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ANALYSIS OF TRAFFIC INFRASTRUCTURE IN THE TOWN OF KUTINA

ABSTRACT

The analysis of the current condition regarding the traffic infrastructure of the town of Kutina it is possible to conclude that in some elements it fully satisfies the needs of its users, whereas in some other elements there are certain divergences. It is specially emphasised that a significant part of the traffic problems of Kutina cannot be solved in a good and permanent manner unless the basic guidelines in the urban planning are adopted and the facilities for public purposes are built, meaning first of all the market and similar facilities for public use. The good location of such facilities changes the whole concept of the urban traffic flows and the co-ordinated planning results in permanent and good traffic solution of the whole traffic network of Kutina.

In order to harmonise the existing condition of the traffic infrastructure with the current and planned needs of the citizens of Kutina, the social community should carry out detailed traffic research and insure adequate financial means for this purpose from the budget.

KEY WORDS

Kutina, traffic infrastructure, urban planning, solving traffic problems

1. INTRODUCTION

The town of Kutina represents the most significant urban and economic centre in the Moslavina region. By its position, Moslavina lies in the central (crucial and connecting) part of the Republic of Croatia. As a separate region, it is divided, i. e. it belongs partly to the Counties of Sisak – Moslavina (most part), Bjelovar – Bilogora and the Zagreb County. The Moslavina region is bordered by the rivers of Česma (to the West), Ilova and Pakra (to the East), Lonja (to the South) and the Moslavačka Mountain in the North. The relief is characterised by the vast plateaus in the Sava and Lonja basin, and the Moslavačka Mountain as a lonely schistose mountain between the rivers Sava and Drava in Croatia. The Moslavačka Mountain covers an area of about 1350 sq. km. It is rich with granite and oil and gas fields. The highest altitude above sea level is 489 m (Humka) and the lowest is 49 m, the town of Kutina lies at an altitude of 149 m.

The construction of traffic routes was of crucial importance for the development of this region. It started with the so-called "old road" (Božjakovina – Ivanić-Kloštar – Križ – Kutina – Slavonski Brod), built in the mid-18th century, which connected the Pannonian regions across Slavonija, Moslavina and Zagreb, further towards the Adriatic ports. This provided new valorisation of Moslavina and Kutina which gravitates to this road.

In the Moslavina region, Kutina represents the biggest town (24,829 inhabitants in 23 settlements). Apart from being located on the Posavina traffic axis, Kutina is also very favourably located regarding Zagreb, as the centre of Central Croatia, government centre, and the most significant industrial centre in the country. Kutina performs the main economic, cultural and traffic functions of the Moslavina region, as compared to Čazma, Garešnica and Ivanić-Grad which perform the functions of local centres.

Road construction in Moslavina strengthens the connections and the development of its industrial activities. The flatland part of Moslavina accommodates the state road D4: Slovene state border Bregana – Zagreb – Slavonski Brod – Yugoslav state border Bajakovo. It is transversally connected to the state road (towards south) D36: (D4) Popovača – Sisak – Pokupsko – Karlovac (D1) and further towards the Adriatic, i. e. northwards (via Kutina – Garešnica – Grubišno Polje) to the Podravina trunk road in Virovitica and further across Hungary into the Eastern Europe the state road D45: (D5) V. Zdenci – Garešnica – Kutina – D4.

The potential perspective in the development of this region has opened also by the connection of one

arm of the railway line Dugo Selo – Kutina – Novska – Banova Jaruga – Pakrac (both in 1879), to the already existing railway lines. The traffic connections of the Republic of Croatia with Europe based on the AGC agreement – European Agreement on Main International Railway Lines and AGTC agreement – European Agreement of Important International Combined Transport Lines and Related Installations are being developed through nine railway corridors, among which the internationally recognised and for Croatia of extreme importance is the corridor X (Pan-European), Salzburg – Ljubljana – Zagreb – Belgrade – Niš – Skopje – Večes - Solun, transiting Moslavina and Kutina.

Thus, it may be concluded that Kutina has a very favourable location regarding longitudinal routes (East Europe – Central Europe – South Europe) and transversal routes (West Europe – Central Europe – the Near East).

The geo-traffic valorisation of such a location provides utilisation of various activities (processing industry, catering services in production, tourism, etc.) The environment of the major Croatian towns, which are at the same time the carriers of the development of their respective regions such as Sisak (84,348 inhabitants), Daruvar (30,092 inhabitants), Bjelovar (66,039 inhabitants), and the fact that the Moslavina region is within the wider gravitation areas of the Zagreb region, define the traffic as a great perspective for a comprehensive development of that area.

2. DEFINING THE PHYSICAL SCOPE OF ANALYSIS

The administrative region covered by the town of Kutina as the unit of local self-government is much wider than the actual functioning of the urban environment.

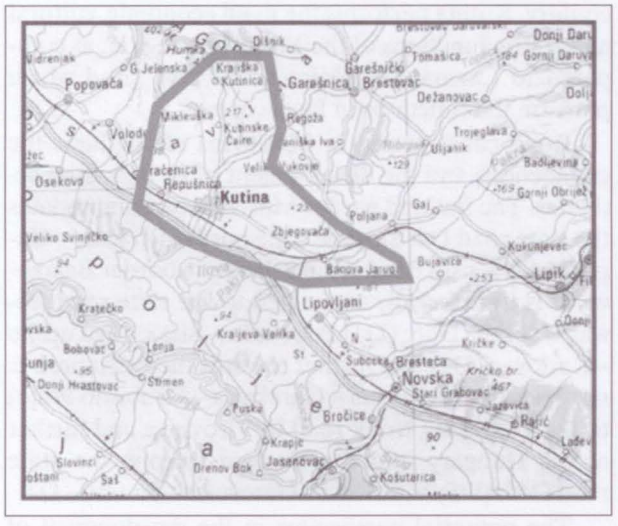


Figure 1 – Wider and narrower areas of the town of Kutina

The narrower zone of coverage could include the narrower area of the town of Kutina itself which is defined by the bordering areas towards:

- Repušnica (Zagrebačka street),
- Kutinska Slatina (Hrvatskih branitelja street)
- Husein (Vladimira Nazora street)
- Zagreb – Lipovac motorway (D4).

