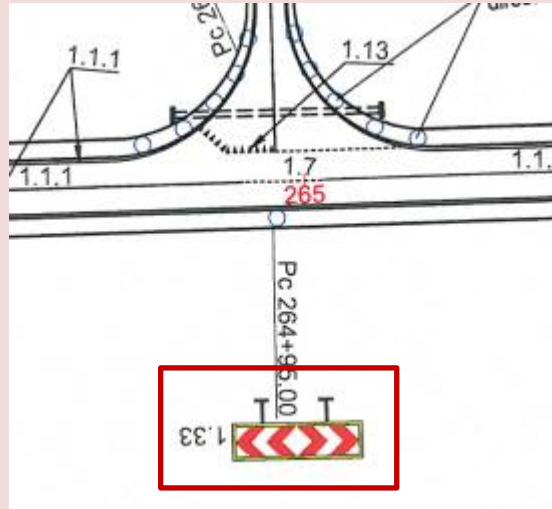
					
8.	PC 329+45	Access to the service area currently functions in an informal circular pattern — vehicles enter from one side and exit from the other. However, there is no road marking or signage indicating that exiting from the entry side is not allowed, which may lead to vehicles driving in the wrong direction. 	L	Install additional road signs within the parking/service area to clearly establish a one-way circular traffic pattern — entry from one side and exit from the other. This will help reduce the risk of vehicles driving in the opposite direction and improve overall traffic safety. 	
9.	PC 328+80	Performing a right turn from the second lane could result in serious collisions due to speed	L	Correct the horizontal road markings and road signs to accurately reflect permitted movements and prohibit right turns from the second	

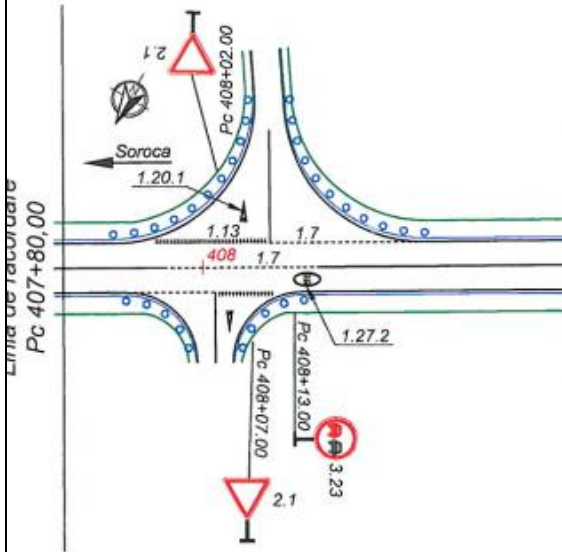
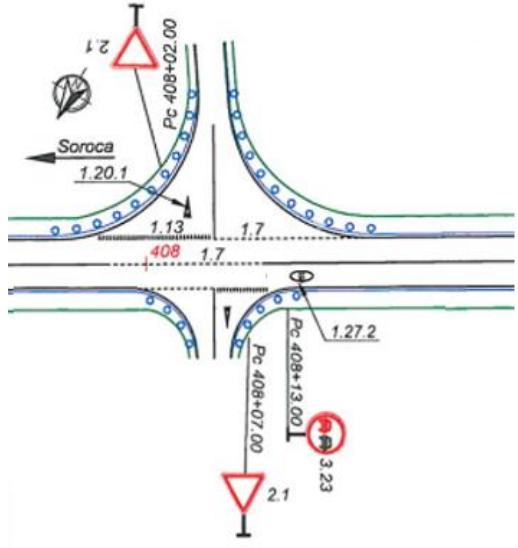
		differences, as vehicles may need to stop abruptly in the second lane where other traffic is moving. 		lane. This will align driver expectations with actual traffic rules and significantly reduce the risk of collisions. 
10.	PC 371+64 PC 414+38 PC 430+47	The proposed safety islands at the intersection are unclear in design (raised or flat), but in either case, they are too small to provide any meaningful safety benefit. If raised, they could even act as an obstacle, creating potential hazards rather than improving traffic safety. 	L	It is recommended to remove the islands and retain two traffic lanes on the minor road, while adjusting the horizontal road markings accordingly. This approach will simplify the intersection layout, maintain clear lane guidance, and avoid introducing ineffective or potentially hazardous obstacles.

				
11.	PC 371+84	The horizontal road markings and road signs are misleading — they indicate that a left turn possibility from the first lane, whereas the road signs do not permit this maneuver. This inconsistency may create conflict situations between drivers. Performing a left turn from the first lane could result in serious collisions due to speed differences, as vehicles may need to stop abruptly in the second lane where other traffic is moving.	L	Correct the horizontal road markings and road signs to accurately reflect permitted movements and prohibit left turns from the first lane. This will align driver expectations with actual traffic rules and significantly reduce the risk of collisions. 

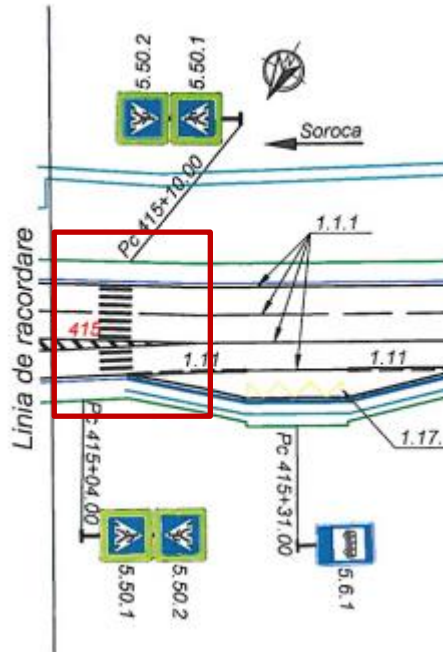
				
12.	PC 374+40	There is a lack of horizontal road markings warning drivers about the lane ending and the mandatory lane-change maneuver. Without such markings, drivers may be unprepared for the lane reduction, increasing the risk of unsafe merging and traffic conflicts. 	L	Maintain consistency (homogeneity) across the entire designed road by applying uniform markings in similar situations. It is recommended to install directional arrows on the pavement indicating the need to merge, ensuring drivers are clearly informed and traffic flows safely. 
13.	PC 379+40 – 380+30 PC 384+53 – 389+70 PC 395+75 – 397+00 PC 406+84 – 407+24 PC 417+59 – 420+10 PC 478+70 – 480+70 PC 524+75 – 527+30 PC 530+80 – 535+50 PC 552+20 – 556+57 PC 560+20 – 563+20	Straight ends of safety barriers are unsafe because a head-on collision with them is likely to result in serious consequences for the road user's health. Such design solutions should be replaced with safer, impact-absorbing terminal ends or different layout of barriers.	M	Lower the ends of the barrier, rotate them away from driving direction and carriageway, dig them into the ground. The design of turned off the road, lowered to the ground level and dig into the ground barriers ensures less severe consequences in terms of accidents. Also, this design of barriers can help the vehicle get back on the road instead of overturns or crashes to surroundings.

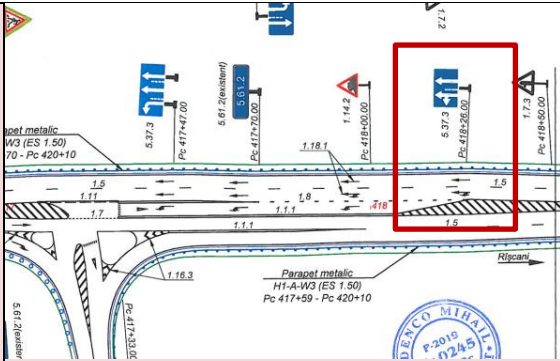
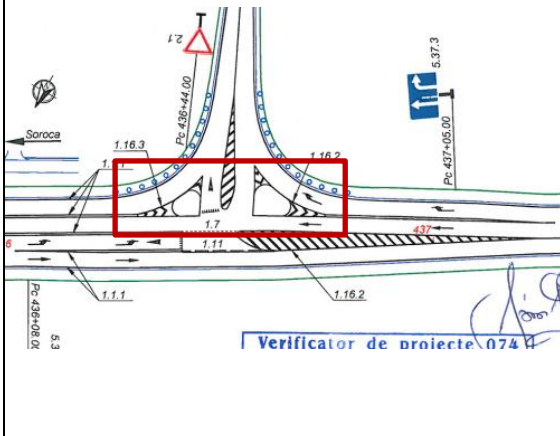
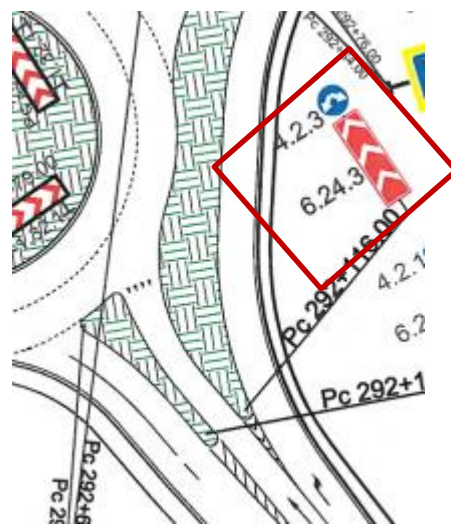
	PC 572+40 – 576+00 PC 583+25 – 584+90			 
14.	PC 382+00	In the intersection area, the acceleration lane of the main road ends, which results in three lanes near the side road instead of the intended two. The acceleration lane practically ends in the middle of the intersection, creating confusion for drivers. Additionally, since there is a nearby bus stop and only minimal separation with horizontal markings, this extra lane may be perceived by drivers as an overtaking or continuation lane, encouraging speed increase near the intersection, which can be unsafe.	L	It is recommended to terminate the additional/acceleration lane before the intersection, ensuring that only two traffic lanes continue through the junction. This would simplify the traffic layout, reduce confusion, and improve safety. Furthermore, vehicles turning from the side road would need to cross two lanes instead of three, minimizing potential conflict points and enhancing overall intersection safety.

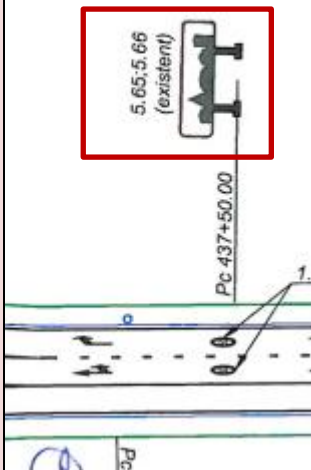
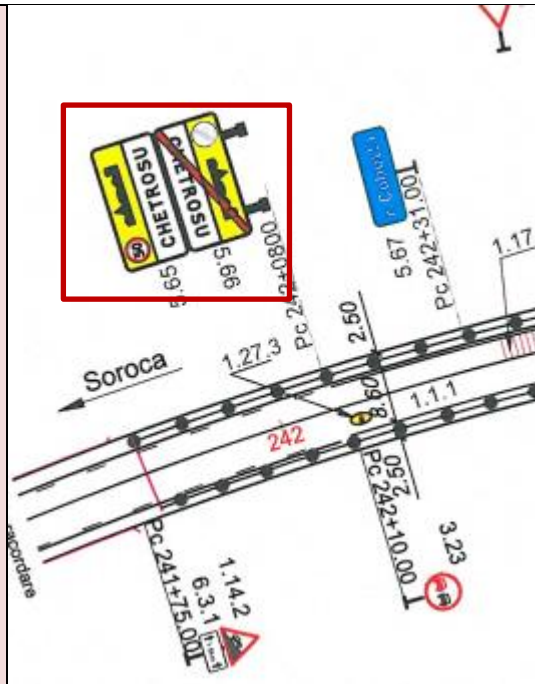
				
15.	PC 331+22 PC 335+28 PC 345+87 PC 353+02 PC 375+33 PC 382+17 PC 386+78 PC 390+53 PC 398+27 PC 420+64	In another section of the same road project, each T-intersection includes road sign No. 1.33, indicating possible directions for drivers approaching from the side road. However, in the current project section, this signage is not consistently applied, creating inconsistency in traffic information. 	L	It is recommended to maintain consistent signage throughout the entire road, ensuring that drivers, regardless of which section they travel on, can expect uniform traffic conditions and signage. This approach improves predictability and overall traffic safety. 
16.	PC 408+00	The intersection does not have a standard four-way configuration — the side roads do not align	M	Where feasible, it is recommended to redesign the intersection as a typical four-way layout, as illustrated in the example below. This

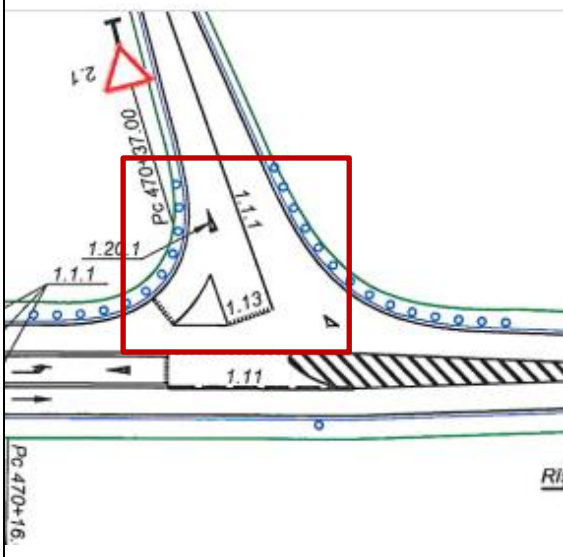
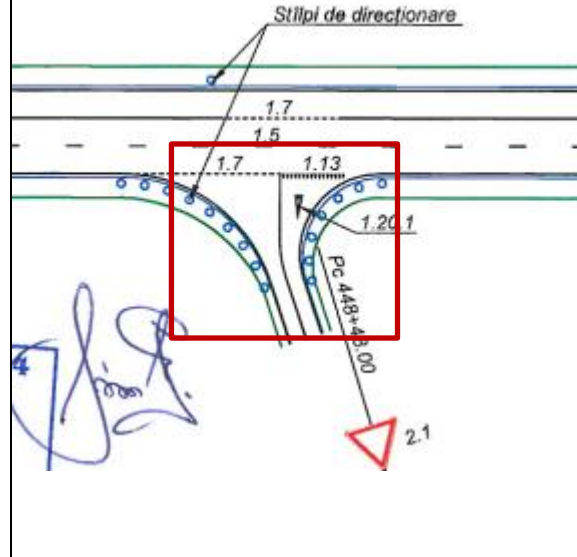
		directly opposite each other. As a result, vehicles approaching from the side roads cannot cross the intersection in a straight, perpendicular line and must instead perform curved or angled maneuvers, which may reduce safety and clarity. 		would ensure more predictable traffic movements, improved visibility, and overall safer and smoother intersection operation. 
17.	PC 415+31 PC 431+55	There is a lack of consistency between different sections of the same road. In another section (from the intersection with road R14 to Drochia), bus stop signs (No. 5.6.1) are installed on both sides of the road so that drivers can see them regardless of their direction of travel. However, in the current section under review, only one sign is installed at each bus stop.	L	It is recommended to maintain the same signage logic as applied in other sections of the road, ensuring uniformity and clarity for all drivers along the entire route.

