

Dangerous intersection on state regional road R1 219 1236 (Križni Vrh, Slovenia)



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Video overview of reserch

Direction 2

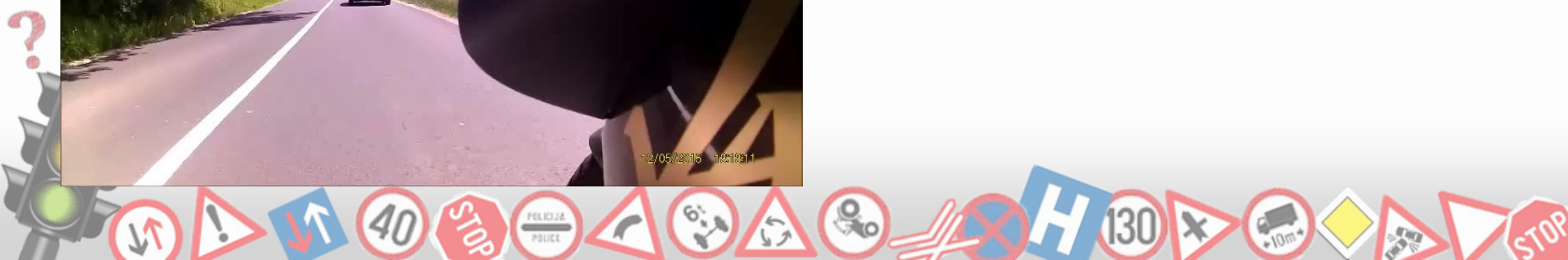


Main road



Side street

Direction 1



Traffic volumes



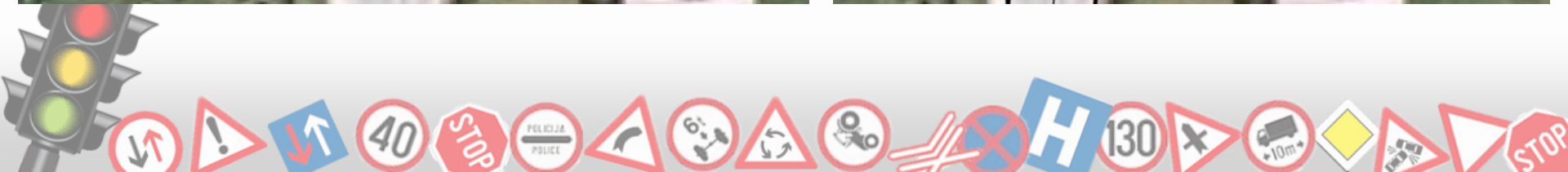
AADT Traffic volume on side street
is estimated on approximately 300
vehicles per day

Traffic volume on main road

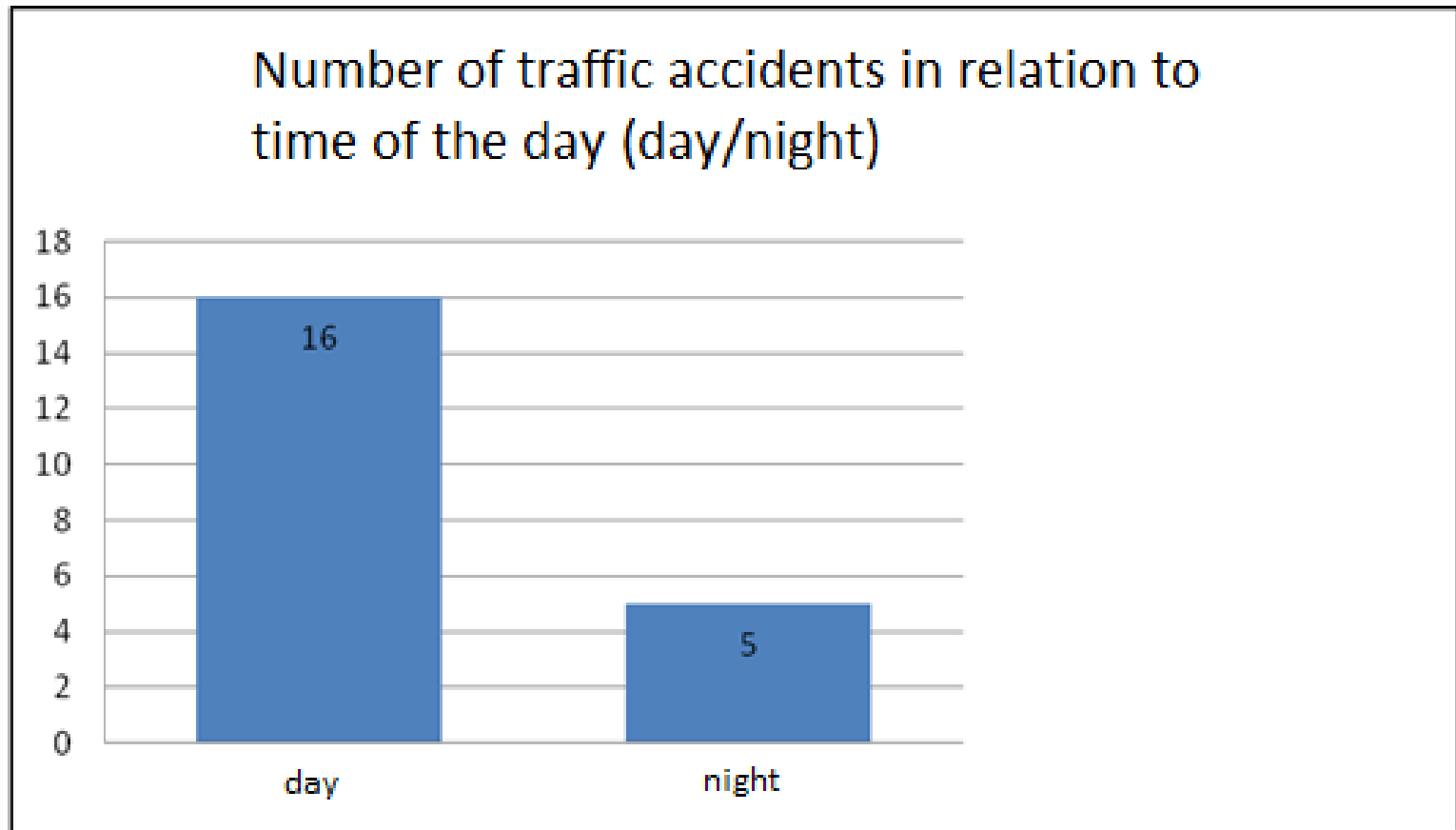
YEAR	AADT	MOTOCYCLES	CARS	BUSES	TRUCK (<3,5t)	TRUCK (3,5 -7t)	TRUCK (> 7t)	TRUCK + TRAILER
2009	5570	42	4687	31	377	113	162	158
2010	5556	38	4674	31	376	111	159	167
2011	5488	41	4620	28	372	106	151	170
2012	5183	39	4466	27	266	103	125	157
2013	5005	39	4302	18	341	71	88	146
2014	5098	42	4369	19	336	59	120	153