These streets surround the present, as well as the future urban area of the town of Kutina. It is to be expected, in accordance with urban planning, that the town will spread westwards i. e. that it will favour the valorisation of the border areas towards the suburban settlement of Repušnica.

3. TRAFFIC INFRASTRUCTURE WITHIN THE OBSERVED AREA

3.1. Road network

Road traffic network in the studied area consists of public classified and non-classified roads.

3.1.1. Classified and non-classified roads

The road network of the town of Kutina consists of state, county and local roads, as well as of non-classified roads and streets, and field, forest, and agricultural roads in public or private use.

In order to provide the best possible overview of the relation of the town of Kutina, the Sisak-Moslavina County, and the Republic of Croatia, the data are presented regarding the number of inhabitants, area covered and the length of roads in the respective areas.

The relations of lengths of the classified roads according to area, number of inhabitants and the number of vehicles in the Republic of Croatia, the Sisak-Moslavina County and the Town of Kutina are presented in the following Tables.

Table 1 – Length of state, county and local roads in the Republic of Croatia, Sisak-Moslavina County and the town of Kutina

Type of road	Republic of Croatia (km)	Sisak-Moslavina County (km)	Town of Kutina (km)
State	7,377.7	478.5	11.00
County	10,193.3	815.1	36.00
Local	10,269.1	808.9	73.70
Total	27,840.1	2102.5	120.70

Source: Koncepcija razvitka prometnog sustava grada Kutine, Institut prometa i veza, Zagreb, 1999

Table 2 – Relations between state, county and local roads according to the number of inhabitants (km/1000 inhabitants)

Type of road	Republic of Croatia (4,426,221 inhabitants)	Sisak-Moslavina County (287,002 inhabitants)	Town of Kutina (24,829 inhabitants)
State	1.67	1.67	0.44
County	2.30	2.84	1.45
Local	2.32	2.82	2.99
Total	6.29	7.33	4.88

Source: Koncepcija razvitka prometnog sustava grada Kutine, Institut prometa i veza, Zagreb, 1999

State roads

The motorway D4 Slovene state border Bregana – Zagreb – Slavonski Brod – YU state border Bajakovo has the status of a state road. It passes along the south part of the town of Kutina as well as the road D45 (D5) V. Zdenci – Garešnica – Kutina – D4 which passes along the urban corridor.

County roads

The length of the county road network is relatively sufficiently represented in the total length of the road network. However, regarding the population density and the network of settlements the share of county roads is relatively low in relation to the road network of the county roads in the Republic of Croatia.

The roads No. Ž 3124 (D43) - Bunjani - Voloder – Kutina – Novska - (D312) and the branch toward

Table 3 – Relations between state, county and local roads according to the area covered (km/sq. km.)

Type of road	Republic of Croatia	Sisak-Moslavina County	Town of Kutina
State	0.13	0.09	0.04
County	0.18	0.16	0.13
Local	0.18	0.16	0.26
Total	0.49	0.41	0.43

Source: Koncepcija razvitka prometnog sustava Grada Kutina, Institut prometa i veza Zagreb, 1999.

Table 4 – Relations between state, county and local roads regarding the number of motor vehicles (km/1,000 vehicles)

Type of road	Republic of Croatia	Sisak-Moslavina County
State	6.46	11.7
County	8.92	19.9
Local	8.99	19.7
Total	24.37	51.3

Izvor: Koncepcija razvitka prometnog sustava Grada Kutina, Institut prometa i veza Zagreb, 1999.

