

Roads to Respect 2010, Students Final Report

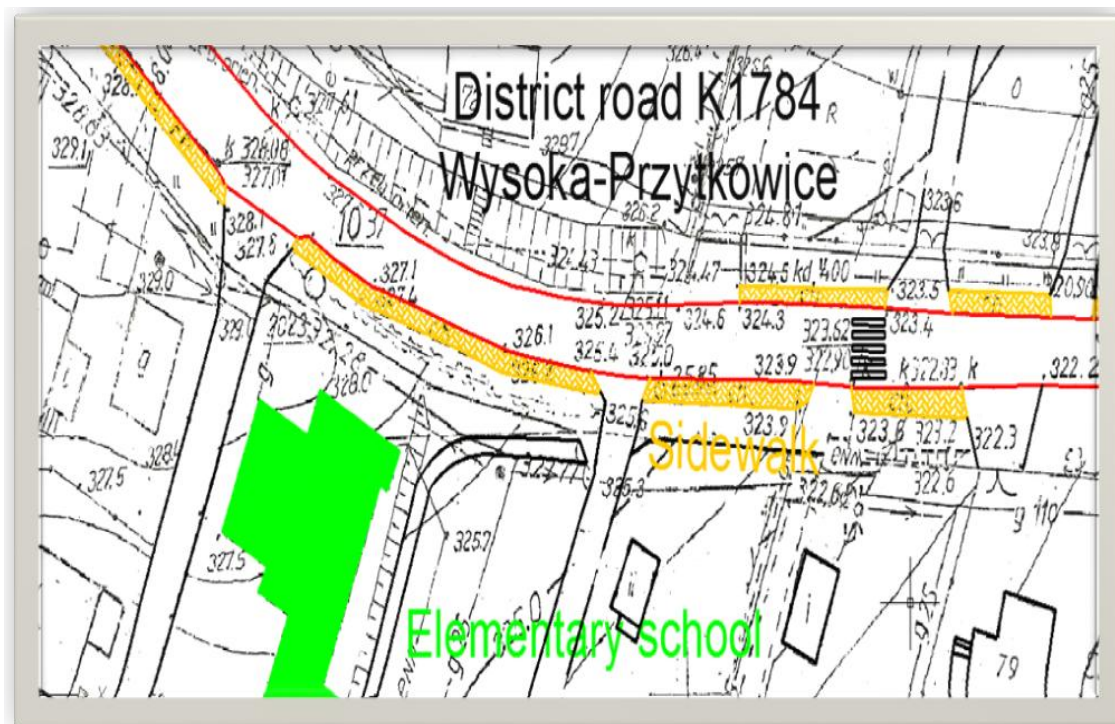


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1-Definition of the High risk site

LOCATION

My High risk site is located in Poland, in my hometown Stanislaw Dolny (it's about 40 km from Cracow). This is an area, of a pedestrian crossing located on district road K1784 between Wysoka and Przytkowice. This road is a part of a communication system between Wadowice and Cracow. The mayor reason, which decided about my choice was location of pedestrian crossing. As we can see on following photo my place is located just after the horizontal arc and in close neighborhood of an elementary school.



Picture 1.1. Situation of High risk site

Designations:

Green - an elementary school building,

Red - an edge of the road,

Orange - a present sidewalk,

Black- a pedestrian crossing,

ROAD SAFETY PROBLEMS

Proximity of school is connected with a presence of children, so we should give a higher level of safety on the road. Location of a pedestrian crossing just after horizontal arc

(sharp arc cause worse visibility) is also not very good solution, what we can see on the next picture.



Picture 1.2. View from horizontal arc

An important thing is that pedestrian crossing is almost invisible by driver when car is on the arc. Also the driver is warning about the presence of a pedestrian crossing only by the sign which we can see on the right sight of a picture 1.2., and he doesn't know how far pedestrian crossing is and what is happening on it. The large trees and bushes on the left are also causing worse visibility. The poor visibility is serious problem especially when we have got bad weather conditions (in the evenings, during fogs and winters).