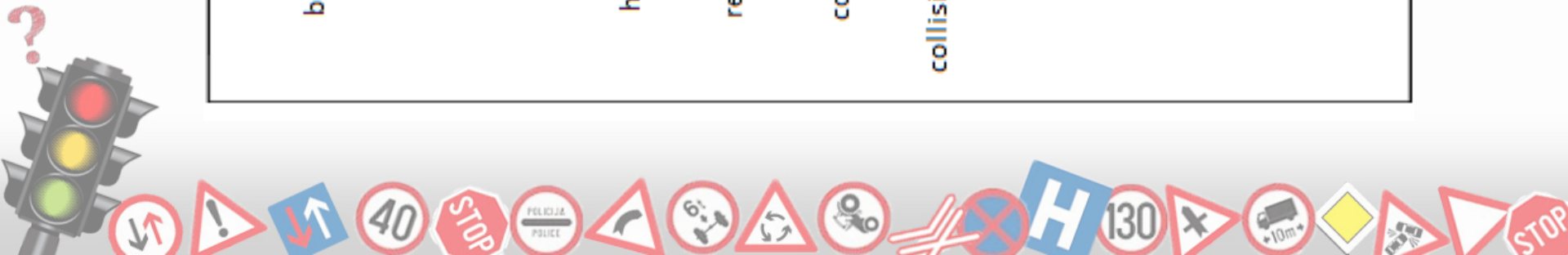
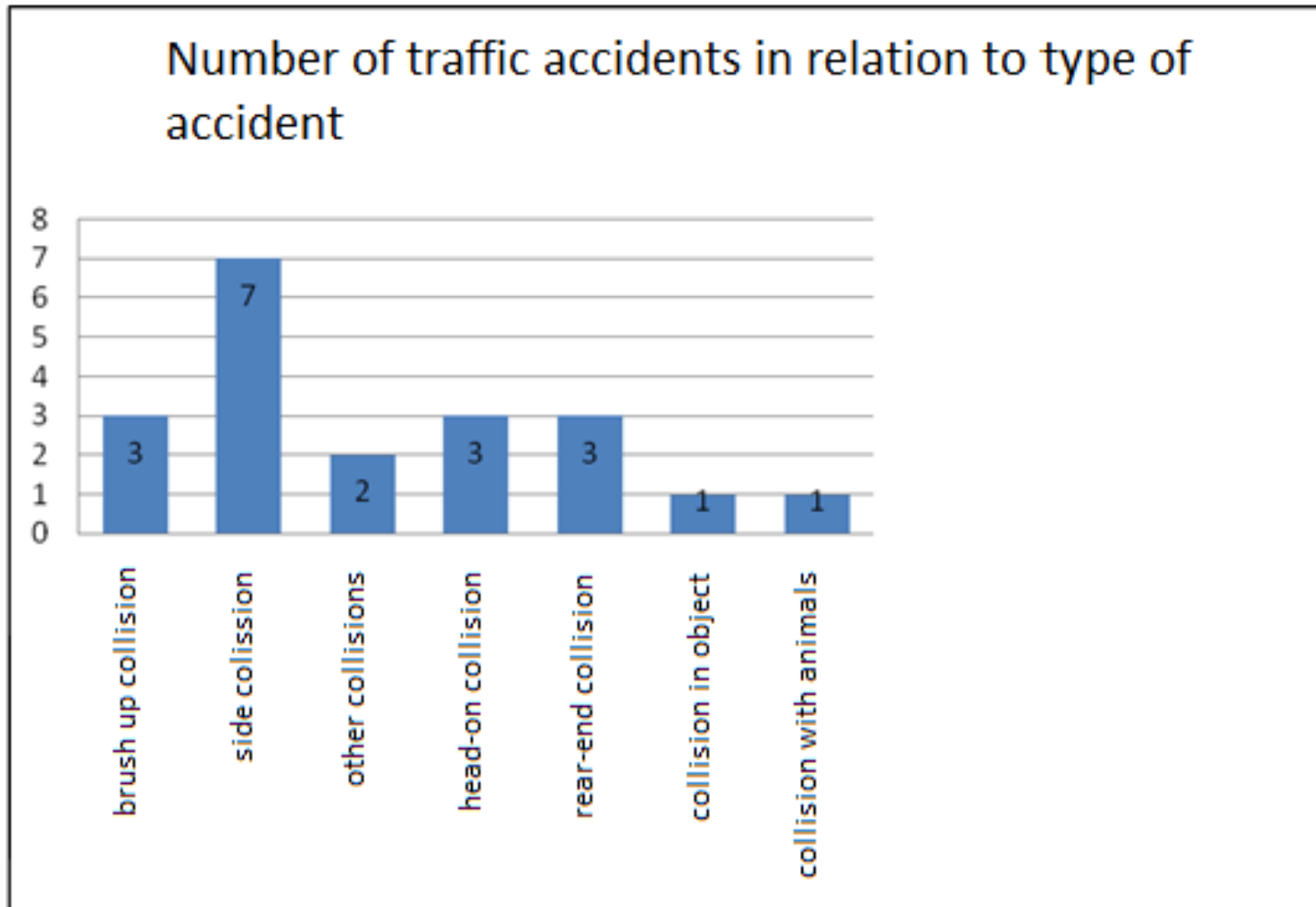
Intersection dimensions (unit: [m])



