Roads to Respect 2010, Students Final Report

European Transport Safety Council

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1-Definition of the high risk site

I chose this high risk site because it is not safe for drivers, especially for pedestrians as a vulnerable category of the road users. I saw that there are so many conflicts between pedestrians and drivers that motivated me to try to contribute to improving the road safety at this location.

The high risk site is in Novi Sad, Republic of Serbia, on the main street, Boulevard of Liberation. The main street consists of two physically separated carriageways and each of them contains three traffic lanes. It streches on north-south direction and intersects with six other boulevards, so there are six priority intersections with traffic lights linked in unique managing system. There are three pedestrian crossings along the main boulevard and traffic for pedestrians is regulated by vertical signalization (traffic signs). 

The high risk site contains two pedestrian crossings at distance about 40 m between intersections Boulevard of Liberation-Boulevard of Tzar Lazar and Boulevard of Liberation-Boulevard of Maksim Gorki (see Figures 1 and 2). The distance between intersections is approximatelly 500 m.

Figure 1. The high risk site position in relation to the intersections

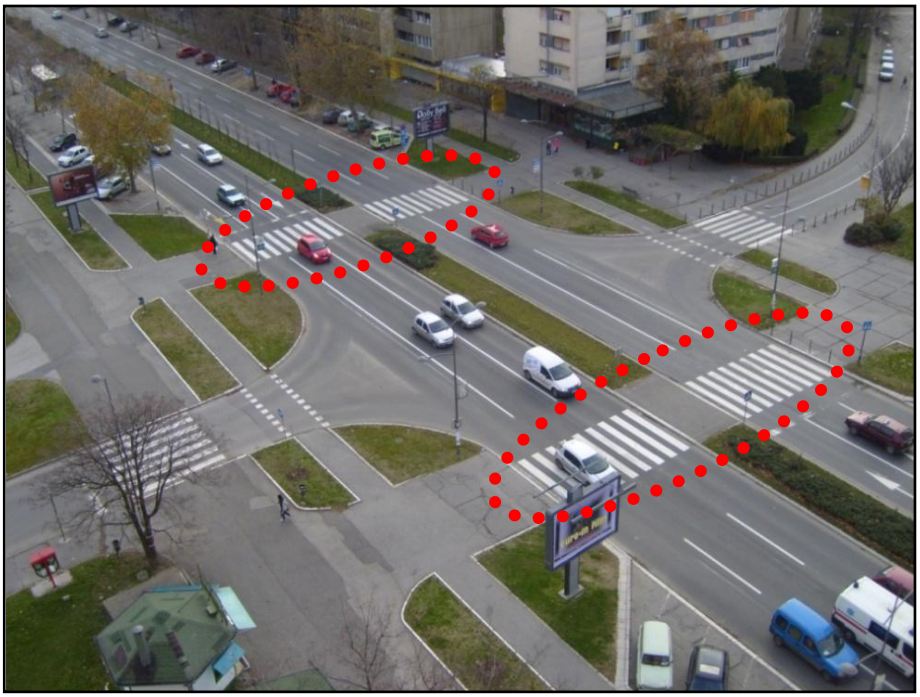
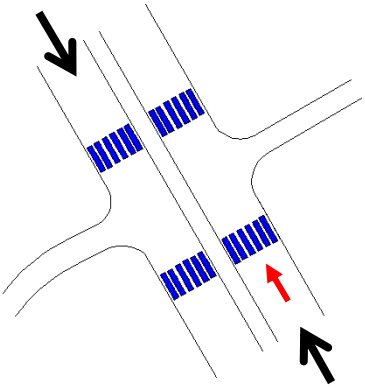
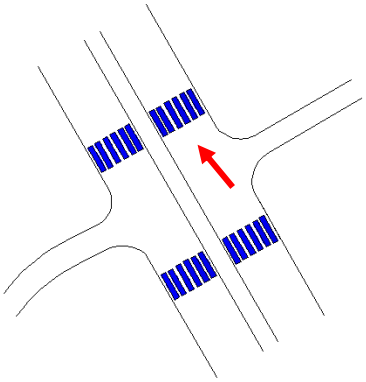
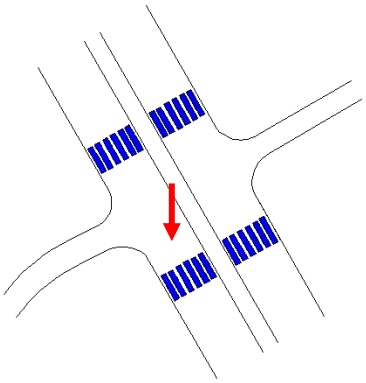


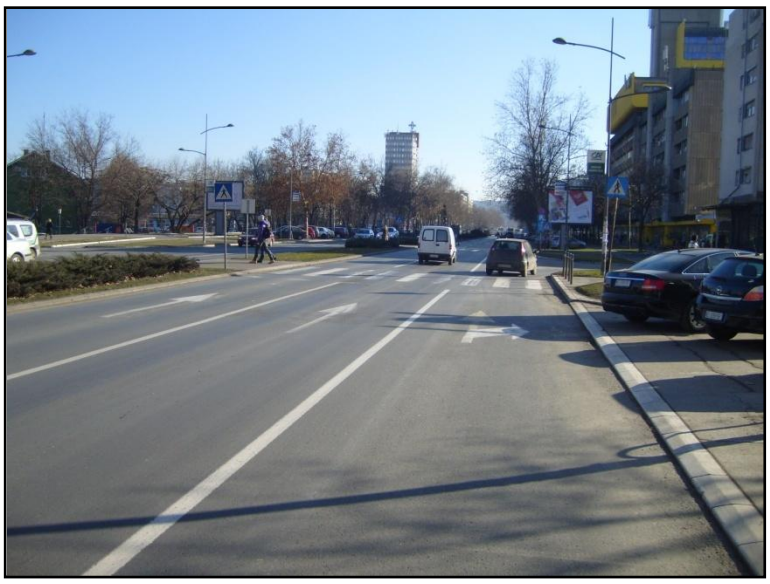
Figure 2. The high risk site before treatment

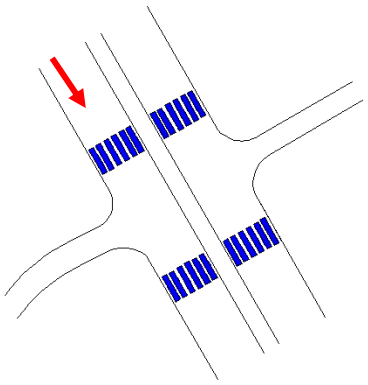
The next pictures show the pedestrian crossings from multi angles (red arrow). They are equipped with horizontal and vertical signalization. Their widths are 5.0 m, width traffic island is 4.0 m and length of pedestrian trajectory from one to the other side of the boulevard is about 20.0 m.











The total traffic volume along the Boulevard of Liberation in both directions during the day (6 a.m.-10 p.m.) is about 120.000 vehicles. It is very powerfull traffic artery. The next figures show traffic volume, that is traffic characteristics at the high risk site on the section Boulevard of Liberation between named intersections in both directions at peak hours (7 a.m.-8 a.m. and 2 p.m.-3 p.m.). Measuring traffic flow parameters during peak hours, maximum speed range is 50-60 km/h.

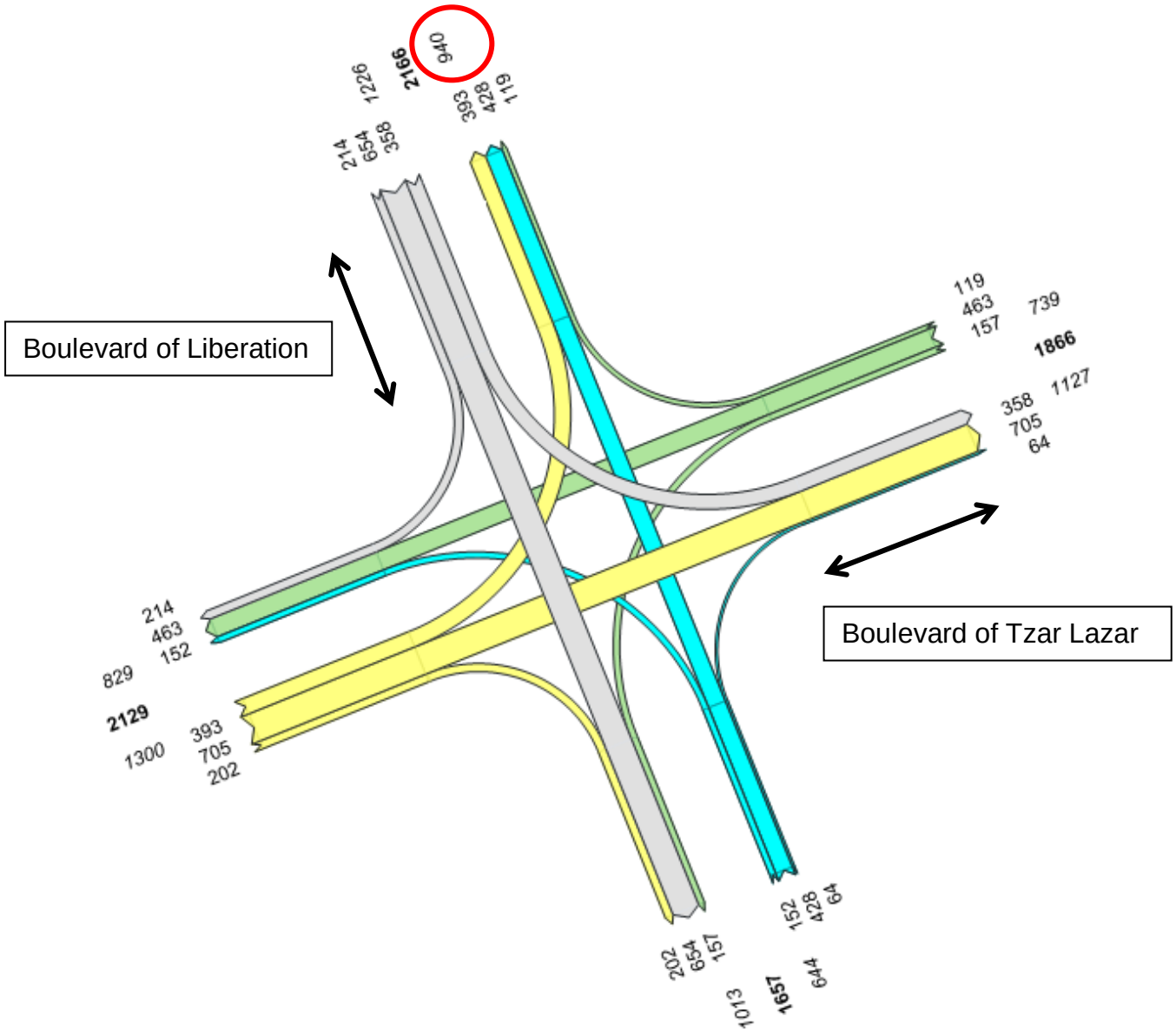


Figure 3. Peak hour 7 a.m. - 8 a.m.