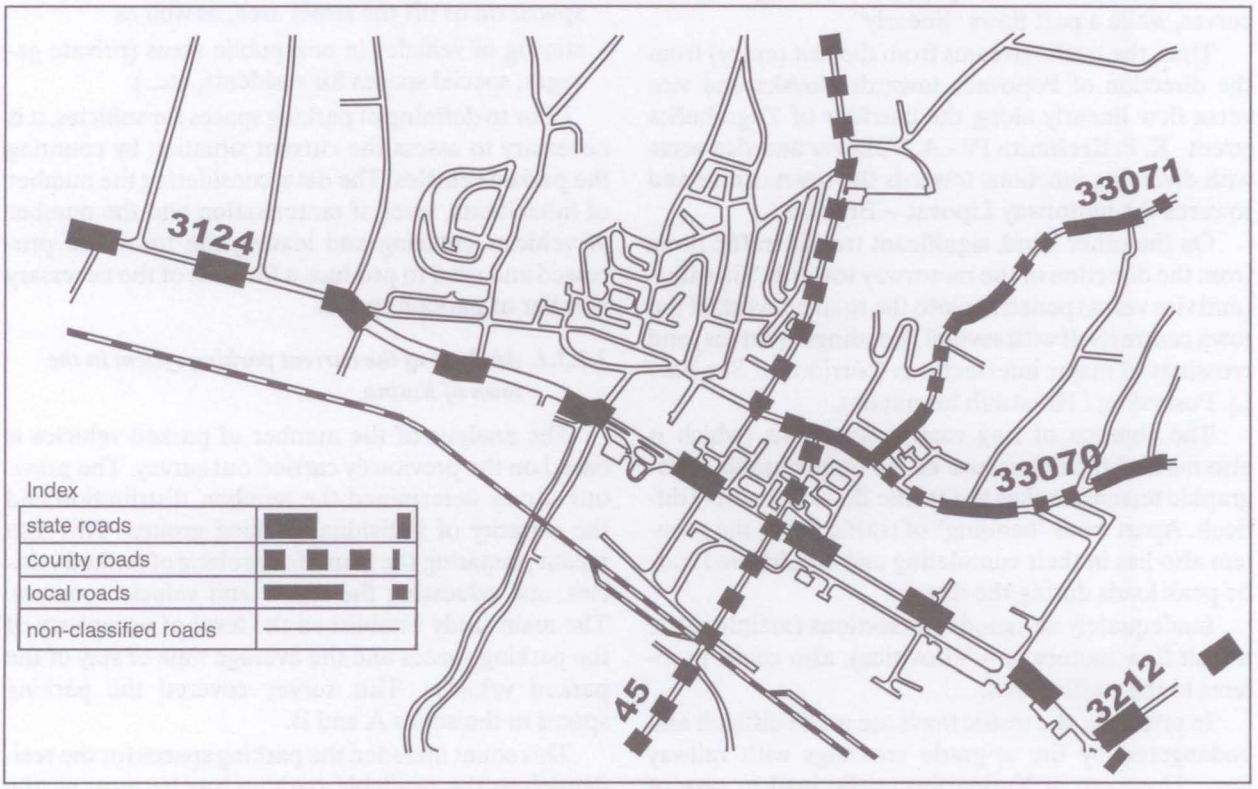


Figure 2 Classified roads in the region of the town of Kutina

Husain No. Ž 3212 (Ž3124) - Husain in the length of 1.2 km have the status of county roads.

Local roads

The share of local roads in the town of Kutina stands out from other comparably analysed parameters which, however, has also negative effects on the financial sources intended for the maintenance of local roads regarding government and county funds.

The roads L 33070 Kutina (D 45) – Husain – Batina - Ž 3213 and L 3071 Kutina (L 33070) – Mišinka - Ž 3213 have the status of local roads.

Non-classified roads

With about 170km of non-classified roads in the whole area of the self-government unit, the town of Kutina is in a very unfavourable position compared to the maintenance costs of the non-classified traffic routes.

3.1.2. Analysis of road traffic routes and traffic light signalisation

Due to the absence of a good solution with road bypasses, all the traffic routes, both the long-distance and the local ones, use the existing road network of the town of Kutina (state, county and local roads).

The characteristic of the traffic flows in the intraurban, but also in wider transit, is dual, in such a way that a part of the existing streams shows a significant tendency of "bending", i. e. featuring frequent curves, while a part flows "linearly".

Thus, the traffic streams from the exit (entry) from the direction of Popovača towards Novska and vice versa flow linearly along the corridor of Zagrebačka street - K. P. Krešimira IV - A. Vukovar and vice versa with diverging junctions towards the town centre and towards the motorway Lipovac – Bregana.

On the other hand, significant transit traffic flows from the direction of the motorway towards Virovitica (and vice versa) penetrate into the road network of the town centre itself with several "bendings" (curves) and crossings of major intersections (corridor of Sisačka / Lj. Posavskog / Hrvatskih branitelja).

The absence of ring road connections (which is also made difficult because of the unfavourable topographic terrain) makes the traffic flows extremely difficult. Apart from "bending" of traffic flows, the problem also lies in their cumulating and emphasised traffic peak loads during the day.

Inadequately designed intersections (mainly in the transit flow motorway – Virovitica), also cause problems to the traffic flows.

In principle, the traffic flows are made difficult and endangered by the at-grade crossings with railway lines. However, in Kutina the traffic load in case of Radićeva street is not of such high volume, so that grade separation does not have to be considered for quite some time yet.

Regarding traffic lights, there are four intersections in Kutina, in the very centre of the town which are equipped with two-phase traffic light signalling control.

Table 5 – Overview of traffic light controlled intersections

Street name	Number of approaches	Note
Kralja Petra Krešimira IV – Kolodvorska	4	2-phase traff.light
Kolodvorska – H. Branitelja – K. Tomislava - Nazorova	4	2-phase traff.light
K.P. Krešimira – Aleja Vukovar – Lj. Posavskog	4	2-phase traff.light
Lj. Posavskog - Nazorova	3	2-phase traff.light

Source: *Koncepcija razvitka prometnog sustava Grada Kutina, Institut prometa i veza Zagreb, 1999*

3.1.3. Parking and garage areas

The stationary traffic means:

- stopping to pick up or discharge passengers from vehicles or load and unload the goods, i. e. stopping for a short period of time;
- short-term or long-term kerb parking, or in parking spaces on or off the street area, as well as
- staying of vehicles in non-public areas (private garages, special spaces for residents, etc.).

Prior to defining of parking spaces for vehicles, it is necessary to assess the current situation by counting the parked vehicles. The data, considering the number of inhabitants, level of motorisation and the number of vehicles entering and leaving the town, are processed and used to produce a forecast of the necessary number of parking spaces.

3.1.3.1. Analysis of the current parking system in the town of Kutina

The analysis of the number of parked vehicles is based on the previously carried out survey. The previous survey determined the number, distribution and the capacity of individual parking groups. This also meant preparing the forms for probing of parked vehicles, and educating the traffic and vehicle counters. The main study established the level of occupancy of the parking spaces and the average time of stay of the parked vehicles. This survey covered the parking spaces in the zones A and B.

This count included the parking spaces for the residents into the available parking lots because all the available parking spaces in the centre are used.