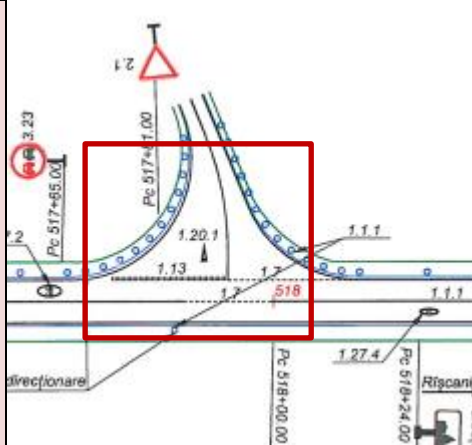
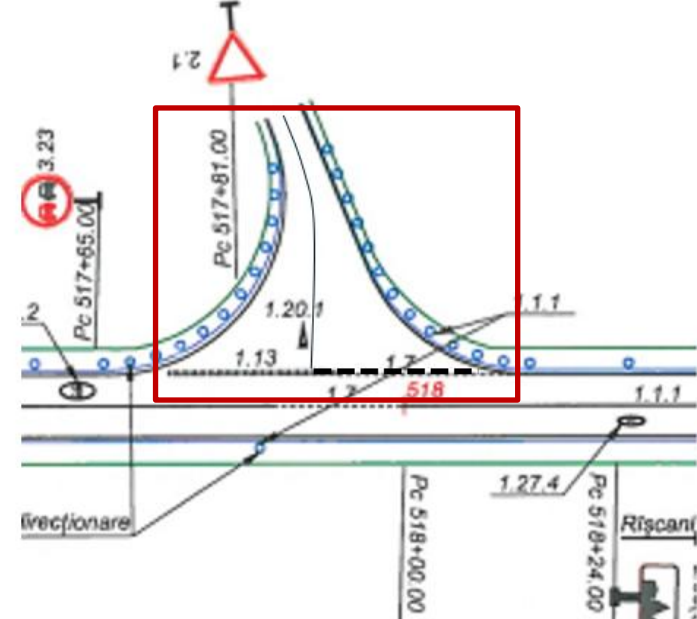
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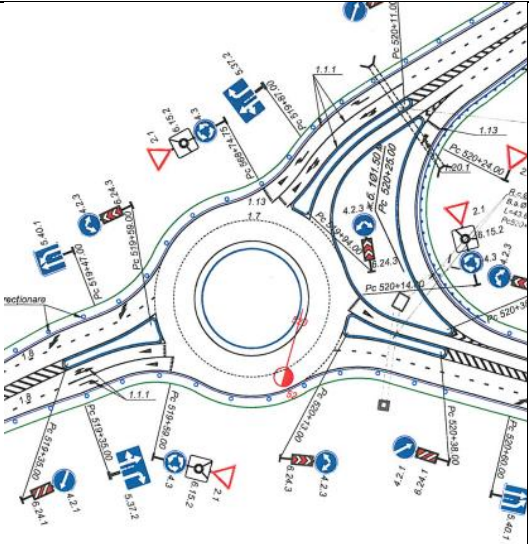
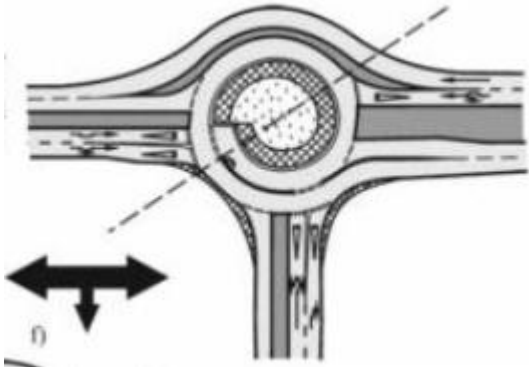
				
19.	PC 418+26	The road signs do not accurately represent the actual traffic situation. In this case, drivers should be informed about the appearance of an additional lane from the left, but instead, a sign indicating traffic directions at the intersection is used. Moreover, approximately 80 meters ahead, there is another sign correctly showing the intersection directions, making the current sign misleading and redundant.	L	Replace the road sign No. 5.37.3 with one that accurately reflects the designed traffic layout, specifically indicating the addition of a new lane from the left rather than intersection directions. 

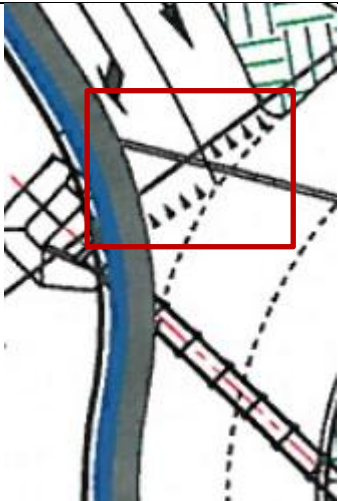
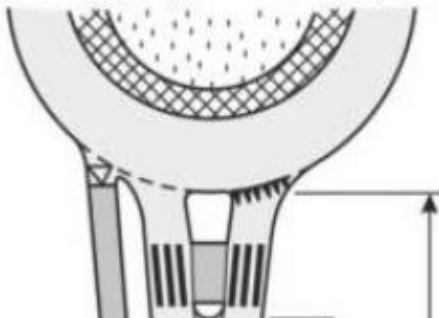
				
20.	PC 436+44 PC 544+00 PC 552+09 PC 552+09 PC 568+17	It is not entirely clear whether the islands designed within the intersection are raised or flat. If they are raised, there is a lack of corresponding road signs informing drivers about the need to pass around an obstacle. 	L	If the islands are raised traffic safety islands, it is recommended to install appropriate road signs indicating the direction of travel around the obstacle to ensure clarity and safety for all road users. 
21.	PC 437+50 PC 567+35	The project includes the installation or restoration of road signs indicating the beginning of a settlement, however, there are no signs indicating the end of the settlement.	L	To maintain consistency along the entire R7 road, it is recommended to install both “beginning” and “end of settlement” signs, ensuring uniform traffic information for all road users including the name of settlement on the sign.

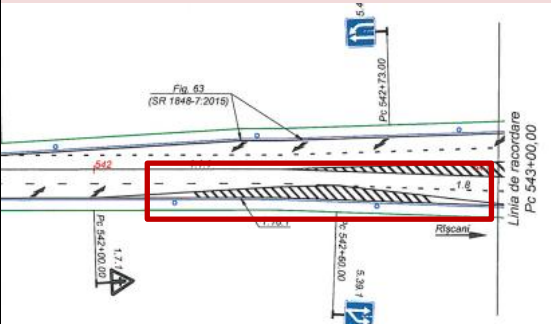
					
22.	PC 470+37	The designed intersection of the secondary road is not perpendicular to the main road, which may limit the visibility of drivers approaching from the main carriageway.	L	It is recommended to realign the secondary road markings and centerline to achieve a more perpendicular intersection layout. Additionally, assess whether the planned traffic island will effectively serve its intended purpose of separating traffic flows. If not, it is advised to adopt a single-lane configuration at this intersection, avoiding the marking of a separate safety island within the junction area.	

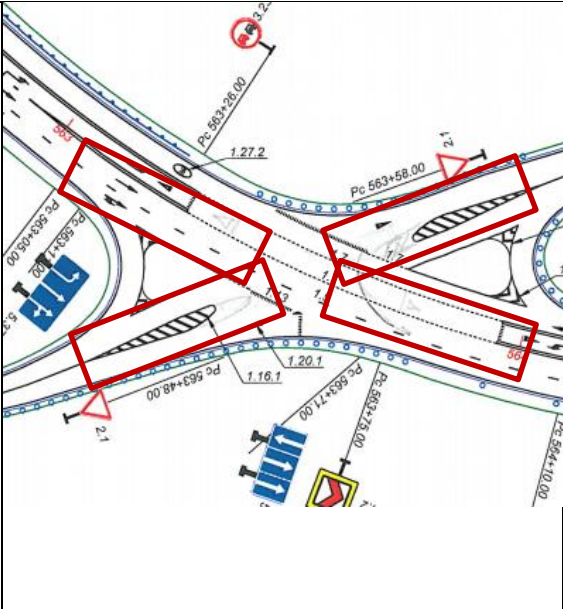
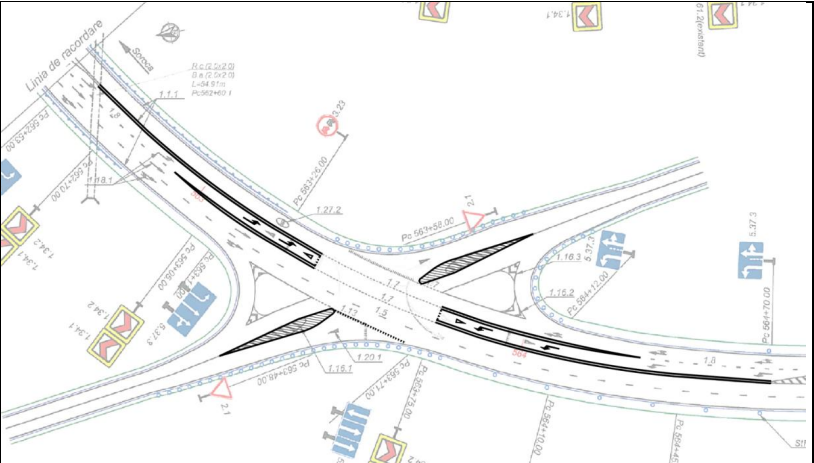
		 Technical drawing of a road junction. A red box highlights a narrow lane on the side road. Dimensions include 1.20, 1.11, 1.13, and 1.11. Stationing markers PC 470+16 and PC 470+17.00 are visible. A red triangle with '2.1' is also present.		 Technical drawing of a road junction. A red box highlights a narrow lane on the side road. Dimensions include 1.7, 1.5, 1.13, and 1.20. Stationing markers PC 448+48.00 and PC 448+49.00 are visible. A red triangle with '2.1' is also present. The text 'Stilpi de direcionare' is written above the drawing.
23.	PC 517+81 PC 536+49	The side road contains lanes of unequal width: one lane is disproportionately narrow compared with the other. This raises concerns that the narrower lane may not meet the width requirements for heavy vehicles (trucks) and can cause operational problems—reduced comfort, encroachment on adjacent lane, unsafe lateral clearance, and difficulty for large vehicles to negotiate the junction.	L	Equalize the lane widths on the side road at the junction with the main R7 carriageway so both lanes meet the applicable dimensional requirements for the design vehicle (including heavy goods vehicles).

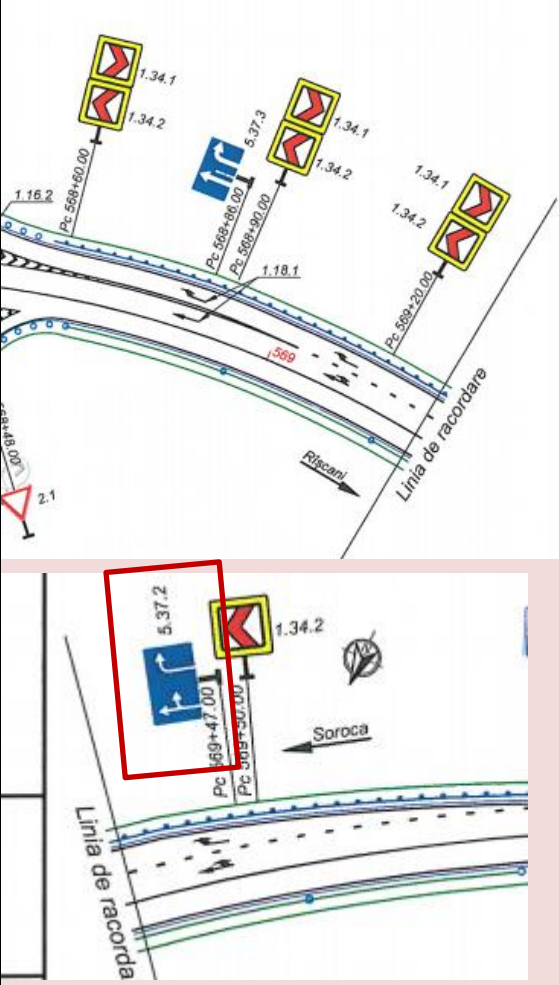
				
24.	PC 520+00	1. The proposed design includes a two-lane roundabout, which may be confusing and unsafe for drivers. Vehicles entering the second lane within the roundabout are required to perform a lane-change maneuver in order to exit, increasing the likelihood of conflict points and unsafe interactions.	H	1. The roundabout should be designed with clearly defined directional lanes that allow drivers to follow a single lane throughout the roundabout and exit without performing lane changes. Such a layout is known as a <i>turbo-roundabout</i>, which minimizes conflicts and improves safety.

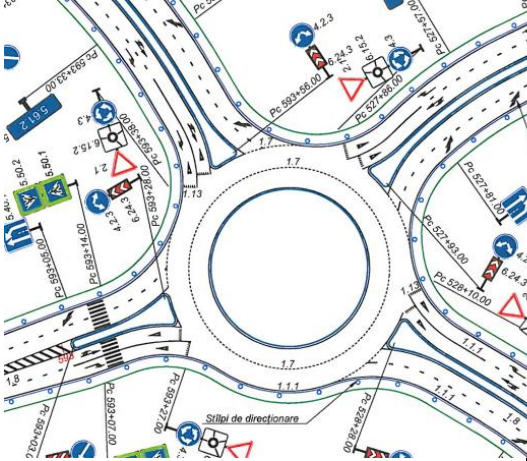
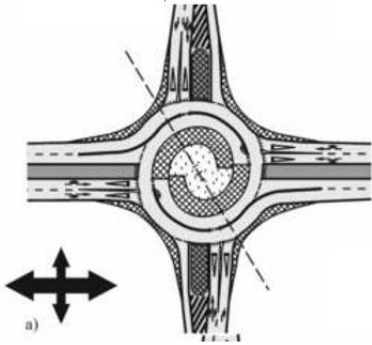
		 2. There is insufficient advance information about the travel directions prior to the roundabout — drivers are not clearly informed about which exits lead to Drochia or other destinations. 3. The 1.13 marking at the intersection is applied incorrectly.	 Example of turbo-roundabout layout 2. Install directional guidance signs clearly indicating which exits lead to Drochia and other key destinations. Additionally, provide advance lane selection signs before entry to the roundabout, showing which lane drivers must choose to reach their intended destination.  Example of directional guidance signs (Lithuania) 3. Correct the alignment and placement of marking 1.13 so that it follows the geometry of the inner carriageway, ensuring consistent and clear stop-line visibility.
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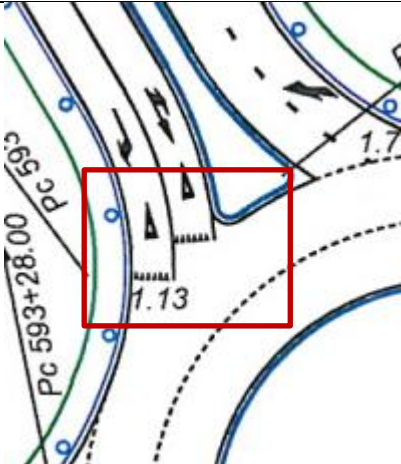
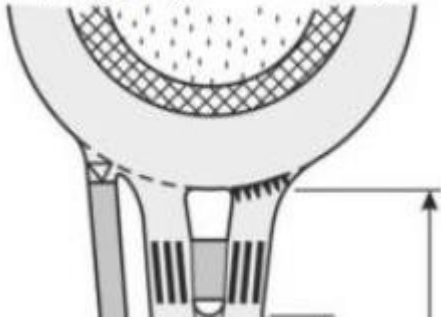
				 
25.	PC 542+60 PC 545+82	The design shows an unexplained narrowing of the carriageway followed by an isolated hatched (buffered) asphalt area and then a re-widening into a two-lane section after ~80 m. This forces an unnecessary merge/sidestep manoeuvre in	L	It is recommended to maintain two continuous traffic lanes without narrowing up to the intersection zone, where the carriageway naturally widens into three lanes. This would ensure smoother traffic flow and reduce potential conflict points.

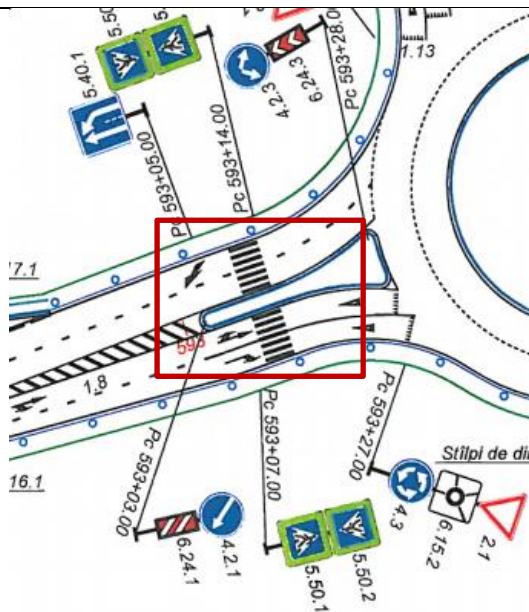
		a short distance, increasing the likelihood of side collisions and lane-change conflicts as drivers are required to change lanes twice over a short distance. The transient, non-logical cross-section reduces predictability for drivers and may encourage unsafe behaviour near the junction. 		
26.	PC 563+50	The intersection design leaves too much room for interpretation by road users, as the lane markings do not clearly define driving paths or turning trajectories. This can lead to confusion and unpredictable vehicle movements within the junction area.	M	Adjust the safety island markings on the side roads to be positioned closer to the main road intersection. Additionally, slightly shift the left-turn lane (approaching from the Riscani direction) toward the center of the intersection to create clearer traffic paths. If the safety islands are designed as raised features, install appropriate road signs to indicate their presence.

