



# WP4. Teaching materials development related to the pedestrian crossing safety management

### IO.10 Development of Pedestrian crossing safety management methodology

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#### 1 ABOUT THE EUROS@P PROJECT

The main objective of the EuroS@P project is to promote the best education solutions in the area of RISM directive, with an increase of awareness and knowledge of road safety, by:

- 1) Developing an e-learning platform with access to project products,
- 2) The development of teaching and training materials dedicated to conducting classes at universities and training courses for RISM staff,
- 3) Raising competencies and skills in RISM by changing curricula at universities and equipping students and staff with didactic materials based on innovative RISM methods and tools,
- 4) Creating the foundations for Road Safety Professional Certification (RSP),
- 5) The development of a lasting relationship and the continuation of active international cooperation between project partners with the possibility of its extension to other institutions.

The EuroS@P project targets the following groups:

- 1) Students, researchers, and academic teachers at universities.
- 2) Road authority staff at national, regional and local levels.
- 3) Experts, specialists, and practitioners involved in RS activities, including staff who conduct training in various RS courses.
- All users of road infrastructure, as an indirect target group, for whom the risk of road accidents will ultimately be reduced by increasing the effectiveness and efficiency of RISM activities.

The project is also supported by a group of associates who will cooperate with project partners to consult and evaluate the results. They will implement final products and promote the dissemination and accessibility of the project results.

#### ABOUT OUTPUT IO.10

- **Objective:** Development of Pedestrian crossing safety management methodology.
- Work package: 4 Teaching materials development related to the pedestrian crossing safety management.
- Target Groups:
  - Research and teaching staff from institutions involved in the project.
  - Specialists dealing with road safety issues at the national and international level.



#### 2 PEDESTRIAN CROSSING SAFETY MANAGEMENT

Managing pedestrian safety at crosswalks is a critical aspect of urban planning and traffic management. To create a comprehensive methodology for pedestrian safety management, incorporating the continuous improvement cycle in the stages you mentioned (Database, Analysis, Identification, Plan, Action, Evaluation), you can follow these steps:

#### 1. Database:

- Data Collection: Start by gathering relevant data about the crosswalk, such as traffic volume, pedestrian counts, accident records, and infrastructure details.
- **GIS Mapping:** Use Geographic Information Systems (GIS) to map out the crosswalk's location and its surroundings, including traffic signals, signage, and nearby landmarks.

#### 2. Analysis:

- Safety Analysis: Analyze the collected data to identify current safety issues and trends related to the crosswalk. Consider pedestrian behavior and driver compliance.
- **Risk Assessment:** Assess the level of risk at the crosswalk based on historical accident data and current conditions.

#### 3. Identification:

- **Identify Problem Areas:** Identify specific issues and problem areas at the crosswalk, such as low visibility, high-speed traffic, or inadequate signage.
- **Stakeholder Involvement:** Involve local authorities, traffic engineers, and the community in identifying key concerns.
- 4. Plan:
  - **Develop Safety Plan:** Create a detailed plan that outlines specific measures to address the identified issues. This may include redesigning crosswalks, improving lighting, or implementing traffic calming measures.
  - **Budget Allocation:** Allocate a budget for the proposed safety improvements and prioritize projects based on severity.

#### 5. Action:

- **Implementation:** Carry out the planned safety measures, which may involve installing new traffic signs, enhancing crosswalk markings, adding pedestrian islands, or making changes to signal timings.
- Public Awareness: Conduct public awareness campaigns to educate pedestrians and drivers about the changes and the importance of following safety rules.

#### 6. Evaluation:

- Monitoring and Data Collection: Continuously monitor the crosswalk after implementing safety measures. Collect data on pedestrian and vehicle behavior, accident rates, and other relevant metrics.
- **Feedback and Adjustments:** Review the collected data periodically to assess the effectiveness of the implemented measures. Make necessary adjustments based on the data.
- Feedback from Stakeholders: Seek feedback from the community and local authorities to ensure that the safety improvements meet their expectations and needs.