Table 6 – Number and structure of the parking spaces in the strict downtown area of Kutina

Zone	Ord. No.	Location	Parking spaces	Parking spaces reserved for the disabled	Total
A	1	Railway station	25	2	27
A	2	Kralja Petra Krešimira IV	32	0	32
A	3	Department Store and Kneza Trpimira	160	7	167
A	4	A. Hebranga with branches	163	2	165
A	5	Bank, Hotel and Centar 2	117	5	122
A	6	Bus station	32	2	34
B	1	Trg Kralja Tomislava (Gradski podrum)	14	0	14
B	2	ZAP and Secondary School "TIN UJEVIĆ	32	1	33
B	3	Municipal Court	10	2	12
B	4	Trg Kralja Tomislava (Library)	30	2	32
B	5	Trg Kralja Tomislava (Town Hall)	57	0	57
B	6	Pučko otvoreno učilište with S. Radića street	60	2	62
Total			732	25	757

Source: Koncepcija razvitka prometnog sustava Grada Kutina, Institut prometa i veza Zagreb, 1999

Table 7 – Occupancy of the parking spaces in zone A

Time	A 25+2	B 32+0	C 160+6	D 163+2	E 117+5	F 32+2	Σ 529+17	Illegally parked
06-07	25	21	71	126	51	23	317	0/0/0/0/0/0
07-08	27	30	86	98	67	30	338	0/0/0/0/0/0
08-09	31	36	85	101	90	28	371	4/4/0/0/0/0
09-10	26	30	160	95	86	28	425	0/0/0/0/0/0
10-11	25	25	160	105	102	26	443	0/0/0/0/0/0
11-12	27	26	160	121	100	28	462	0/0/0/0/0/0
12-13	25	30	148	135	101	26	465	0/0/0/0/0/0
13-14	26	25	150	115	92	15	423	0/0/0/0/0/0
14-15	33	33	115	125	86	25	417	6/1/0/0/0/0
15-16	25	28	101	148	80	26	408	0/0/0/0/0/0
16-17	27	37	147	132	97	9	449	0/5/0/0/0/0
17-18	27	30	150	153	90	4	454	0/0/0/0/0/0
Σ	324	351	1533	1454	1042	268	4972	10/10/0/0/0/0

Source: Koncepcija razvitka prometnog sustava Grada Kutina, Institut prometa i veza Zagreb, 1999

3.1.4. Public urban traffic infrastructure

As local self-government unit, the town of Kutina consists of 23 settlements with 24,289 inhabitants covering an area of 279,71 sq. km. The very town of Kutina has 14,956 inhabitants and belongs to those towns in which the need to organise public urban transportation is not yet expressed to such an extent that it would prove inevitable.

Public urban transportation in Kutina consists of suburban and interurban bus lines as well as taxi service based on concession agreements with the local government and self-government unit.

Further analysis focuses on the bus traffic infrastructure.

3.1.4.1. Bus station Kutina

The bus station (Figure 6) is the main terminal of the bus line road transport. It was constructed some twenty years ago with advanced traffic and technological elements which even today meet completely the

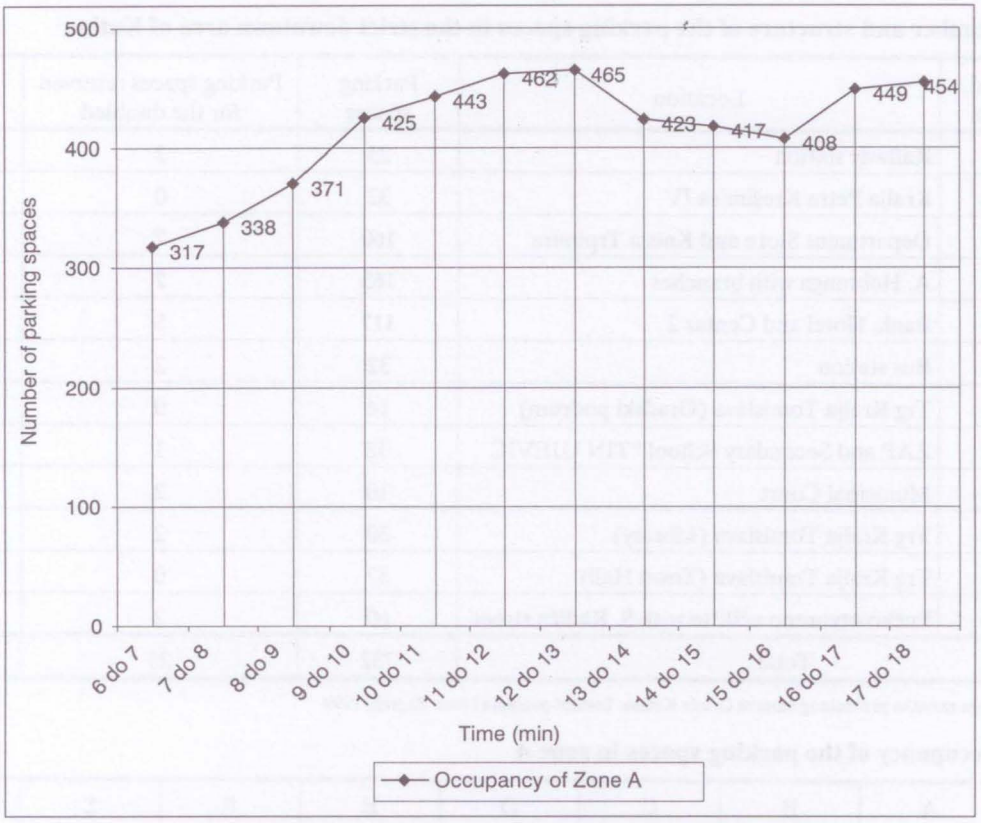


Figure 3 – Occupancy of parking spaces during the day in zone A

Table 8 – Occupancy of the parking spaces in zone B

Time	A 14+0	B 32+1	C 10+2	D 30+2	E 57+0	F 60+2	Σ 203+7	Illegally parked
06-07	6	18	3	5	18	3	53	0/0/0/0/0/0
07-08	11	21	8	9	49	5	103	0/0/0/0/0/0
08-09	12	21	11	14	48	8	114	0/0/0/0/0/0
09-10	14	35	14	35	45	4	147	0/2/2/3/0/0
10-11	16	37	10	29	41	1	134	2/4/0/0/0/0
11-12	15	36	10	33	50	3	147	1/3/0/1/0/0
12-13	9	30	6	24	38	8	115	0/0/0/0/0/0
13-14	7	32	8	26	40	10	123	0/0/0/0/0/0
14-15	10	25	5	21	43	5	109	0/0/0/0/0/0
15-16	7	21	5	10	35	6	84	0/0/0/0/0/0
16-17	11	19	4	12	11	4	61	0/0/0/0/0/0
17-18	2	12	2	15	7	18	56	0/0/0/0/0/0
Σ	120	307	86	233	425	75	1246	3/9/2/3/0/0