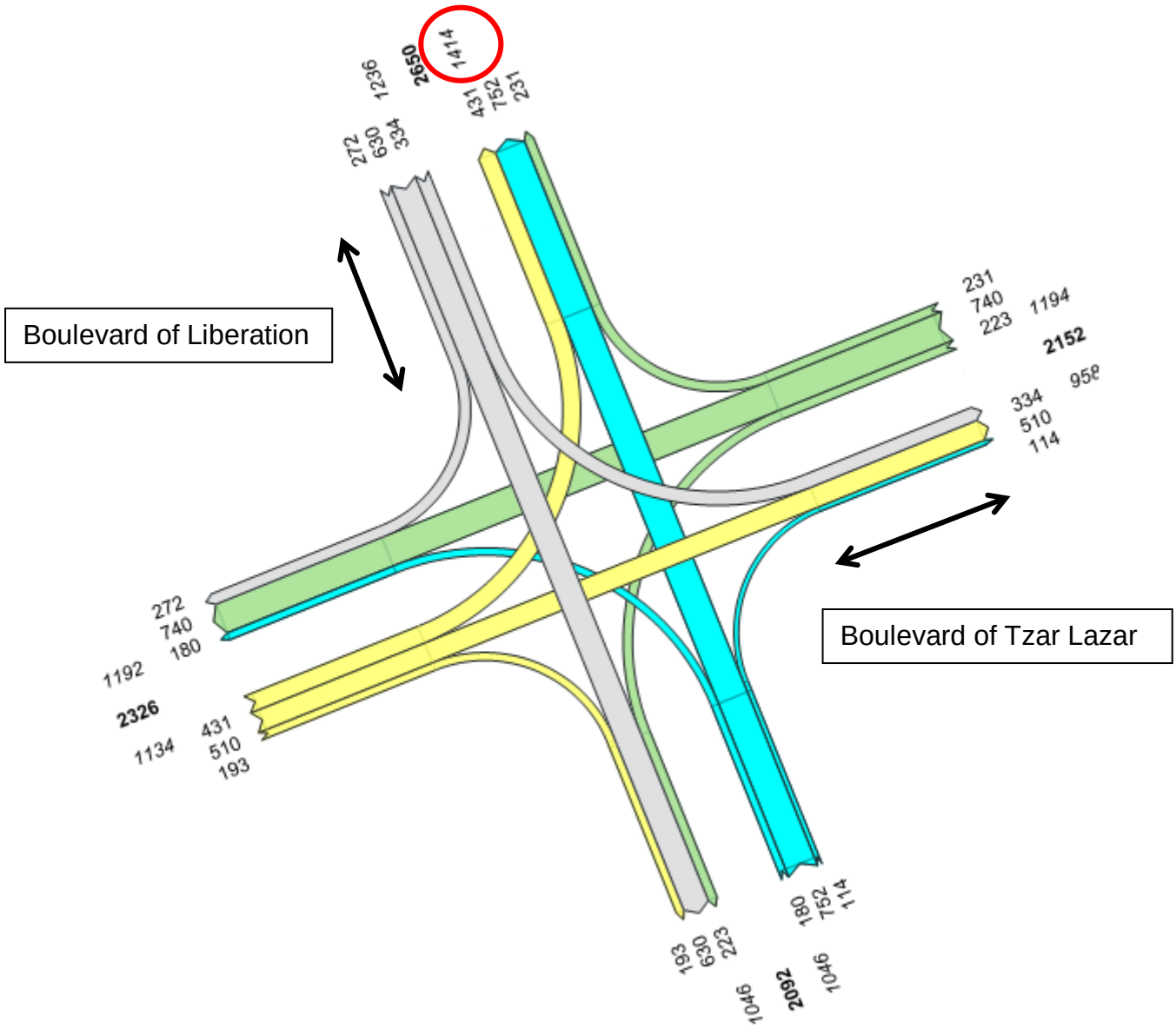


Figure 4. Peak hour 2 p.m. - 3 p.m.

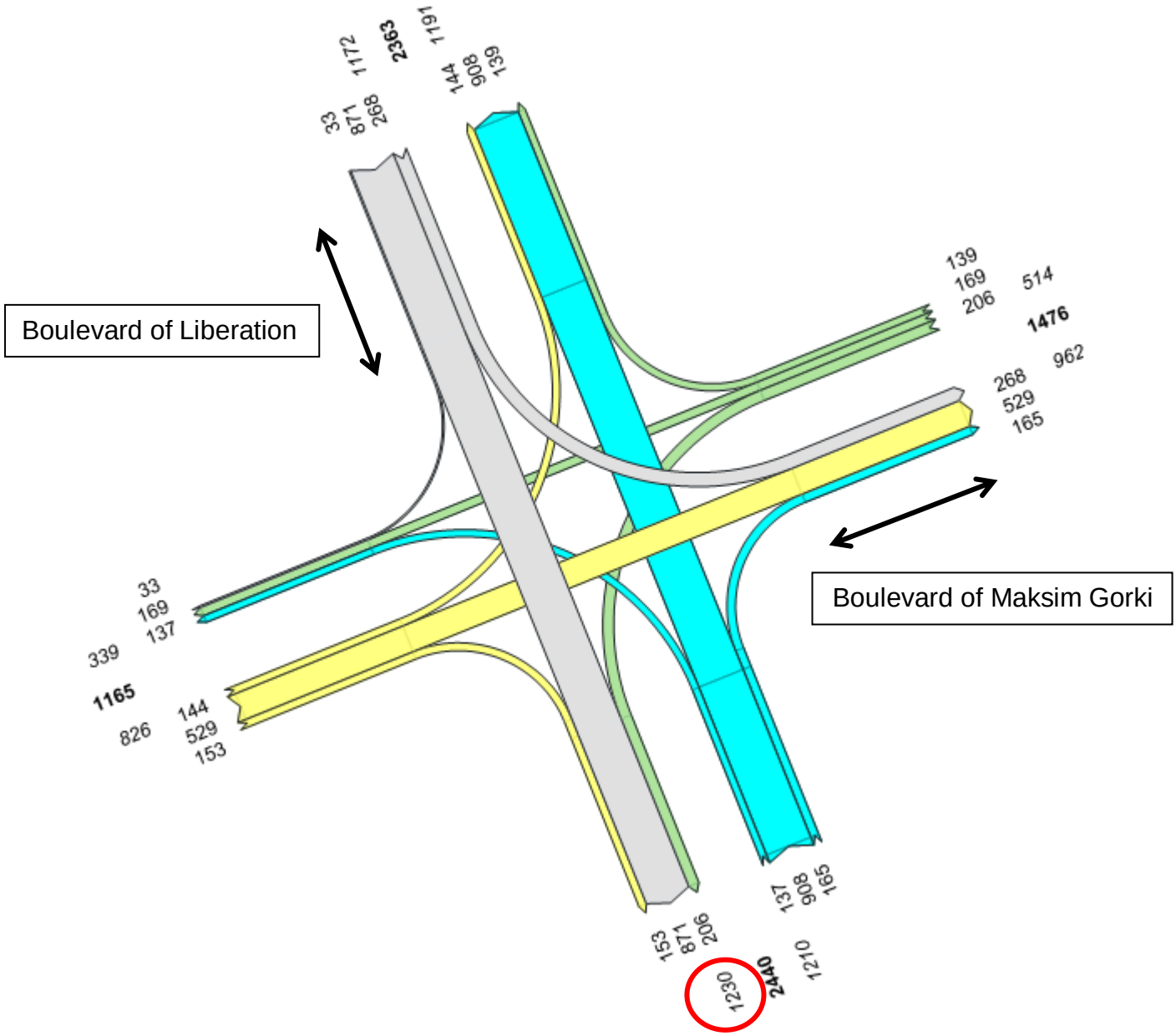


Figure 5. Peak hour 7 a.m. - 8 a.m.

