

RSI implementation in the countries of the region

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Abstract: As early as 2001, the European Commission expressed in its White Book the need for assessing the impacts on road safety and conducting road traffic safety inspections with the aim of reducing the number of fatalities in car crashes from 2001 to 2010. In this context, the Directive 2008/96/EC on road infrastructure safety was issued. The purpose of this Directive was to ensure higher level of traffic safety during all phases of the road life cycle, from its planning, designing, constructing to the maintenance of the road already in operation.

The said Directive requires for procedures relating to the Road Safety Impact Assessment (RSIA), Road Safety Audit, Network Safety Management (NSM) and ranking of high accident concentration sections (Black Spot Management) and Road Safety Inspection (RSI) to be established and implemented.

This paper aims at showing the current state of affairs in countries of the region with regard to the implementation of the road safety inspections.

The results of this paper will provide the scientific and expert public with insights into the state of traffic safety of the region's countries with regard to Road Safety Inspection.

Key words: inspection, road, traffic safety.

INTRODUCTION

In 2001, the European Commission in its White Paper titled „European policy for 2010: time to decide“ expressed the need for assessing the impacts on road safety (hereinafter referred to as: RS), and carrying out road safety inspections with the aim of reducing by 50% the number of fatalities in road accidents for the period 2001-2010. As proposed by the Commission, the European Parliament and the Council adopted the Directive 2008/96/EC on road infrastructure safety management [1].

The purpose of this Directive is to ensure that the appropriate level of RS is maintained during all phases of the road life cycle, from its planning, designing, constructing to the maintenance of the road already in operation.

This Directive applies to the roads forming part of the Trans-European road network but excluding tunnels that fall under the scope of the Directive of the European Parliament and the Council 2004/54/EC on minimum safety requirements for tunnels in the Trans-European Road Network (the Directive 2008/96/EC, point 5). One of measures adopted in this Directive in relation to increasing the level of road safety is the introduction of the Road Safety Inspection (RSI).

Road Safety Inspection is the study of an existing road or a section of road to identify any deficiencies that may lead to road accidents [14]. Numerous studies have confirmed the role and importance of RSI implementation with the view of reducing the number of road accidents and increasing the level of RS ([3], [6], [10], [4], [5]).

ROAD SAFETY INSPECTION

British traffic engineers were the pioneers of road safety inspection and first started, as early as 1980s, to carry out road safety inspections. However, the concept of road safety audits is much older. It reaches back as far as the 19th century, when military rail engineers were ordered to look into frequent rail accidents. Based on their discoveries and recommendations some changes were made in order to prevent similar accidents from happening in future, and the inspections became mandatory with respect to all railroads before their putting into service. The procedures developed in Great Britain during 1980s, were adopted by many other countries worldwide. Thus, in 1990s Australia, New Zealand and the South African Republic started to carry out inspections, while in Europe, the example first set by Great Britain was followed by Denmark, Iceland and Norway. In the late 1990s, a large

number of countries began to show interest in conducting inspections, among others Austria, Canada, France, Germany, Spain, the USA, etc. [9].

The Directive requires member states to introduce and implement procedures relating to [13]

- Road Safety Impact Assessment (RSIA),
- Road Safety Audit (RSA),
- Network Safety Management (NSM), and Ranking of high accident concentration
- sections (Black Spot Management), and
- Road Safety Inspection (RSI).

Road Safety Impact Assessment (RSIA) and Road Safety Audit (RSA) are carried out during the phases of road planning, designing and putting into service, while the Network Safety Management and Ranking of High Accident Concentration Sections and the Road Safety Inspection are conducted on roads already in use. It is important to note that the cost-benefit ratio is inversely proportional to the road use time variable, that is to say the highest effects with the lowest costs are possible during the phases of planning and designing of roads.

Road Safety Inspection (RSI)

RS Inspection is a preventive tool to reduce the number of road accidents and consequences thereof through identification of deficiencies of a road and the surrounding area. According to Rune Elvik, road safety inspection is a systematic check of existing roads in order to identify hazardous points, and it promotes measures to deal with this issue. This process is carried out on existing roads according to the set methodology. RS inspection results in the preparation of the report on detected road hazards and road safety deficiencies, to which the client (road managing company or road authority) must provide response. RS inspection is not just the assessment on whether the standards relevant for existing roads are applied properly, but rather represents a comprehensive review of the state of play and potential problems existing on roads by observing it from the perspective of different traffic participants. Thereby, appropriate solutions to eliminate or at least to reduce road safety problems are suggested taking into consideration the needs of various traffic participants.