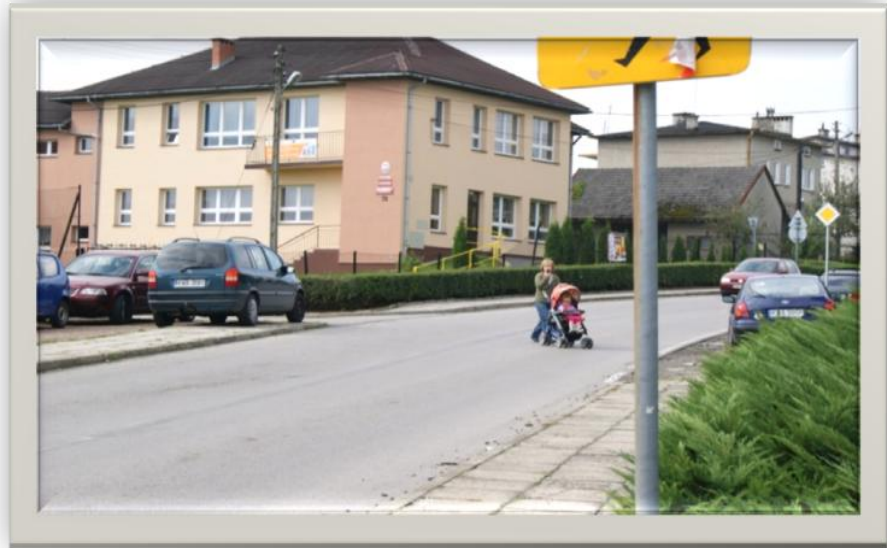
Another serious inconvenience was improper using of sidewalk. Drivers which parking on the whole width of sidewalk are taking the whole free space from pedestrians. In polish law that thing is unacceptable (driver must leave 1m of free space).



Pictures 1.3 , 1.4. Improper parking on a sidewalk

I also want to tell about very important problem. Driver in the vehicle is sitting one meter above road surface. He may not be able to see children which are standing behind cars parking on the sidewalk. Also we haven't got any barriers there, so children can suddenly break on roadway, just in front of driving car. Of course there is a speed limit around the

school area, but as research say, the collision vehicle- pedestrian with speed like 40 km/h in 60% of cases can end by dead of pedestrian. Also lack of the barriers on the arc cause improper movement of pedestrians (crossing on the curve), which we can see on pictures below.





Pictures 1.5,1.6,1.7. Crossings on the curve

Last problem connected with my High risk site is low condition of horizontal and vertical signs. Lanes on road surface, which separated opposite driving directions are almost invisible. This type of marking is very important in traffic engineering, because it shows to driver correct track of movement, and show how far from edge of the road car is. Also signs "Pedestrian crossing" haven't got reflection surface (2-nd category). One of them is also far from road. Poor state of sidewalks is also important thing. We have got lower comfort of walking and safety (especially during winter). The whole situation we can see it on picture below.



Picture 1.8. View on road surface and sidewalk

ACCIDENTS DATA

I contacted with police department to try to get some data about accidents on that road, but this level of data was very difficult to find. I get data about accident from our communal area from 2009 and 2010. All of them we can see on a diagram below.