				 Example of traffic re-organization (see enlarged in Annex C)
27.	PC 569+47	Misleading road sign No. 5.37.2 indicates that a right turn is allowed from both lanes, while in reality, it is only permitted from one lane.	L	Replace the road sign with one that accurately reflects the actual traffic situation at the intersection.

				
28.	PC 593+50	1. The proposed design includes a two-lane roundabout, which may be confusing and unsafe for drivers. Vehicles entering the second lane within the roundabout are required to perform a lane-change maneuver	H	1. The roundabout should be designed with clearly defined directional lanes that allow drivers to follow a single lane throughout the roundabout and exit without performing lane changes. Such a layout is known as a <i>turbo-roundabout</i>, which minimizes conflicts and improves safety.

	in order to exit, increasing the likelihood of conflict points and unsafe interactions.  2. There is insufficient advance information about the travel directions prior to the roundabout — drivers are not clearly informed about which exits lead to Drochia or other destinations. 3. The 1.13 marking at the intersection is applied incorrectly.	 <i>Example of turbo-roundabout layout</i> 2. Install directional guidance signs clearly indicating which exits lead to Riscani and other key destinations. Additionally, provide advance lane selection signs before entry to the roundabout, showing which lane drivers must choose to reach their intended destination.  <i>Example of directional guidance signs (Lithuania)</i> 3. Correct the alignment and placement of marking 1.13 so that it follows the geometry of the inner carriageway, ensuring consistent and clear stop-line visibility.
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		 4. Pedestrian crossings with safety islands are planned before the roundabout; however, pedestrian crossing signs are not provided on the safety islands.	  <i>Example of 1.13 marking in roundabouts (Lithuania)</i> 4. It is recommended to install pedestrian crossing signs on the safety islands as well.  <i>Example of pedestrian crossing road signs in roundabouts (Lithuania)</i> 5. Design appropriate pedestrian infrastructure that connects
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		 5. There are no pedestrian paths planned after the pedestrian crossing.	public transport stops and pedestrian crossings. 6. If the roundabout is replaced with a turbo roundabout, it is recommended to install road signs before the entry that inform drivers which lane they must choose based on their intended direction of travel. Since lane changes are not possible within a turbo roundabout, drivers should perform the necessary lane change before entering and select the correct lane in advance.  <i>Example of road sign for orientation in roundabouts (Lithuania)</i>
29.	PC 327+50 PC 412+63 PC 437+50	The signs indicating the start and end of the settlement are planned only on one side of the road. As a result, road users—especially when exiting the settlement—may not notice the signs, since they are located on the opposite side.	L Install settlement start and end signs on both sides of the road. One side should indicate the end of the settlement, and the other side should indicate the start, consistent with the current practice on the R7 road. 

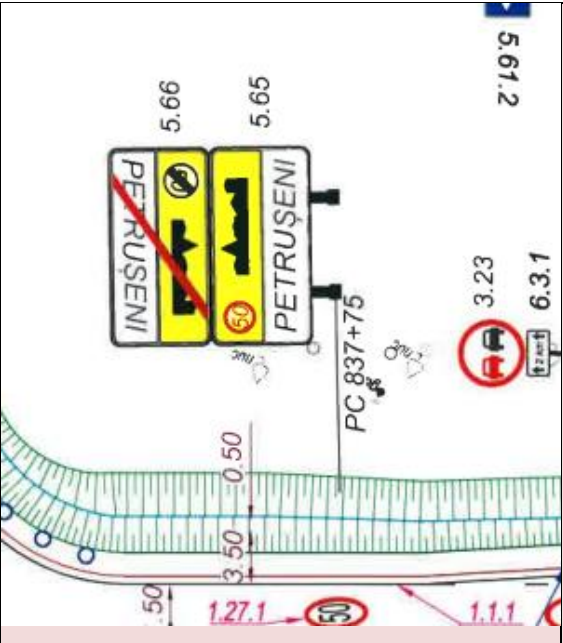
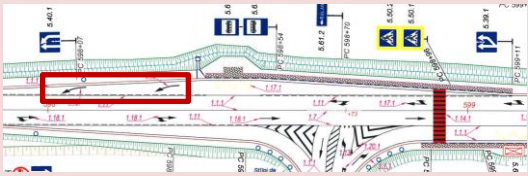
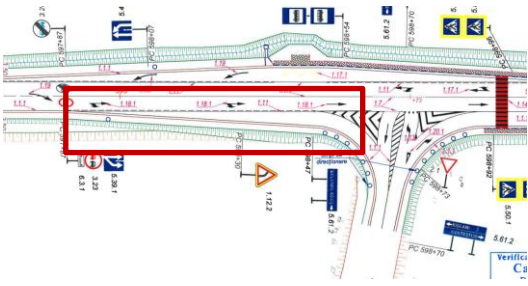
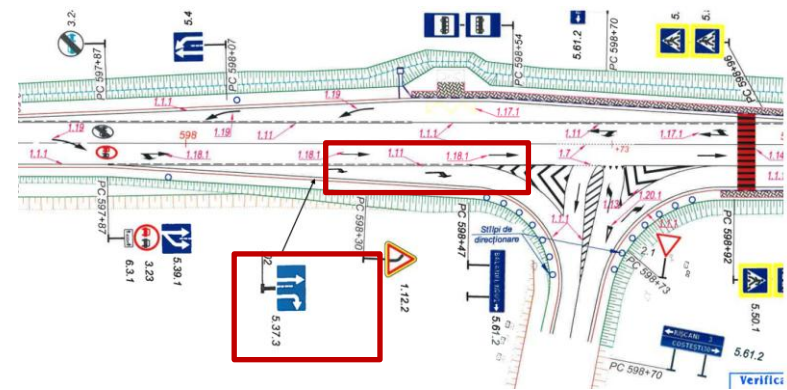
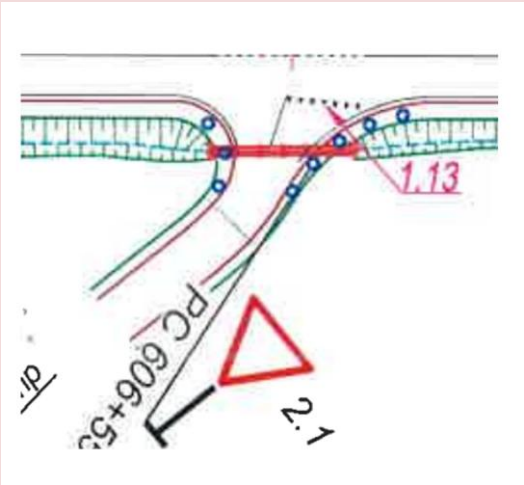
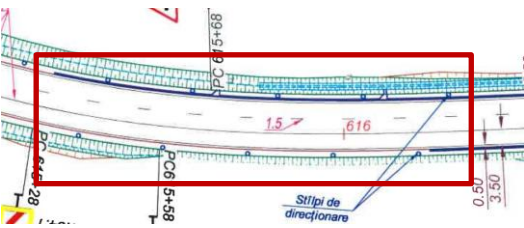
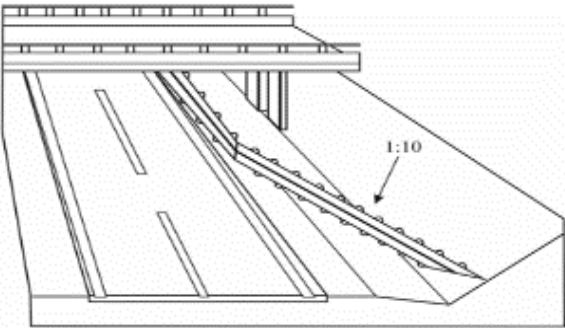
			 Example of road signs to inform about start/end of settlement currently on R7 road
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Table 5-4: Recommendations Lot 2

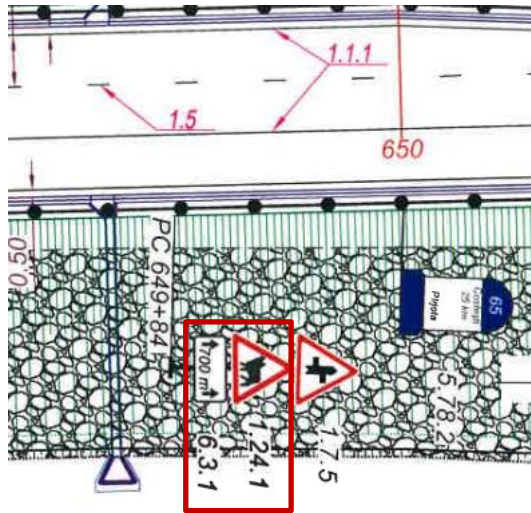
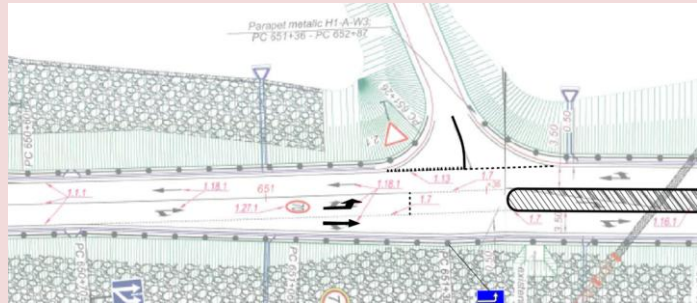
LOT 3 Riscani - Costesti

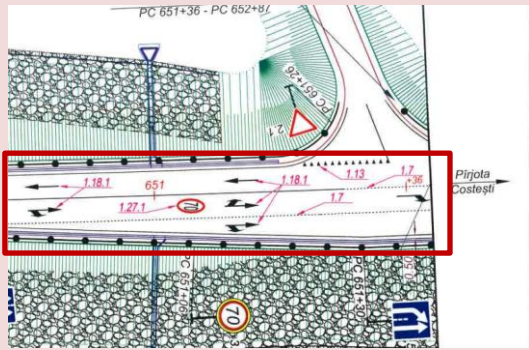
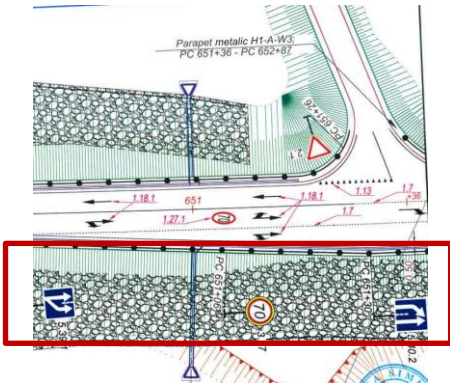
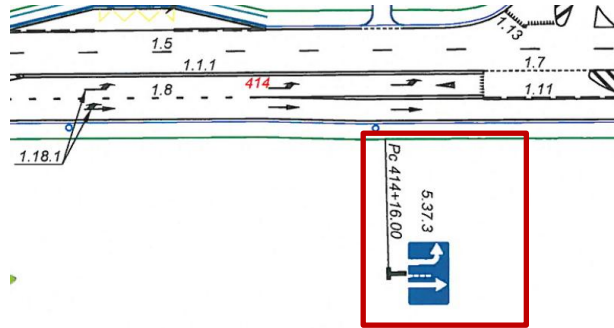
Item	Location	Deficiency	Ranking (H/M/L)	Recommendation
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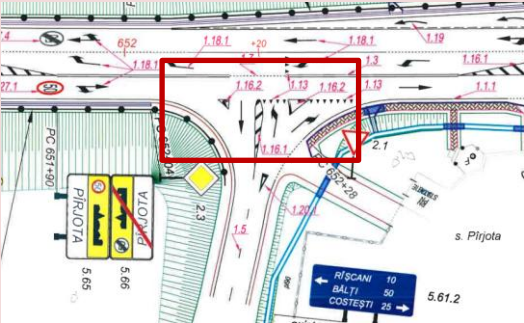
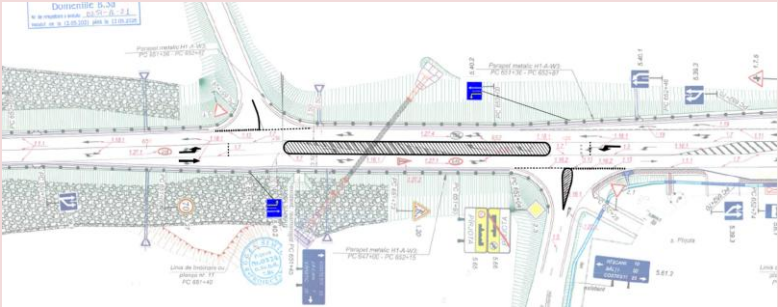
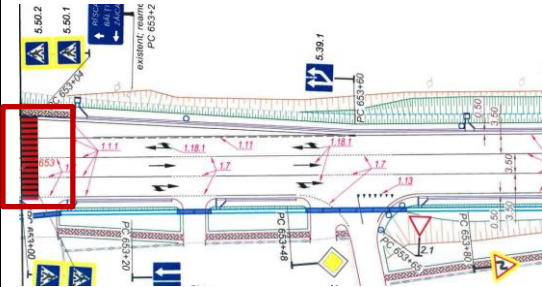
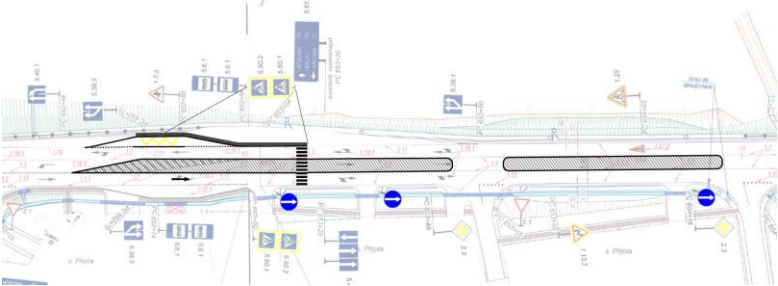
1.	PC 598+07 PC 652+70	Arrow markings 1.19 are used at the bus stop, even though these markings are typically intended to warn about a lane ending or the completion of an overtaking maneuver. Additionally, on other sections of the R7 road, bus stops are planned without the use of 1.19 markings. 	L	Remove the 1.19 markings at the bus stop to avoid giving drivers the impression that the bus stop area can be used as an additional traffic lane for overtaking.
2.	PC 598+50	The horizontal road markings incorrectly indicate that a right turn can be made from the second lane, even though such a maneuver would be unsafe. In addition, there are no 5.37.3 road signs indicating the directions at the intersection. 	L	Plan the traffic layout so that the second lane is designated only for driving straight, while the first lane (which appears as a deceleration lane) is used exclusively for right turns. It is also recommended to install a road sign before the intersection indicating the allowed directions. 
3.	PC 606+53	Incorrect horizontal marking 1.13 at the intersection with the main road.	L	We recommend marking 1.13 perpendicular to the main road. Additionally, assess the need to apply a solid centerline on the side

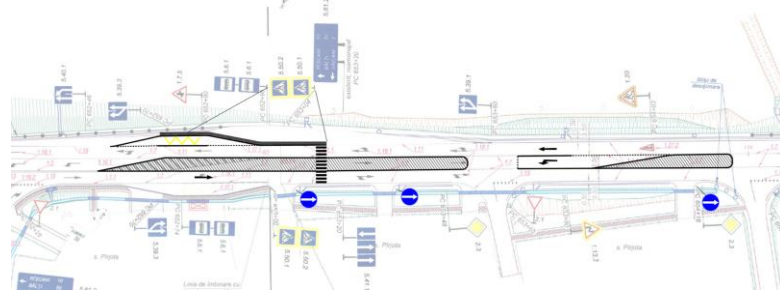
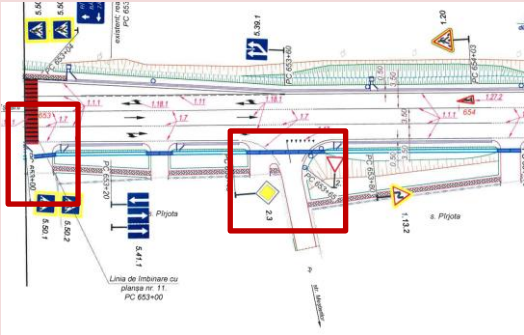
				road, as the drawing does not clearly show the width of the side road. This creates a risk that not all vehicles will fit properly within the lane.
4.	PC 615+20 – 619+50 PC 632+30 – 639+00 PC 647+00 – 647+67 PC 647+00 – 652+20 PC 654+29 – 655+02 PC 655+47 – 657+50 PC 655+58 – 657+30 PC 669+02 – 669+50 PC 696+25 – 699+95 PC 699+85 – 702+46 PC 724+20 – 725+48	Straight ends of safety barriers are unsafe because a head-on collision with them is likely to result in serious consequences for the road user's health. Such design solutions should be replaced with safer, impact-absorbing terminal ends or different layout of barriers. 	M	Lower the ends of the barrier, rotate them away from driving direction and carriageway, dig them into the ground. The design of turned off the road, lowered to the ground level and dig into the ground barriers ensures less severe consequences in terms of accidents. Also, this design of barriers can help the vehicle get back on the road instead of overturns or crashes to surroundings. 