#### 7. Continuous Improvement:

• **Periodic Review:** Regularly revisit the safety plan and its effectiveness, identifying any emerging issues or new trends.





 Adaptation: Be prepared to adapt the safety measures as needed to address changing circumstances, such as increased traffic or shifts in pedestrian behavior.

This methodology forms a continuous improvement cycle that aims to enhance pedestrian safety at crosswalks over time. It's essential to involve stakeholders, use data-driven decision-making, and maintain a commitment to safety as part of ongoing urban planning and traffic management efforts.



Figure 1 Pedestrian crossing safety management process.





### ROAD SAFETY AUDIT/TARGETED INSPECTION PROCEDURE (PCSA, PCSI)

### **OCTOPUS METHOD**





### 3 ROAD SAFETY AUDIT/INSPECTION PROCEDURE (PCSA, PCSI) – "OCTOPUS METHOD"

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The basis of the road safety audit/inspection process is a site visit carried out by the Auditor in the field. Inspections can be carried out from Monday to Saturday, excluding the time of precipitation. As part of the fieldwork, it is necessary to collect data on the organization and geometry of road traffic, in connection with the directions of vehicle traffic. This information will be collected on a form, the content of which will be described below. Each of the forms contains eight sheets, and the information to be obtained is grouped thematically so that the card is readable and understandable for auditors. The form is divided into 14 thematic blocks:

- General information name and surname of the person conducting the audit/inspection, details of the verifying auditor, date and time of the site visit and weather conditions.
- Metric according to the inventory according to the data received from the Ordering Party, the crossing number; the district, the street on which it is located; street category and number of lanes.
- 3. Characteristics of the crossing location, determination of whether the roadway has the right of way, indication of the presence of a bicycle path and its location in relation to the crossing, presence of tram lines, indication of the type of track surface and the surface behind and before the crossing, determination of the condition of the surface, lighting elements, dimensions of the crossing, geometry of the street in the area of the crossing and measurement of the distance of the crossing to the adjacent roadway (in the case of an intersection), determination of speed and a description of the crosssection at the height of the crossing.
- 4. Organization of vehicle traffic indication of the direction of vehicle traffic cars, trams and bicycles.
- 5. The presence of bus stops within the crossing, if any, is an indication of their location and distance in relation to the crossing, and the type a stop on the roadway or a bus bay.
- 6. Vertical marking an inventory of vertical markings in the crossing area.
- 7. Horizontal markings the type of marking, the background of the marking, the condition of the markings, if there is a narrowing of the crossing, then the location and type of narrowing and its width are determined.
- 8. Drainage the number of rainwater inlets and the drainage rating.
- 9. Facilities for the disabled ramps, facilities for the visually impaired.
- 10. Posts and fences division into types of devices and their location.
- 11. Parking determination of the presence of parking divided into location: on the roadway, in the lane next to the road, in the lane and on the crossing.





- 12. Visibility an indication of the visibility measured by the auditor, the visibility required and, if any, an indication of visibility limitations.
- 13. Auditor's opinion and comments.
- 14. Photographic documentation.

Each card completed by the Chief Auditor will be checked/analyzed by the Verification Auditor. In the event that the auditors' opinions diverge, the decision on the recommendation will be made by the Project Steering Committee (composed of three BRD auditors). The paper version of the data will be transferred to the electronic database. The audit/inspection of each of the crossings will be carried out using an identical form. The prepared form is attached to this methodology.







Figure 2 Location of the crossing between intersections.



#### 4 ELABORATION OF RESULTS AND CONCLUSIONS

The results will be developed through the final evaluation of each crossing individually and in relation to the other crossings. It will be possible to sort/segregate data in such a way as to be able to search from the database for all crossings, e.g. with incomplete vertical markings or all where there is increased parking. The result of the study will be a final report containing summarized results and conclusions, as well as a database enabling independent data segregation. The aim of the research is to identify problem areas, determine the causes of problems and propose solutions. As part of the BRD assessment, solutions are envisaged in the field of:

- 1. Additions to vertical and horizontal markings,
- 2. Shortening the length of the pedestrian crossing narrowing the roadway, building an asylum,
- 3. Revitalization of the road surface / tram track,
- 4. Enlargement of the visibility area: driver pedestrian, pedestrian driver.
- 5. Where it is justified to introduce facilities for people with disabilities,
- 6. Indication of crossings to transfer / liquidation,
- 7. Other.