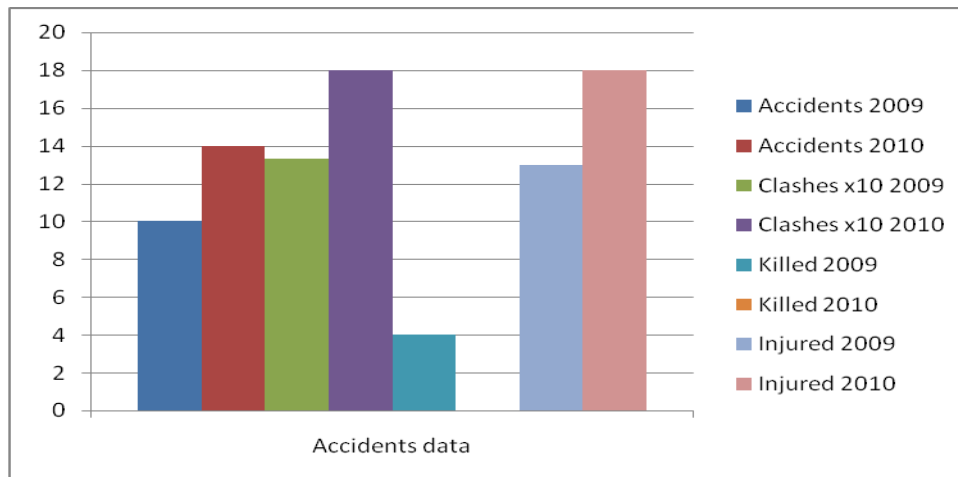


Diagram 1.1. Accidents data from communal area of Kalwaria Zebrzydowska

As we can see during one year we had got larger amount of accidents (4 more), clashes (47 more), injured people (5 more). In report which I get from police department I found info that the most accidents happened between 14-16 pm., so in time when children finished lessons and leave school.

2- Project proposal to treat the selected high risk site

In creating safer pedestrian crossing I want to eliminate three mayor problems:

- poor visibility of pedestrian crossing,
- low condition of horizontal and vertical marks,
- illegal parking and crossings on the arc,

Poor visibility is caused with small radius of the arc (very sharp arc), and in connection with close location of pedestrian crossing may cause road traffic safety problems. With creating better visibility I also wanted to improve the way of informing driver about presence of a high risk site. To do this I proposed installing acoustic lanes before pedestrian crossing. An example of this solution we can see on the next picture.



Picture 2.1. An example of an acoustic marking

That type of lanes are constructed before pedestrian crossing in proper distances. (distant between single or group of lanes is largest before pedestrian crossing). Lanes are made from special layers of red mass. Thickness of marking is about 0,9-5 mm. Mass is used to many types of asphalt and concrete pavement. In the mass is also built with special molecules which give better visibility during nights. This marking type create a great opportunity to warn driver properly early. When car's tires drive on lane's surface, driver feel it, and he knows that he is closing to some danger place (in that case to pedestrian crossing), and can stimulate him to reduce speed. Better visibility we can also achieved by rebuilding the passage into the pedestrian crossing on red surface (it's surface is also made of special mass). That type of marking is making by mechanical way, after properly preparations of road surface (surface's cleaning and measuring location of lanes). In this case we need to 33,60 m² painted surface (lanes+pedestrian crossing). This will be cost about 2197,40 zl./**546,67 €** (65,40 zl./**16,27 €**) per square meter). An example of that marking we can see on the next picture.



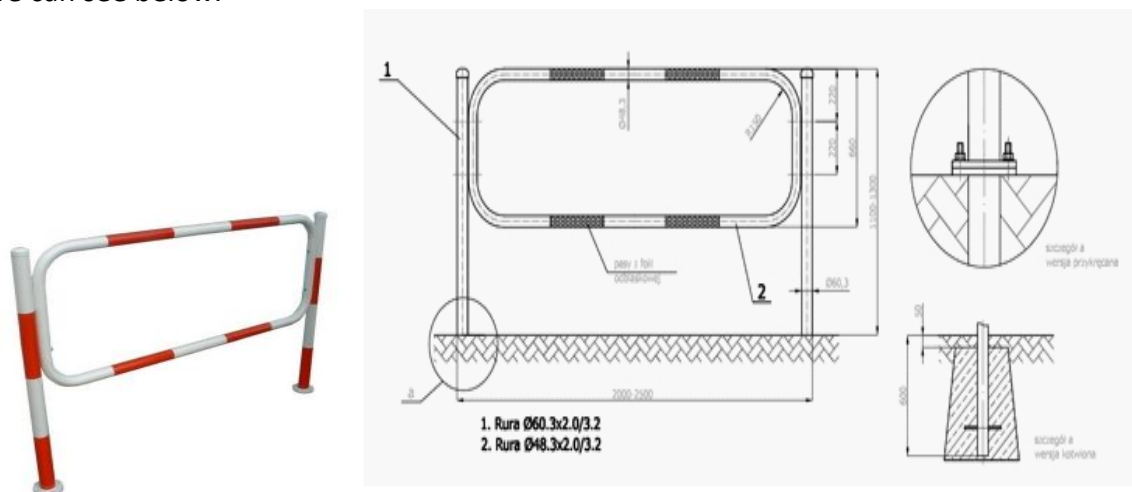
Picture 2.2. Pedestrian crossing on a red surface.