	PC 754+10 – 755+01 PC 764+64 – 766+38 PC 773+20 – 775+10 PC 776+18 – 778+40 PC 780+40 – 782+92 PC 785+50 – 786+50 PC 875+68 – 875+92 PC 880+53 – 880+77 PC 886+01 – 886+25			
5.	PC 616+83	Road sign 1.7.2 informs drivers about an upcoming junction on the right side, but it only indicates the nearest intersection. There is no repeated sign for the junction at PC 619+72. 	L	It is recommended to install road signs 1.7.2 before each junction to properly inform drivers—specifically, add the corresponding sign when approaching the junction at PC 619+72 so drivers are aware of the side road on the right. Additionally, road signs 1.7.3 should be installed in the opposite driving direction so that drivers are informed about side-road intersections regardless of the direction they are traveling.
6.	PC 649+84 PC 686+43 PC 705+56	A road sign 6.3.1 is planned with an indication that it applies for 700 m, but within this distance there are several access roads connecting to the main road. Vehicles entering from those side roads will not see a repeated 6.3.1 sign after the junctions.	L	Repeat road sign 6.3.1 after each junction so that all road users—whether continuing on the main road or entering from side roads—are properly informed about the animal-crossing hazard.

				
7.	PC 651+36	Traffic organization at the intersection is chaotic. The main road widens from one lane to two near the side-road intersection. The first lane is marked for straight and left turns, and the second lane is also marked for straight and left turns. However, just a few meters after the intersection, the straight-ahead option disappears due to a painted hatched area. This means drivers are instructed to go straight from both lanes, but immediately after the intersection they must merge into the first lane, creating unnecessary and unsafe lane-changes.	H	It is recommended to reorganize the traffic layout so that the first lane allows drivers to continue straight through the first intersection and turn right at the next intersection (PC 652+20), while the second lane is designated solely for left turns, without suggesting the possibility to drive straight. This will eliminate unnecessary merging and ensure clearer, safer traffic movement.  <i>Example (see enlarged in Annex C)</i>

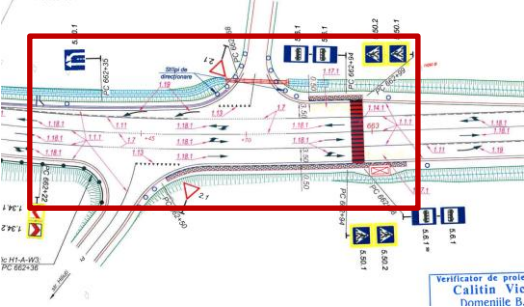
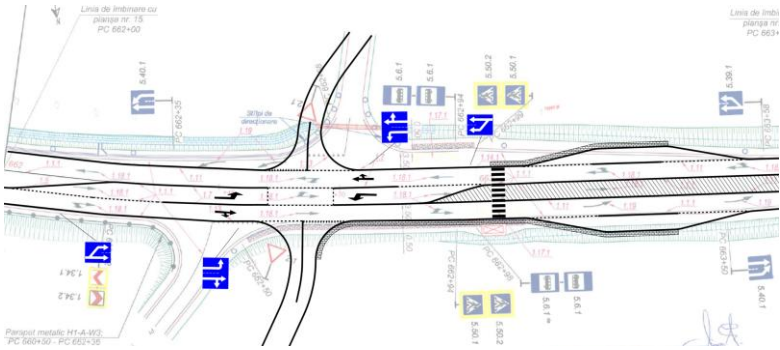
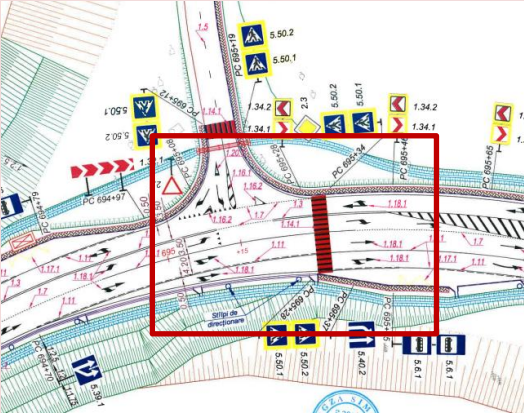
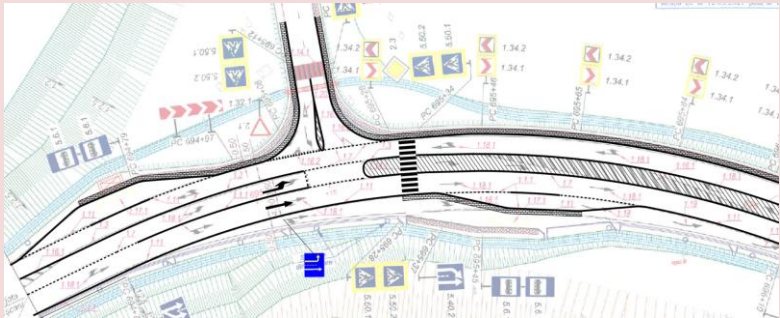
				
8.	PC 651+36 PC 692+22 PC 699+80 PC 840+00 PC 847+00	There is a lack of road signs informing drivers about the traffic organization at the intersection. 	L	It is recommended to install road sign 5.37.3 to inform road users about the traffic layout and lane directions at the intersection.  <i>Example of LOT 2 Drochia – Riscani section</i>
9.	PC 652+20	The proposed safety islands at the intersection are unclear in design (raised or flat), but in either case, they are too small to provide any meaningful safety benefit. If raised, they could even act as an obstacle, creating potential hazards rather than improving traffic safety.	L	It is recommended to remove the islands and retain two traffic lanes on the minor road, while adjusting the horizontal road markings accordingly. This approach will simplify the intersection layout, maintain clear lane guidance, and avoid introducing ineffective or potentially hazardous obstacles.

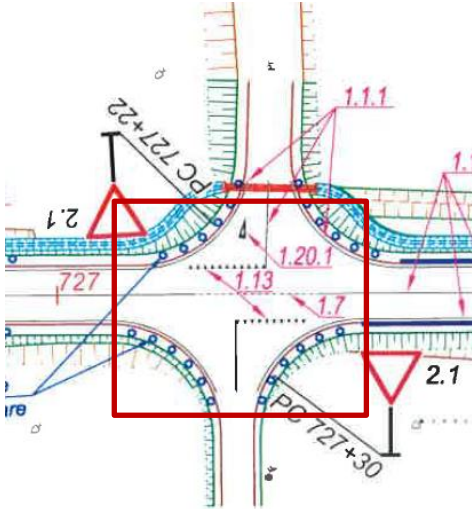
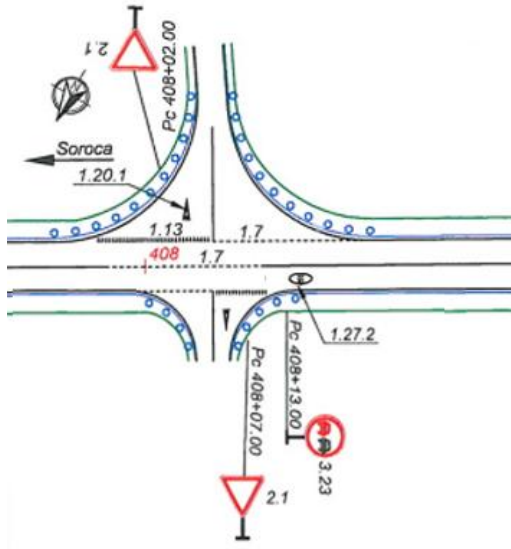
				 Example (please see enlarged in Annex C)
10.	PC 653+04	The planned pedestrian crossing is very wide, spanning four traffic lanes and a bus stop area. This creates safety risks for pedestrians, as they must cross a large section of the roadway. It is also unclear why the lengths of the public transport stops differ: on the northbound side (Costești → Rîșcani), the stop is approximately from PC 652+20 to PC 653+50, while on the southbound side (Rîșcani → Costești) the stop extends only from approximately PC 652+50 to PC 653+00. 	H	It is recommended to standardize the lengths of the bus stops, which would create more space to relocate the pedestrian crossing nearby without intersecting the bus stop areas. If it is not possible to redesign the lengths of the stops, the pedestrian crossing should be moved further away so that pedestrians do not need to cross more than three traffic lanes. Proposed changes has to have continuation through all the settlement to correspond recommended changes.  Option No. 1 (please see enlarged in Annex C)

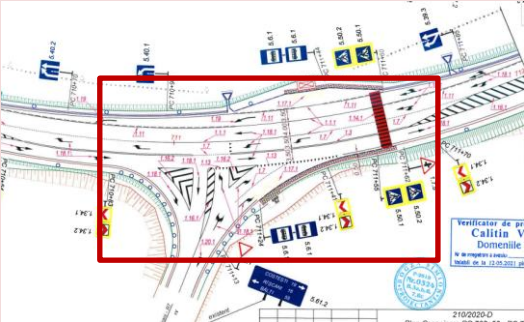
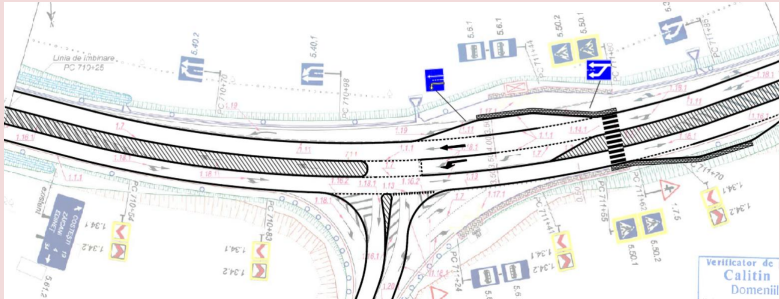
				 <i>Option No. 2 (please see enlarged in Annex C)</i>
11.	PC 653+00 – PC 653+65	The existing pedestrian infrastructure lacks continuity, which may result in pedestrians walking on the carriageway and thereby increasing exposure to traffic conflicts. 	M	It is recommended to ensure continuous and interconnected pedestrian facilities by providing direct links between pedestrian paths and adjacent pedestrian crossings, public transport stops, and other relevant pedestrian attractors.
12.	PC 655+30	The regulatory road sign 2.3 is designed to be installed only for one traffic direction, while no corresponding sign is planned on the opposite side of the road. This may lead to inconsistent or unclear information for road users approaching from different directions.	L	It is recommended to maintain consistency by installing road signs 2.3 on both sides of the road, ensuring that all road users receive uniform and clear information.

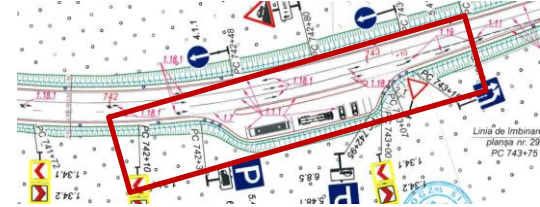
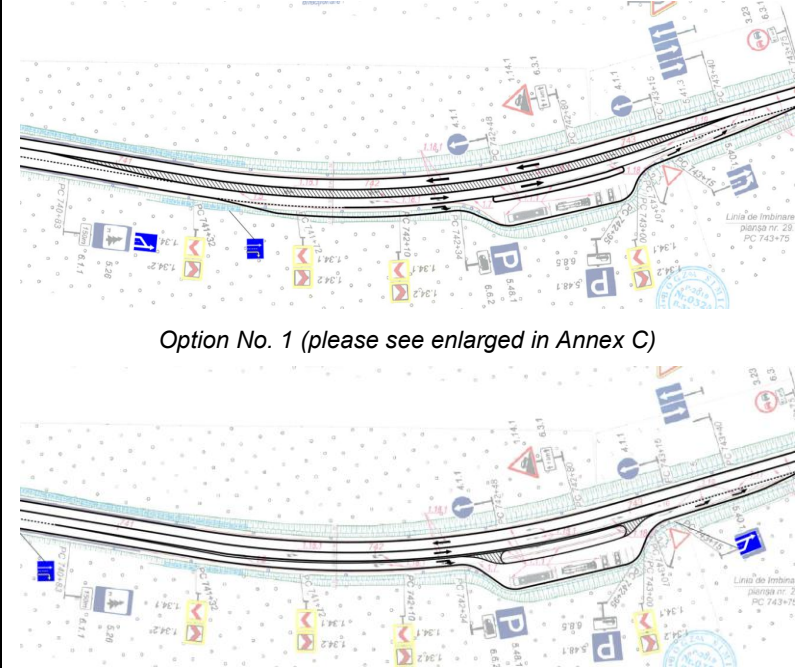
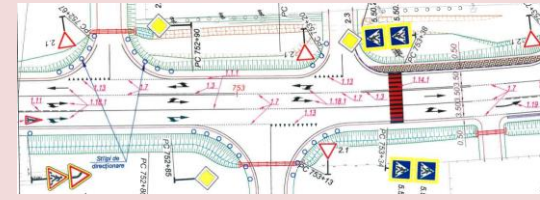
13.	PC 655+43 PC 662+70	The intersection geometry currently deviates from a standard perpendicular four-way configuration. This non-standard design prevents traffic traveling straight across from one minor road to the other minor road from executing the maneuver along a straight trajectory. This geometric constraint can introduce confusion, unpredictability, and increased conflict points, potentially leading to a higher risk of accidents.	L	We recommend, where geometrically and financially feasible, undertaking modifications to realign the intersection to a standard perpendicular four-way configuration. This adjustment would significantly enhance predictability, improve driver visibility, and allow for a straight and direct crossing path for traffic movements, thereby increasing overall intersection safety and operational efficiency.