RS inspection must be carried out when:

- a road, a section of a road or an intersection is identified as dangerous, for example: according to the accident database or iRAP,
- there are other information about serious safety problems on a road, a section of a road or intersection given by the Police, Road Maintenance Unit, local administration etc.,
- a reconstruction or rehabilitation is planned in the near future,
- it is due according to the RSI time schedule.

The Client and the Inspector participate in the RS inspection. The Client, typically an organisation respon-

sible for road management (road manager), orders the RS inspection. The Client delivers the required documents to the Inspector who then reviews and analysis them in detail in the office and after that conducts a field study, detects problems and prepares a report on RS inspection and proposes measures to be taken.

Not every detected problem must be covered by a proposed measure, nor the proposed measure binds the client to proceed according to it. The Inspector delivers the report to the Client who is required to provide written statement on measures accepted and rejected along with reasons behind such decisions. The Client is required to provide necessary funds and other resources needed for the implementation of the accepted measures and to start implementation thereof as soon as possible.

RS Inspection is conducted by an independent expert team. The team has the task to review all the influence elements of a road (alignment, change of curve radius, width of carriageway, condition of carriageway, sight distance, etc.), that could directly or indirectly cause a road accident. The team must be disciplinary and composed of several members in order to minimise and, if possible, eliminate the subjectivity. In order to ensure an efficient field inspection and adequate selection of measures, the RS inspection should be conducted by highly experienced and well trained RS experts. The experience of the team is very important when it comes to making an assessment of the importance of detected problems and the selection of measures which will be the most effective in relation to the invested resources. It is very important that the RS inspection is conducted objectively. PIARC suggests a team consisting of a team leader, team members, specialist advisors (if needed), and observers.

When conducting the RS inspection, the team uses checklists which serve as a reminder to record problems detected during the check of a particular section. The RS inspection must take into consideration the following elements: time of inspection (day or night), seasonal variations (sun, snow, rain, ice, fog), and site specific matters (road passes near school, supermarket, etc.).

In order to identify hazards with certainty, the RS inspection should be conducted both by vehicle and on foot, and covering both traffic directions. The identified problems are broken into eight groups: function of a road; cross section; alignment; intersections; public and private services, service and rest areas, public transport; vulnerable road users; traffic signs, markings and lighting; roadside features and passive safety installations.

Function

This part defines the category of a road, does the road pass through cities or built-up areas, what types of vehicles are using the road and what is the percentage of certain categories' participation in traffic, are speed limits appropriate, what type of traffic generally prevails

(transit, local or mixed), and whether the road is being used by vulnerable road users (pedestrians, cyclists etc.)

Cross section

This part checks the width of a road and the width of traffic lanes, surface conditions, existence and width of shoulders, crossfall of carriageway, existence and width of separate lanes for cyclists/pedestrians.

Alignment

With regard to the alignment, it is important to determine whether there are horizontal curves and their number, the condition of vertical curves as well as are there adequate sight distances.

Intersections

In addition to road intersections, this part analyses and defines the condition of accesses to private properties as well as railway crossings condition, that is the intersection where railway line crosses a road.

Public and private services, service and rest areas, public transport

This part examines whether there are access roads to service and rest areas, schools, hospitals, supermarkets, restaurants, parking lots, loading and unloading facilities, etc. Likewise, it is necessary to look into the state of play with regard to public transport on the observed section as well as to check the location of bus stops.

Vulnerable road users

RS inspection includes the safety check of vulnerable road users, that is pedestrians, bicyclists, scuter-mop-er drivers and motorcyclists. In case there are no separate lanes intended for the use of vulnerable road users, it is necessary to determine, based on the percentage of vulnerable road users who participate in traffic and those who get fatally injured in road accidents, is there a need to build such lanes or this category of road users can be protected by implementing some other measures.

Traffic signs, markings and lighting

This part includes the analysis of the state of play with regard to the horizontal and vertical traffic signals. It is checked whether the signals are legible, clear and visible both during the day and at night. Also, checks on the number and position of traffic signs, as well as checks on lighting conditions on roads or road sections are carried out.

Roadside features and passive safety installations

The issues that may arise in relation to the road surrounding include deep channels, high guardrails or cuts, foliage, trees or other objects located in the immediate vicinity of roads. Also, the elements of passive safety installations should be checked as they may pose a road

safety risk (for example: incorrectly placed guardrails) [14].