I also thought about something which can improve visibility in poor weather conditions (like in winter when road surface is covered by snow and lanes may not be visible.) Very popular solution which I meet very often is installing a sign “Pedestrian crossing” with signalization on an outrigger above the road. Of course this object needs access to source of energy, but there is also available to mount a solar which gives free energy. Unfortunately that construction isn’t cheap (it cost about 15 000 zł./**3 731,34 €** with solar plus costs of installment), but it gives great visibility from much farer distance in winter, nights and evenings.

Horizontal and vertical marking are unchallenged part of traffic engineering. Lanes which separated opposite driving directions also show to driver proper gauge of riding (especially important in the night) and show how far from the edge of the road vehicle is. Also vertical signs (especially “Pedestrian crossing”) are incompatible with regulations, namely they don’t posses reflection able surface. Additional one of signs which is visible in the distance at the picture 1.2. is too far from edge of the road and should be relocated. Costs of new vertical sings is about 1277,24 zł./**317,72 €** with installment and removal of olds. It’s fast, easy process which gives better traffic organization and also improves visibility of a pedestrian crossing.

As we can saw at the pictures 1.3 and 1.4 illegal parking may be difficult and dangerous for pedestrians (and those photos wasn’t taken during peak hours). Ideal solution would be constructing a small parking, which can taken vehicles from sidewalks. During my conversations with school authorities this theme was one of the priorities. This project isn’t available to realization in short part of time, it may take even several years. Last year school received from district authorities part of land between school building and road K1784 (that part of land was ownership of district.), and I with school boards think that it will be good place to build parking area.

The second important thing is limited the number of incorrect maneuvers namely crossings on the arc. Also as we could see on pictures 1.6 and 1.7 pedestrians aren’t protected on the sidewalk. There aren’t any elements which can separate pedestrians from vehicles. To minimize the threat of “meetings” pedestrian-car in improper places and to show people the right way to pedestrian crossing I wanted to use U-shape barriers (Olsztyński’s type), which we can see below.



Pictures 2.3.,2.4. U-shape barrier (Olsztyński’s type) view and dimensions

This type of barriers have dimensions 2,0m x 1,9m. They are made from 2 steel galvanized pillars $\phi 60,3$ mm with thickness of partition from 2,0 mm to 3,2 mm, connected with the

central part, which is also made from steel galvanized pillar $\phi 48,3$ mm. At the top of the pillar is a special lock, which prevents against water intrusion. Barriers can be settled in the ground, painted (optional color), galvanized, and even covered by reflection material. This element is most expensive construction in my project. It cost 271,29 zł./**67,48 €** per 1 meter. Accord to my calculation, the necessary amount of barriers is 22, which gives 11 936,76 zł./**2969,12 €**. Of course possible realization will be separated in several parts, because of huge amount of needed money.

The time of realization whole elements isn't long. The mayor problem are costs. Separately they may be acceptable, but as whole amount will be very difficult to realize it in single time. I prepared the whole cost estimate of my project (without parking area), and I attached it to the end of this chapter. The whole changes I want to introduce we can see at pictures below.