Source: Development concept of the traffic system of the town of Kutina, Institut prometa i veza, Zagreb, 1999

traffic requirements of Kutina. The station was built with the following functions and facilities:

- station building,
- traffic office,
- facilities for the traffic personnel,
- sixteen roofed passenger platforms,
- two passenger ticket offices (one functioning) with a passenger lounge,
- two coffee shops,
- sanitary facilities and toilettes,

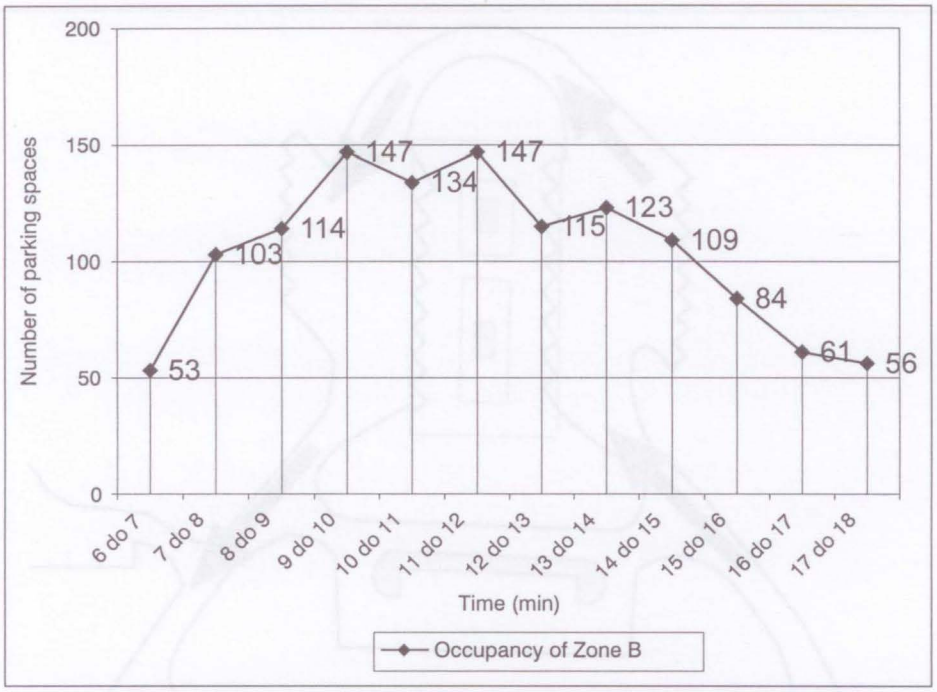


Figure 4 – Occupancy of parking spaces during the day in zone B

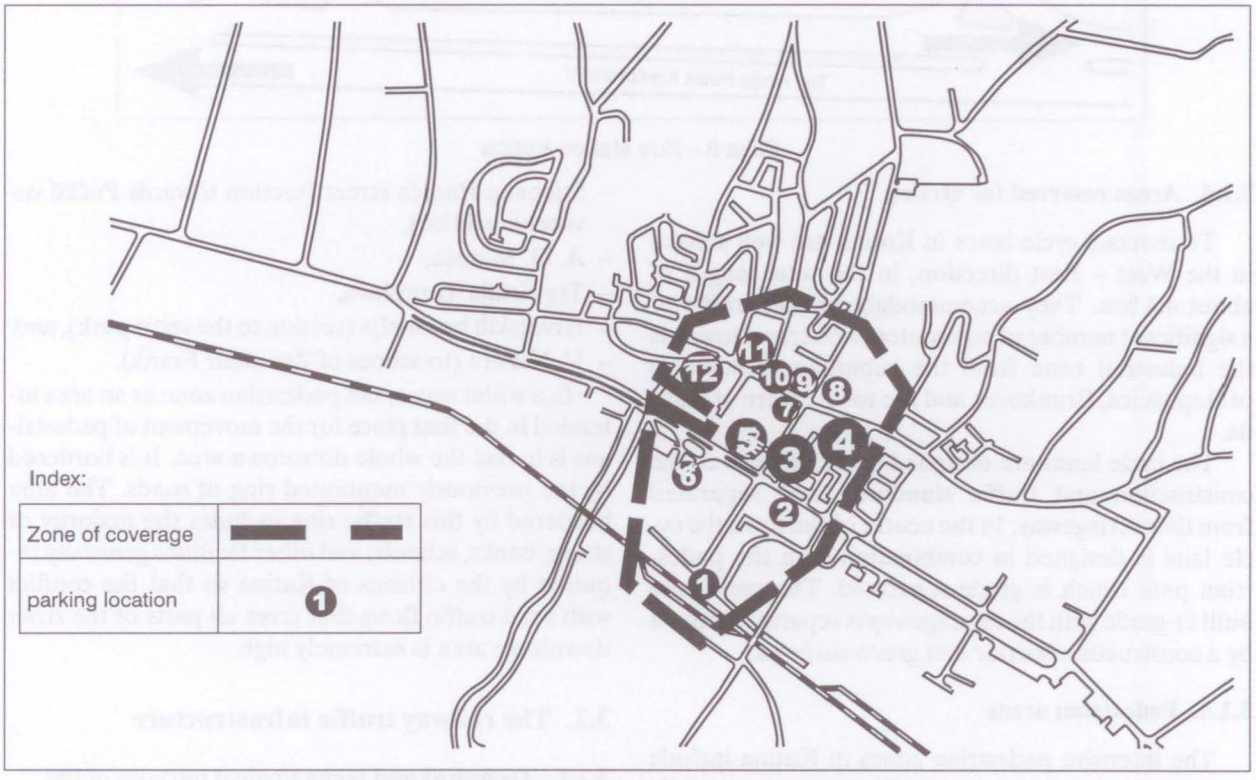
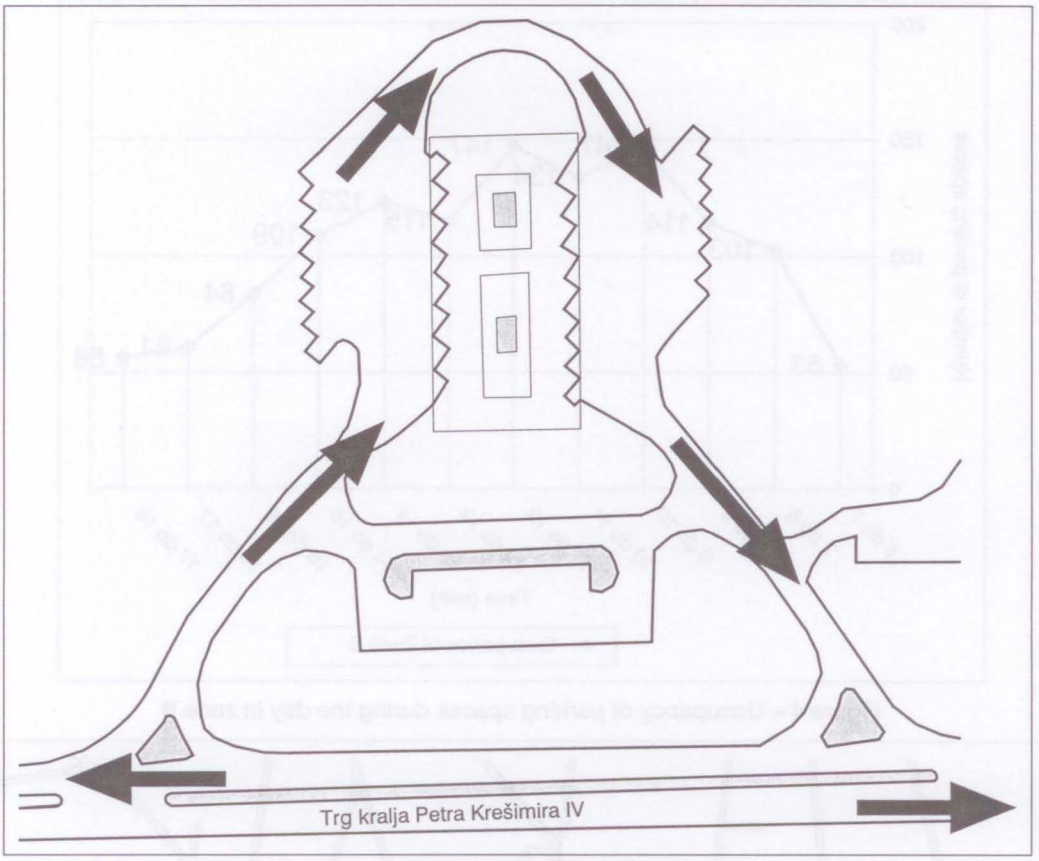


Figure 5 – Parking spaces in the strict downtown area

– tobacco and newsagent's stand,
– sixteen parking spaces for buses,
– a parking lot for passenger cars (free of charge).

On a workday about 2,000 passengers pass through the station. On Saturdays and Sundays the number of passengers is about 60% lower than on workdays.

The operation of the station is also characterised by two seasons. One, from September to May, with an increased number of passengers and the second, from June to August when the number of passengers is substantially lower because there are very few schoolchildren during that time using the services of the local bus transport.



Slika 6 – Bus station Kutina

3.1.5. Areas reserved for cycling

Transversal cycle lanes in Kutina are well solved, in the West – East direction, in the total length of about 4.4 km. They accommodate bicycle traffic of a significant number of commuters who travel towards the industrial zone from the suburban settlements of Repušnica, Brunkovec and the town centre of Kutina.

The cycle lanes are designed in accordance to the construction and traffic standards, and separated from the carriageway. In the centre of the town the cycle lane is designed in combination with the pedestrian path which is grade-separated. The cycle lane built at-grade with the carriageway is separated from it by a construction barrier and green surfaces.

3.1.6. Pedestrian areas

The intensive pedestrian zones in Kutina include squares and downtown streets. There are no specially separated and marked zones, nor pedestrian zones physically protected from the intrusion of motor vehicles.

The busy pedestrian zone is defined by the following bordering streets:

- Lj. Posavski,
- K. P. Krešimira IV,
- Kolodvorska street,
- Stjepana Radića street (section towards Pučko otvoreno učilište),
- A. G. Matoša,
- Trg Kralja Tomislava,
- Hrvatskih branitelja (section to the sport park), and
- V. Nazora (to school of Zvonimir Frank).

In a wider sense, the pedestrian zone as an area intended in the first place for the movement of pedestrians is in fact the whole downtown area. It is bordered by the previously mentioned ring of roads. The area bordered by this traffic ring includes the majority of shops, banks, schools, and other facilities generally required by the citizens of Kutina so that the conflict with road traffic flows that cross all parts of the strict downtown area is extremely high.

