

## **Editorial**

One year after the May floods, acting director of the PE Roads of Serbia, Zoran Drobnjak speaks about the role of our enterprise in the remedy of the damages that occurred during the emergency.

Last year in May, we witnessed the biggest natural disaster ever that struck the Republic of Serbia. The floods of such scale are said to occur not once in a hundred but once in a thousand years. It was raining constantly for more than 48 hours, heavy struggle against floods and water torrents lasted for 9 days.

Unfortunately, human lives were not spared. Houses, bridges, roads were destroyed, landslides were activated.

In difficult and dreadful times, the entire Serbian nation was put to the greatest test of solidarity and humanity. Funds for assistance were more than limited, however, good will and feeling of greatest empathy and solidarity initiated the people to unite and find strength for almost impossible things in fighting against the scary face of the nature.

During this emergency, PE Roads of Serbia gave its contribution among the first entities in the very first hours of the disaster, it is stated by the director Zoran Drobnjak, also highlighting the role of supervisors, all road companies and their employees, which were in the field with their manpower and machines for days and nights, without a break, for 24 hours a day, tirelessly working to remove the water, deposits, rockalls, debris, fallen trees and other consequences of the floods.

We reacted efficiently, together with the road companies, thus establishing normal traffic on I and II category state roads. We did everything in order to provide the conditions for the people in the flooded areas to continue fast with their usual life activities as quickly as possible, it is highlighted by director Drobnjak.

### ***SIDEBAR***

Award of the national prize for business excellence "Quality Oscar" to our enterprise is the evidence that exceptional results were achieved for improving and developing joint work of the PE Roads of Serbia primarily with the Ministry of Construction, Transport and Infrastructure, Government of the Republic of Serbia, other ministries, local self-governments and municipalities, contractors, road companies and all interested parties. The prize is, at the same time, the proof of readiness of the PE Roads of Serbia to act with firm determination and strictly professionally at any moment, even in the most frightful one.

**(ACTIVITIES OF THE PE ROADS OF SERBIA DURING THE MAY FLOODS)**  
**First reactions after the surge of the water torrent**

West and central Serbia were mostly jeopardized in natural disasters in May 2014. Uncurbed flood waters caused great damages on the network of both I and II category state roads and local roads. Professional teams of the PE Roads of Serbia visited the damaged routes struck by the natural disaster and recorded the damages caused on the roads, bridges and all accompanying infrastructural facilities. Great damages were stated on structures, bridges, culverts, retaining walls where the water flushed the foundations of abutments and jeopardized the stability of structures, causing their collapsing.

All road companies actively participated in the fight against the floods, clearing of sites, river beds, cleaning of slopes and landslides thus providing assistance to the local population. The works were carried out on the territories of the following municipalities: Obrenovac, Kuršumljija, Smederevo, Rajka, Brus, Belgrade, Bajina Bašta, Valjevo, Krupanj, Mali Zvornik, Osečina, Ljubovija, Loznica, Šabac, Vladimirci, Vlasotince, Koceljeva, Ub, Mionica, Ljig, Kosjerić, Požega, Ivanjica, Čačak, Gornji Milanovac, Lučani, Knić, Rekovac, Kragujevac, Šid, Despotovac, Petrovac na Mlavi, Požarevac, Zaječar, Velika Plana, Kraljevo, Trstenik, Varvarin, Svilajnac, Paraćin, Jagodina, Lajkovac, Sremska Mitrovica, Irig, and to a smaller extent on the territory of Užice and Novi Pazar.

The works most intensive were the removal of debris and rockfall from the road base, as well as the clearing of deposits of extreme landslides from the road. Significant amounts of crushed stone were used in order to temporarily re-establish the traffic on the segments where the pavement deflected due to deep landslides. For most both national and local roads, which were closed for traffic, teams of road workers provided alternative road routes or deviations with their constant operations for the purpose of accessing the cut-off settlements.