Pictures 2.3.-2.4. High risk site after changes

Table 2.1. Suggested value of cost estimate (Prices level-December 2010)

Element, Type of works	Unit	Multiplicity	Amount	Individual value [€]	Net value [€]
1. Marking on a pedestrian crossing-Elementary School in Stanislaw Dolny- Dolany. Road K1784 Wysoka-Przytkowice					
1.1. KNR 231/701/3 Protective banisters- protective barriers- Olsztyński's type, length 2m	meter	1	44	67,48	2969,12
1.2. KNR 231/703/3 Removal of old traffic signs- exist D6 (Pedestrian crossing) + "Agatka" (Presence of children)	element	1	4	3,66	14,64
1.3. KNR 231/702/2 Pillars to traffic signs. Steel pillars. Diameter 70 mm	element	1	2	27,58	55,16
1.4. KNR 231/703/2 Installment of traffic signs. Surface of sign > 0,3 m2. (D6+ "Agatka"- 1 element)	element	1	2	123,96	247,92
1.5. KNR 6/705/6 Horizontal marking of a road. Thicklayer's painting of acoustic lanes and pedestrian crossing	square meter	1	33,6	16,27	546,67
Recapitulation of element					3833,51
Net value of cost estimate					3833,51
Tax (22%)					843,37
Gross value od cost estimate					4676,88

3- Campaign to get the high risk site treated

After R2R camp I thought about changing my High Risk site, but I decided finally to stay at place which I chose firstly. The mayor reason was that place is in my hometown, I know inhabitants and also I heard voices about safety on that pedestrian crossing and as a citizen would have bigger chances to get better support from inhabitants. Firstly I decided to contact with school authorities. During my conversation with school director I showed my presentation from Brussels. Director agreed with my proposal solution, and ascertained that really serious problem is illegal parking, so we were talking about construction of small parking. That idea was propel several years ago, but the school wasn't owner enough space of land. It changed last year, when school board got part of the land between building and district road, from district authorities. To get support in our operations I proposed short presentation during meeting with parents. I started to prepare documents for my meeting (visualization of my High risk site, cards for signatures of inhabitants, new presentation). During meeting we get support (by signatures) for rebuilding of pedestrian crossing and constructing new parking area (an example of a signature card is on the next picture and all cards are in attachment from this chapter).

Stanisław Dolny, 24.XI.2010

Mając na uwadze chęć poprawy warunków bezpieczeństwa na przejściu dla pieszych przy Szkole Podstawowej im. Św. Królowej Jadwigi w Stanisławiu Dolnym niniejszym podpisem wyrażam swe poparcie dla tego projektu

Imię i Nazwisko	PESEL	Podpis
Kosowska Barbara	74092711629	Kosowska Barbara
Paulk Jolanta	76040812581	Paulk Jolanta
Paulk Ewa	71043012884	Paulk Ewa
Karko Aneta	71081009600	Karko Aneta
Anna Błaż Paweł	8010100646	ABP
Agata Lesiak	83021612025	Lesiak Agata
Ewa Paulk	73103113281	Ewa Paulk
Widzka Katarzyna	7807231002	Widzka Katarzyna
Marta Kiejfow	80012212062	MKiejfow
Miroslawa Górnij	76022305308	Górnij Miroslawa
Ewa Rzepka	72122613367	Rzepka Ewa
Katarzyna Ogięta	79081011526	Ogięta Katarzyna

Z podziękowaniem

Mateusz Kurpiel, student V roku Politechniki Krakowskiej

Picture 3.1. A signatures card

Signatures cards include Name and Surname of follower of campaign, ID Numbers, and signatures. This cards were sent to district authorities, to show them, that I've got support from local people and inhabitants know about safety problems on high risk site.

I also want to present some photos from meeting with parents (24 XI 2010)



Pictures 3.2.,3.3. Meeting with parents in October

In January I started to look after sponsor for my project. Firstly I created cost estimate document of my planned reconstruction. I separated each one of elements (vertical marks, barriers, pedestrian crossing and lanes renovation). My biggest hopes I tied with building company, in which I had my engineer's practices-PRDM Wadowice. I wrote an official letter to company and arranged a meeting with a chairman.