Traffic accident statistics

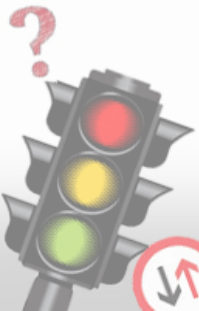
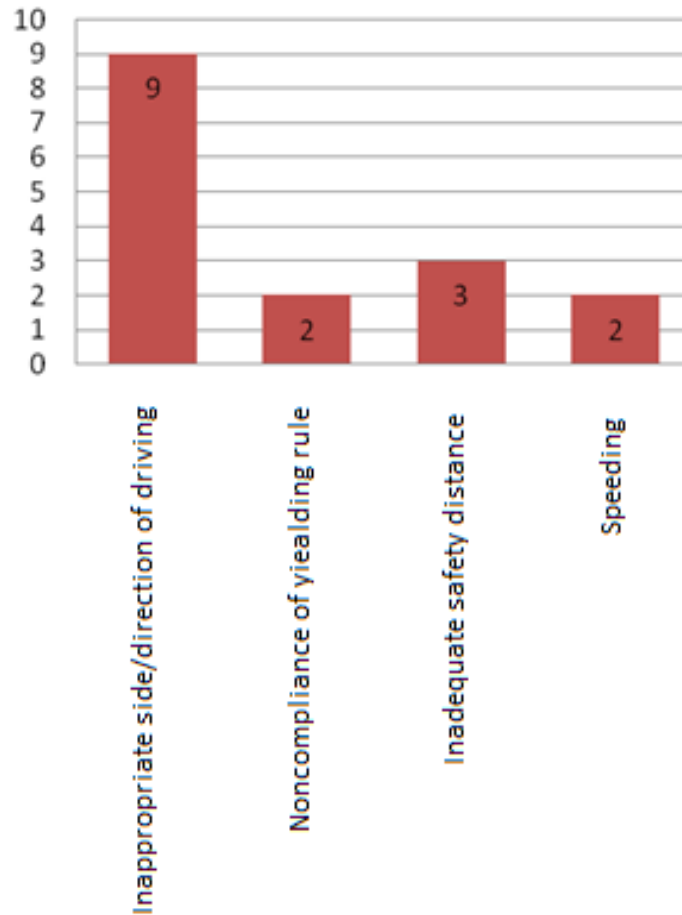