**Establishment of Information Centre for Road Conditions**

For the purpose of fast and accurate information for the public, as all as all interested parties, PE Roads of Serbia immediately established the Information Centre for Road Conditions in the Department for Public Relations, which was operational 24/7. Two landline numbers were active: 011/3040-655, 3040-666, one mobile phone number: 064/861-7117 and e-mail address: [info@putevi-srbije.rs](mailto:info@putevi-srbije.rs). Establishment of the Information Centre of the PE Roads of Serbia has enabled to answer the numerous calls and emails, owing to which the citizens could get instructions about how and which route to use to continue their trip. On the other hand, it was important to give all efforts to try to keep those who wanted to reach their families in the flooded areas in order to prevent additional complications. Passengers in transit were informed about the safe travel options through the Republic of Serbia, via E-75 motorway in the direction towards Greece, Hungary and other countries in the region. Report on the condition on I and II category state roads in the Republic of Serbia was updated on daily basis, and during the crisis situation it was updated several times a day. Collected information were regularly submitted both to the Ministry of Construction, Transport and Infrastructure, Republic Centre for Emergency Situations of the Ministry of Interior, AMSS and all printed and electronic media. Also, updated

data about closures, interruptions, regime modifications and traffic normalization were regularly placed on the website of the PE Roads of Serbia, both in Serbian and English.

In addition to providing the information about the passability and condition on I and II category state roads, Information Centre also provided assistance by informing the Centres for Emergency Situations, sending them to the addresses where citizens were to be evacuated who could not evacuate themselves and leave the flooded areas without other people's assistance.

PE Roads of Serbia issued appeals to the participants in traffic about potential dangers on the road occurring from frequent rockfalls, water, fallen trees, debris and deposits, landslides and damages of the road itself. Citizens were also appealed by sending warnings about weather changes obtained from Republic Hydrometeorological Service of Serbia.

During the emergency situation, all road companies were engaged in the field with the required manpower and machines for 24 hours a day to eliminate water, debris, fallen trees and other deposits. It is of particular importance to highlight that the teams of road companies were preventively engaged in the field from the very first announcements of water level increase. When the emergency situation was proclaimed, manpower and machines quickly arrived to the jeopardized area or they were already present.

Beside the engaged 800 workers, excluding machine operators and drivers, also 150 trucks, 30 loaders, 25 excavators, 60 road vehicles, 12 bulldozers and 40 combined machines were engaged every day.

During the emergency situation, there was a constant coordination among the PE Roads of Serbia, local self-governments and Centre for Emergency Situations of the Ministry of Interior of the Republic of Serbia. Employees at the PE Roads of Serbia sent help to the affected population in the amount of a per diem and in cooperation with the Institute for Blood Transfusion they organized voluntary blood donation.

### **Remedy of consequences of floods on state roads**

IIA and IIB category state roads suffered the greatest damages. PE Roads of Serbia has remedied numerous state and local roads that were damaged during the floods last May. A lot of damages, mostly in the form of cracks and classic landslides, were remedied with good quality.

One of the drastic examples is II B category state road No.313, section Rakovac-Zmajevac, on which the torrent originating from voluminous precipitation carried with it the shoulder and pavement on certain road segments, thus safe traffic was jeopardized. The works started and they were finished professionally and with good quality within the record deadline of almost one month and this section is open for traffic.

Consequences of the floods are still being eliminated on almost the entire territory of Serbia, deviations are being constructed on all landslides where it is possible.

Photo 1. Road segment prior to intervention



Photo 2. Road segment after intervention



### **Bridge Koceljeva**

In May 2014, structure of the bridge Koceljeva collapsed because of the rise of the water to the foundation of the middle pier, which caused the complete closure of I B category state road No. 21 for traffic. Since the scale of the damage on the bridge was so big, decision was made to construct a new bridge instead of the old one.

Integral continuous bridge structure was designed without expansion joints and bearings, which increased the durability of the bridge and reduced its maintenance costs. The main bearing span of the bridge consists of two beam continuous beams of reinforced concrete, with constant height  $d=1.10$  m and width 2.50 m, connected with reinforced concrete slab with thickness  $d=25$  cm. Superstructure of the bridge is rigidly joint with piers and abutments. Consoles of pedestrian footways are laterally fixed to the main girders, with width 1.70 m.