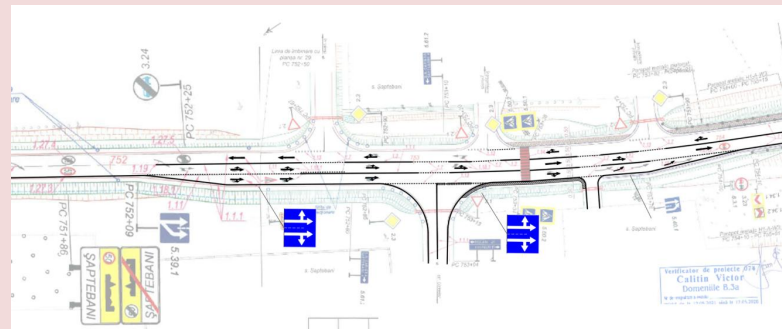
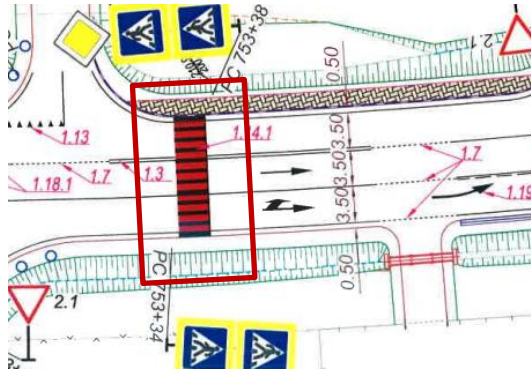
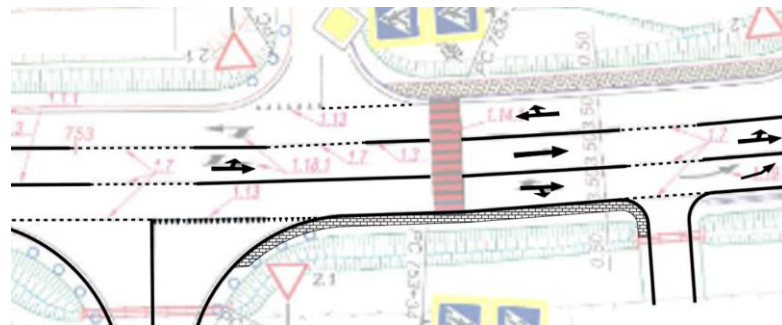
14.	PC 662+70	A high-complexity conflict zone has been identified at the confluence of the pedestrian crossing, bus stop, and intersection. The proposed pedestrian crossing traverses an excessively wide roadway, spanning four (4) traffic lanes, which includes the designated bus stop area. Furthermore, the crossing is positioned directly within the bus stop lay-by, where buses are intended to queue. This direct placement creates a conflict where pedestrians crossing are obscured by standing buses, and buses initiating movement are intersecting with crossing pedestrians. Additionally, the bus stop lay-by is positioned immediately adjacent to the intersection, effectively blurring the lines between the dedicated bus stop area and a potential deceleration or auxiliary lane for	H	It is recommended for a fundamental overhaul of the current intersection and bus stop design scheme. This major modification should focus on three primary objectives: The bus stop lay-by must be relocated away from the immediate vicinity of the intersection to clearly separate public transport operations from general intersection maneuvers and to eliminate its potential misuse as a deceleration lane. The intersection geometry, including lane widths and turning radii, to optimize traffic flow and reduce conflict points. Design protective measures for pedestrians by ensuring the crossing is not located within the bus stopping area, potentially by narrowing the crossing distance using curb extensions and implementing dedicated refuges (pedestrian islands) within the roadway to facilitate a safer, two-stage crossing procedure.

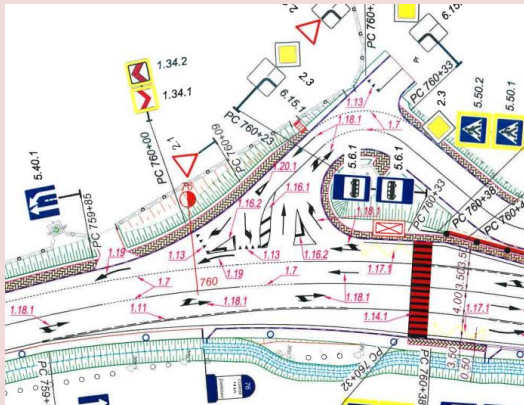
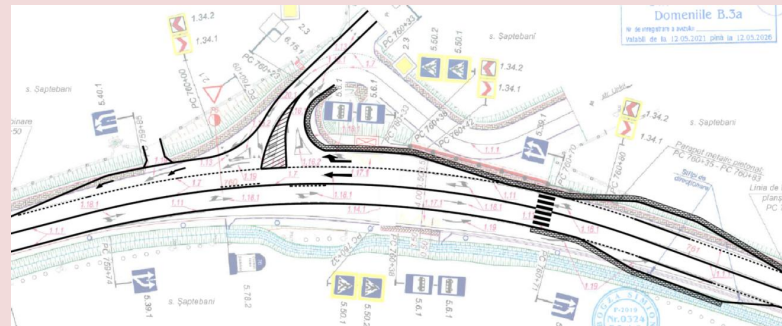
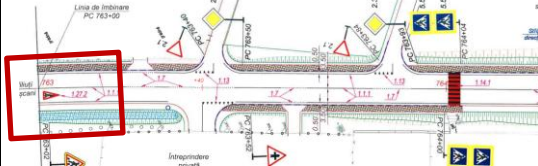
		general traffic accessing the junction. This proximity introduces operational uncertainty and increases the risk of rear-end and side-swipe collisions. 	 Example (please see enlarged in Annex C)
15.	PC 695+12	It is unclear why the roadway is widened in the intersection area, increasing the number of lanes, which results in a pedestrian crossing spanning four traffic lanes and a bus stop. The reason for the additional lane, which extends approximately 100 meters, is also not clear. 	H  Example (please see enlarged in Annex C)

16.	PC 727+30 PC 747+79	The intersection does not have a standard four-way configuration — the side roads do not align directly opposite each other. As a result, vehicles approaching from the side roads cannot cross the intersection in a straight, perpendicular line and must instead perform curved or angled maneuvers, which may reduce safety and clarity. 	L	Where feasible, it is recommended to redesign the intersection as a typical four-way layout, as illustrated in the example below. This would ensure more predictable traffic movements, improved visibility, and overall safer and smoother intersection operation. 
17.	PC 711+00	It is unclear why, in the direction from Costești to Rîșcani, the number of lanes changes near the intersection, extending for approximately 150 meters. A separate lane is provided for the left turn, but the purpose of the additional lane over such a short section is unclear. Additionally, a pedestrian crossing is planned across a wide roadway, spanning four traffic lanes and a bus	H	It is recommended to fundamentally redesign the intersection by providing the necessary number of lanes, ensuring pedestrian safety, designing safe bus stops, and installing appropriate road signs indicating lane directions within the intersection.

		stop. On the side road, vehicles can turn onto the main road from two lanes, while the main road in the Rîșcani → Costești direction has only one lane. The bus stop is also planned on the turning lane within the intersection. 		 Example (please see enlarged in Annex C)
18.	PC 742+00	The horizontal road marking is misleading — drivers are informed that they may turn right from the second lane, but this permission disappears afterward. This creates unsafe conditions and can lead to conflicts or traffic accidents. In addition, the intersection connects to a stop-by/parking area, and the exit from this area may appear to drivers as an acceleration lane, even though it is actually a regular lane that later merges. This misinterpretation increases the risk of side-impact collisions.	M	The intersection, including the entrance and exit of the parking/stop-by area, should be redesigned to ensure clear lane functions and safe maneuvering. The second lane should be designated for through traffic only, while the first lane should be reserved for right turns. The layout must be adjusted to avoid confusion between a normal lane and an acceleration lane, improving safety for all road users. Additionally, it is recommended to organize the traffic flow within the parking area as a one-way loop — entering from one side and exiting from the other — to reduce the risk of vehicles driving in conflicting directions.

				 Option No. 1 (please see enlarged in Annex C) Option No. 2 (please see enlarged in Annex C)
19.	PC 753+00	Chaotic horizontal road markings misinform drivers about possible driving directions. There are also no road signs indicating the permitted directions at the intersections. 	M	Redesign the horizontal markings so that drivers clearly understand which movements are allowed from each lane. Additionally, install appropriate directional road signs before the intersections to inform drivers about the correct directions in advance.

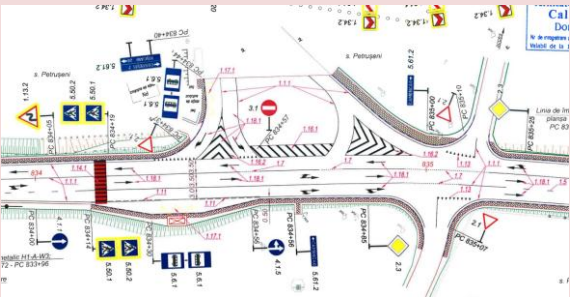
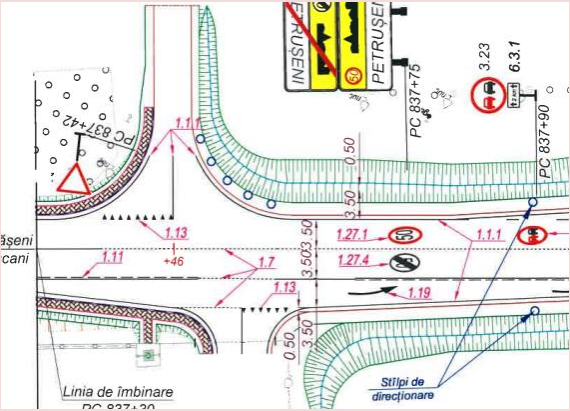
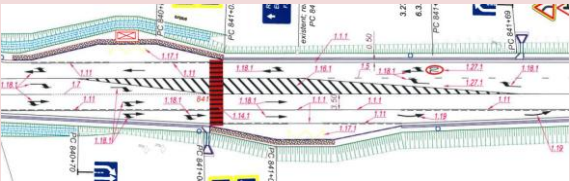
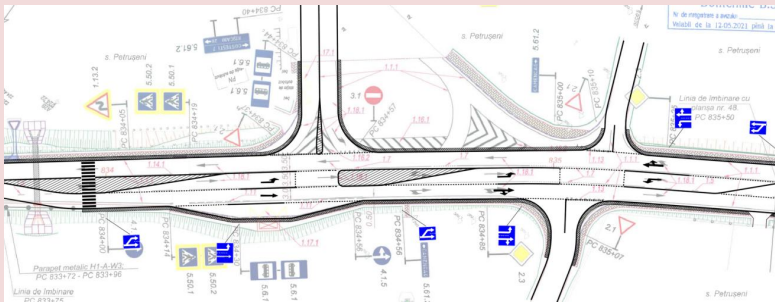
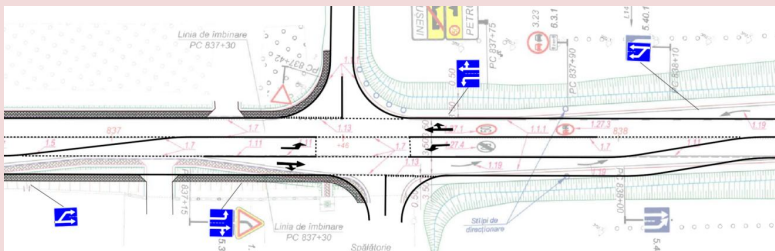
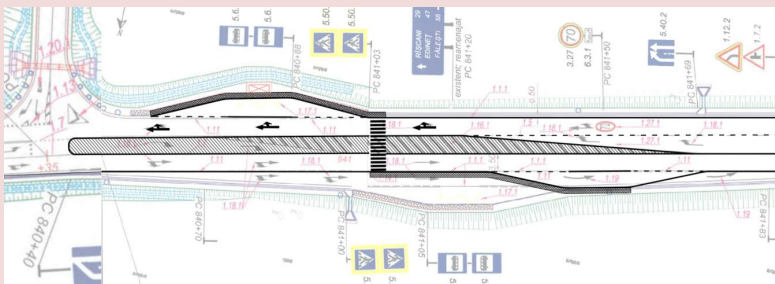
				 <i>Example (please see enlarged in Annex C)</i>
20.	PC 753+34	Pavement for pedestrians is planned only on one side of the road. This means that after crossing the street, pedestrians will have to continue walking on the carriageway, which increases risk and the likelihood of accidents. 	L	Plan pedestrian infrastructure on both sides or provide a safe connection so that pedestrians are protected from direct conflict points with motor vehicles.  <i>Example</i>
21.	PC 760+00	The intersection layout is unsafe. The addition of extra lanes allows vehicles to drive directly through a bus stop area. Another bus stop is positioned on a curve, meaning that if a bus is	H	Redesign the intersection and include appropriate road signs to clearly indicate the traffic organization. Ensure a safe pedestrian crossing and relocate bus stops to positions that do not create additional conflict points or encourage chaotic driving behavior.

		stopped there, drivers will be forced to make unsafe maneuvers to pass it. The planned pedestrian crossing spans four traffic lanes, creating significant risk for pedestrians. 		 <i>Example (please see enlarged in Annex C)</i>
22.	PC 763+00 PC 768+00	In one driving direction, horizontal marking 1.27.2 warning about pedestrians is planned, while in the opposite direction such marking is not provided. As a result, road users receive inconsistent information, and the pedestrian warning becomes incomplete. 	L	To ensure consistent and clear information for all road users, regardless of their travel direction, we recommend applying marking 1.27.2 in both directions.
23.	PC 770+70 PC 798+00 PC 803+00	The horizontal road markings are misleading, the pedestrian crossing is unsafe, and safe maneuvers in the intersection are not ensured.	H	Redesign the section to provide safer vehicle maneuvers, protect pedestrians by installing a safety island, correct the horizontal markings, and install appropriate road signs informing drivers

PC 834+50
PC 837+46
PC 841+00

Additionally, the current layout creates unnecessary conflict points between vehicles and pedestrians, and the lack of clear lane guidance increases the risk of side collisions and chaotic driver behavior.



		 PC 834+50  PC 837+46  PC 841+00		 PC 834+50 (please see enlarged in Annex C)  PC 837+46 (please see enlarged in Annex C)  PC 841+00 (please see enlarged in Annex C)
24.	PC 651+90 PC 655+80 PC 687+05 PC 704+32	The signs indicating the start and end of the settlement are planned only on one side of the road. As a result, road users—especially when exiting the settlement—may not notice the signs,	L	Install settlement start and end signs on both sides of the road. One side should indicate the end of the settlement, and the other side should indicate the start, consistent with the current practice on the R7 road.

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Table 5-5: Recommendations Lot 3

5.12. General recommendations for remaining Lot 4

At this stage, it is not yet possible to conduct a detailed safety assessment of the remaining project section, as the design documentation for this lot has not been prepared. This section include: Lot 4: Drochia Bypass (6 km). Nevertheless, based on recurring issues identified during the assessment of Lots 1, 2, and 3, it is evident that several design weaknesses tend to repeat across different sections. These recurring aspects can already be addressed and prevented in the design of the remaining three lots. Below are general recommendations—structured by thematic areas—that should be considered when preparing the new designs to ensure clarity, safety, consistency, and long-term functionality of the upgraded road network.

- 1. Intersections.** In the reviewed sections, many proposed intersections were found to be irregularly shaped, inconsistently widened, or geometrically unclear without apparent justification. Such configurations create confusion for drivers, particularly when performing left turns from minor roads or when pedestrian crossings are placed in unsafe and unpredictable locations. For future lots, it is strongly recommended to apply standardized and homogeneous intersection layouts—either three-leg (T-junction) or four-leg (crossroads)—following uniform design principles. Since the new road sections will be constructed without constraints of existing road geometry, intersections should be designed to be as simple and intuitive as possible, avoiding atypical or experimental layouts that could increase driver uncertainty and risk.
- 2. Horizontal Road Markings.** The audits of Lots 1–3 identified numerous inconsistencies between horizontal markings and corresponding vertical signs, as well as non-uniform application of essential markings such as line type 1.13, bus stop markings, and lane guidance arrows. Horizontal markings play a critical role in traffic organization and must be fully consistent, unambiguous, and homogeneously applied across all road sections. For the remaining lots, designers should ensure that road markings are planned with careful attention to clarity, consistency with signage, and compliance with national standards. This includes uniform treatment of bus stops, lane-dividing lines, and approach markings at intersections and roundabouts.
- 3. Road Signs.** Road signs communicate the core information required for safe and predictable driving. In future lots, road signs must be designed systematically, ensuring proper placement, adequate quantity, visibility, and adherence to design speed requirements. Signposting must work in harmony with horizontal markings, providing consistent messages and supporting intuitive driver behaviour. Clear advance information—especially near intersections, roundabouts, pedestrian facilities, and conflict points—should be prioritized to improve navigation and reduce last-minute manoeuvres.
- 4. Parallel Roads and Access Management.** If bypasses or high-standard road sections are designed, careful consideration must be given to access control. Depending on the design speed and road category, direct access from minor or agricultural roads may not be appropriate or safe. In such cases, parallel or connector roads should be considered to manage local traffic, agricultural vehicles, and slow-moving machinery. The aim is to prevent unsafe entries onto high-speed segments and to maintain safe separation between through traffic and local access movements.
- 5. Curves and Road Geometry.** Lots 1–3 were largely designed by following the alignment of the existing road, occasionally widening the platform but maintaining most existing curves. While this may be acceptable in constrained conditions, new sections (especially bypasses) should aim to use straighter, more consistent alignments where practical. Curve geometry must comply with local design standards, ensuring adequate sight distance, proper superelevation, smooth transitions, and logical progression for drivers. Reducing unnecessary curvature improves safety, reduces fatigue, and enhances route continuity.