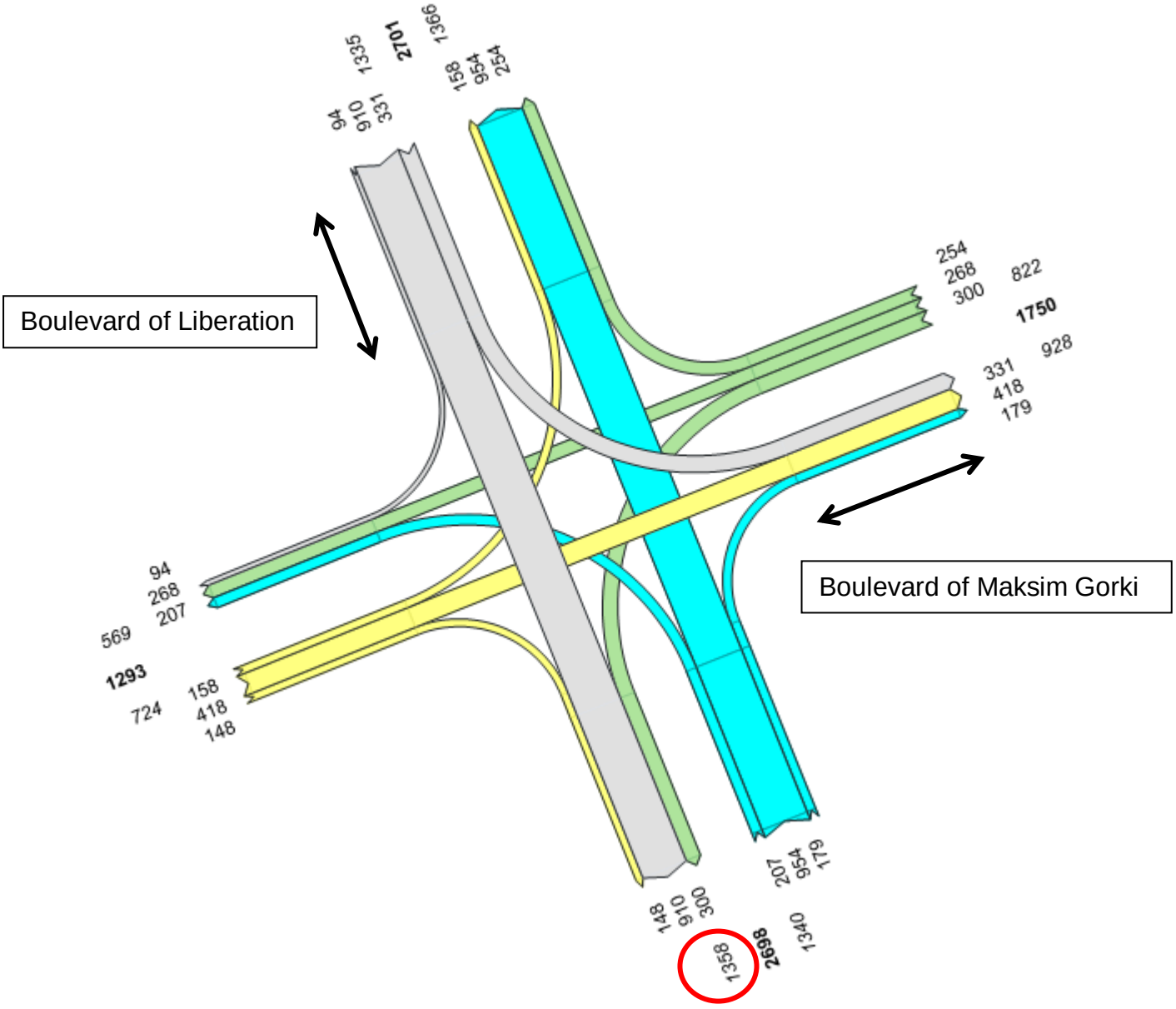


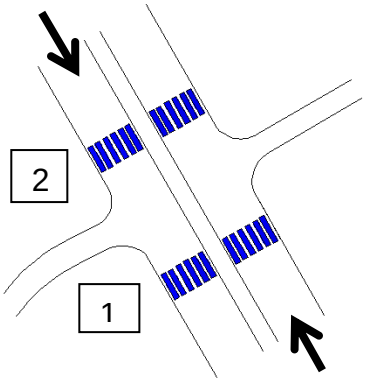
Figure 6. Peak hour 2 p.m. - 3 p.m.

The light signalization along the Boulevard of Liberation are regulated so that six intersections work in linear coordination with the primary goal to eliminate or minimize time losses for vehicles due to stoppings on successive traffic lights, to increase boulevard capacity and improve driving conditions. These effects are reduced by frequent traffic flow disruptions by periodical pedestrian flows. Results of pedestrians counting are showed in Table 1 and like as graphical in Figure 7.

There are following facilities in the vicinity of the high risk site: a company for distribution of electrical energy "Elektrovojvodina", football stadium "Vojvodina", Heating station, Municipality for inspection works, National employment, buildings for inhabitation, banks, shops, and restaurants. All of those activities generate pedestrian flows that are less intesity compared to others that occur at the intersections with traffic lights.

Table 1. Pedestrian volume on both pedestrian crossings

Time	Pedestrian crossings		∑
	1	2	
7-8 h	70	185	255
10-11 h	110	180	290
14-15 h	115	175	290
18-19 h	68	152	220
∑	363	692	1055 ped/h



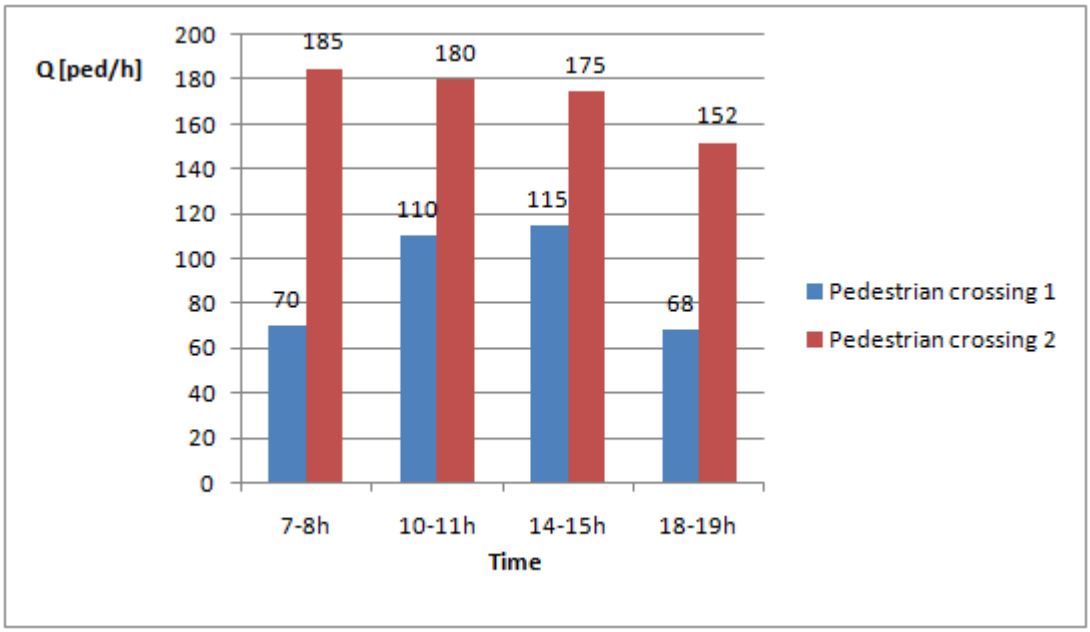


Figure 7. Hourly distribution of pedestrians for both pedestrian crossings

"Cutting" of the traffic flow by pedestrians on places without traffic lights increase risk of accidents. Pedestrians often try to cross the street expecting that drivers will stop their vehicles. Pedestrians are particularly endangered during peak hours, when they interrupt the intensive traffic flow on such a powerful street. There are frequent situations when vehicles in "green wave" do not stop to give right of way to pedestrians.

According to the traffic accident data, this location is identified like very dangerous ("Black spot"), so it is necessary to take concrete measures for improvement the road safety (Table 2). There are great number accidents with damage because vehicles suddenly stop in front of pedestrian crossings and other vehicles hit them.

Table 2. Traffic accident data for three last years

Traffic accidents	2008	2009	2010	∑
with killed	/	/	**2**	**2**
with injured	11	12	11	34
with damage	28	42	17	87
∑	39	54	30	**123**

The big tragedy was happened last summer when motorcyclist with high speed hit 12-year-old boy who was crossing boulevard (Figure 8).

NEWS CHRONICLE

HEAVY TRAFFIC ACCIDENTS IN THE LIBERATION OF THE BOULEVARD

Motorcyclist killed the boy driving the rear wheel

Ž. Bogosavljević | 21 07. 2010th - 00:02 h | Photo: A. Kamasi | Comments: 628

Novi Sad - In severe car accident on the Boulevard of liberation in Novi Sad at 18:20 pm was killed twelve DD in which the pedestrian walkway on the motorcycle ran VG engine driver on that occasion and suffered serious injuries and his passenger, whose identity is not yet known slightly injured and both were admitted to the Emergency Center, Clinical Center Vojvodina.

Horrific scene after the accident

The accident occurred when the VG riding along an engine "Suzuki" from the direction of the Liberty Bridge at the moment of liberation almost empty boulevard hit a boy who was on rollerblades and crossed the pedestrian crossing. The blow was so strong that DD died on the spot, and the engine took off and crashed into a parked Reno Clio, while the driver and passenger fell from the engine to asflat.

Figure 8. Newspaper article about heavy accident

2- Project proposal to treat the selected high risk site

The basical postulate in traffic regulation is that unsignalized pedestrian crossings may not be located on coordinated section of some transport route.

I think that a good idea is removing pedestrian crossing number 1 and setting light signalization on pedestrian crossing number 2.

I made this desicion after counting pedestrians and conducted questionnaire among them. Criteria was intensity of pedestrian flows. Pedestrian flow on pedestrain crossing 2 is higher than pedestrian crossing 1 (Figure 7).

Questionnaire results :

- total 60 participants
- 60% participants - young people (20-30 years old)
- 50% male, 50% female
- 60% had danger situation crossing the street and didn't feel safe
- 75% said that it should be difficult for them to cross the street at the neighbouring intersections Boulevard of Liberation-Boulevard of Tzar Lazar and Boulevard of Liberation-Boulevard of Maksim Gorki in case removing all pedestrian crossings at the high risk site
- 80% thought that installing pedestrian semaphore should be good solution for improvement their safety

At the high risk site it would be installed pedestrian semaphore with button for their announcement and display about time when pedestrians can cross the street (Figures 9 and 10). The light signalization is proposed because it can allow traffic flow without stopping during "green wave". Pedestrian semaphore would work in coordination with traffic lights at the neighboring intersections. Usage this kind light signalization with display about time until green would eliminate pedestrians suspense about waiting time for crossing the street and they would be safer. It would be modern variant of pedestrian crossing where pedestrian pressing button guarantee himself protection.

Figures 9 and 10.

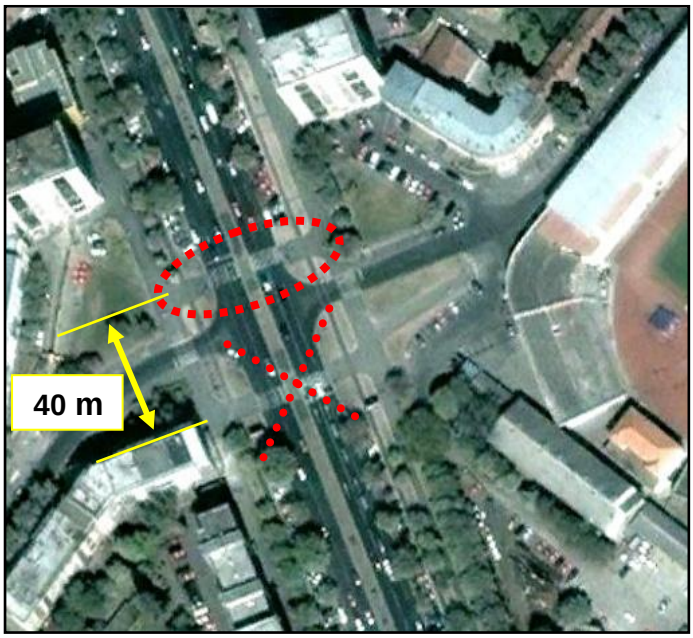


Figure 11. The high risk site after treatment

Effects of light signalization on pedestrian crossing would comprise:

- the better safety of pedestrians and other road users
- reduction time losses for vehicles due to stoppings
- reduction of energy consumption (fuel) for vehicles
- reduction of traffic accidents rate
- the better utilization capacity of this section of Boulevard of Liberation

For example, increasing average traffic flow speed from 20 to 30 km/h would reduce energy consumption about 12%. Elimination only one stopping at speed 40 km/h would provide energy saving (fuel) to overcome the additional distance about 350 m.