Total length of the bridge with wings is 59.82 m. Spans of the new designed bridge are: 14.80+21.40+14.80 m. Road alignment is divided into two lanes 3.60 m wide each, so that the total width of the road is 7.20 m.

Additionally, river Tamnava is regulated on the segment of the bridge, as well as before and after the bridge, in the total length of 411 m. The road is also adjusted and the road level is lifted by about 70 cm.

Serbian Prime Minister Aleksandar Vučić officially opened the bridge for traffic on April 18, 2015.

Photo 1. Old bridge (View from the downstream side)



Photo 2. New constructed bridge



Photo 3. New constructed bridge (side view)



Photo from Twitter



Photos from the Ministry website





Vučić - Twitter





## Remedy of the landslide “Pejičina krivina”

“Pejičina krivina” is another of the numerous active landslides on I B category state road No. 23, section Kratovska stena – turning to Markovica. After the landslide was activated and certain deformations formed on the road, left carriageway (in the direction towards Ovčar Banja) was widened – mild deviation and deformed asphalt pavement was removed in order to relieve the landslide.

Having in mind the general condition of the road and traffic volume on this section, it was necessary to implement urgent remedy works. Character and seriousness of the landslide conditioned investigations and preparation of remedy design.

The landslide was stabilized by the construction of reinforced concrete retaining wall in the total length of 44 m and height of 5.1 m, which was executed in four levels. This work was done in 30 days.

On the stated road with high traffic volume, vehicles moved safely even during the works.

Attached photos:

### 1. Before the works



2. During the works:



### **Bajina Bašta, Kosjerić and Krupanj – a year after**

A year has passed since terrible floods affected eight municipalities on the Serbia territory. Obrenovac suffered the greatest damages, followed by many other places: Krupanj, Šabac, Paraćin, Mionica, Ub, Osečina, Valjevo, Lajkovac... The Presidents of Bajina Bašta, Kosjerić and Krupanj, Radomir Filipović, Milijan Stojanić and Rade Grujić respectively, inform us on previous situations in these three municipalities and everything that has been done in one year's time.

The most important and only real help during the May floods in 2014 and subsequently, after the rehabilitation, with due respect to all Serbian institutions, has been provided by the Ministry of Construction, Transport and Infrastructure – Head of Cabinet Marija Blečić and the PE „Roads of Serbia“, Acting Director Zoran Drobnjak, **Radomir Filipović, the President of the municipality Bajina Bašta, says and starts a conversation for the Newsletter 12.**

Cooperation commenced in the first moments after the disaster occurred, when we realized that almost a half of municipality's territory was vanishing and that the state road of vital importance was cut off on two spots (Bajina Bašta – Rogačica and Kostojevići – Rogačica), **Filipović says.**

On the territory of Bajina Bašta it was necessary to get 1150 km of local roads, approximately 50 km of state roads and 250 – 300 km of private roads leading to the forests and fields operational, and to bring them to the previous state, **Filipović says.**

Employees from the PE „Roads of Serbia“ mostly assisted with reconstruction of the state roads, but the rehabilitation works were executed on local roads, too.

Cooperation with Acting Director of the „Roads of Serbia“, Executive Director of the Sector for Maintenance of I and II Category State Roads Zoran Stojisavljević and field engineers Branko Velanac and Rade Marjanović influenced fast solution of great problems, **Filipović pointed out.**

Together with the municipality of Ljubovija, which we are adjacent to, we managed in the first wave to protect all bridges in Drina Valley, establish traffic and release Debelo brdo.

The President Filipović emphasized: the river Rogačica, which was at that point bigger than river Drina is today, showed incredible descrutive power; they managed to construct bridge over Đojin stream even though water deposited rocks and stones. They were continuously on call on Carevac, from first to last drop of rain, until June 2015.

**The most important thing is that we had no civilian casualties during floods – we have managed to do the impossible!**

Deputy Prime Minister of the Republic of Serbia, Prof. Dr. Zorana Mihajlović, officially opened the communication in Kaluđerske bare, centre of Tara Mountain, lifeblood and basis for development of tourism, road Kaluđerske Bare – Mitrovac, on which two bridges, damaged by

floods, have been rehabilitated. This communication has been completely reconstructed very well and in record time, first of all thanks to the PE „Roads of Serbia“.