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The implementation of the above recommendations will require designs of new traffic organization and, in extreme cases, reconstruction / relocation / liquidation of the crossing.





#### 5 DETAILED EXPLANATIONS OF SELECTED ASSUMPTIONS FOR DATA COLLECTION

#### 5.1 Characteristics of the pedestrian crossing

#### 5.1.1 Location of the pedestrian crossing

The location of crossings was classified and five categories were created:

- 1. Between intersections (Fig. 3),
- 2. At the inlet/outlet of an intersection,
- 3. At the inlet/outlet of the roundabout,
- 4. By the exit,
- 5. Other if the location of the crossing does not correspond to any of the above.

Categorization is related to the differentiation of speed on the approach to the crossing depending on the location of the crossing and will affect the choice of method for assessing the required visibility.



Figure 3 Location of the crossing between intersections.

#### 5.1.2 Distance from edge of perpendicular carriageway

The concept of perpendicular roadway was used in the paper (Fig. 4). It is a perpendicular roadway (superior in terms of traffic organization) to the subordinate roadway on which the crossing is located. A perpendicular carriageway occurs when a crossing is located at the entrance or exit of a roundabout/intersection or at an exit. The distance from the edge of the audited pedestrian crossing to the perpendicular roadway is described.

#### 5.1.3 Speed on perpendicular carriageway

As part of the data collected, the permissible speed on this carriageway is determined. Determination of the above parameters will allow to assess the speed at which vehicles turning into the analyzed crossing arrive.







Figure 4 Perpendicular roadway

#### 5.1.4 Roadway with priority

The next information in the paragraph "Characteristics" refers to the roadway on which the <u>crossing is located</u>. The auditor describes whether the roadway has the right of way – this is reflected in the speed that vehicles reach on the approach to the crossing, on the main roadway they are higher, so the risk is higher.

#### 5.1.5 Cycle path and location

The database contains information about the surroundings of the crossing and its technical condition. The possibility of cycling and the location of the bicycle path in relation to the crossing are specified, the following locations are possible:

- 1. Between the intersection and the crossing (Fig. 3),
- 2. Behind the crossing (from the opposite side of the intersection or superelevation roadway, Fig. 4).







Figure 5 Bicycle path between pedestrian crossing and intersection.



Figure 6 Bicycle path behind the pedestrian crossing.

#### 5.1.6 Track surface

When there is a tram track at a crossing, the database records information on how many tracks run through the crossing and what surface they have. Pavement types are predefined in the form.





#### 5.1.7 Pavement, roadway after and before the crossing and its condition

Information about the surface before and after the crossing is also collected. The type of surface and its condition are determined. Pavement types are predefined in the form. A three-point subjective scale of the Auditor's assessment was used – good (does not require renovation), satisfactory (the surface will soon need to be renovated), bad (the surface needs to be renovated).

#### 5.1.8 Geometry of the street in the area of the pedestrian crossing and speed

The following information concerns the geometry of the street in the crossing area:

- 1. Arch a crossing located on an arc,
- 2. Straight a crossing located on a straight section,
- 3. Broken precedence.

In addition, the permissible speed is determined according to the traffic organization. The exceptions are exits from the gates of plants, petrol stations, car parks, where theoretically there are no restrictions. Depending on the zoning and geometry it is recommended to come a discretionary value. In most cases, these will be 20 (residential zone) or 30 km/h



The width and length of the crossing must also be determined (Fig. 7).

#### Figure 7 Width and length of the crossing.

The total length of the crossing is measured in the middle of the width of the crossing and determines the distances between the outer curbs of the roadway (the island of asylum elevated and "painted" are included in the total length of the crossing). The length of the longer crossing is the distance that a pedestrian must cross a wider roadway in the case of an asylum island other than the one marked with road markings.