Traffic accident statistics



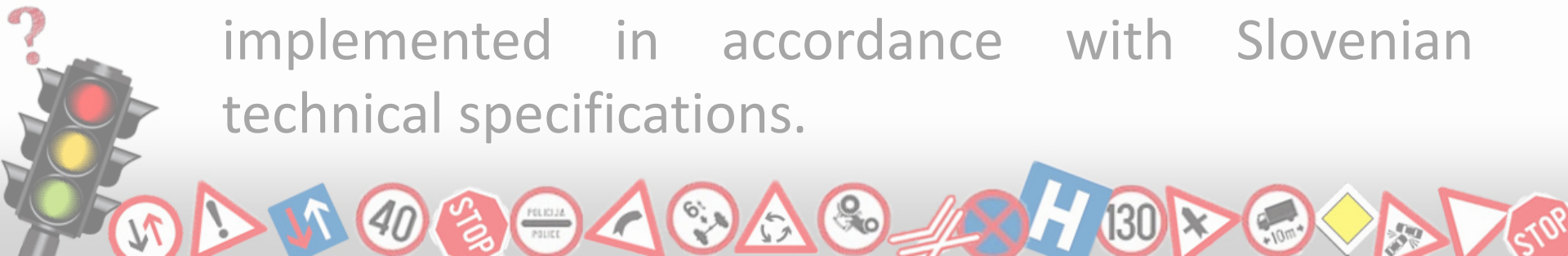
Traffic accident statistics

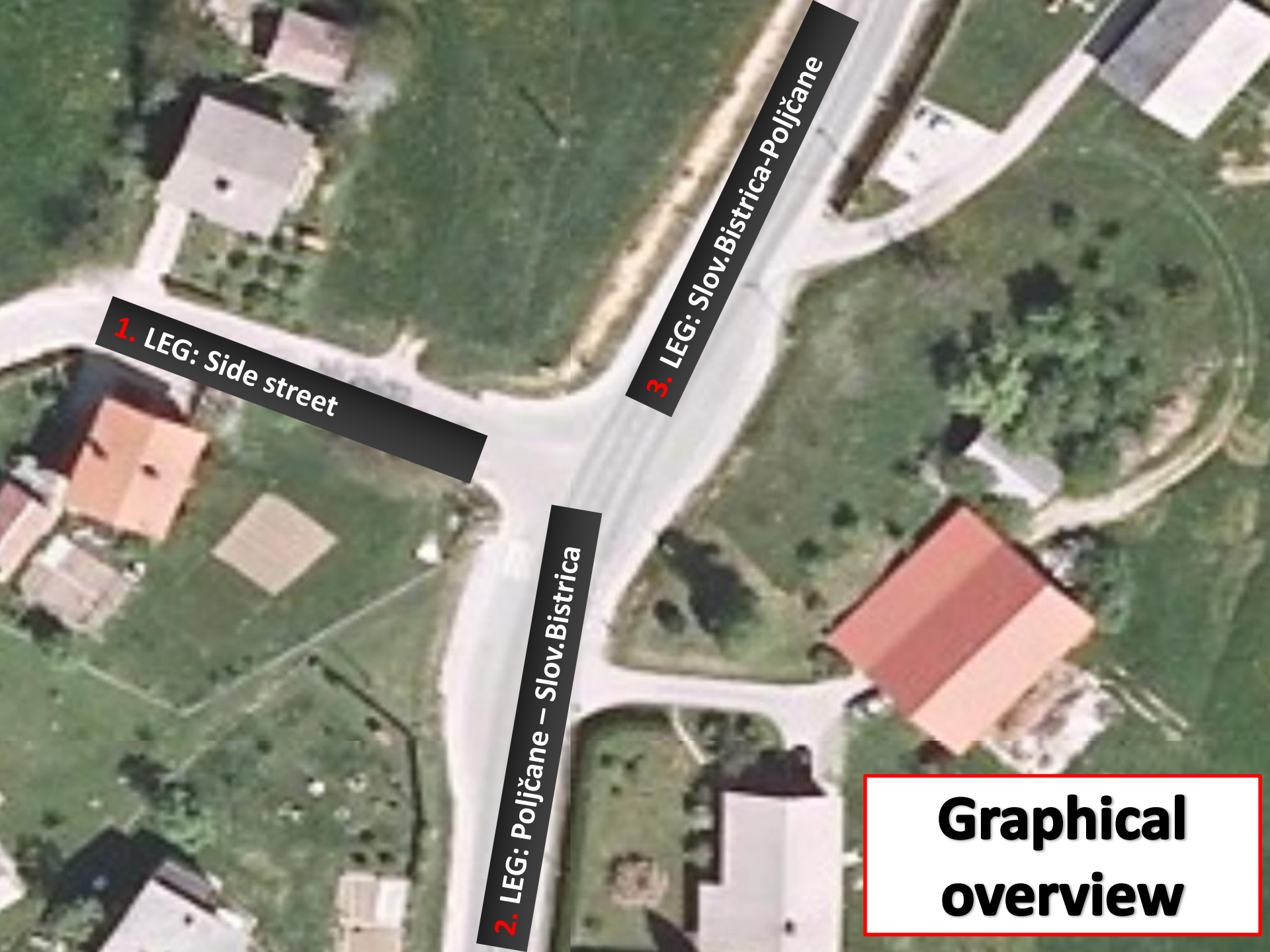
Number of traffic accidents in relation to cause of accident



Main problems

- In the intersection we are facing with three main problems:
 - A lack of visibility from local road (side street) on regional road because of obstacles (vegetation) and horizontal and vertical alignment of the road;
 - Speeding on main road;
 - Bus stations and pedestrian crossing are not implemented in accordance with Slovenian technical specifications.





1. LEG: Side street

2. LEG: Poljčane – Slov.Bistrica

3. LEG: Slov.Bistrica-Poljčane

**Graphical
overview**

Graphical overview of intersection



1. View from side street



1. View in direction of Slov. Bistrica



1. View in direction Poljčane

No.1 –side street

No.2 –main road



2. View in direction Slov. Bistrica



2. View in direction Slov. Bistrica



2. View in direction Slov. Bistrica



Graphical overview of intersection



3. View in direction Poljčane



3. View in direction Poljčane



4. Aerial view

No.1 –side street (morning time)