All rehabilitated roads, landslides, structures on the territory of the municipality of Bajina Bašta were done well and professionally with great and generous help of the PE „Roads of Serbia“.



**The municipality of Kosjerić struggled with the water forces.**

It is difficult to put in one sentence our gratitude to the PE „Roads of Serbia” for their hard work and effort during May floods which brought calamities and problems both to the municipality of Kosjerić and numerous other municipalities, the President of the municipality of Kosjerić, Milijan Stojanić, said.

It is very important to emphasize humanity that came out after only few hours, first of all expressed by the Serbian Government, and immediately after by the PE “Roads of Serbia” which engaged all the necessary mechanisation and helped to the municipality of Kosjerić where they stayed for entire four months.

In the most critical moment, when water threatened to flood the entire city, the PE “Roads of Serbia” were first to help us. It was 24hours work, machines didn’t switch off because the most important activity was to transport the material and make mounds in order to minimise the damage.

The PE „Roads of Serbia assisted primarily by providing the machines and manpower, and when flood calmed down, they helped us with the rehabilitation of both the local and state roads and bridges, because in addition to local infrastructure the main road was ruined.

On the first place, the main role was played by Zoran Drobnjak who understood the situation and informed the line Ministry and the Government on magnitude of aid that the municipality of Kosjerić needed in its helpless situation.

Representatives of the Ministry of Construction, Transport and Infrastructure, members of the Government and your Director visited on multiple occasions the municipality of Kosjerić during floods.

Now, a year after the floods, thanks to prompt reaction of the PE “Roads of Serbia”, life in Kosjerić has come mostly back to normal. The PE “Roads of Serbia” has really showed great compassion.

The natural disaster which could have destroyed the entire Municipality will go down in history of Kosjerić, and in this tragedy it is worth to mention those who first came to assist, namely the Serbian Government and the PE “Roads of Serbia”, which we are immensely grateful for, the President of the Municipality of Kosjerić, Milijan Stojanić, finishes.

**Municipality of Krupanj faced similar problems.**

Floods and landslides, which began to seriously threaten the life of citizens already on 14 May, caused complete cut off of Krupanj from all road routes. Even telephone communications were impossible to establish. Additional problem were infections and epidemics, and the road routes had to be opened as soon as possible, **Rade Grujić, the President of the municipality of Krupanj, remembers.**

The PE “Roads of Serbia” was first to react, and already on 17 May 2014 the bridge on the road towards Krupanj was made operational. This fact had special importance, as highlighted by the President of the municipality, because it was finally possible to leave Krupanj and seek help. „I would like to specially point out“, Grujić says, „that General Director of the PE “Roads of Serbia”, Zoran Drobnjak, and the Executive Director of the Sector for Maintenance of I and II Category State Roads, Zoran Stojisavljević, came here in the first days of floods, immediately after the rehabilitation of bridge in the village Brštica which leads over Stolice to Loznica“. Additionally, the first convoys with humanitarian help started to arrive. Situation on road route towards Ljubovija demanded also a prompt solution, because the landslide completely cut off the road and prevented access to newly planted areas of raspberries, where the alternative road was built, so that people could reach the plants and continue with their daily activities.

From a total of 26 bridges 14 was destroyed on local roads and 8 was damaged, while 120 km of roads was destroyed or damaged. On the road route from Zavlaka towards Krupanj the biggest problem were landslides, namely 7 of them. River simply washed away 16 km of that road, but, as Rade Grujić says, everything is sanitized and paved. The following roads have been renewed: Krupanj-Zavlaka – 15 km, 6 km of road on section Krupanj-Jagodnja, road to Ljubovija and road to Loznica via Stolice and three local roads. Additional task for the PE “Roads of Serbia” were streets in flooded Krupanj. The PE “Roads of Serbia” together with donors rehabilitated three streets. In Žikica Jovanović Španac Street, located near hospital, the power of river was so devastating that it not only washed the road away, but also the mound which should have prevented water from advancing into courtyards. Fortunately, assistance arrived at the right time, and houses were eventually saved. The PE “Roads of Serbia” performed impressive actions, and in name of all citizens of the municipality of Krupanj and in my own name I would like to express the deepest gratitude to your enterprise, **Grujić said.**