Example 1. If there is a cross-section: 2 lanes (6 m), asylum island (2 m), 3 lanes (9 m), the following data will be entered:

- Total length of crossing
  17 m
- The length of the longer crossing is 9 m.





Example 2. If there is a cross-section: 2 lanes (6 m), asylum island (2 m), 2 lanes (6 m), the following data will be entered:

- Total length of crossing 14 m
- The length of the longer crossing is 6 m.

Example 3. If there is a cross-section: 1 lane (3 m), no asylum island (0 m), 1 lane (3 m), the following data will be entered:

- Total length of crossing 6 m
- The length of the longer crossing is 6 m.

#### 5.2 Cross section

The cross-section is described in the selected, main direction of vehicle movement, it is described from left to right and is located in the axis of the crossing, **the possible elements** 

#### of the cross-section are distinguished:

- 1. Bus bays left and right,
- 2. Parking bays left and right side,
- 3. Bicycle lanes left and right,
- 4. Carriageways number of lanes left and right,
- 5. Asylum Island type and width
  - Learned
  - At the level of the roadway (prefabricated elements outside the crossing)
  - Road markings, (island "painted")
  - Dividing belt,
  - Dividing lane with the tram.

An example description of the cross-section in the crossing axis is shown in Figures 8 -14.





Figure 8 Cross-sectional elements – example I.



Figure 9 Cross-sectional elements – example II.





Figure 10 Cross-sectional elements – example III.



Figure 11 Elements of cross-sectional section – example IV.







Figure 12 Cross-sectional elements – example V.



Figure 13 Elements of cross-sectional – example VI.







Figure 14 Cross-sectional elements – example VII.

#### 5.3 Organization of vehicle traffic

The paragraph refers to information on the organization of traffic on the roadway on which the crossing is located. The direction of traffic of wheeled vehicles, rail vehicles and bicycle traffic is taken into account. The directions were adopted in accordance with the geographical directions.



Figure 15 Direction of vehicle traffic.

The parameter "number of relations exiting from the intersection towards the crossing" has been specified, which refers to situations where there is <u>a perpendicular</u> roadway. The parameter is used to assess the risk from how many directions a pedestrian is exposed to potential danger.







Figure 16 Relations exiting from the intersection towards the crossing – 2 relations.

#### 5.4 Bus stops

The information concerns the location of bus stops on/near the roadway on which the crossing is located and on/by the perpendicular carriageway (if any). If there is a bus stop on the roadway where the crossing is to be audited, the form should include information about where exactly the stop is located (behind/before the crossing), what is its type and how far from the crossing it is located. Bus stops are described for all possible directions of vehicle traffic. The presence of bus stops, especially those located in the roadway, is to be taken into account when assessing the visibility conditions at the crossing.

#### 5.5 Vertical markings and warning signals

The database collects information on vertical markings in the area of the crossing and only on markings related to pedestrian traffic markings. Every possible direction of travel of vehicles should be inventoried, any deficiencies in the marking should be indicated in the auditor's opinion. The condition of the marking is assessed using a 2-point scale – good/bad. If there are warning signals at the crossing, they should also be taken into account when taking stock of the vertical markings. The number of alert signals inventoried shall be described and whether the sign is working correctly.

#### 5.6 Horizontal markings

#### 5.6.1 Type, Background, Condition, Other

As part of the data collected, the type and assessed condition of the road markings at and before the crossing should be collected. The types of road markings and their background should be included in the form. The condition of the marking is subjectively assessed by the Auditor using a three-point scale – good, satisfactory, bad.





#### 5.6.2 Narrowing of the roadway — "shortening of the pedestrian crossing"

In this part of the data entry you will find information about the narrowing of the roadway in the area of the crossing (if any). The auditor determines what type of narrowing occurs in a given place and what width it has. The types of restrictions are defined in the form. Narrowing is indicated separately for the left and right sides of the crossing. The sides are defined by the predetermined direction of the main traffic.



Figure 17 Example of narrowing - left side of the crossing, elevated island with a width of x.x m.