RESULTS

Bosnia and Herzegovina

The Law on Fundamentals of Traffic Safety on Roads in Bosnia and Herzegovina [7] defines the term "road safety inspection" as the procedure for independent safety checks on existing public roads. Furthermore, the Law stipulates that the existing roads, in order to comply with the road safety requirement, must be subjected to the road safety inspection system by the competent road authorities. Also, envisaged to be adopted is an act of secondary law which will set out the basic requirements to be complied with by roads, their elements and facilities in terms of road safety, road safety audit and road safety inspection. To date the said act has neither been drawn up nor introduced.

The situation is significantly different when it comes to the RS inspection system implementation at the Entity and BiH Brčko District level, and, in particular, in case of the Republic of Srpska. Thus, the Law on Fundamentals of Road Safety in the Republic of Srpska [8] stipulates, inter alia, that in order to improve road safety a system of mandatory and independent safety checks of the existing public roads shall be put in place. Furthermore, the Law requires existing public roads to undergo compulsory safety checks aimed at preventing road accidents and identifying deficiencies that could affect safe traffic performance. The checks shall be mandatory with respect to main and regional roads, and also in the case of other public roads and streets in built-up areas, if needed. The checks shall be carried out by an independent licenced legal entity or natural person, who may not be involved in the process of managing the roads undergoing checks. The Traffic Safety Agency of the Republic of Srpska is in charge of licensing legal and natural persons. Also, the Law envisages the adoption of the secondary legislation, namely the Rulebook on Audit and Inspection and the Requirements and Manner of Licencing.

The Rulebook on Audit and Inspection and the Requirements and Manner of Licencing [10], sets forth the requirements and courses of action with regard to road safety audit, road safety inspection, the requirements with respect to duties of the road safety auditor and inspector, the procedure of licencing and monitoring over the work of road safety auditors and inspectors, the database, as well as valid lists of road safety auditors and inspectors.

The Rulebook prescribes that the RS inspection is a formal and independent assessment of an existing road safety made by an independent expert or a team. Further, the RS inspection is a preventative measure consisting of regular and systematic safety checks conducted on existing public roads, and covering the whole road network.

Road safety inspection can be:

- a. periodic-which means the inspection of traffic signalization, the road and the surrounding, carried out every two years on international roads, motorways and expressways and every five years on main, regional and local roads; and
- b. targeted-which means the inspection of road sections with the highest level of traffic risk.

According to the information available at the official website of the RS Agency for Traffic Safety [15] as seen on 02.06.2016, currently there are 20 natural persons and 6 legal entities that are licenced to perform road safety inspections. It is important to note that there are no official information about road safety inspections carried out on public roads of the Republic of Srpska in the period following the adoption of secondary legislation, that is July 2012 onwards.

As for the Federation of Bosnia and Herzegovina and BiH Brčko District, no primary or secondary legislation has been adopted to regulate more closely the road safety inspection on the existing roads. Also, there are no official information on whether the existing roads are subjected to road safety inspection.

The Republic of Serbia

In the Republic of Serbia, the Law on Fundamentals of Road Safety stipulates that a public road manager shall ensure independent road safety inspection projects, as follows: periodic inspections in every five years for all sections of national roads, targeted inspections for the most dangerous sections of national roads and periodic and targeted inspections for other roads, if possible and needed. Also, the Law stipulates the adoption of secondary legislation which shall, inter alia, define requirements for road safety inspection. It should be also noted here that there are no information on whether the said legislation has been introduced in the meantime. Likewise, there are no official information on whether and to what extent the existing roads are subjected to the road safety inspection.

The Republic of Croatia

In the Republic of Croatia the terms inspection and auditor-inspector have been incorporated into the Law on Roads. In compliance with the Law on Roads, the audit of the project and other documents, within the Trans-European Road Network safety assessment is carried out by a road safety auditor. The road safety auditor is required to hold a certificate issued for a period of five years, and also the Register of Certified Auditors is provided for by the Law.

Meanwhile, in early 2016 The Rulebook on Road Safety Infrastructure Audit and Road Safety Auditors Training was adopted [12].

This Rulebook prescribes the procedure and scope of road safety audit activities, working experience and

professional qualifications of road safety auditors, certification procedure, auditor training and aptitude test programme, additional training programme, the content and manner of keeping the Register of Certified Auditors, auditor report preparation procedure and the procedure for calculating road safety audit activities fee.