## SECTOR FOR TRAFFIC MANAGEMENT INFORMATION SYSTEM CONSEQUENCE OF MAY FLOODS 2014 AND RECONSTRUCTION OF STATE ROADS

Natural disasters from May 2014 had devastating intensity of damage on state roads in central and west parts of the RS territory.

The Government responded by establishment of the Public Investment Management Office which together with the World Bank established a team for road infrastructure including the experts from the Database Department of the Sector for Traffic Management Information System of the PE "Roads of Serbia".

Task of the road infrastructure team was to perform damage assessment, define funds necessary for renewal, and in case this intensity of natural disaster repeats, to prevent damages from recurring and losses in traffic caused by impassability, i.e. impeded traffic, as well as losses on alternative routes.

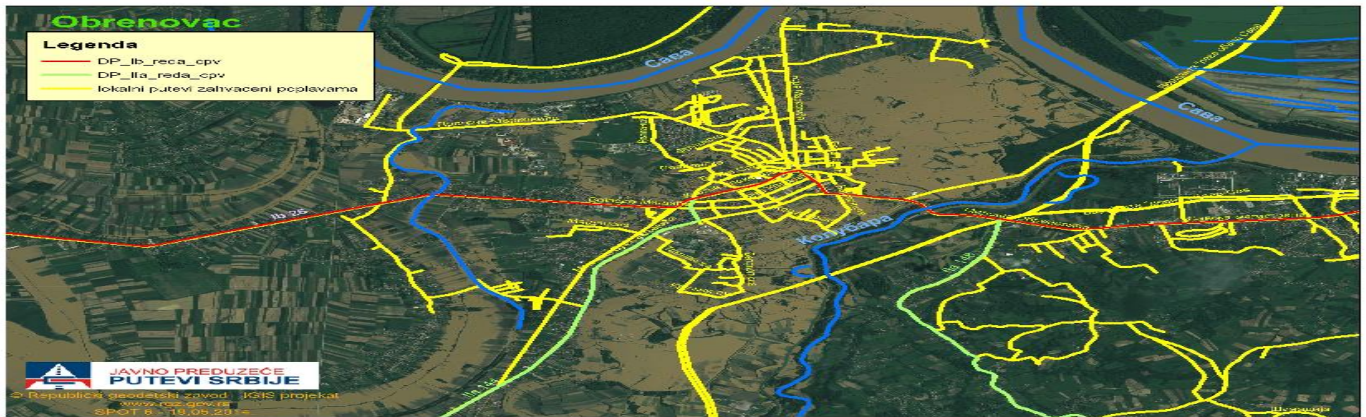
Additional team task was a preparation of information for Paris Donors' Conference, and monitoring of renewal as well.