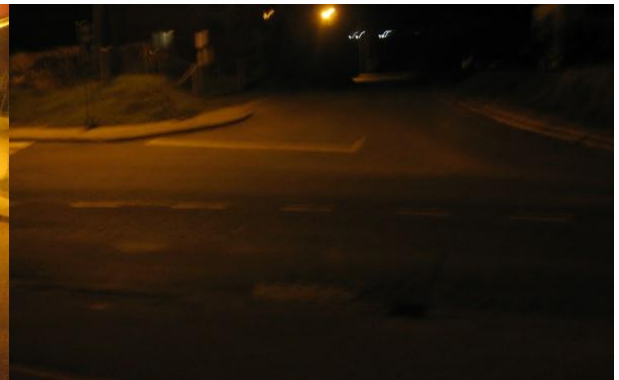
No.3 –main street



1. View from side street



4. Aerial view (night)

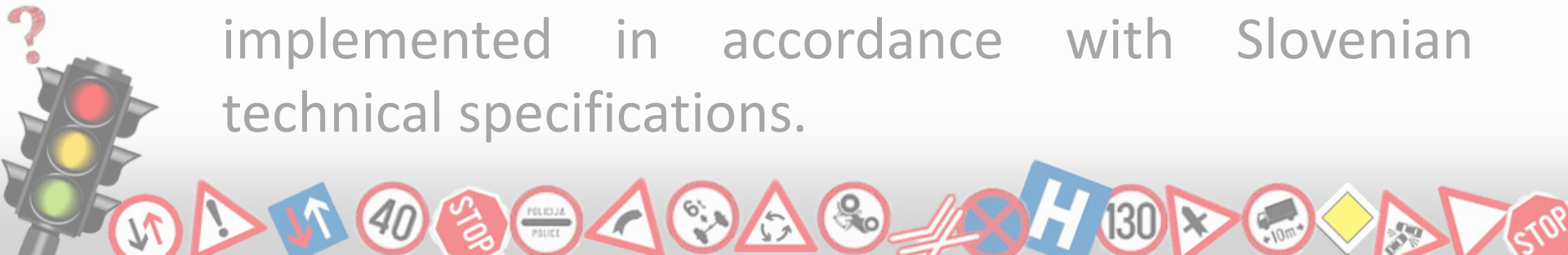


4. Aerial view (night)



Main problems

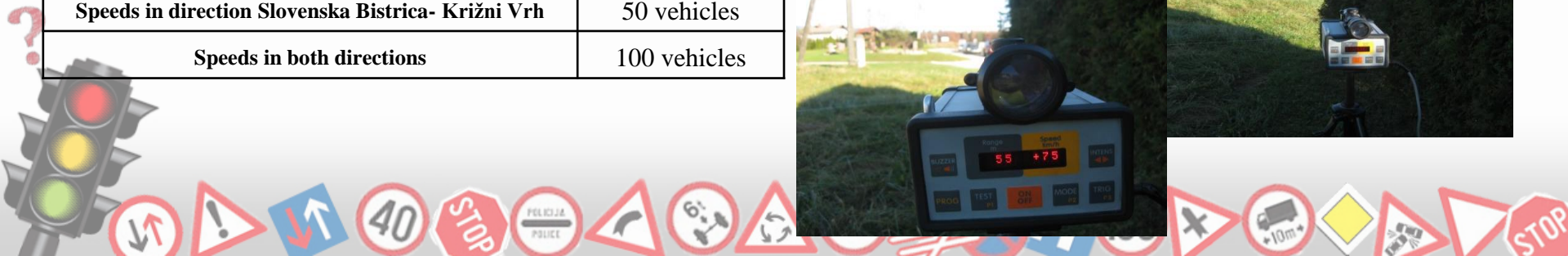
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Speed analysis on regional road

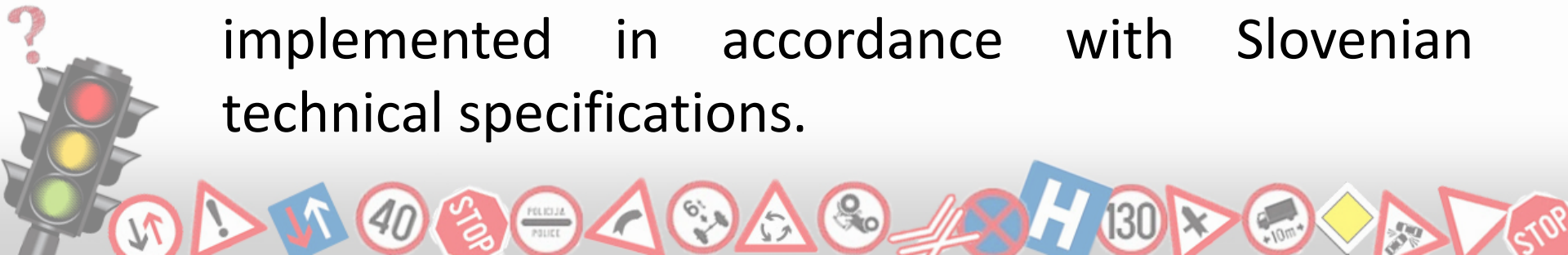
	Mean speed	Minimal speed	Maximal speed	V ₈₅	V ₅₀	V ₁₅
Speeds in direction Križni Vrh - Slovenska Bistrica	56,8 km/h	48 km/h	66 km/h	61,7 km/h	56,0 km/h	53,3 km/h
Speeds in direction Slovenska Bistrica- Križni Vrh	58,1 km/h	49 km/h	75 km/h	64,7km/h	57,0 km/h	53,2 km/h
Speeds in both directions	57,5 km/h	48 km/h	75 km/h	66,8 km/h	56,6 km/h	52,6 km/h

Direction	Sample size
Speeds in direction Križni Vrh - Slovenska Bistrica	50 vehicles
Speeds in direction Slovenska Bistrica- Križni Vrh	50 vehicles
Speeds in both directions	100 vehicles



Main problems

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Bus stops

- Bus stops are located in front of and behind observed intersection.
- According to Slovenian technical guidance about bus stops, the distance between bus stops should be at least 10 m (in these case is not).