- 6. Pedestrian Infrastructure.** In the evaluated sections, pedestrian infrastructure was often treated as secondary, with pathways that were incomplete, inconsistently connected, or obstructed by elements such as lighting poles, drainage channels, or vegetation. For the remaining lots, pedestrian safety must be integrated as a core component of the road design. This includes continuous sidewalks, safe and well-marked pedestrian crossings, accessible bus stops, and obstacle-free walking zones. Special attention should be given to pedestrian activity near populated areas, public transport stops, schools, and markets.
- 7. Safety Barriers.** The assessment of earlier lots revealed deficiencies in barrier terminal treatments, with several endings presenting severe safety hazards. For the remaining lots, it is essential to apply safe barrier design principles: barrier ends must be buried or anchored into the ground and redirected away from the carriageway to prevent the risk of fatal head-on impact. Only compliant, crash-tested barrier terminal designs should be used, ensuring that occupants are protected in the event of accidental departure from the roadway.
- 8. Intelligent Transportation Systems and Enhanced Visibility Measures.** Although full-scale Intelligent Transportation Systems (ITS) may not be required on all road sections, it is strongly recommended to integrate cost-effective smart safety solutions that significantly improve visibility and driver awareness, particularly at pedestrian conflict points. Where feasible, directional or adaptive lighting should be installed at pedestrian crossings to enhance the visibility of pedestrians during nighttime and adverse weather conditions. The use of flashing beacons or illuminated signs is also encouraged, as these devices draw driver attention more effectively in low-light environments and alert them to upcoming hazards. Additional safety-enhancing measures may include motion-activated lighting that increases brightness when pedestrians are detected, high-brightness LED road studs to delineate lanes or highlight curves, and solar-powered warning signs. Combining these technologies can greatly improve situational awareness and create a safer environment for both drivers and vulnerable road users.
- 9. Road Lighting and Visibility Enhancement.** Adequate road lighting is essential for ensuring safe driving conditions during nighttime and adverse weather such as rain, fog, or snow. It is strongly recommended to provide consistent and properly designed illumination at critical conflict points, including intersections, pedestrian crossings, roundabouts, curves, and bus stop areas. Lighting design should minimize dark zones, glare, and abrupt brightness transitions that may reduce driver adaptation and visibility. The use of high-efficiency LED lighting, adaptive or motion-activated systems, and illuminated delineation elements should be considered to improve object detection, lane recognition, and overall driver perception. Enhanced lighting significantly improves reaction time, reduces collision risk, and increases safety for all road users, particularly vulnerable users such as pedestrians and cyclists.

Annex A – Road Safety Severity Ranking scheme

Based on the developed Road Safety Audit (RSA) Manual, the risk rating for identified issues has been determined using a standardized assessment matrix. The rating combines the Likelihood of an incident occurring with the Severity of its potential consequences. This structured approach ensures consistency and clarity in evaluating road safety risks. The table below outlines the rating framework used:

Current situation			
Risk of road accident	There are fatalities or serious injuries	Only slightly injured persons	No persons killed or injured
	Degree of importance		
High (H)	High (H)	High (H)	Medium (M)
Medium (M)	High (H)	Medium (M)	Low (L)
Low (L)	Medium (M)	Low (L)	Low (L)

Annex B – Road Safety Audit checklist

Based on the Road Safety Audit (RSA) Manual, the following checklist was followed to ensure a comprehensive and systematic approach during the audit process. This checklist aligns with best practices and covers critical aspects of road design and operation that may impact safety for all road users:

Requirements of different road users

- Is the designed road intended for the involved traffic users
- Has the need for parking been taken into account?
- Have all classes of pedestrians that could be seriously affected by this Project been considered? (For example, schoolchildren, the elderly, etc.)
- Has the need to stop drivers been considered?
- Are the necessary conditions for pedestrians and cyclists provided?
- Are roadsides safe if there are lanes for cyclists on the roadway?
- Have the needs of riders and horse-drawn vehicles been taken into account, including the use of verges?
- Can underpasses be used by cyclists?
- Have the needs of truck drivers been taken into account, including turning radii and lane widths?
- Have public transport needs been taken into account?
- Have the needs of public transport users been taken into account?
- Have public transport manoeuvring needs been taken into account?
- Are public transport stops safely located?
- Have the transport needs of operational services been taken into account?
- Is safety ensured during the operation of the machines of the maintenance service

Traffic Conditions

- Do the design solutions match the anticipated traffic intensity?
- Are significant traffic generating facilities located at a sufficient distance from intersections to avoid safety issues?
- Will there be security issues in the future if:
 - Upgrade
 - Adding an additional roadway
 - Geometric changes at intersections
- Are the design solutions appropriate for the design traffic volume and characteristics (including the effects of large and heavy vehicles, cyclists and pedestrians)?
- Will the road be able to safely handle an unexpected or significant increase in traffic?
- Will the road safely handle unexpected changes in traffic?
- Has the need for parking been taken into account?
- Was lighting considered in the Project?

Visibility

- Will sight distance be ensured:
 - At intersections
 - At the exit to the adjacent territories
- Is the visibility distance sufficient:

- At intersections (If not, what are the implications?)
 - At the entrance and exit
 - At emergency vehicle access points
- Will drivers be able to see pedestrians (and vice versa) given the terrain?
- Does the landscape interfere with visibility now and after the Project implementation?
- Is visibility provided on vertical and horizontal curves?
- Does visibility interfere with:
 - Fences or barriers
 - Furnishings
 - Parking lots
 - Signs
 - Elements of landscape design
 - Bridge piers
 - Parked cars in emergency areas or on the side of the road
 - Queue of cars
 - Small architectural forms
- Are railroad crossings, bridges and other hazards visible?
- Are other local features obstructing visibility?
- Are there obstructions from above (e.g. road or rail overpasses, signboards, overhanging trees) that obstruct visibility on vertical curves?
- Is there clearance for oversized vehicles?
- Is visibility sufficient for:
 - Pedestrian and bicycle crossings
 - Access roads, railway crossings
- Was the minimum visibility triangle ensured:
 - On transitional-high-speed lanes
 - At intersections
 - At roundabouts
 - In other conflict points
- Is the stopping distance ensured in all cases?
- Is there an adequate stopping distance on slopes?

Design Principles

- Does the estimated speed match the number and type of intersections?
- Does the lane width match the prospective intensity?
- Are separate lanes required for turning vehicles? Are transitional lanes required?
- Have detours or alternate routes been provided to ensure that existing areas are not cut off from transport links while the work is being carried out?
- Have appropriate design standards been used?
- Does the plan and profile meet regulatory requirements?
- Is the design speed correct for:
 - Designing horizontal and vertical curves

- Definitions of visibility
- Designing transitional speed lanes
- Do the horizontal and vertical curves match correctly?
- Are the vertical curves correct?
- Are the horizontal curves compliant?
- Are the applied curves appropriate for the functional purpose of the road?
- Are lane widths, shoulders, medians and other dimensions appropriate for the purpose of the road?
- Does the width of the traffic lanes and the carriageway correspond to:
 - Radii of curves
 - Traffic intensity
 - Dimensions of vehicles
 - Accepted speed
 - A combination of speed and intensity
- Do the design standards meet all the characteristics of the road?
- Are the applicable standards appropriate for the purpose of the road?
- Is the geometric transition from the road to the bridge safe?

Intersections

- Are there any potential problems at the junction with existing roads?
- Are all intersection parameters (eg distance, type, location, etc.) appropriate for the Project as a whole?
- Is the crossing frequency appropriate (neither too high nor too low):
 - For secure access
 - To avoid additional load on neighbouring roads
 - For emergency vehicle access
- Have any physical limitations, visibility limitations that could affect the choice or spacing of intersections been considered?
- Are all planned crossings necessary?
- Can unnecessary intersections be eliminated? Can traffic safety be improved by changes to the surrounding road network?
- Will the angle of the intersecting roads and visibility conditions be sufficient for the safety of all road users?
- Have the level crossings been identified and properly designed?
- Can all entrances be safely used?
- Have provisions been made for the safe access and movement of ambulances and other emergency services?
- Is there visibility at the intersection?
- Is the standard adopted for visibility, speed and unusual combinations of traffic volumes and compositions?
- Do intersections allow all vehicles to pass?
- Do the curvature radii at intersections allow all vehicles to turn?
- Are there horizontal curve radii for long vehicles?
- Are there any unusual elements at the intersections that could affect traffic safety?
- Are pedestrian barriers provided where necessary? (for example, to direct pedestrians or prevent parking)
- Have safety islands been provided where necessary?
- Is parking near an intersection safe or should steps be taken to prohibit it?

- Is there a safety hazard due to parked vehicles?
- Will the intersection and its functions be perceived correctly?
- Are the speeds at the intersection safe?
- Is there anything in the design of the intersection that misleads the driver?
- Are safety islands secure in all possible respects?
- Is there sufficient vertical clearance for structures? (e.g. power lines, shop sheds)
- Are traffic light phases applied correctly?
- Is there enough time for vehicular and pedestrian traffic?
- Will traffic lights be visible? (e.g. not obstructed by trees, poles, signs or large vehicles)
- Are traffic signals from other directions misleading?
- Are traffic lights increased if they can be affected by sunrise/sunset?
- Do the vertical and horizontal curves make it possible to see the traffic signal from the end of the line?
- Will approaching drivers see pedestrians?
- Are there partially or fully controlled turn phases where needed?
- Are there redundant traffic lights?
- Are road markings at intersections properly designed?
- Were appropriate pedestrian phases provided at traffic lights?
- Is the design of the central island safe at roundabouts?
- Is the radius and design of the central island appropriate for the vehicles used?
- Can pedestrians be seen in time by drivers at roundabouts?
- Can pedestrians tell if vehicles are turning? (no obstruction in line of sight)
- Are roundabout markings properly designed?
- Is the lighting correct?
- Are intersections long enough to accommodate a queue of turning cars?
- Are all exits to the surrounding areas safe?
- Can pedestrians cross safely through:
 - Intersections
 - Regulated and unregulated pedestrian crossings
 - Security islands
 - Bridges
 - Other places
- Are pedestrians prevented from crossing the road in dangerous places?
- Are the signs associated with pedestrians appropriate and adequate?
- Are the widths and slopes of walkways, walkways, etc. safe?
- Is the pavement of footpaths, crossings, etc. safe?
- Have curbs been installed for each crossing?
- Is the lighting at the crossings satisfactory?
- Is there a maximum use of transitions?
- Is it possible to abandon the design of the intersection at this location?
- Have the needs of cyclists been taken into account:
 - At intersections

- On high-speed sections of roads
- On cycling routes and crossings
- At the exit from the main roads
- Are cycle/pedestrian paths (including sections on bridges) safe and signposted?
- Is priority clearly defined at all intersections?

Speed

- Would any sudden change in speed be safe?
- Is the speed limit, if any, appropriate for the proposed road?
- Is the posted or proposed speed limit consistent with the design speed?
- Have appropriate measures been taken to ensure safety where sudden changes in speed are required?
- Will drivers be able to track the road correctly at the set speed?

Obstructions and Installations

- Is the surrounding area free from physical obstructions or vegetation that could affect road safety? (e.g. isolated large trees, wooded areas, steep or rocky bluffs that limit design options)
- Has the safety at the location of the environmental protection facilities been considered? (e.g. noise barriers)
- Are there measures to prevent animals from entering the road?
- Was the issue of unstable territories considered? (e.g. subsidence of mines)
- Has the impact of distractions (e.g. scenic views) been taken into account?
- Will there be safety when roadside vegetation grows?
- Is the vegetation dangerous for vehicles on the possible sections of the emergency exit from the road?
- Are the dimensions for utilities provided?
- Is there a safe distance to utilities and do they interfere with visibility?
- Will there be glare problems for drivers during sunrise and sunset?
- Are there other obstacles on the road that could pose a safety hazard?
- Have measures been taken to remove, relocate or shield all obstructions?
- Are barriers in hazardous areas provided where necessary?
- Are barriers safe for all road users?
- Are the end sections of the barrier fence safe? Are dampeners used?
- Are barriers required in all cases?
- Are bridge guards and culvert end walls safe with respect to:
 - Visibility
 - Ease of recognition
 - Proximity to traffic
 - Potential for harm or damage
 - Designations and markings
 - Interfacing with a barrier fence
- Is there tree planting where vehicles can get off the road?

Weather Conditions and Drainage

- Are slopes, curves and general design approaches appropriate for likely weather or environmental aspects of the area? (e.g. fog-prone areas, snow-covered areas, etc.)
- Will the road be safe when it is wet or foggy?

- Has the possibility of flooding/flooding been considered?
- Are culvert heads and outlets safe?
- Are slopes safe?
- Will the new road have appropriate drainage?
- Do the slopes of the road and intersection design allow for appropriate drainage?
- Will there be water stagnation on the pavement and shoulders?
- Will there be road flooding near the intersection of watercourses and other water bodies?
- Is there enough space between storm drains to avoid flooding?
- Is stormwater design safe for cyclists?
- Will there be appropriate drainage on footpaths and sidewalks?
- Did the design take into account data on local climatic conditions and features (e.g. areas of frequent fog, etc.)?
- Will there be security in different seasons of the year? (For example, shadows in summer, slippery surfaces in spring, etc.)

Motorways with centre median

- Does the barrier design allow emergency vehicles to stop and turn without unnecessarily disrupting traffic?
- Is there an emergency stop option?
- Are there safe breaks in the median? (i.e. frequency, visibility)
- If the number of carriageways changes further down the road, are drivers adequately informed about this?
- Is it safe to cross from one carriageway to two and vice versa?
- Is the dividing strip wide enough to accommodate lighting poles?

Artificial lighting

- Do the advertising lights and traffic lights on the next road interfere with drivers?
- Are anti-dazzle screens used?
- Is adequate lighting provided when needed?
- Are there any objects that interfere with the lighting? (e.g. trees or bridges)
- Are lighting poles located in safe places?
- Should safety supports be provided?
- If special lighting conditions are required, is this provided?
- Is the lighting designed correctly?
- Are difficult and dangerous places adequately lit?
- Are there patches of shade on the road? Alternating light and shadow?

Horizontal and vertical markings

- Are all traffic control functions designed to avoid creating unsafe conditions?
- Are signs and markings applied correctly on curve sections?
- Are there conditions for overtaking?
- Is the character size correct?
- Are the signs visible in all places?
- Is it easy to understand the signs?
- Are the signs appropriate for the needs of the driver?
- Are all important features of the road marked?

- Is the construction of signs safe?
- Are safety sign supports used?
- Is it possible to reduce the number of characters?
- Do the signs on the new road match those on the adjacent section of the road (or do previous signs need to be updated)?
- Does the markup comply with the standards?
- Are there places where markup can be misleading or misinterpreted?
- Is there a solid marking line where necessary?
- Are spot reflective elements provided, if necessary?
- Are warning signs, recommended speed signs, or direction of turn signs used on horizontal curves?
- Do the markings on the new road match the markings on the adjacent section of the road (or do the previous markings need to be updated)?
- Are 'Direction of Turn' signs correctly applied where appropriate?
- Will markings and signs be visible at night?
- Will markings and signs be visible in wet weather?
- Has the need for structural markings and noise bands been considered?
- Have high and low driver eye positions been considered?
- Are safety bollards used?
- Do the locations of traffic controllers and other service devices pose a safety hazard?
- Will signs and markings be visible in all conditions, including day/night, rain, fog, etc.?