#### 5.7 Rain drains

The auditor collects information on the number of storm drains and the presence of kerbside sewage. The auditor assesses the drainage at the crossing using a two-stage scale: correct/incorrect. Proper drainage is defined as one where the drains are located outside the crossing area, and their location makes them collect rainwater before the crossing. In addition, it is assessed whether there are no stagnant rainwater or the risk of its formation in the area of the crossing.

#### 5.8 Facilities for Disabled Users/Restrictions

Crossings should be analyzed in terms of facilities for the disabled. It should be assessed whether the basic needs of the physically disabled – ramps and for the blind – guide plates (fields of attention, other) have been taken into account. The left and right sides of the crossing and the area of the asylum island (if any) should be analysed. Again, the sides were marked by the predetermined direction of the main traffic. The list includes information on which crossings are equipped with the above-mentioned facilities and where they are missing.



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#### 5.9 Posts and fences

The paragraph posts and fences is information about how parking is limited at a given crossing. There are several types of fencing – described in detail in the form. A scheme of marking the location of fences in relation to the crossing has been adopted and it is shown on the example in Fig. 18.



Figure 18 Fencing example.

The reference point for the description of the fence in the area of the crossing is the main direction in which the vehicles are going. On the basis of this direction, the sides of the placement of the fences are determined. Each side is divided into three areas for the placement of the fences:

- 1. behind the aisle,
- 2. at the crossing,
- 3. before the crossing.

The description of the area "behind/in front of the crossing" is determined by the selected **one** main direction (of vehicles). In the form, each of the pages is described, if there are no fences in a given area, there is a "none" item in the form. If the analyzed crossing is located in such a way that there is a perpendicular roadway, then the fences are also determined on the perpendicular roadway.

The example shown in Figure 19 shows a post fence, on the left side of the crossing, behind, in front of and on the crossing. Post fencing also occurs on perpendicular roadways.



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#### 5.10 Parking

The form should describe the parking. Individual types of parking are defined:

- 1. Parking on the roadway: parking at the curb (does not block traffic, in the space of a wide roadway or at the curb in places separated by horizontal markings),
- 2. Parking in the lane next to the road: parking behind the curb: on pavements, green areas, arranged and unarranged spaces,
- 3. Lane parking: this is a type of parking that blocks traffic in the lane and vehicles have to change lanes to avoid a parked car.
- 4. Parking on the pavement and on the road (with one wheel),
- 5. Parking at a crosswalk is parking on a "zebra" and in the waiting zone in front of a pedestrian crossing, blocking free access to the pedestrian crossing.
- 6. Parking on a perpendicular carriageway (if any) is such parking that could limit the visibility of the pedestrian crossing on the subordinate street from the perspective of the driver turning right from the main roadway onto the subordinate street.

The reference point is one main, determined direction of the vehicles. On its basis, the left and right sides of the parking lot are determined. Then, for each of the parties, the designated parking areas are analyzed in terms of the highlighted types of parking

Parking areas are understood as the location of parking in relation to the crossing (Fig. 19), the following are distinguished:

- 1. Parking behind the aisle,
- 2. Parking in front of the crossing,
- 3. Parking at the crossing,
- 4. Parking on a perpendicular carriageway (if any).

As a result of the field audit/inspection, each of the areas should be analyzed in terms of available parking opportunities. In each of the areas, one of three parking conditions could occur:

- 1. A vehicle parked and registered during a site visit, the distance of the parked vehicle to the crossing,
- Vehicle not parked in a given area parking not found (NS) during the site visit, but there are no physical restrictions (fences) to park and the situation in the field indicates that parking is likely to occur,
- Vehicle not parked in the area and no possibility of parking (ND not available) due to fences or other permanent obstacles – parking not available.





The description of *the parking as not stated* (NS) allowed to identify potential places where parking is possible, but at the time of the site inspection it was not recorded. Below is a diagram illustrating the Contractor's approach to the description of parking in the



Figure 19 Designated parking areas.