3.2. The railway traffic infrastructure

3.2.1. Technical and technological purpose of the railway station

Organisationally unique, the railway station Kutina consists of two technical and technological units, which are:

- Kutina passenger park (further in the text: Kutina PP) in km 26 + 409,
- Kutina cargo park (further in the text: Kutina CP) in km 25 + 144.

Regarding traffic operation, Kutina PP is an inter-station on the section of the MG 2.1. DUGO SELO – NOVSKA main railway line, and is used for regulating the train traffic on the respective shunting and inter-station sections. The operation at Kutina PP includes passenger handling, piece-, express and wagon shipment handling, as well as railways – customs procedures.

The railway station Kutina CP is a specialised cargo and auxiliary shunting yard for forming and transforming cargo trains according to special tasks related to the existing industry of Kutina economy.

3.2.2. Building facilities at the railway station Kutina

The following facilities are available at the railway station Kutina PP for performing of the required operations:

- the station building with the respective areas (lounge, passenger ticket counter, traffic office, public and official sanitary unit, two areas for passenger handling, a parking lot for passenger cars, etc.),
- a building with the offices of the station manager, deputy station manager for operative tasks, technologist,
- warehouse for parcels (roofed closed areas covering ca. 240 sq. m) with respective areas (cash-desk offices, parcel and customs warehouse manager, deputy station manager for TKP, school instructor, auditor, sanitary facilities),
- storehouse ramp with a sloped approach for road vehicles,
- side ramp for wagon–warehouse–wagon cargo handling,
- other necessary infrastructure and devices.

The following facilities are available for operation at the railway station Kutina CP:

- eight container units set in 1983 for the needs of the temporary railway station building, housing the train traffic controller, warehouseman, goods cashier, train foreman, wagon dispatcher, wagon controllers, manoeuvring squad, cleaner, security guard – receptionist, premises for SS devices, sanitary facilities,
- two container units for block houses 1 and 2, with block 2 constantly occupied by pointsman who secures the travelling routes of trains with keys on the site.

3.2.2. Railway track capacities of the railway station Kutina

These capacities are presented in the following Tables 9 and 10.

Table 9 – The railway track capacities at the railway station Kutina PP

Track No.	Purpose	Useful length (m)
1	for manipulation	595
2	for handling (acceptance and dispatch)	625
3	for handling (acceptance and dispatch)	620
4	for handling (acceptance and dispatch)	624
Customs	customs clearance of wagon shipments	120
Connecting	connecting tracks Kutina PP – Kutina CP	96

Source: Railway station Kutina, Operation schedule of the railway station, Kutina, 1995

Table 10 – Railway track capacities at the railway station Kutina CP

Track No.	Purpose	Useful length (m)
transit	main line DS – NO	852
6	for handling (acceptance and dispatch)	687
7	for handling (acceptance and dispatch)	687
8	shunting – dispatch	692
9	shunting – dispatch	689
10	bypassing	812
11	customs (incomplete)	717
12	customs (incomplete)	703
Ilova	turn-out track	569

Source: Railway station Kutina, Operation schedule of the railway station, Kutina, 1995