Miscellaneous

- Is it safe to connect old and new road sections?
- If an existing road has a lower category than a new road, is there a clear and unambiguous warning about this?
- Is it safe to cross when the road environment changes (e.g. from urban to rural areas; from a lighted area to a dark area, etc.)?
- Will the road be perceived unambiguously by drivers in any situation?

Parking

- Are there sufficient parking spaces in special places to avoid road parking and the associated risks?
- Are parking lots conveniently located?
- Is there enough parking space for all-round visibility and distance from the intersection?
- Is there room for large vehicles to turn around in safe areas?

Additional RSA checklist focusing on motorways

- Do the function and intended use of the road match?
- Have the effects of the construction Project on the surrounding road network been taken into account?
- Are the characteristics of the traffic composition taken into account?
- Corresponds the design speed to the road category?
- Have the design speeds of the connection ramps been selected correctly?
- Has the safest of the standard cross-sections been selected and is construction site traffic routing possible?
- Does the expansion standard correspond to the adjacent route sections?
- Is the transition area to the adjacent road section formed correctly?

- Is the end of the Project area outside critical areas, e.g. crest, incline, curve, poor visibility or distraction?
- Has the spatial alignment been taken into account?
- Has it been avoided that the minimum dimensions of location and longitudinal profile meet?
- Is the visibility sufficient?
- Have the number, spacing and formation of the nodes been adequately chosen?
- Is the timely recognizability of the nodes and the node elements guaranteed?
- Is the sequence of the node elements understandable?
- Can exiting, acceleration and interweaving lanes be designed appropriately?
- Is the distance to adjacent nodes sufficient?

If no general Project is audited, the points of the RSA – general Project must also be included:

- If available, have the RSA results of the previous RSA phase been taken into account?
- Are the cross-sectional dimensions appropriate for the function of the road?
- Are the cross-falls and slopes sufficient?
- Is the new road sufficiently drained?
- Are the hard shoulders stable (stability under load)?
- Are the tree plantings and other side obstacles inaccessible for skidding vehicles?
- Have measures been taken to exclude the hit (fall) of materials from the side of the slopes (the device of holding devices (structures) to prevent the fall of stones, rocks, sliding of the embankment slopes)?
- Have suitable measures been taken against falling material (e.g. falling rocks) at the incision slopes?
- Is the stopping distance view obstructed?
- Is operational maintenance safely possible?
- Are the designs coordinated in terms of position and height (spatial alignment)?
- Are deficits in the spatial alignment effectively prevented by the choice of design elements?
- Is the design and equipment of the selected junction appropriate for the function of the use of the road and the intersecting roads?
- Can the radii of the ramps be recognized in time by drivers?
- Has the construction standard and, if applicable, the transition area to the adjacent road section been adapted?
- Are the lane widths and curve width extensions sufficient?
- Are the exiting, acceleration and interlacing strips adequately designed?
- Is the junction sufficiently drained?
- Are the visibility conditions guaranteed at the junctions and are the required viewing distance areas freely visible?
- Are there enough parking spaces for cars, trucks and buses?
- Is the traffic routing in ancillary facilities appropriate?
- Are pedestrian facilities at ancillary facilities designed safely?
- Have arrangements been made for safe access for rescue service vehicles / operations services / fire brigade?
- Are fixed obstacles avoidable, set up at a sufficient distance or secured?
- Will planting growth lead to future safety problems?
- Are guard rails or concrete guard walls sufficiently and correctly arranged?
- Is fixed lighting at nodes / ancillary facilities required and, if necessary, designed appropriately?
- Are anti-glare devices required?

- Is the view obstructed by e.g. protective fences?
- Is the arrangement of wild life fences necessary?
- Is the line marking clear?
- Are speed limits accordingly planned (start, end, location, installation locations)?
- Are overtaking bans for trucks, buses, etc. necessary and appropriately arranged?
- Are the locations of the emergency telephones effectively arranged?

Additional RSA checklist focusing on Rural roads

- Have the RSA results of the previous RSA phase been taken into account?
- Do the function and intended use of the road match?
- Are the characteristics of the traffic composition taken into account?
- Does the design speed correspond to the road category?
- Does the proposed road standard correspond to the adjacent route sections?
- Is the transition from an urban to a rural road or from an illuminated to an unlit road section safely designed?
- Has the safest one of the standard cross-sections been chosen?
- Are the lane widths and curve width extensions sufficient?
- Are the waiting areas, especially on pedestrian islands, sufficient for waiting pedestrians and cyclists?
- Are the cross-falls / slopes sufficient?
- Is the road sufficiently drained?
- Are the hard shoulders stable (stability under load)?
- Have the needs of pedestrians and cyclists been taken into account?
- Is the passage created safely when cycle paths end on a roadway?
- Is there a sufficient separation between lanes for motorised transport and paths for cyclists and pedestrians?
- Is it possible to guide pedestrians and cyclists on the existing network?
- Is the pedestrian / cyclist infrastructure at in the nodes coordinated with the desired paths?
- Is the right of way clearly defined at areas where cyclists encounter motorized traffic?
- Are pedestrian crossings designed in such a way that bundled use is guaranteed and the road is not crossed at other points?
- Are pedestrian crossings required?
- Have the interests of pedestrians and cyclists at traffic signals been taken into account?
- Are the curbs at the crossing points for pedestrians and cyclists lowered?
- Are parking spaces (car, truck, busses) necessary and sufficiently dimensioned to prevent parking on the road?
- Are the tree plantings inaccessible by skidding vehicles?
- Have suitable measures been taken against falling material (e.g. falling rocks) for incised slopes?
- Are unavoidable bottlenecks designed safely?
- Is the stopping distance view ensured and not obstructed by e.g. barriers, vegetation?
- Are fixed obstacles avoidable, placed at a sufficient distance or secured?
- Can road service vehicles be parked safely?
- Is the end of the Project area outside critical areas, e.g. crest, incline, curve, poor visibility or distraction?
- Are the designs coordinated in terms of position and height (spatial alignment)?
- Are deficits in the spatial alignment effectively prevented by the choice of design elements?

- Has it been avoided that the minimum dimensions of location and longitudinal profile meet?
- Is the spatial alignment sufficient?
- Are the critical changes correctly arranged on roads construction type 2 + 1 spatially?
- Are lane reductions properly designed?
- Are property driveways required and are they designed safely?
- Are the entrances and exits of ancillary facilities planned in adequate places?
- Are traffic islands or narrow lanes required at city entrances?
- Are there enough opportunities to overtake safely (overtaking viewing distance / overtaking lanes)?
- Are design speeds of junction and adjacent road sections coordinated?
- Is the node necessary and is the distance between adjacent nodes adequate?
- Are there access roads and paths that can be combined?
- Is the design and equipment of the selected junction appropriate for the safety of the road and the intersecting roads?
- Is the traffic routing clear and understandable?
- Are exiting, acceleration lanes and interlacing areas necessary and safe?
- Is the intersection sufficiently drained?
- Are traffic signals / permanent speed monitoring necessary?
- Are the visibility distance in the junctions guaranteed and are the required visibility areas freely visible?
- Are passive protective devices provided at the required points?
- Will planting growth lead to future safety problems?
- Is the line marking clear and recognizable?
- Are there special arrangements for groups with disabilities, e.g. blind at traffic signals required?
- Is fixed lighting on lanes, at nodes / ancillary facilities required and, if necessary, designed appropriately?
- Are anti-glare devices required?
- Is the arrangement of wild life fences necessary?
- Is the view obstructed by e.g. wild life or snow fences, road equipment, parking vehicles, traffic signs, planting?
- Is suitable road equipment (e.g. snow fences) necessary or intended due to special weather conditions?
- Is it necessary to develop active safety measures at railway crossings (automatic traffic signaling, sound signals, barriers, automatic barriers on pedestrian paths and / or various combinations of these devices) and are they provided for in the Project?
- Is the recognizability of railroad crossings guaranteed?
- Are visibility conditions of railroad crossings guaranteed?
- Are overtaking bans and speed restrictions planned at railroad crossings?
- Are public transport stops outside of critical areas? Are the concerns of public transport taken into account?

Additional RSA checklist focusing on Urban Roads

- Are the characteristics of the traffic composition taken into account?
- Are the property entrances designed safely?
- Are speed restrictions necessary and accordingly arranged?
- Has the construction standard and, if applicable, the transition area been adapted to the adjacent routes?
- Are lane constrictions required or are they designed safely?
- Are the lane widths and curve width extensions sufficient?

- Have provisions been made for safety?
- Have provisions been made for safe access for rescue service vehicles / operations services / fire brigade?
- Have suitable measures been taken to ensure that the maximum permissible speeds are observed?
- Have the needs of local public transport and its users been taken into account?
- Have the needs of pedestrians been taken into account?
- Have the interests of the cyclists been taken into account (e.g. separate cycling ways)?
- Are the waiting areas on the pedestrian islands large and wide enough for cyclists crossing or waiting pedestrians to stand there?
- Are the parking spaces arranged in such a way that the parking process is safe?
- Is the road sufficiently drained?
- Are pavements, pedestrian islands or narrow lanes necessary?
- Are the pedestrian islands clearly visible and functional?
- Have the dimensions of the speed-reducing measures been observed?
- Are the cross-falls sufficient?
- Is the line marking clear and recognizable?
- Are there no parking areas required?
- Have the RSA results of the previous RSA phase been taken into account?
- Has the construction standard and, if applicable, the transition area to the adjacent road section been adapted?
- Is the transition from an urban to a rural road or from an illuminated to an unlit road (town entrance) appropriate?
- If the beginning / end of the expansion is outside critical areas, e.g. hill top, downhill gradient, curve, poor visibility or distraction?
- Are the lane widths and curve width extensions sufficient?
- Is the stopping view distance guaranteed on the entire route?
- Is the view obstructed by e.g. protective fences, boundary fences, road equipment, poles, bridge railings, parking facilities, traffic signs, landscaping / planting, bridge abutments, buildings?
- Is the design and equipment of the selected junction appropriate for the function of the road and the intersecting roads (intersection, junction, roundabout, traffic signals, etc.)?
- Is the size of the junction sufficient for all vehicle movements (tow curves)?
- Are the turning lanes / areas in front of traffic signals necessary for vehicle traffic turning off and are they sufficiently dimensioned?
- Are the required viewing area distances at intersections for all road users freely visible?
- Is there coordination with other (existing) traffic signals in the route or in the network?
- Are the green times sufficient for cyclists and pedestrians?
- Can pedestrians cross the road at once? Is the green time sufficient?
- Are longer and / or additional green phases planned for road users with reduced mobility?
- Have cyclists been signalled separately? Are the signalling devices correctly arranged for the cyclists?
- Is the right of way clearly defined in places where cyclists meet or where cyclists meet motorized traffic?
- Is the signage / road marking coordinated, free of contradictions and legible?
- Is the pedestrian / cyclist guidance at junctions coordinated with the actual traffic relation and clearly signposted?

- Do the signs obstruct the view of driveways or intersecting roads?
- Are special arrangements at traffic signals required for special groups or facilities (including hospitals), e.g. for young, older citizens, the sick, disabled, deaf or blind?
- Are separate green phases required for pedestrians and cyclists? Can pedestrians cross the road at once? Is the green time sufficient?
- Are longer and / or additional green phases planned for road users with reduced mobility?
- Is there a need for high-intensity signals and / or contrast blinds if the signals are likely to be affected by sunrise / sunset sunlight?
- Have the correct locations been chosen for the signals (additional signals, overhead signals, etc.)?
- Is lighting of special situations (crossing points, changes in the cross-section of the road, etc.) necessary and, if necessary, designed appropriately?
- Are the public transport stops designed in such a way that they can be safely reached by passengers?
- Are pedestrian crossings required at public transport stops?
- Is the cycle traffic routing in the bus stop area safe?
- Are pedestrian crossings required at crossings?
- Does the location of the pedestrian crossings correspond to the desired paths of pedestrian traffic?

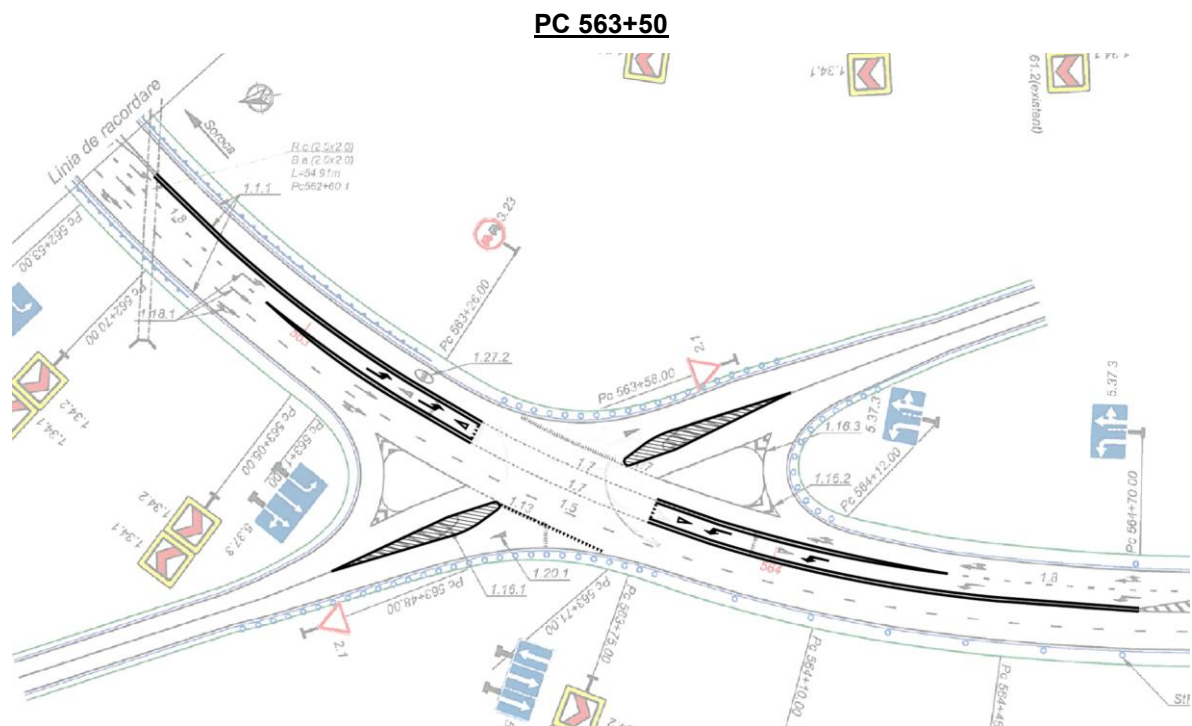
LOT 1: Section R14 – Drochia

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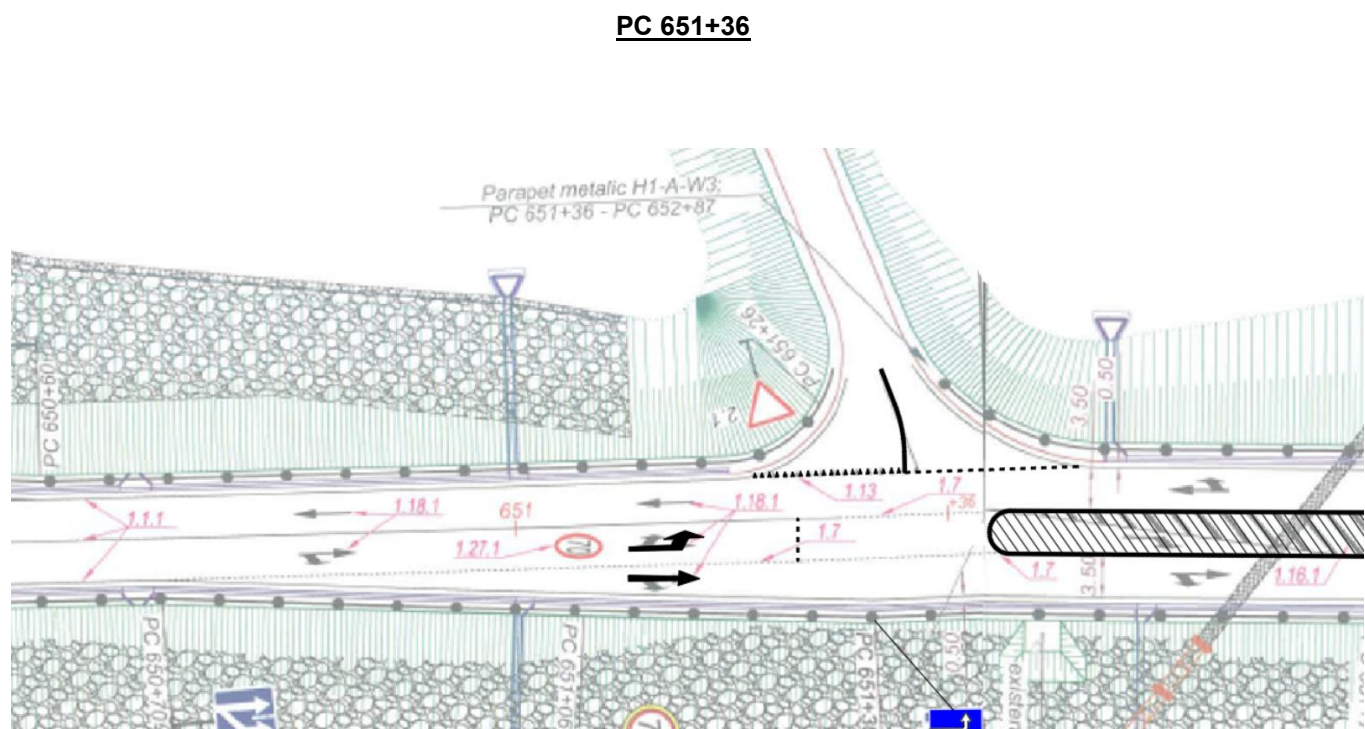
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Technical drawing of a road cross-section showing a 2-lane road with a center line and side slopes. The drawing includes labels for "Stilpi de directionare" (directional posts), "Drochia" (road name), and "Pc 249+00.00". A blue stamp from "ALEXANDRU INVECTIA" is visible.