#### 5.11 Visibility

#### 5.11.1 Measured visibility

In terms of visibility, two groups of values should be considered – <u>measured visibility and the</u> required visibility <u>between the</u> pedestrian and the driver of the vehicle. The auditor measures visibility in the field under real-world conditions using a rangefinder or measuring wheel. Visibility is measured between the point in the axis 1.0 m away from the edge of the road (assuming that the motorcyclist is moving on this trajectory) and the point where there is a pedestrian waiting/entering the pedestrian crossing, i.e. 1.0 m from the edge of the road – on the pavement.

Cases and methods of determining visibility are presented in Appendix - SCHEMES FOR DETERMINING VISIBILITY.

An on-site auditor identifies and determines if there are elements that limit visibility, such as:

- 1. Parking
- 2. Tree
- 3. Buildings
- 4. Ads



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- 5. Stop
- 6. Fence
- 7. Other if there are elements not listed above.

#### 5.11.2 Required Visibility – Theoretical Assumptions

The visibility obtained from the measurement should be confronted with the required visibility. The method of determining the required visibility was developed on the basis of the Regulation of the Minister of Infrastructure and Development of 17 February 2015 on the Technical Conditions to be met by public roads and their location (hereinafter referred to as the Regulation) and on the basis of the Handbook for Pedestrian Traffic Organisers issued in 2014 at the request of the National Road Safety Council (hereinafter referred to as the Manual).

Four types have **been developed to** determine the required visibility depending on the location of the pedestrian crossing in relation to the oncoming vehicle and traffic organization:

- TYPE 1 when the pedestrian crossing is located on the section between intersections or when the pedestrian crossing is located at the intersection and the street with the analyzed crossing is a street with the right of way.
- 2. TYPE 2 ("rear visibility") in a situation where the crossing is located at an intersection on a subordinate street and there is a situation where the driver driving on the superior street may turn right from the road with priority to the pedestrian crossing on the subordinate road.
- 3. TYPE 3 in a situation where a pedestrian crossing is led through a tram track.
- 4. TYPE 4 at the approach of the superior road and at the exits from gates, exits, garages, petrol stations and other facilities where there is no speed limit markings.

The values of the required TYPE 1 visual fields are shown in Figure 20 – for a vehicle moving straight ahead and the required fields of sight for a vehicle turning right onto the crossing from the superordinate carriageway. Each table contains the following information:

- 1. Longitudinal inclination of the roadway [%],
- 2. Permissible speed on the carriageway on which the crossing is located [km/h],
- 3. Visibility required for the dimensions indicated in the drawings [m].

#### Visibility TYPE 1

Visibility when a pedestrian crossing is located on a roadway on which a vehicle is moving (Fig. 20) has been developed on the basis of the Ordinance § 168, a table of visibility distances allowing the vehicle to stop in front of an obstacle on the roadway. It was assumed that the vehicle is 1.0 m from the edge of the roadway (motorcycles are included), the pedestrian is also 1.0 m from the edge of the roadway (on the pavement), halfway across the crossing (based on the Handbook page 111). In accordance with the Contracting Authority's comments, it was agreed that the visibility requirements will be determined on the basis of the permissible speed values in the range from 20 to 70 km/h, which will be increased by safety factors. On





the basis of the measurements in the city of Warsaw, a table of speeding drivers depending on the cross-section of the road was prepared. The V85 speed quantile was used for the analysis on the available street cross-sections and on its basis it was determined how much drivers exceed the speed limit (value given in %). The overspeeding percentage determined the factor of safety for a given speed and cross-section. A table was obtained for the following values:

Cross-section	V lim	Exceeding V lim	V lim + safety factor.
[-]	[km/h]	[%]	[km/h]
1x2	40	40%	56
1x2	50	15%	58
1x4	50	40%	70
2+1	50	10%	55
2x2	30	40%	42
2x2	50	25%	63
2x2	80	-6%	75
2x3	50	45%	73
2x3	60	40%	84