WHAT HAVE ALREADY BEEN DONE?



Settlement name sign displacement



Before displacement



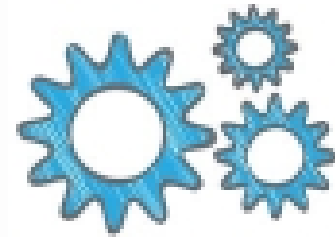
After displacement





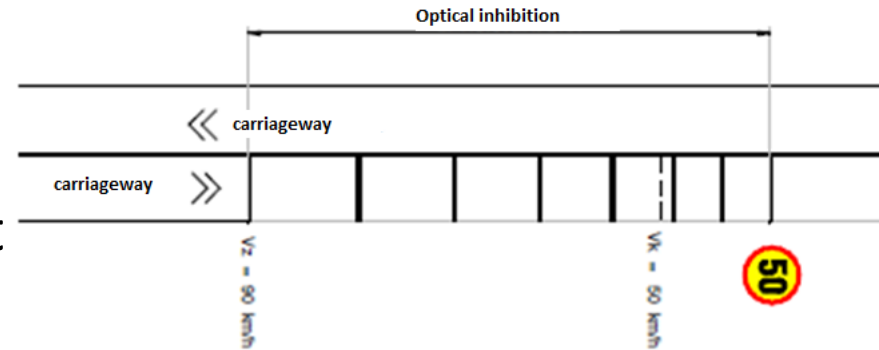
WHAT COULD BE DONE!

Proposed solutions



Proposed low – cost solutions: PHASE A

- 1) Implementation warning measures on main road: Optical inhibition;
- 2) Introduction of lower speed limit + new speed limit sign “40”;
- 3) Visibility improvements: vegetation, tourist-info traffic signs and excessive earth removal or displacement.



Speed (km/h)	90	81	72	63	54	50	50	50	50
Mileage (m)	0	20	20	49	18	01	15	76	13
Time (s)	0	1	1	2	1	1	1	4	1



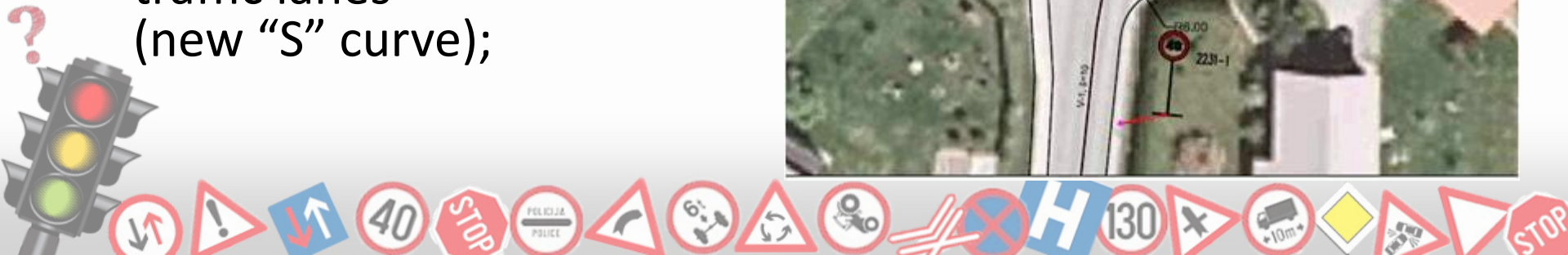
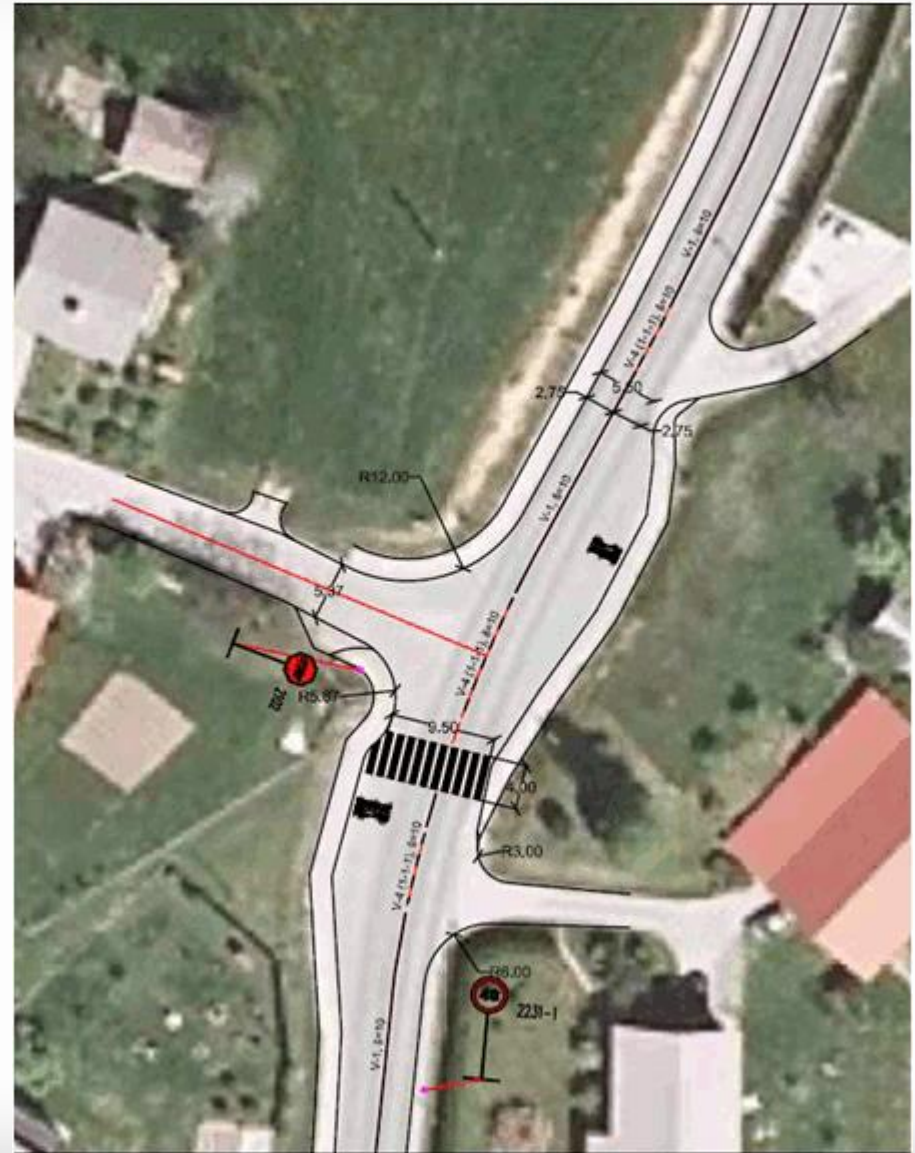
Proposed low – cost solutions: PHASE A – speed awareness campaign