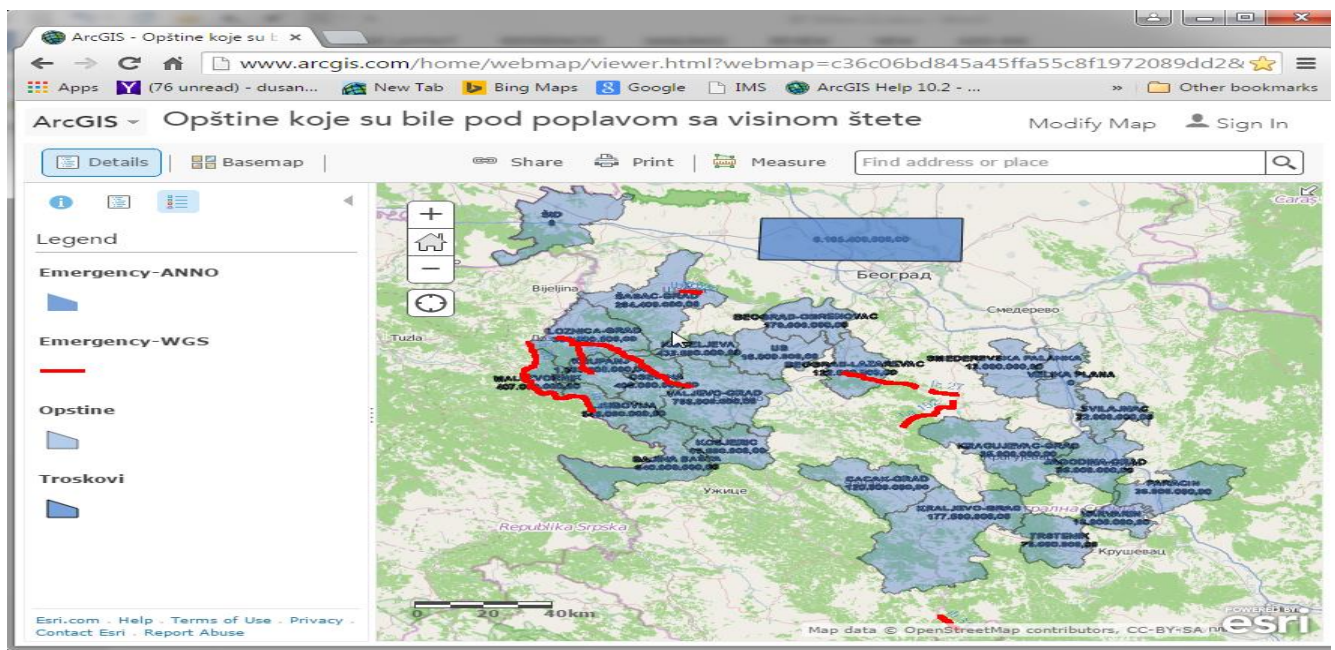
On satellite imagery dated 19 May 2014 the scale and intensity of natural disaster are visible. The satellite imagery were obtained through cooperation with the project IGIS RGZ.