LOT 2: Drochia – Riscani

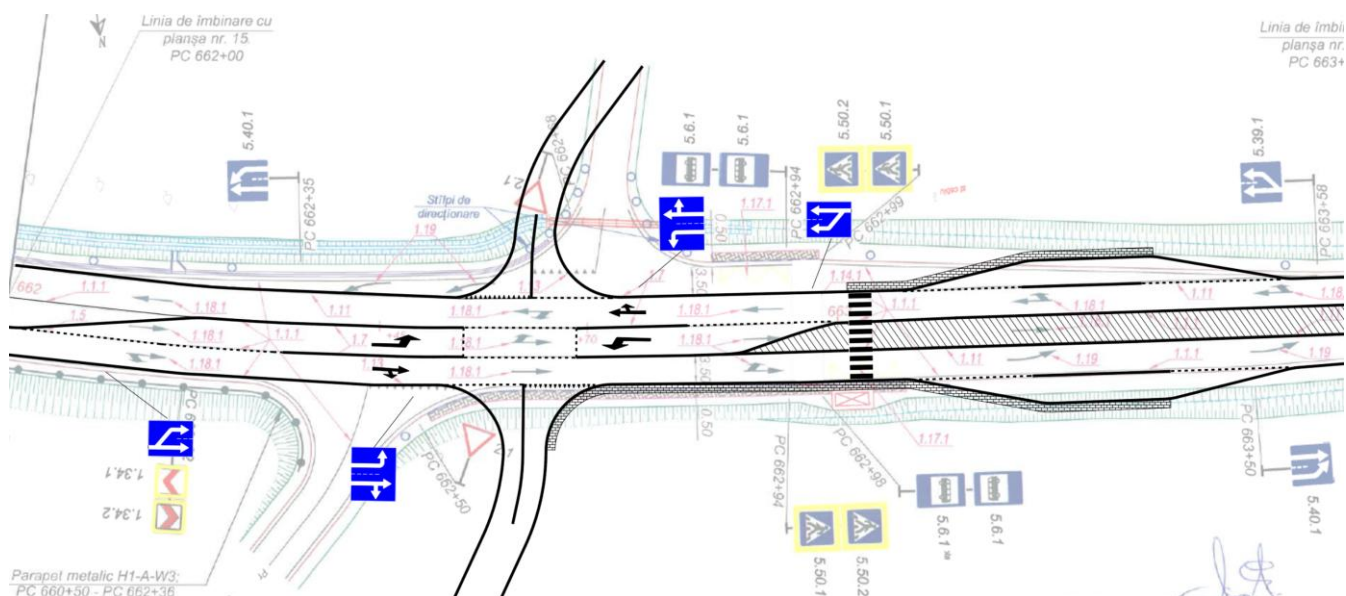


LOT 3: Riscani - Costesti

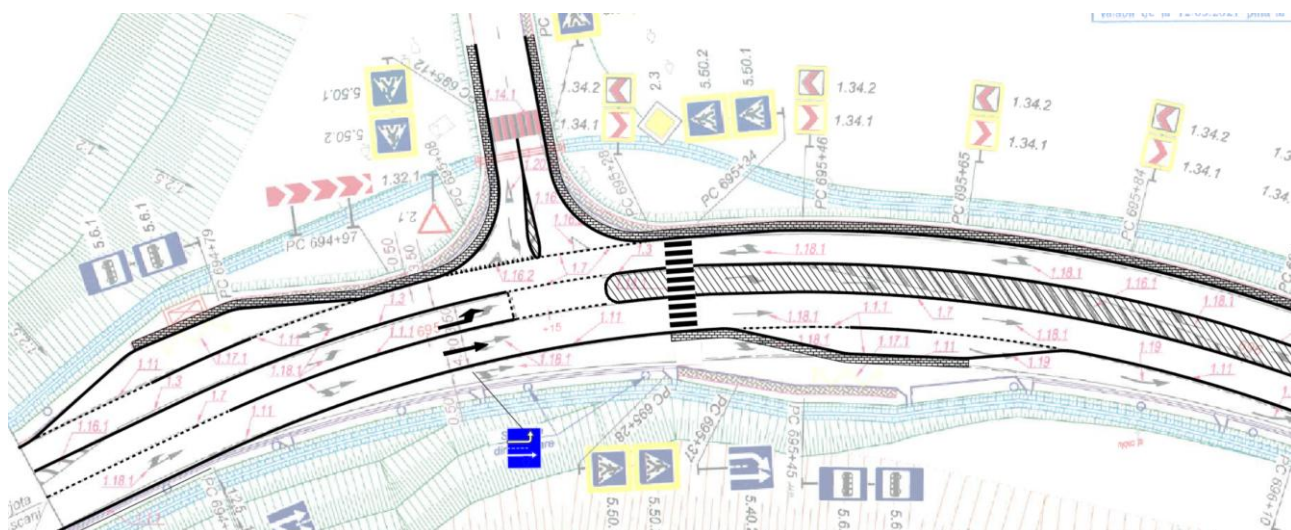


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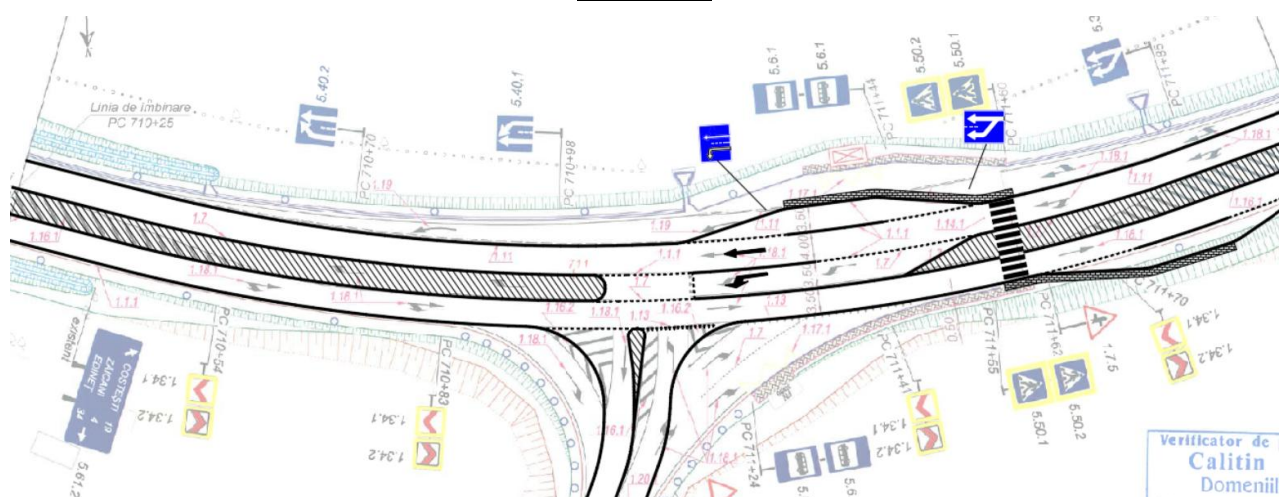
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PC 695+12

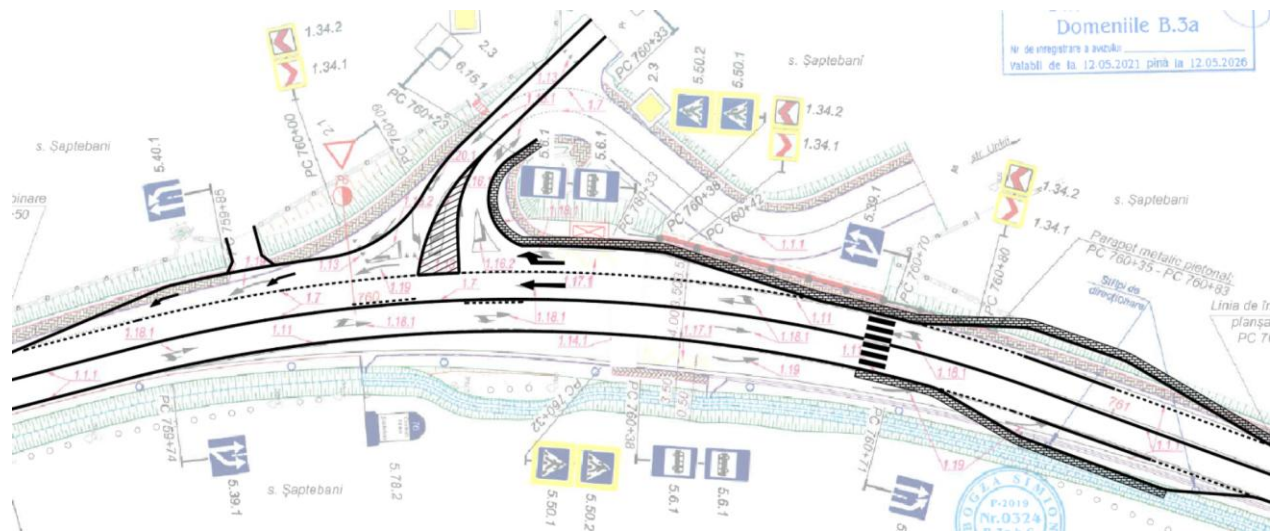


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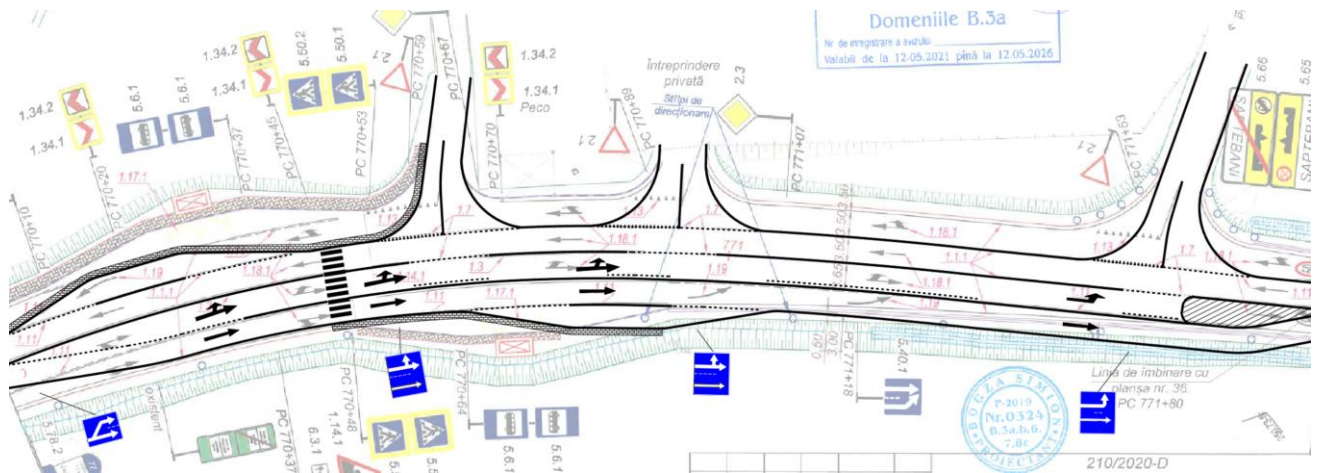


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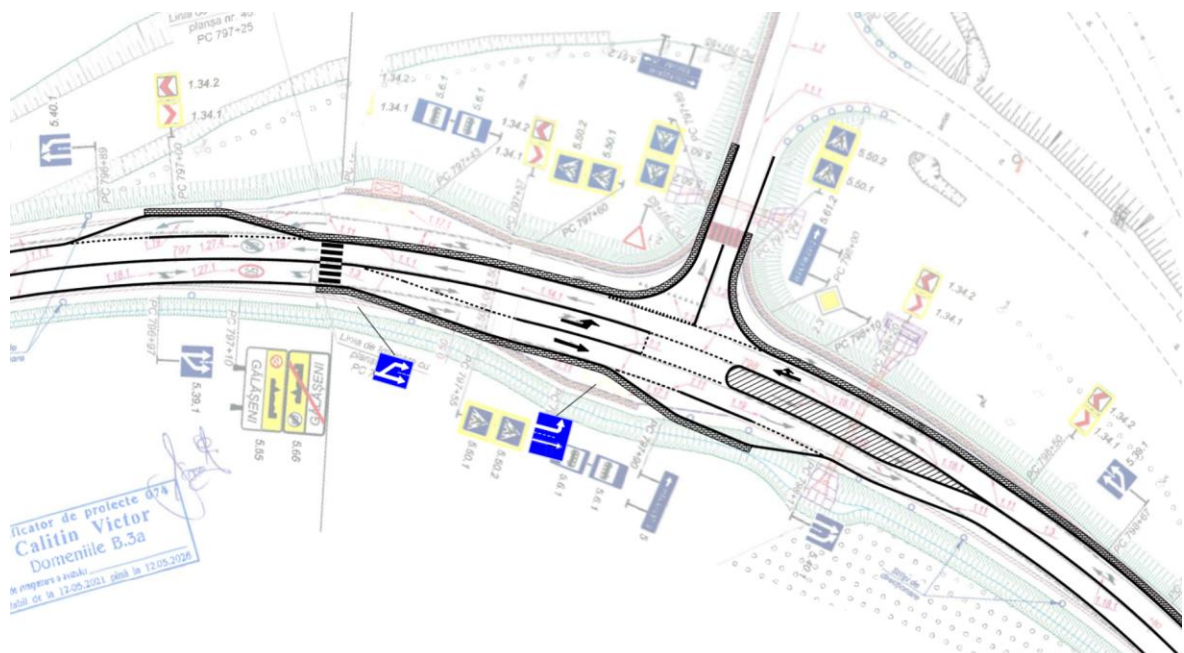
PC 760+00



PC 770+70



PC 798+00



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