#### Table 1 Speeding of drivers depending on the cross-section - Warsaw

The burgundy colour indicates the cross-sections for which the largest research sample was obtained. The analysis showed that the more extensive the cross-section, the more often and significantly drivers exceed the speed limit. Hence, for the cross-section of two carriageways with 3 lanes each (2x3), the highest ratios of 40 and 45% were obtained. The values included in the table of the Regulation were interpolated to obtain the values for the speed increased by the safety factor (understood as the value by which the drivers exceed the speed on a given cross-section). The table has been prepared for the values of slopes of the grades in the range from -8% to 8%. Figure 20 specifies three dimensions for the required visibility: 'a', 'b', 'c', which means:

- Dimension "a" is the distance of the vehicle to the edge of the pedestrian crossing (measured in a straight line, parallel to the roadway) – the dimension value is determined by interpolating on the basis of the table from the Regulation and the Handbook. The dimension from which the remaining distances are determined.
- 2. Dimension "c" is the distance between a vehicle and a pedestrian (each 1.0 m from the edge of the roadway) measured in a straight line.
- 3. Dimension "b" is the distance from the crossing to the point of intersection of the line of sight between the driver and the pedestrian with the curb. At the distance "b" in the space next to the road, there should be no obstacles limiting visibility.

In the case of vehicles exiting large roundabout intersections, the speed of the vehicles was assumed to be 40 km/h and no speeding was counted.



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Figure 20 Visibility TYPE 1, Visibility at stop in front of a pedestrian crossing – vehicle on the roadway before the crossing

#### Visibility TYPE 2 (Fig. 21)

Visibility for a vehicle turning right from the superior road to a pedestrian crossing was also determined on the basis of the table contained in the Ordinance § 168 - a table of visibility



distances allowing the vehicle to stop in front of an obstacle on the roadway and on the basis of the Manual – it was again assumed that both the vehicle and the pedestrian are 1.0 m from the edge of the roadway. The visibility requirements are shown for the permissible speed in the range of 20 to 70 km/h and for the longitudinal inclination values in the range of -8% to 8%. No safety factors were taken from the speed test barracks. To put it simply, it was assumed that the turning radius at the intersection is 10.0 m and the crossing is 6.0 m away from the superior roadway. Figure 21 specifies three dimensions for the required visibility: 'd', 'e', 'f'.

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- The dimension "d" is the distance (measured along the turning path) of the vehicle to the edge of the pedestrian crossing (the vehicle is 1.0 m from the edge of the roadway), the value of the dimension "d" is determined by the tables from the Regulation and the Manual. The dimension from which the remaining distances are determined.
- 2. The dimension "e" is the straight-line distance between the vehicle and the pedestrian (each 1.0 m away from the edge of the road).
- 3. The dimension "f" is the distance from the pedestrian crossing to the point of intersection of the driver-pedestrian line of sight with the curb line of the curb. At a distance of "f" there should be no obstructions in the space next to the road, limiting visibility.





Figure 21 Visibility at a stop before a pedestrian crossing – a vehicle turning from a perpendicular carriageway,

Cases and methods of determining visibility are presented in Appendix - VISIBILITY DETERMINATION SCHEMES

#### Visibility TYPE 3 (Fig. 22)

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Visibility at pedestrian crossings crossing tram tracks was developed on the basis of the table included in Appendix 3 to the Regulation of the Minister of Infrastructure of 2 March 2011 on the technical conditions of trams and trolleybuses and the scope of their necessary equipment. As in the previous cases, it was assumed that the pedestrian is 1.0 m away from the edge of the road and is in the middle of the 4.0 m wide crossing. The visibility requirements are





presented for a tram speed of 30 km/h. Figure 22 shows three dimensions of required visibility: 'g', 'h', 'i'.

- Dimension "g" means the safe length of the tram's braking distance, determined on the assumption that the vehicle stops before the edge of the pedestrian crossing (measured in a straight line, parallel to the track axis) – the value of the dimension is determined by taking into account the driver's reaction time and the actual length of the tram's braking distance, assuming the value of the braking delay equal to 1.0 m/s2 on the basis of the table included in the above-mentioned Regulation. The dimension from which the remaining distances are determined.
- 2. The "h" dimension is the distance from the pedestrian crossing to the point of intersection of the line of sight between the driver and the pedestrian with the edge of the track. At a distance of "h" there should be no obstacles in the space near the trackbed that would limit visibility.
- 3. The "i" dimension is the distance at which the driver's field of vision should be free of obstacles.