- **Implementation form:** jumbo posters on the beginning of settlement
- **Press and media attention:** social media (Facebook), local newspapers and television, regional television



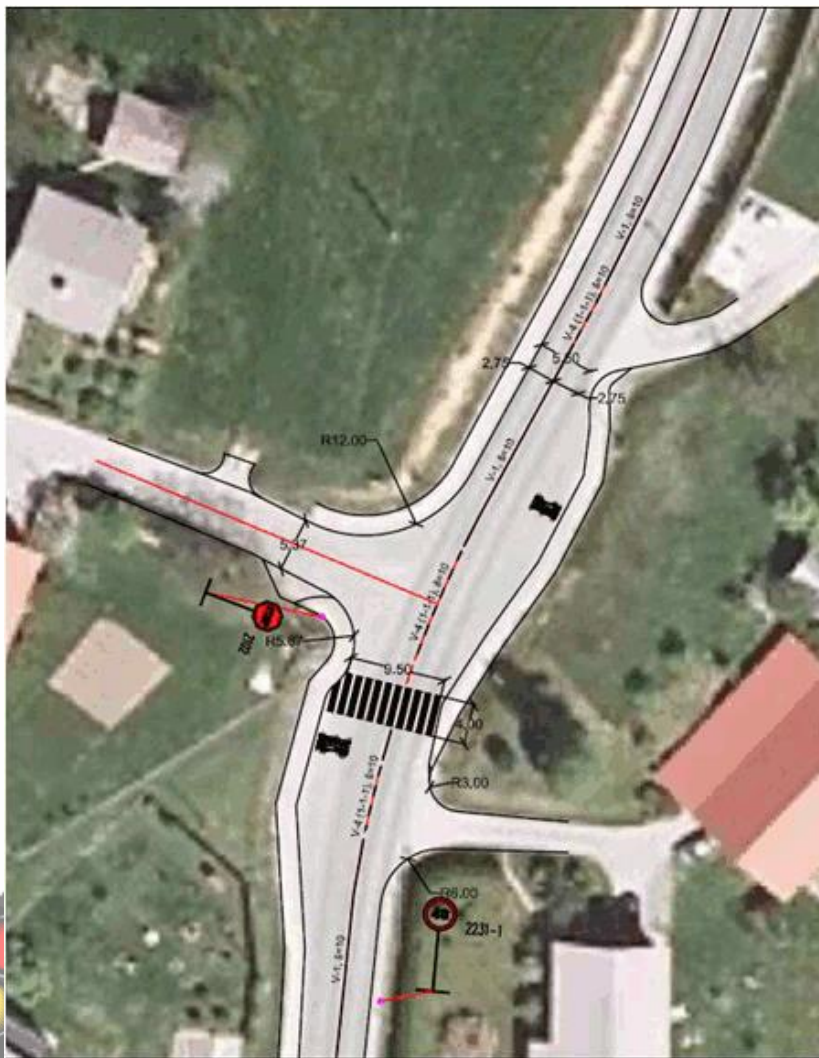
Proposed low – cost solutions: PHASE C

- 1) Closing and reconstruction of access road;
- 2) Reconstruction of both Bus stops
→ 1. bus stops will be reconstructed in traffic line and used as a merge lane with better visibility
→ 2. bus stops will be reconstructed in traffic lane;
- 3) Displacement of existing traffic lanes (new “S” curve);



Proposed low – cost solutions: PHASE C

Situation with bus stops ...