On the basis of calculation, I made estimation of project budget. The cost of project is about 24.000 EUR and the works on implementation would last from 7 to 15 days.

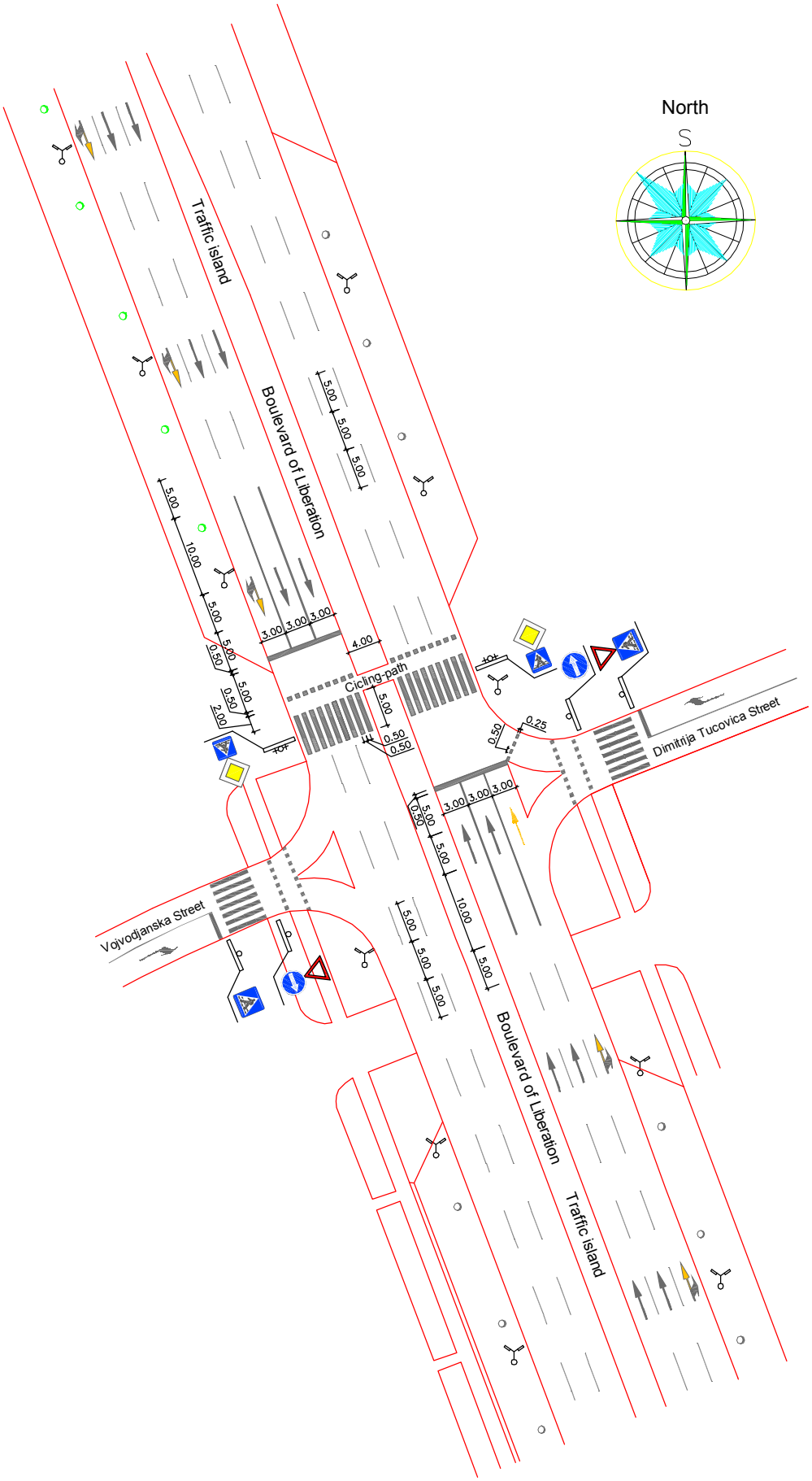
There is the plan designed to change the programs work of light signalization at all intersections on Boulevard of Liberation. Total, there are four programs with cycles lasting 70, 90, 110 and 130 seconds. In the final report, there are diagrams of a coordinated work of the light signals on pedestrians crossing 2 and the neighbouring intersections for each program.

Pedestrian crossing 2 is located at 360 m from signals of intersection Boulevard of Liberation-Boulevard of Tzar Lazar and 175 m from signals of intersection Boulevard of Liberation-Boulevard of Maksim Gorki (Figures 12 and 13). It is important data for forming diagrams of coordinate signalization.

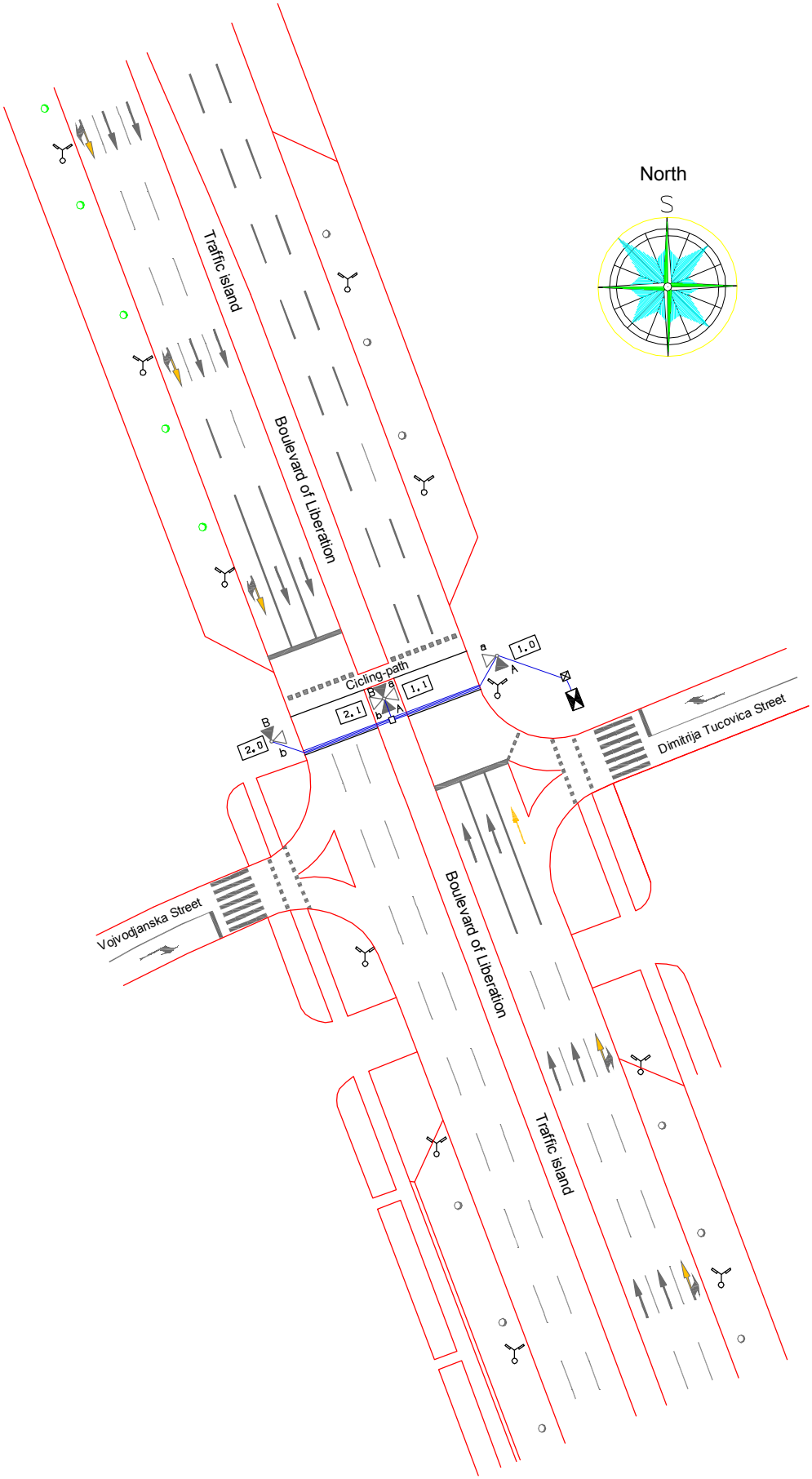
Figures 12 and 13.