Stanisław Dolny:3.01.2011

Mateusz Kurpiel
zam. Stanisław Dolny 311
34-130 Kalwaria Zebrzydowska

**Przedsiębiorstwo Robót Drogowo-Mostowych
w Wadowicach sp. z o.o.**
ul. Kochanowskiego 1

Przedsiębiorstwo Robót Drogowo-Mostowych
w Wadowicach Sp. z o.o. - SEKRETARIAT
Wypłynęło 3.01.2011
Skierowane do [Signature]

Jestem studentem V roku Wydziału Inżynierii Lądowej Politechniki Krakowskiej im. Tadeusza Kościuszki. W październiku 2010 r. brałem udział w programie Roads to Respect organizowanym przez ETSC (European Transport Safety Council). Program ten ma na celu poprawę warunków bezpieczeństwa ruchu drogowego. Każdy z uczestników wybrał miejsce niebezpieczne, opisał problemy ruchu drogowego na nim występujące oraz zaproponował warunki poprawy bezpieczeństwa w wybranym miejscu. Miejscem, które zainteresowało mnie ze względu na poziom bezpieczeństwa (zwłaszcza dzieci) jest przejście dla pieszych przy Szkole Podstawowej im. Św. Królowej Jadwigi w Stanisławiu Dolnym-Dolany. W związku z prowadzoną przeze mnie kampanią zwracam się z prośbą o chęć wsparcia mojego projektu poprzez sfinansowanie wymiany oznakowania pionowego (znak D6 + „Agatka” w ilości 2 sztuki). Proszę o pozytywne rozpatrzenie mojej prośby.

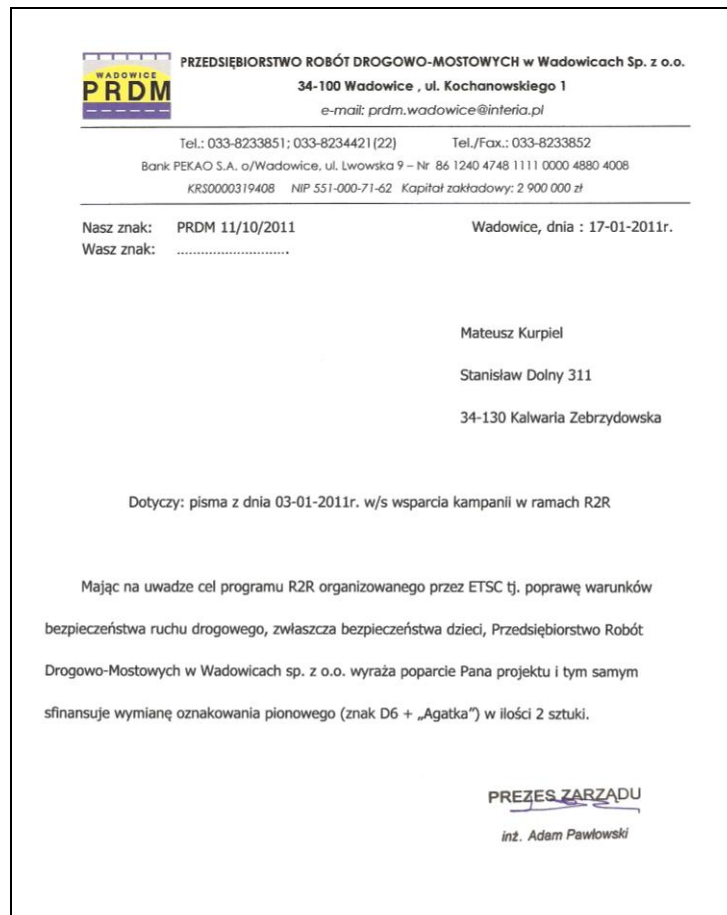
Załączniki:

1. Certyfikat uczestnictwa w programie R2R
2. List polecający od dyrektora programu R2R

Z poważaniem
Mateusz Kurpiel

Picture 3.4. Letter to PRDM Wadowice

In the letter I wrote shortly about ETSC and R2R camp, and I asked for financial support. Details about my expectations were discussed during my meeting with chairman of company. I presented my project solution, documents from ETSC about R2R and my proposal costs estimate document. The chairman said that the whole cost of project is quite big, and what's more there is only a proposal amount of money, so it can be much bigger, so it is impossible to incur all cost. After meeting I waited for answer.