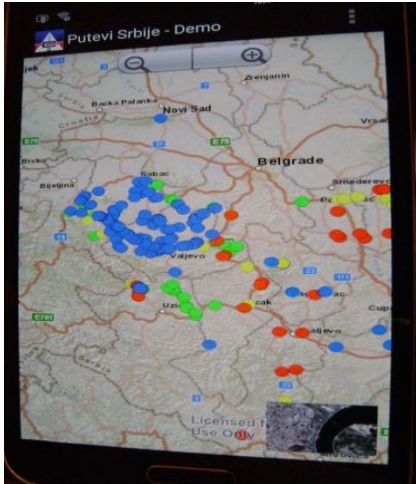




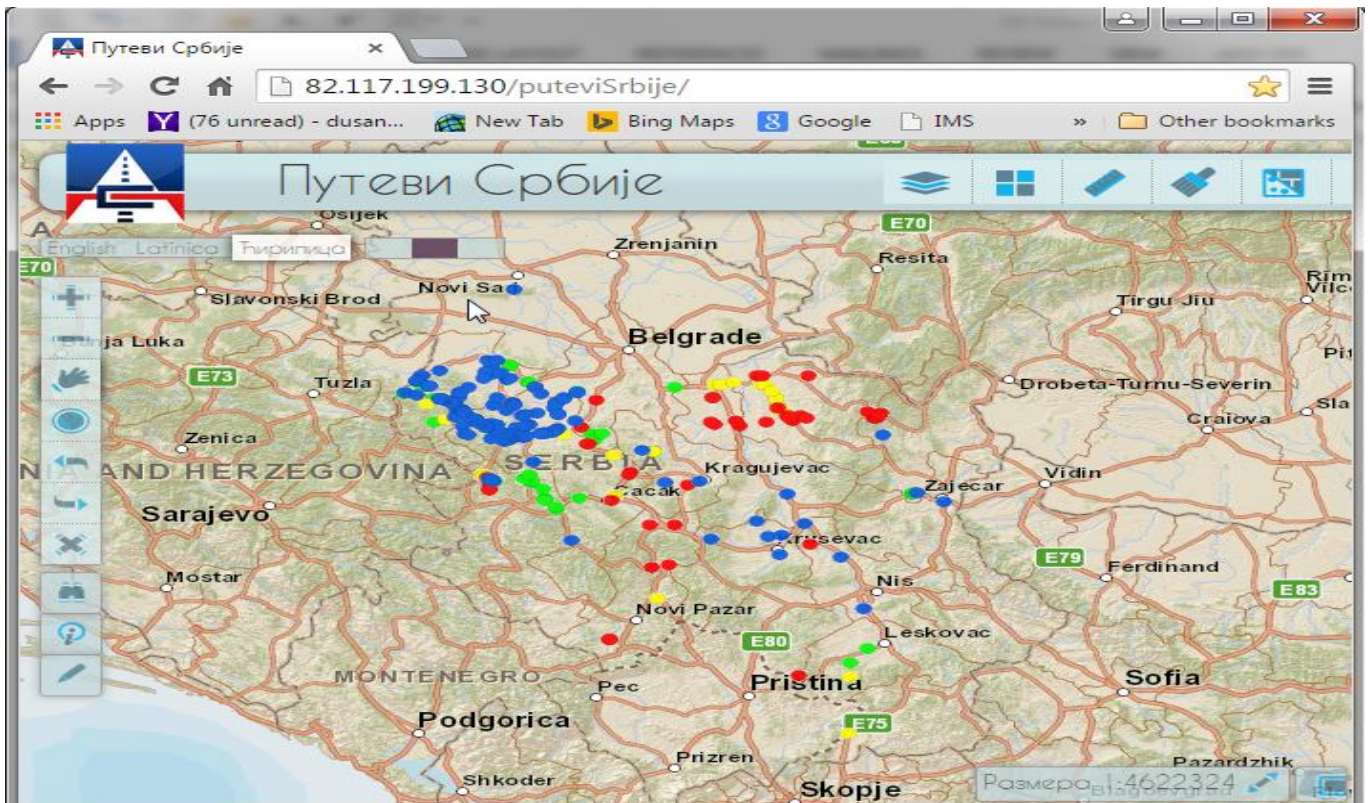
Web display of damaged road infrastructure per municipalities, and urgent investment works supported by ESRI ArcGIS cloud.



Android mobile application for gathering data on bridges from the field along with direct data upload through service of GIS server.



Web editing application for monitoring of bridge renewal and structural data through GIS server.



## **Rehabilitation of roads from IPA programs**

Based on a report on special inspection of roads and road structures, and identified damages as consequences of floods on I and II Category state roads, we applied for rehabilitation of the following state roads from IPA programs: I B Category state road No. 22, Belgrade – Svračkovac; II A Category state road No. 150 Bosuta – Gornja Toplica (Dragolj) and Gornja Toplica – Belanovica – Arandelovac (Misača, Dragolj); II A Category state road No. 152, Topola – Guriševci – Rudnik; II B Category state road No. 358, Kadina Luka – Srasle Bukve (rehabilitation of cut off part of the road at village Ba is completed), II B Category state road No. 364, Brajkovac – Belanovica – Rudnik (Ljig – Rajac, Slavkovic; Belanovica); II A Category state road No. 150, Arandelovac – Ranilović (Misača); II B Category state road 358, Kadina Luka – Ba – Srasle Bukve; II B Category state road No. 364, Rudnik – Belanovica.

### **INDEPENDENT TRADE UNION OF THE PE „ROADS OF SERBIA“**

May 2014 in Serbia was characterized by devastating floods causing numerous fatalities and bringing suffering to many inhabitants of our country. In such difficult times, the humanity, compassion and Trade Union of the PE “Roads of Serbia” from Belgrade, which made a good organization and in accordance with its abilities provided aid to its members who suffered from consequences of floods, arouse on national level.

The first aid to imperilled people, amount of approximately RSD 200.000,00 was given from the Union’s budget formed by the payments of union membership fee and given as nonrefundible aid to the most imperilled colleagues. Trade Union gave numerous cash loans each month during the past year to its members from the funds raised by the membership fees.