Documents relating to the technical part of project are:

1. *Plan of horizontal and vertical signalization after treatment*
2. *Layout of traffic lights after treatment*
3. *Symbol signals*
4. *Matrix of conflicting flows and protective times*
5. *Plan of programs change*
6. *Diagrams of coordinate signalization*

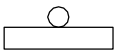


University of Novi Sad Faculty of Technical Sciences Novi Sad, Serbia	Department of Traffic	Scale of a drawing 1:750
Drawing: *Plan of horizontal and vertical signalization after treatment*	Structure: Boluverad of Liberation Project engineer: Vladan Jeftic Control: dr Vuk Bogdanovic	Page: 17

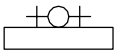


University of Novi Sad Faculty of Technical Sciences Novi Sad, Serbia	Department of Traffic	Scale of a drawing 1:750
Drawing: *Layout of traffic lights at the high risk site after treatment*	Structure: Boluverad of Liberation Project engineer: Vladan Jeftic Control: dr Vuk Bogdanovic	Page: 18

Symbols of vertical signalization



Traffic sign pillar



Traffic light pillar

Symbols of traffic light signalization

Pillar

Symbol of pillar

A

Symbol of vehicle signals

a

Symbol of pedestrian signals

Vehicle signals

Pedestrian signals

Symbols of cable installation

Control device

Standard manhole

Transient manhole

Power cable under pavement

University of Novi Sad Faculty of Technical Sciences Novi Sad, Serbia	Department of Traffic	
Drawing: *Symbol signals*	Structure: Boluverad of Liberation Project engineer: Vladan Jeftic Control: dr Vuk Bogdanovic	Page: 19

MATRIX OF CONFLICTING FLOWS

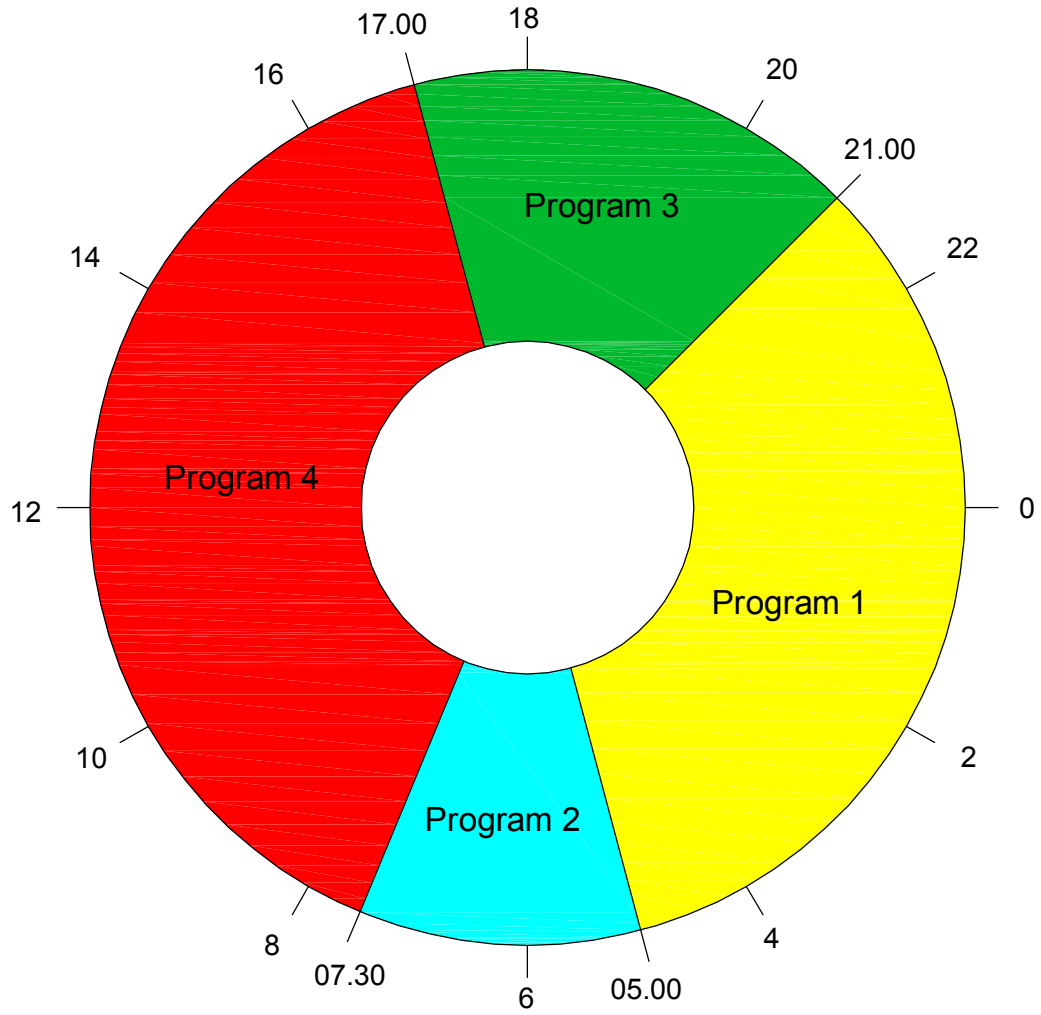
Conflicting flows		Signal group that get right of way			
		A 1.0 A 1.1	**B 2.0 B 2.1**	**a 1.0–a 1.1**	**b 2.0–b 2.1**
Signal group that lose right of way	**A 1.0 A 1.1**		–	X	–
	B 2.0 B 2.1	–		–	X
	a 1.0–a 1.1	X	–		–
	b 2.0–b 2.1	–	X	–	

MATRIX OF PROTECTIVE TIMES

Conflicting flows		Signal group that get right of way			
		A 1.0 A 1.1	**B 2.0 B 2.1**	**a 1.0–a 1.1**	**b 2.0–b 2.1**
Signal group that lose right of way	**A 1.0 A 1.1**		–	3	–
	B 2.0 B 2.1	–		–	3
	a 1.0–a 1.1	10	–		–
	b 2.0–b 2.1	–	10	–	

$$Tzpp = \frac{D}{Vmin} + 1 = \frac{10m}{30/3{,}6\ \frac{m}{s}} + 1 = 2{,}2 \approx 3\ [s]$$ at the begining of the pedestrian phase

$$Tzpk = \frac{Lpp}{Vp} + 1 = \frac{9\,m}{1\ \frac{m}{s}} + 1 = 10\ [s]$$ at the end of the pedestrian phase

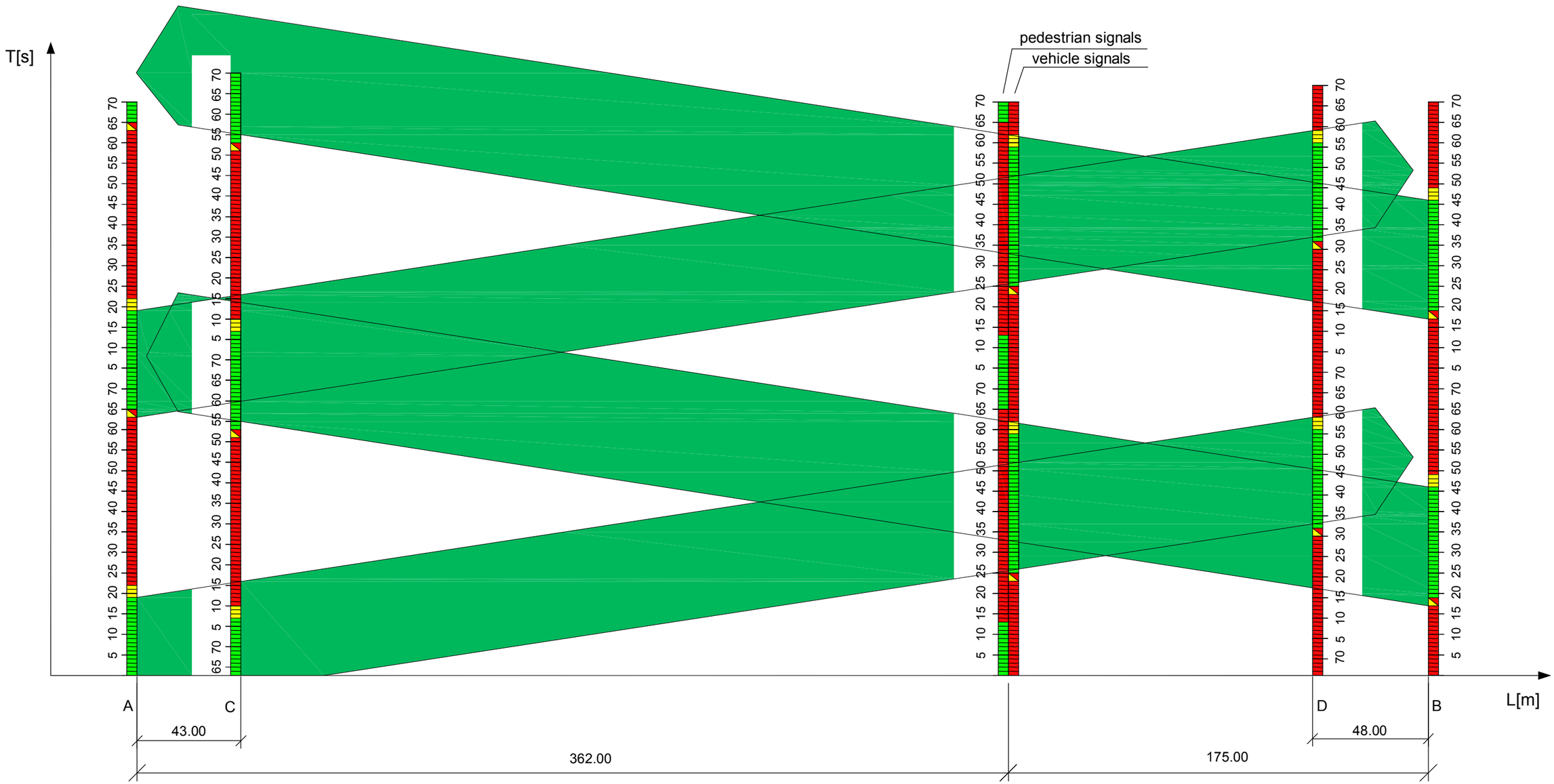


Program 1 - cycle of 70 s
Program 2 - cycle of 90 s
Program 3 - cycle of 110 s
Program 4 - cycle of 130 s

Program 1 - works at period time from 21.00 to 05.00 h
Program 2 - works at period time from 05.00 to 07.30 h
Program 3 - works at period time from 17.00 to 21.00 h
Program 4 - works at period time from 07.30 to 17.00 h