Picture 3.5. Positive answer from PRDM Wadowice

In above-mentioned letter company supported my campaign for road safety and gave me financial support in changing vertical signs (“D6 + Agatka” plus pillars). Then I informed district authorities about my support and prepared letter to Department of District Ways, which we can see on picture 3.6.. In this letter I described my High risk site (problems with low visibility, parking on a sidewalk, crossings on curve, poor condition of vertical and horizontal marking), proposal solution (visualization), cost estimate document and information from sponsors (all documents are in attachment of this chapter).

I also wanted to talk about my campaign in wider circle, inform people about problems, so I thought about writing an article in local newspaper. In my calendar I talked about “Wiadomości Kalwaryjskie”, but now days this editorial have problems and doesn't issue newspaper. During researching new magazine I phoned to editor in chief of “Wiadomości powiatowe” (this monthly is emitted on wider area-the whole district). I asked for possibility of writing an article about road safety in our region plus my R2R project. The answer was positive, so I started preparing an article. I also needed some info and data about road safety in our region (especially my High risk site), so I contacted with Chief Department of Road

Police in Wadowice. Unfortunately getting data from my road was impossible (too low category of road) so I only got data and information about accidents, collisions from district area (2009 and 2010). In April my article was published. The whole text in on the next picture.



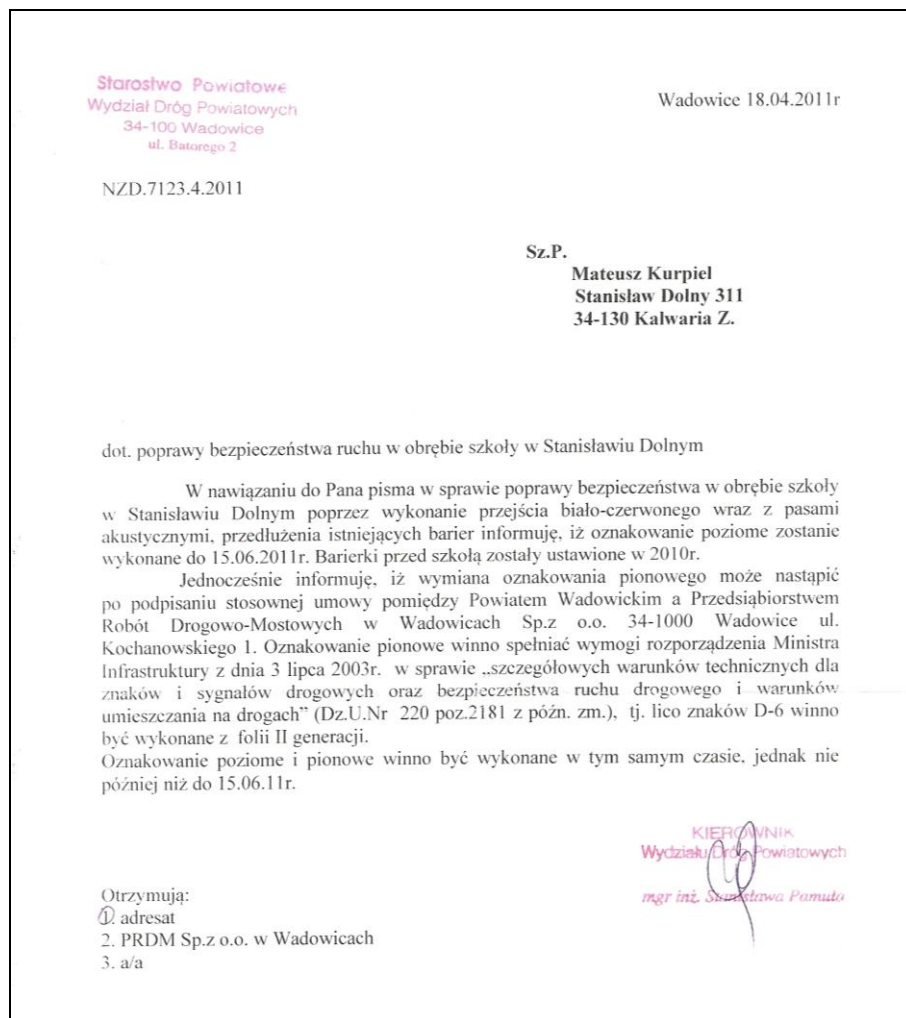
Picture 3.6. My article "Safe Road"