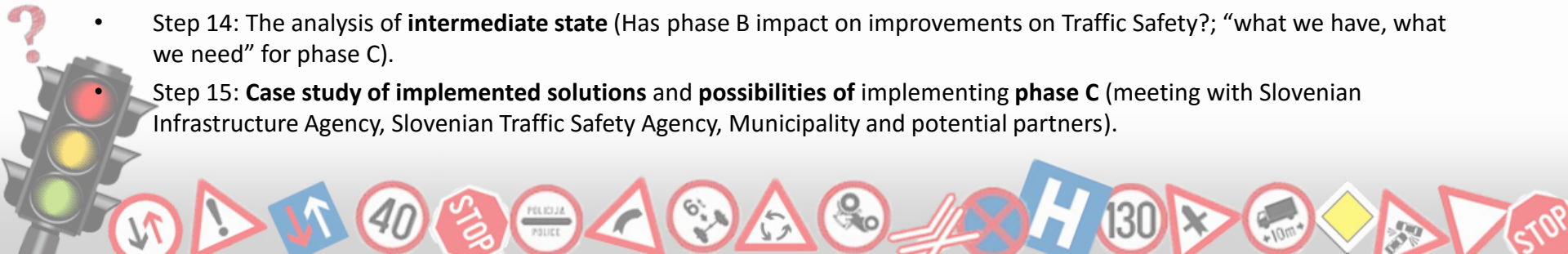
Timetable of bus lines

Odhod Departure	Prihod Dest. arrival	Trajanje Duration	km	Naziv linije Route name
05:16	05:29	00:13	7	Rog.Slatina - SLBistrica
06:16	06:29	00:13	7	Rog.Slatina - SLBistrica
07:20	07:33	00:13	7	Poljčane ŽP - SLBistrica
08:45	08:58	00:13	7	Poljčane ŽP - SLBistrica
10:10	10:23	00:13	7	Poljčane ŽP - SLBistrica
12:21	12:31	00:10	7	Rog.Slatina - SLBistrica
15:10	15:23	00:13	7	Poljčane ŽP - SLBistrica



Steps to achieve project goal (strategy)

- Step 1: **Contacting** Slovenian Infrastructure Agency and Slovenian Traffic Safety Agency (with help of professors on University)
- Step 2: **Contacting** Municipality, Police, Local Community and journalists (there must be highlighted that we have support from ETSC, Slovenian Infrastructure Agency, Slovenian Traffic Safety Agency and University)
- Step 3: **Contacting** potential partners (A.s.K engineering – Active Signaling Korun, Sipronika d.o.o. - Technological company designig/developing/manufacturing innovative traffic calming solutions , T-media napredne komunikacije d.o.o. (multimedia and internet production), Municipal utility services company, Road Company Ptuj d.d., 3M, Goodyear)
- Step 4: Determination of **meeting dates** for detailed project presentations for all of involved subjects.
- Step 5: Execution of **detailed project presentations**
- Step 6: The analysis of **intermediate state** (“what we have, what we need”)
- Step 7: Preparation of the necessary documentation for project phase A.
- Step 8: **Implementation** of the project **phase A** and **speed awareness campaign**.
- Step 9: Overview of implemented phase A
- Step 10: The analysis of **intermediate state** (Has phase A impact on improvements on Traffic Safety?; “what we have, what we need” for phase B) – organizing meeting with involved subjects (possibility of implementation of phase B).
- Step 11: Preparation of the necessary documentation for project phase B.
- Step 12: **Implementation** of the project **phase B**.
- Step 13: Overview of implemented phase B.
- Step 14: The analysis of **intermediate state** (Has phase B impact on improvements on Traffic Safety?; “what we have, what we need” for phase C).
- Step 15: **Case study of implemented solutions** and **possibilities of implementing phase C** (meeting with Slovenian Infrastructure Agency, Slovenian Traffic Safety Agency, Municipality and potential partners).



Project action plan

Month and Year	Action
November 2016	<ul style="list-style-type: none"> • Contacting Slovenian Infrastructure Agency, Slovenian Traffic Safety Agency, University, Municipality, Police, Local Community , <u>potential partners</u> (A.s.K engineering – Active Signaling Korun, Sipronika d.o.o. - Technological company designig/developing/manufacturing innovative traffic calming solutions , T-media napredne komunikacije d.o.o. (Multimedia and internet production), Municipal utility services company, Road Company Ptuj d.d., 3M, Goodyear journalists) • Determination of meeting dates
December 2016	<ul style="list-style-type: none"> • Execution of detailed project presentation to Slovenian Infrastructure Agency, Slovenian Traffic Agency, University, Municipality, Police , Local Community and Local journalists • Execution of detailed project presentation to at least 2 potential partners
January 2017	Execution of detailed project presentation to other potential partners
February / March 2017	Implementation of project phase A (depends on snow conditions) + start of speed limit awareness campaign
April 2017/May 2017	Implementation of project phase B
September 2017	Evaluation of implemented solutions
October 2017	Meeting with Slovenian Infrastructure Agency, Slovenian Traffic Safety Agency, Municipality and potential potential partners about possibilities of implementation of project phase C



Possible obstacles on our way to success

- Possible disobediance of some subjects
- Documentation
- Financial support
- Public disagreements





? **THANK YOU FOR YOUR ATTENTION** !