V=40 km/h - Coordination speed

Cycle 70 seconds

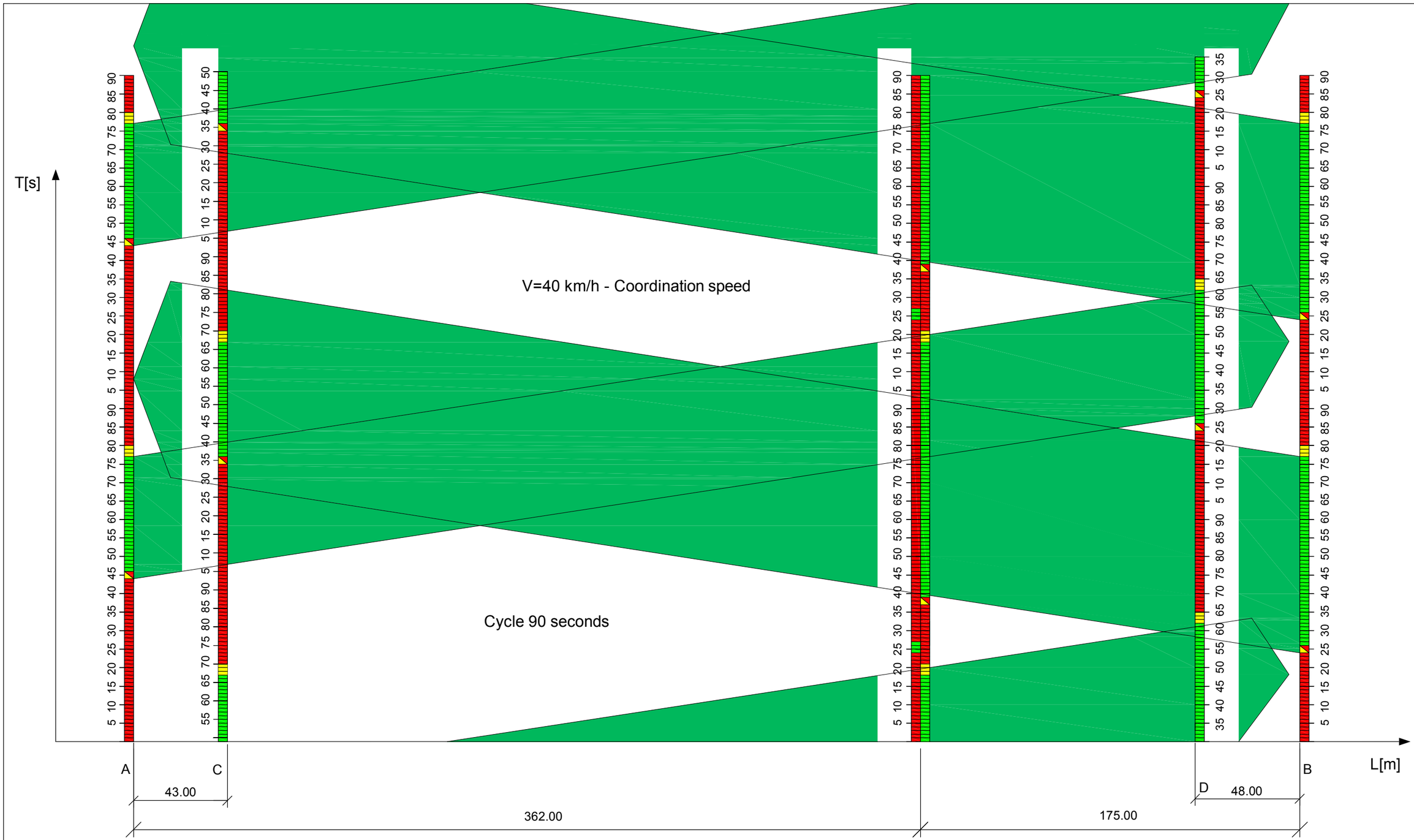


Intersection Boulevard of Liberation - Boulevard of Tzar Lazar

Pedestrian crossing 2

Intersection Boulevard of Liberation - Boulevard of Maksim Gorki

University of Novi Sad Faculty of Technical Sciences Novi Sad, Serbia	Department of Traffic	
Drawing: *Diagram of coordinate signalization on refered section of boulevard*	Structure: Boluverad of Liberation Project engineer: Vladan Jeftic Control: dr Vuk Bogdanovic	Page: 22



Intersection Boulevard of Liberation - Boulevard of Tzar Lazar

Pedestrian crossing 2

Intersection Boulevard of Liberation - Boulevard of Maksim Gorki

University of Novi Sad
Faculty of Technical Sciences
Novi Sad, Serbia

Department of Traffic

Drawing:

Diagram of coordinate signalization on refered section of boulevard

Structure: Boluverad of Liberation

Project engineer: Vladan Jeftic

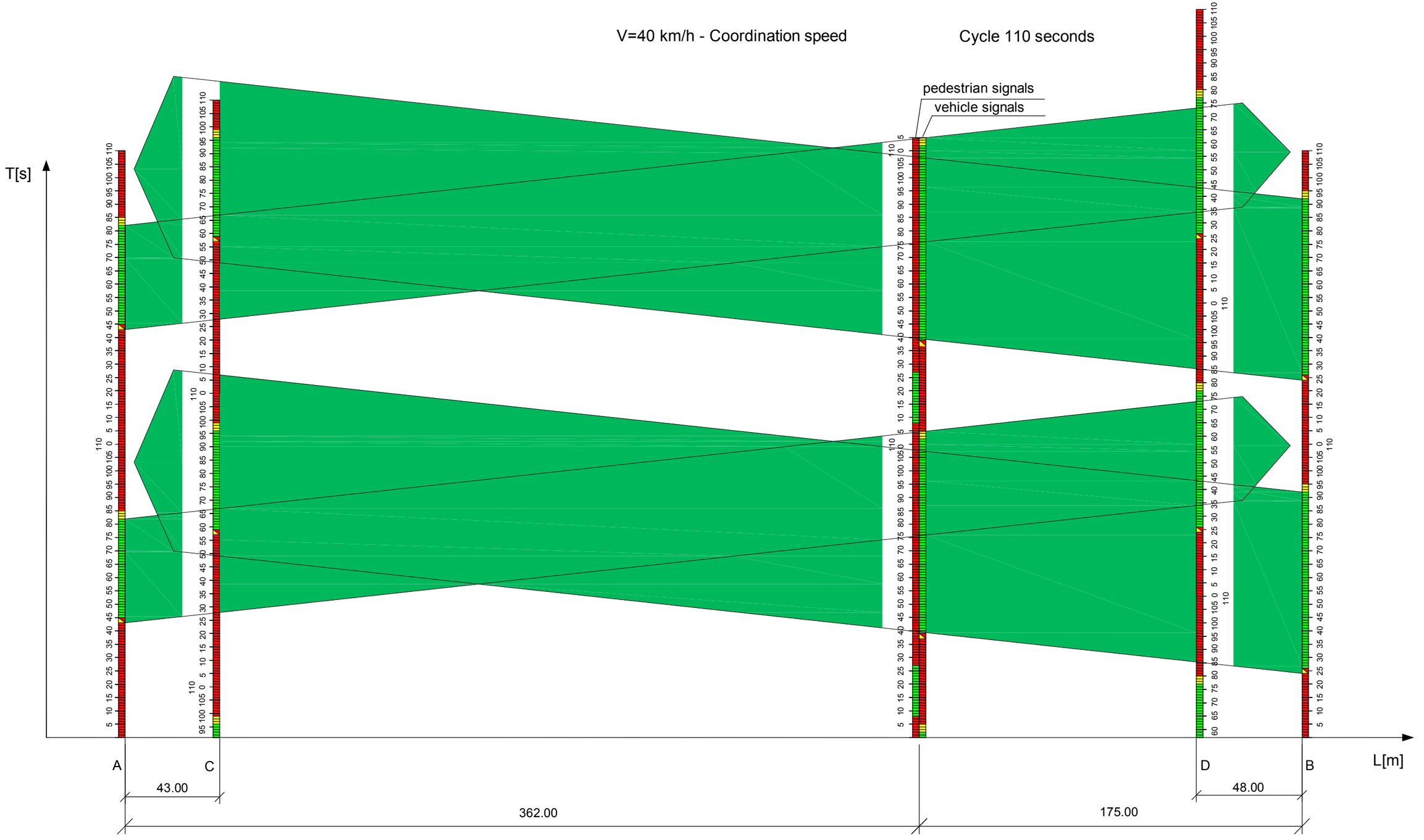
Control: dr Vuk Bogdanovic

Page:

23

V=40 km/h - Coordination speed

Cycle 110 seconds

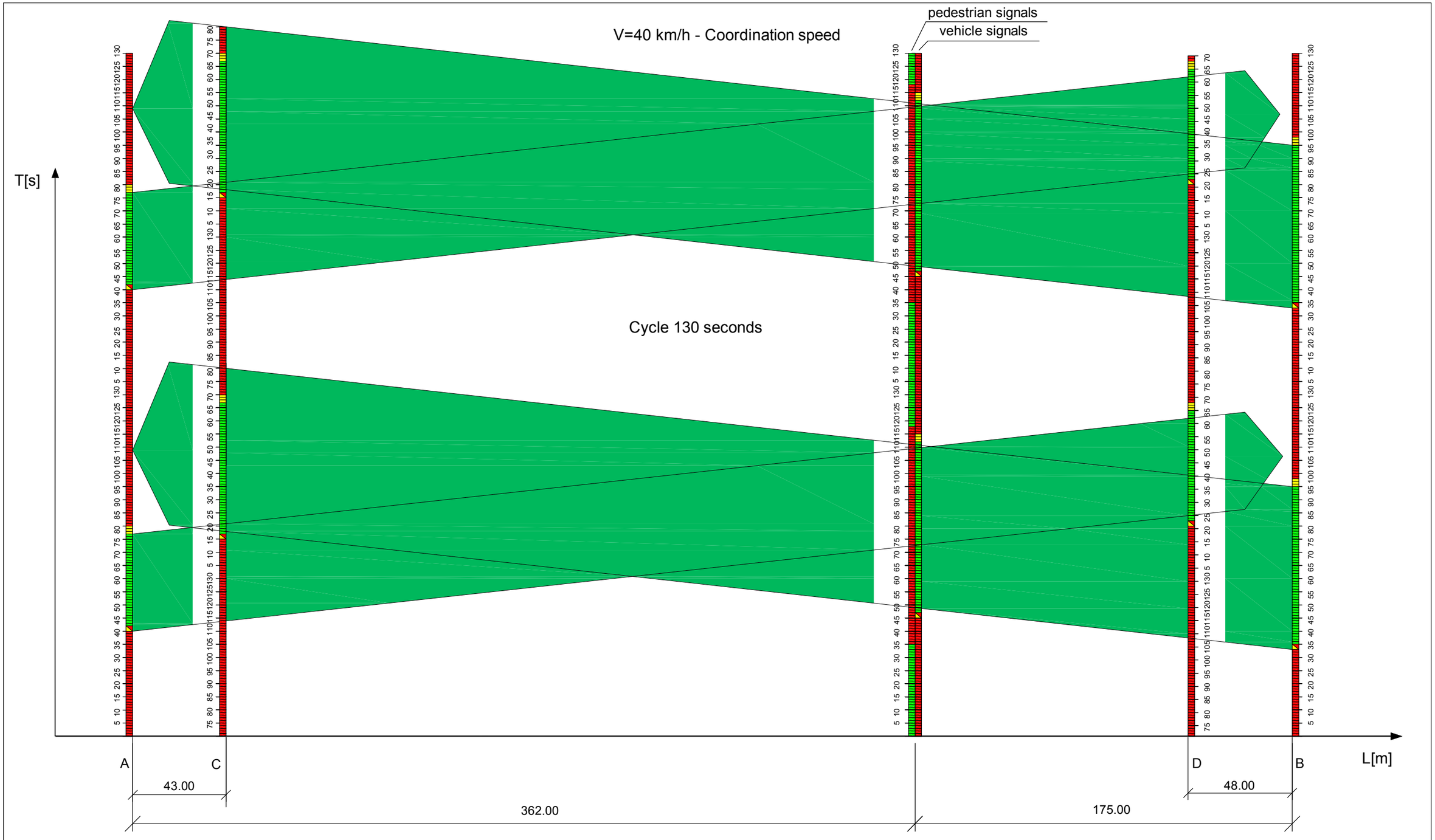


Intersection Boulevard of Liberation - Boulevard of Tzar Lazar

Pedestrian crossing 2

Intersection Boulevard of Liberation - Boulevard of Maksim Gorki

University of Novi Sad Faculty of Technical Sciences Novi Sad, Serbia	Department of Traffic	
Drawing: *Diagram of coordinate signalization on refered section of boulevard*	Structure: Boluverad of Liberation Project engineer: Vladan Jeftic Control: dr Vuk Bogdanovic	Page: 24