The article began with information about 3 mayor elements of communication system: human-vehicle-road (in 60 % of cases improper behavior of driver is mayor cause of an accident). Then I pointed several important rules connected with good designing of roads: -creating self-explained roads,

- proper traffic organization: horizontal and vertical marking, traffic lights,
- we should escape from creating too long straight elements of road (it can cause monotony and falling asleep among drivers),
- right and proper largeness and location of marks connected with speed, class of the road, it must be visible for drivers

Then I described situation in our district and communal area by using data from Police Department . In the last part of my article I described my High Risk Site, and the whole problems connected with it. I proposed an example of solution, added pictures “before and after” changes and also showed very important role of ETSC and R2R in creating safer roads.

In second part of April I get respond from district authorities. They decided to finance the new pedestrian crossing on a red surface with acoustic lanes before it, if my sponsor (PRDM-Wadowice) will give money and make new vertical signs. All works have to be ended before 15-th of June. The positive answer from district authorities is on the picture below.



Picture 3.7. Positive answer from Department of District Ways in Wadowice

After this letter the next part of my report will be changes, which were introduced on my high risk site. Of course I also informed school board about positive decision from district. Unfortunately the matter of new parking was stopped, at least in this year, but I want to tell about in the last chapter of my report.

4-Achievements of the project

I wanted to create 2 mayor elements in my project:

- 1) New parking area
- 2) New horizontal and vertical marking

Firstly I want to tell about building of a new parking area. In my last report I wrote that decision was taking under consideration by mayor of Kalwaria Zebrzydowska. Unfortunately whole decisions connected with the parking was removed on 2012. The main reason of that decision was limitation of expense of investments in city budget.

Now the second part: new marking. Realization of sign on an outrigger wasn't possible in this year because of too high cost, and of course I was conscious of negative answers from district authorities and sponsors. But hopefully I managed to get consensus with district authorities. Namely they financed part of barriers and a new pedestrian crossing with acoustic lanes and I found a sponsor who gave money for new vertical signs. This changes were implemented in the first half of June. There are some pictures from my high risk site. First parts of changes were installing barriers and painting new pedestrian crossing after proper preparation of road surface (cleaning, measuring elements of a pedestrian crossing). In renovation works was also renovation of the double white lane in the middle of a road. This lane separate the opposite traffic flows and can provide better conduct of vehicles on the curve during bad weather conditions.





Pictures 4.1.,4.2. Making of new pedestrian crossing on a red surface.

Second part was making acoustic lanes before pedestrian crossing. In this type of solution acoustic lanes are located in groups (3 lanes, 2 and 1 beginning from pedestrian crossing) what we can see on the next picture.



Picture 4.3. Acoustic lanes before pedestrian crossing.

The next part of rebuilding of my high risk site was reinstalling of old signs with steel pillars and assembled a new type of vertical marking with special reflection surface. The area of

sign is bigger than before, also we have got 2 steel pillars. On the single table we have got bigger symbol of a pedestrian crossing, under it there is sign called "Agatka", which informs about presence of children. Around this 2 marks is yellow reflection area, which gives better visibility in nights. New sign is visible on the next picture.



Picture 4.4. New vertical marking

More pictures from rebuilding of my high risk site is in attachment of this chapter. At the end of this report I want to show present situation on my place with all changes, which I was able to realize during my campaign.



Picture 4.5.,4.6. Present view on my High Risk Site

In the next year there is a possibility of installing full amount of barriers and also if district authorities will have funds for improvement of road traffic safety, the rest part of vertical marking (sign "Pedestrian crossing" on an outrigger) may be installed.