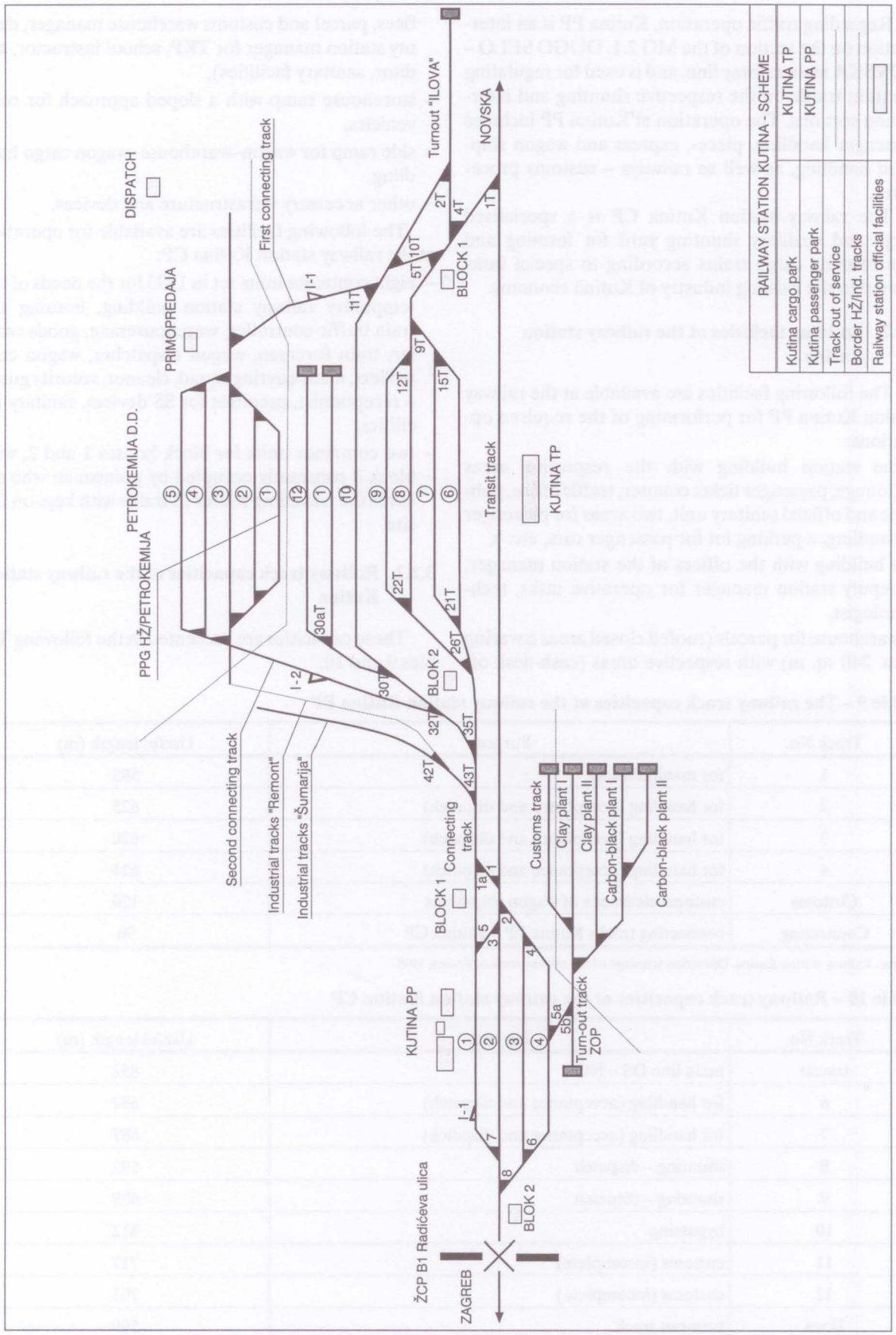


Figure 7 – Railway station Kutina

4. CONCLUSION

The town of Kutina has an extremely favourable geo-traffic position compared to the international corridors and state and county routes in railway and road traffic. The current traffic system of the town of Kutina, especially the road traffic infrastructure has reached the level when it is starting to become a limiting factor in maintaining the basic functions of the town. This condition resulted first of all from the high level of motorisation and the uncoordinated urban valorisation of the space through adequate urban planning of the town of Kutina. It should be emphasised that a significant part of the traffic problems of Kutina cannot be solved in a high-quality and permanent manner until basic guidelines in the development of the town are accepted, and the construction of facilities for public purposes, meaning first of all the market and similar objects for public use. A good location of such facilities changes the whole concept of the urban traffic flows and the co-ordinated planning results in permanent and high-quality traffic solution of the whole traffic network of Kutina. These decisions should be approached with extreme delicacy and careful thought since mistakes in the location of these public facilities would create significant traffic problems.

With the aim of harmonising the current situation of traffic infrastructure with the current and planned needs of the citizens of Kutina, the social community should carry out detailed traffic studies and allocate for this purpose from its budget satisfactory financial means.

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SAŽETAK

ANALIZA PROMETNE INFRASTRUKTURE GRADA KUTINA

Analizom postojećeg stanja glede prometne infrastrukture grada Kutine moguće je zaključiti da ista u nekim svojim elementima zadovoljava potrebe korisnika u potpunosti, dok u nekim elementima postoje stanovite divergencije. Posebno se naglašava da je značajan dio prometnih problema Kutine nemoguće kvalitetno i trajno riješiti dok se ne usvoje osnovne smjernice urbanističkog razvoja grada te izgradnje objekata javne namjene gdje se u prvom redu misli na tržnicu i slične objekte opće namjene. Kvalitetnim lokacijskim smještajem takvih objekata mijenja se cijela koncepcija gradskog prometnog krvotoka te se koordiniranim planiranjem stvara trajno i kvalitetno prometno rješenje cijele prometne mreže Kutine.

U cilju usklađivanja postojećeg stanja prometne infrastrukture s trenutnim i planiranim potrebama stanovništva Kutine, društvena bi zajednica trebala obaviti detalja prometna istraživanja i svojim proračunom osigurati za tu svrhu odgovarajuća financijska sredstva.

KLJUČNE RIJEČI

Kutina, prometna infrastruktura, prostorno planiranje, rješavanje prometnih problema

LITERATURE

[1] **Božičević, J., Dadić, I.** i ostali:: *Strategija razvitka prometnog sustava Republike Hrvatske*. Institut prometa i veza, Zagreb, 1998.

[2] **Božičević, J.**: *Prometna valorizacija Hrvatske*. Hrvatska akademija znanosti i umjetnosti, Zagreb, 1992.

[3] *Brojanje prometa na cestama 1992.*, Institut prometa i veza, Zagreb, 1993.

[4] **Dadić, I., Kos, G., Županović, I.**: *Absorption of Traffic Volumes and the Management of Traffic Flow in the Zone of Mihanoviceva Street in Zagreb*, ISEP (International Symposium on Electronics in Traffic), Ljubljana, 1995.

[5] **Dadić, I.**: *Organizacija prometnih tokova u gradovima*. Bilten HAZU-Znanstveni savjet za promet, Zagreb, 1992.

[6] Fakultet prometnih znanosti: *Prometna studija za pup Donji grad u Zagrebu – II dio*, Zagreb 1991.

[7] **Kreč, S., Klarić, M.**: *Strateški pravci razvitka hrvatskih željeznica*. Znanstveno-stručni skup - Uloga željeznice u obnovi i razvoju Hrvatske (abstracts), Bjelovar, 1997., str. 7-10.

[8] **Marković, I.**: *Integralni transportni sustavi i robni tokovi*. Fakultet prometnih znanosti, Zagreb, 1990.

[9] **Sić, M.**: *Prometno-geografski položaj i prometna valorizacija SR Hrvatske*. Čovjek i prostor 7-8, Zagreb, 1989.

[10] Urbanistički institut Hrvatske. *GUP Grada Kutine-Nacrt prijedloga*. Zagreb, 1998.

[11] Urbanistički institut Hrvatske. *Izmjene i dopune PUP-a zone "Centar-Istok"-Kutine*. Zagreb, 1998.

[12] Urbanistički institut Hrvatske. *Detaljni plan uređenja središta grada Kutine-nacrt prijedloga plana*. Zagreb, 1998.

[13] *Zakon o javnim cestama*. Narodne novine, 100/96.