Intersection Boulevard of Liberation - Boulevard of Tzar Lazar

Pedestrian crossing 2

Intersection Boulevard of Liberation - Boulevard of Maksim Gorki

University of Novi Sad Faculty of Technical Sciences Novi Sad, Serbia	Department of Traffic	
Drawing: *Diagram of coordinate signalization on refered section of boulevard*	Structure: Boluverad of Liberation Project engineer: Vladan Jeftic Control: dr Vuk Bogdanovic	Page: 25

For cycle of 90 sec, green light for pedestrians could last only 3 sec. It is unacceptable for them. As a rule, minimum green light for pedestrians is 5 sec. Because of that, pedestrians would be confused and their safety dangerous. So, my proposal within project solution would be elimination this program from light signalization plan.

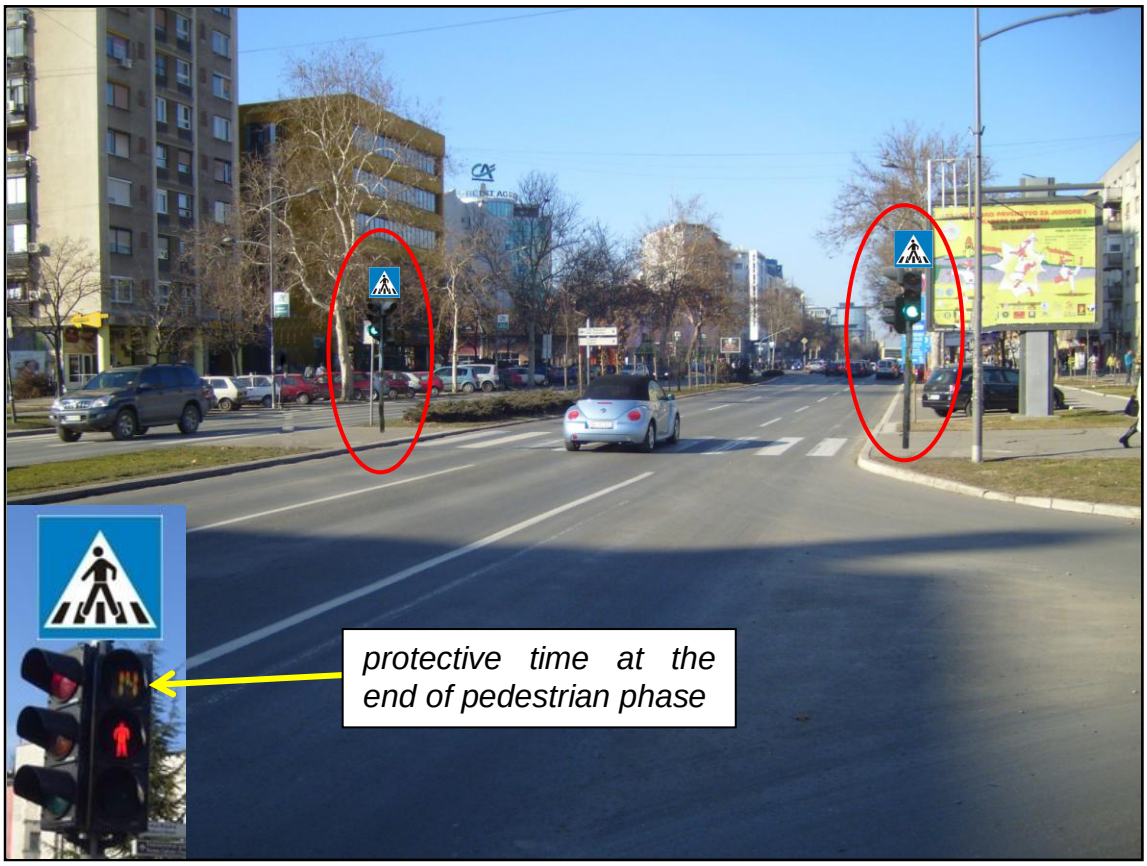
For cycle of 130 sec, green light could last even 47 sec. In this case, during phase for traffic from minor boulevards when is red light for coordinated flows, it may come to accumulation vehicles in front of pedestrian crossing 2. So, green light for pedestrians ought to short at about 20 sec.

Whereas the high risk site includes bicycle traffic, cyclists cross the street, but there is no an independent cicling-path. Therefore, an integral part of the high risk site management is marking cicling-path width 2.0 m that would extend parallel to the pedestrian flows.

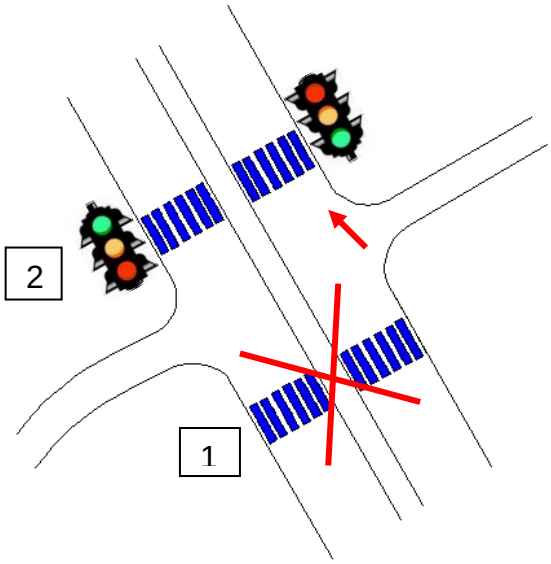
Transportation infrastructure must be adapted for successful movement for all categories of population which include persons with disabilities and elders.

For easy movement of pedestrians, especially people with disabilities of various categories, it is necessary to trample down curbs on the entire width of the pedestrian crossing. Due to blind and visually impaired persons, pedestrian semaphore must be equipped a sound signalization for easy orientation and movement of people. In order to blind and visually impaired persons locate the pedestrian crossing easily, it is necessary to set tactile warning surfaces near the pedestrian crossing (Figure 14).

Figure 14. Handicapped-accessible infrastructure

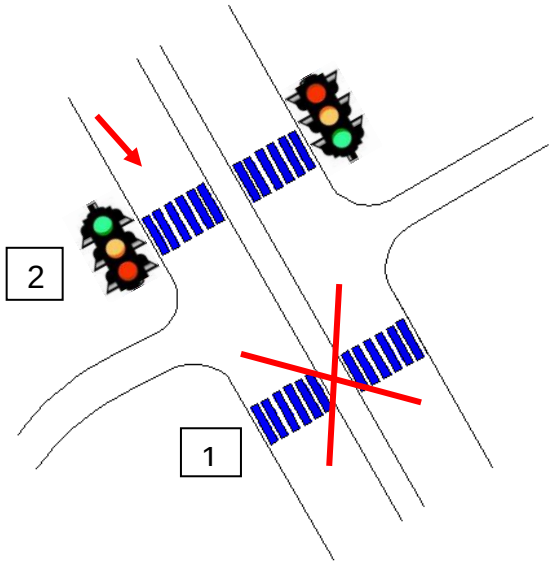


THE HIGH RISK SITE AFTER TREATMENT



Red arrow *- photo angle*

THE HIGH RISK SITE AFTER TREATMENT



Red arrow *- photo angle*

3 - Campaign to get the high risk site treated

Before starting the campaign I have done some preparatory works. After personal observation and selecting the high risk site, I talked with my professor to explain my ideas about the potential high risk site treatment. I got support for development of my R2R project.

First I did and that was important for preparing my project is finding traffic accident data at the police. Afterwards, I also sent letter to Traffic centre management (SAUS) because of getting data about traffic regulation and work programs of light signalization at the intersections near the high risk site. I was interested in oppinion of pedestrians about their safety. Therefore, I did questionnaire among them with the help of my colleagues. Concrete results have already been shown. All of these documents are shown at the next pages:

Figure 15. My professor and me

These actions I have done in campaign refers to the preparing technical part of the project. I spent a lot of time for this task. It also need to be implemented good political part for efficiency of whole project. I had concrete results and good conclusions and was sure that were good possibilities to convince local authorities they will welcome project solution and seriously understand traffic problem.

Remark:

УНИВЕРЗИТЕТ У НОВОМ САДУ

ФАКУЛТЕТ ТЕХНИЧКИХ НАУКА

Трг Доситеја Обрадовића 6, 21000 Нови Сад, Република Србија
Деканат: 021 6350-413; 021 450-810; Централа: 021 485 2000
Рачуноводство: 021 458-220; Студентска служба: 021 6350-763
Телефакс: 021 458-133; e-mail: ftndean@uns.ac.rs

ИНТЕГРИСАНИ СИСТЕМ МЕНАЦМЕНТА СЕРТИФИКОВАН ОД:

МУП РЕПУБЛИКЕ СРБИЈЕ

ОДЕЉЕЊЕ САОБРАЋАЈНЕ ПОЛИЦИЈЕ НОВИ САД

н/р Зоран Алимпић, дипл. инж. саобр.