It is important to note that the Rulebook concerned applies only to the road infrastructure safety audit from the aspect of planning and construction of new roads or reconstruction of existing road network, and review of existing roads during the initial period of use. No secondary legislation has been introduced to regulate road safety inspection of existing roads. Also, there are no official information on whether and to what extent the existing roads are subjected to the road safety inspection.

CONCLUSION

On the basis of analysis of the road safety inspection implementation status in Bosnia and Herzegovina and the region's countries, that is, Serbia and Croatia, it can be said that the Directive has not yet been fully implemented. That is to say, with the exception of the Republic of Srpska, in the Federation of BiH, the BiH Brčko District and in Serbia and Croatia, there are no natural persons nor entities that are licenced by the competent authority to carry out road safety inspection. Also, notwithstanding the above, there are no information on whether and to what extent the existing roads are subjected to the road safety inspection. In view of the foregoing the question of road safety inspection at the level of local self-government arises.

The importance of road safety inspection is reflected in that it, as the last phase of a proactive activity, makes it possible to eliminate detected road deficiencies so that road accidents do not occur at all. The level of road safety is directly related to conditions prevailing on roads. The detailed analysis of the road influence elements identifies road deficiencies and suggests measures to increase the level of road safety, by applying the criteria of time scale and needed financial resources. This way, the number of accidents and the magnitude of consequences thereof are being reduced, thus directly achieving positive ratio between the resources invested in road safety inspection and the implementation of measures on one side and the potential costs which would be incurred by the road accidents on the other. This is the major benefit accrued from road safety inspection.

In view of the foregoing, and having in mind the worldwide experiences of road safety inspection effects and benefits, the status of road safety inspection in BiH and the region's countries, as well as the road network condition, it would be necessary for both, republic and local authorities to understand and recognize the benefits of road safety inspection and to start implementing this measure without delay in order to produce, as soon

as possible, results which would bring benefits.

Namely, there is a large number of measures proposed on the basis of road safety inspection which do not require substantial funds and with a short implementation period suggesting that the improvement may be brought about very quickly. Basically, there are two main strategies for the implementation of road safety inspection; actions pursued from a local level towards a national level and vice versa. Since the local community roads share in the overall traffic network is considerable, significant progress towards road safety improvement may be achieved by taking an approach from the local level-local authorities responsible for road management, to the national level. Namely, a lot of parties in each local community may, by using collective influence, put „the pressure from the bottom“.

BIBLIOGRAPHY

- [1] Directive 2008/96/EC.
- [2] European Commission. White Book, European Transport Policy for 2010: Time to decide. 2001.
- [3] Elvik, R. (2006). Road safety inspections: safety effects and best practice guidelines. Report of WP 5 of RIPCORD-ISEREST.
- [4] Lipovac, K., D. Jovanov, R. Branković i O. Stević. Report of RSA for the road M-23.1. section Kragujevac-Ravni Gaj, JP Putevi Srbije, Beograd. 2006.
- [5] Lipovac, K., D. Miložić, D. Jovanov i R. Branković. First experience in implementation of RSA (Road Safety Audit), in Serbia-case study, I Road Congress, Sarajevo. 2007.
- [6] Lutschounig, S., Nadler, H. State of the practice RSI. Report of WP 5 of RIPCORD-ISEREST. 2005.
- [7] Law on Fundamentals of Road Safety in BiH 2010.
- [8] Law on Traffic Safety in the Republic of Srpska („Official Gazette of RS“, no.63/11).
- [9] Pokormý, P. Implementation of EC Directive 2008/96 in the Czech Republic, ICTCT workshop. 2012.
- [10] Mocsári, T., Holló, P. Common understanding on Road Safety Inspections. Report of WP 5 of RIPCORD-ISEREST. 2006.
- [11] Rulebook on the audit and inspection, the requirements and procedure of licencing („Official gazette of RS“, no.72/12).
- [12] Rulebook on the audit of road safety infrastructure and on road safety auditors training (“Official Gazette of the Republic of Croatia“, no.02/16).
- [13] Tollazzi, T., Zavasnik, Z., Zajc, L.J. Implementation of Directive 2008/96 in Republic of Slovenia, Modern traffic, 1-2. 2012, pp.125-128
- [14] World Road Association (PIARC), Road Safety Inspection Guideline, 2008.
- [15] www.absrs.org