Наш број:	049–49/680–1
Ваш број:	-
Датум:	15.12.2010. год.
Адреса:	Трг Доситеја Обрадовића 6
Факс:	++381 21/450–644
Тел:	++381 21/485-2482

Поштовани,

Студент Факултета техничких наука, Департман за саобраћај Владан Јефтић у склопу европског програма "Путеви за поштовање" (Roads to Respect) који организује Европски Савет Безбедности Саобраћаја из Брисела (ETSC) учествује на тренинг кампу с циљем да млади инжењери стекну нова знања о управљању опасним местима на путевима. У склопу наведног програма наш студент би требало да обради једно од опасних места па су му потребни подаци о саобраћајним незгодама из претходног периода за локацију у Новом Саду на саобраћајници Булевар ослобођења од кућног броја 92 до броја 96.

Обраћамо Вам се са молбом да му омогућите приступ траженим подацима.

С поштовањем,

Руководилац
Департмана за саобраћај

Доц. др Вук Богдановић

М.П.

Декан
Факултет техничких наука

Проф. др Илија Ћосић

УНИВЕРЗИТЕТ У НОВОМ САДУ
ФАКУЛТЕТ ТЕХНИЧКИХ НАУКА

Трг Доситеја Обрадовића 6, 21000 Нови Сад, Република Србија
Деканат: 021 6350-413; 021 450-810; Централа: 021 485 2000
Рачуноводство: 021 458-220; Студентска служба: 021 6350-763
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ИНТЕГРИСАНИ СИСТЕМ МЕНАЏМЕНТА СЕРТИФИКОВАН ОД:

н/р Србислав Гуглета, дипл. инж. саобр.

Наш број:	049–49/680–1
Ваш број:	-
Датум:	18.03.2011. год.
Адреса:	Трг Доситеја Обрадовића 6
Факс:	++381 21/450–644
Тел:	++381 21/485-2482

Поштовани,

Студент Факултета техничких наука, Департман за саобраћај Владан Јефтић у склопу европског програма "Путеви за поштовање" (Roads to Respect) који организује Европски Савет Безбедности Саобраћаја из Брисела (ETSC) учествује на тренинг кампу с циљем да млади инжењери стекну нова знања о управљању опасним местима на путевима.

У склопу наведног програма наш студент би требало да обради једно од опасних места па су му потребни подаци о саобраћајним незгодама из претходног периода за локацију у Новом Саду на саобраћајници Булевар ослобођења од кућног броја 92 до броја 96. У оквиру пројекта неопходно је да сагледа постојеће стање регулације саобраћаја на одабраној локацији и да у складу са усвојеном стратегијом да предлог решења којим ће се смањити степен ризика на тој локацији.

Обраћамо Вам се са молбом да му омогућите приступ подацима о начину регулисања саобраћаја као и програмима рада светлосне сигнализације у непосредном окружењу анализиране локације.

С поштовањем,

Руководилац
Департмана за саобраћај

Доц. др Вук Богдановић

М.П.

Декан
Факултет техничких наука

Проф. др Илија Ћосић

Questionnaire for pedestrians

УНИВЕРЗИТЕТ У НОВОМ САДУ
ФАКУЛТЕТ ТЕХНИЧКИХ НАУКА
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Датум: 24.02.2011. **Место:** Нови Сад ***АНКЕТА ЈЕ АНОНИМНА!***

Ред. бр.	**ПИТАЊА:**
1.	Колико имате година? _____
2.	Пол: *М* *Ж* (заокружити)
3.	Да ли се осећате довољно безбедно док прелазите коловоз на овом делу Булевара ослобођења? *ДА* *НЕ* (заокружити)
4.	Да ли страхујете да започнете прелазак коловоза бојећи се да се возила неће на време зауставити испред пешачког прелаза? *ДА* *НЕ* (заокружити)
5.	Да ли сте се икада до сада нашли у опасној ситуацији прелазећи коловоз на овом делу Булевара ослобођења? *ДА* *НЕ, ШТО НЕ ЗНАЧИ ДА НЕЋУ* (заокружити)
6.	У случају уклањања оба пешачка прелаза, да ли би за вас била отежавајућа околност да прелазите коловоз на суседним раскрсницама: Булевар ослобођења - Булевар Максима Горког и Булевар ослобођења - Булевар цара Лазара? *ДА* *НЕ* (заокружити)
7.	Да ли мислите да би увођење семафора са тастерском најавом било добро решење за безбедније учешће пешака у саобраћају? *ДА* *НЕ* (заокружити)
8.	Да ли бисте поштовали рад семафора у циљу Ваше веће безбедности, а по цену дужег чекања на прелазак коловоза? *ДА* *НЕ* (заокружити)
ХВАЛА НА САРАДЊИ!	

4 - Achievements of the project

My aim was to attend a meeting of the Road Safety Council and to present the results of the project on such an important meeting. The body of the Council are traffic engineers, and other profiles of people such as lawyers, economists...These people make decisions regarding the road safety in the city.

When I was in the Department of Traffic Police to finding the accident data, traffic engineer, Chief of Department for traffic and technical operations told me to come back to him when I did the technical part of the project to be personally convinced that the data were not misused. When I arrived the second time, during an interview with him, I informed that he was one of the members of the Road Safety Council. We talked about how I might be eligible to attend at the one of their meetings. I received instructions to send a letter to the Municipality for transport and roads, the main institution for traffic in the city.

I handed letter to the Head of the Municipality for transport and roads, also a member of the Road Safety Council. He then told me to compose a project abstract to other members would be more easily informed with the topic of the project and make a decision if they agree that one of the items on the agenda of the session be my project presentation.

Shortly after, I received a notice to attend the meeting. At the meeting the President of the Council said that the traffic problem was known but the appropriate steps with purpose of solving were not done and that was good that a young engineer involved in one such action. Unfortunately engineers have decided by voting that this time did not support my project because all competent authorities were not informed about it on time, the organization for my parts was not good. The President of the Council has given me support, but the voting decided. He told me that he will call me next time to do what I am not first. I still have not received an invitation. I hope I will, maybe after the holidays. I would like that because I'm dissatisfied by reason nobody of the people from the local authority has not heard my project soution in which I invested a lot of work and effort.

Remark:

Page 34: Letter to the Municipality for transport and roads

Page 35: Project Abstract

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ИНТЕГРИСАНИ СИСТЕМ МЕНАЏМЕНТА СЕРТИФИКОВАН ОД:

Grad Novi Sad

ГРАДСКА УПРАВА ЗА САОБРЋАЈ И ПУТЕВЕ НОВИ САД

Улица Жарка Зрењанина број 2

Наш број:	049–49/680–1
Ваш број:	-
Датум:	12.05.2011. год.
Адреса:	Трг Доситеја Обрадовића 6
Факс:	++381 21/450–644
Тел:	++381 21/485-2482

Поштовани,

Студент Саобраћајног одсека на Факултету Техничких Наука, Владан Јефтић, учествовао је на тренинг кампу "Путеви за поштовање" (The Roads to Respect) који организује Европски Савет Безбедности Саобраћаја из Брисела (ETSC). То је европски програм који постоји с циљем да млади инжењери стекну нова знања о управљању опасним местима на путевима.

У склопу наведног програма наш студент обрађује опасно место на потезу саобраћајнице Булевар ослобођења у Новом Саду од кућног броја 92 до кућног броја 96. Опасно место чине несигналисани пешачки прелази на координисаном потезу Булевара ослобођења.

Обраћамо Вам се са молбом да му омогућите присуство на једној од седница Тела за координацију безбедности саобраћаја на којој би студент приказао резултате пројекта који се односи на измену начина регулисања саобраћаја на поменутој локацији у сврху побољшања стања безбедности за учеснике у саобраћају.

С поштовањем,

Руководилац
Департмана за саобраћај

Доц. др Вук Богдановић

М.П.

Декан
Факултет техничких наука

Проф. др Илија Ћосић

ИЗВОД

из пројекта *"Предлог начина регулисања саобраћаја на пешачким прелазима на потезу Булевара ослобођења у Новом Саду наспрам Војвођанске улице"*

Предмет пројекта је идентификација и третирање једног опасног места на уличној мрежи Новог Сада.

Основни циљ је да се предложе мере безбедности саобраћаја које ће утицати на смањење степена ризика на опасном месту и омогућити одвијање саобраћаја на вишем нивоу безбедности.

Опасно место представљају два несигналисана пешачка прелаза на координисаном потезу Булевара ослобођења између сигналисаних раскрсница Булевар осолобођења - Булевар цара Лазара и Булевар ослобођења - Булевар Максима Горког - Булевар браће Рибникар. На овом месту регистрован је повећан број налета возила на пешаке и налета возила на слеђена возила у саобраћајном току.

Анализа и сагледавање постојећег стања на датој локацији обухватила је утврђивање карактеристика саобраћајних токова на основу података о бројању саобраћаја из 2009. године, бројање пешака у различитим временским периодима у току дана и анкетирање пешака.

Предлог решења за санацију опасног места подразумева увођење светлосне сигнализације, семафора са дугмадима за најаву пешака и дисплејима о времену када ће пешаци добити право преласка коловоза. Предлог решења предвиђа уклањање мање оптерећеног пешачког прелаза, а опремање светлосним сигналима пешацима оптерећенијег пешачког прелаза који би био укључен у систем линијске координације пројектоване дуж посматране саобраћајнице. У пројекту су дати дијаграми координисане сигнализације пешачког прелаза и суседних раскрсница за сва 4 сигнална програма са циклусима у трајању од 70, 90, 110 и 130 секунди, као и планови темпирања сигнала за возаче и пешаке за дате програме рада. Повезивање пешачког прелаза у координисан рад вршен је при брзини саобраћајног тока од 40 km/h. Увођењем светлосне сигнализације, постигли би се вишеструки ефекти:

- повећана безбедност за учеснике у саобраћају
- мањи број саобраћајних незгода
- мањи број заустављања возила
- мања потрошња енергије (погонског горива)
- мањи негативни утицаји на животну средину
- боље искоришћење капацитета и већа проточност потеза булевара

Пошто се у зони опасног места одвија бициклистички саобраћај, саставни део управљања овим опасним местом било би постављање бициклистичке стазе за двосмерни саобраћај која би се простирала паралелно уз пешачке токове. Пројектно решење треба да буде такво да обезбеди приступачну транспортну услугу и за особе са инвалидитетом, старе и немоћне особе (обарање ивичњака, тактилне површине упозорења, звучна сигнализација на семафорским стубовима).

Нови Сад, 19.05.2011.