Figure 22 Visibility of the tram stopping in front of the pedestrian crossing.

#### Visibility TYPE 4

In a situation where a pedestrian crossing is located on a minor road at the intersection of the superior road and the subordinate road, the dynamics of vehicles approaching the crossing are completely different than on sections with priority. Drivers travelling on a minor road must slow down or stop before merging into traffic on the superior road. Hence, on the basis of measurements on selected cross-sections, it was assumed that vehicles approaching the superior roadway (where they must give way to vehicles on the superior roadway) move at a speed of 40 km/h and the value of speeding is not added in this case. The field of vision is





determined according to the table for TYPE 1, but assuming a permissible speed of 40 km/h without a safety factor.

In the case of crossings at the exits from the gates of plants, petrol stations, car parks, where theoretically there are no administrative restrictions, the required visibility is determined according to the TYPE 1 visibility, however, assuming a subjective value of speed without a safety factor. Depending on the zoning and geometry it is recommended to come a discretionary value. In most cases, these will be 20 km/h (residential zone) or 30 km/h.

#### 5.11.3 Required visibility – simplifications

Simplified values may be adopted. A slope of 0% is allowed for slight inclinations. Tables 6.2 - 6.5 show the adoption of simplified, often rounded values of the required visibility for individual types of visibility and types of cross-sections.

Visibility type	Przekrój	Permissible speed [km/h]	Speeding [%]	V85 [km/h]	Visibility marking	Visibility adopted [m]
					0	
TYP 1	1x2	30	-	-	С	35
TYP 1	1x2	40	40%	56	С	65
TYP 1	1x2	50	15%	58	С	65
TYP 1	1x4	50	40%	70	С	90
TYP 1	2+1	50	10%	55	С	60
TYP 1	2x2	30	40%	42	С	40
TYP 1	2x2	50	25%	63	С	80
TYP 1	2x2	80	-6%	75	С	105
TYP 1	2x3	50	45%	73	С	105
TYP 1	2x3	60	40%	84	С	135

Table 2 Simplified Required Visibility Values – TYPE 1





Visibility type	Speed limit on the main road [km/h]	Visibility marking	Assumed rear visibility [m]
TYPE 2	20	е	10
TYPE 2	30	е	15
TYPE 2	40	е	25
TYPE 2	50	е	40
TYPE 2	60	е	55
TYPE 2	70	е	75

#### Table 3 Simplified Required Visibility Values – TYPE 2

Table 4 Simplified Required Visibility Values – TYPE 3

Typ widocznośc i	Prędkość przyjęta[km/h]	oznaczenie widoczności	Przyjęta widoczność w tył [m]
TYP 3	30	i	45

#### Table 5 Simplified Required Visibility Values – TYPE 4

Visibility type	Traffic organization	Adopted speed [km/h]	Visibility marking	Visibility assumed [m]
TYPE 4 based on TYPE 1	Access to the intersection with the superordinate road	40	С	35
TYPE 4 based on TYPE 1	Wyjazd z bramy, zakładów pracy, parkingów	30	С	20
TYPE 4 based on TYPE 1	Zjazd z małego ronda	30	С	20
TYPE 4 based on TYPE 1	Zjazd z średniego ronda, wyspy centralnej	40	С	35

Visibility not specified in the above tables shall be calculated on the basis of the adopted rules according to clause 6.10.1 for the selected type of visibility and for the most recent available speed measurements.



#### 6 PEDESTRIAN CROSSING SAFETY RATING (PCSR)

In the field, after a site visit, the Auditor issues a subjective assessment to the pedestrian crossing in the form. It should be emphasized that the infrastructure and traffic organization are not subject to assessment. The degree of threat to pedestrian safety with the existing infrastructure and user behaviour is assessed. There are a few cases where the Auditor has nothing to complain about in terms of infrastructure (technical condition, traffic organization, visibility), but user behaviour such as vehicle speeds, vehicle traffic intensity, pedestrian traffic pose a huge threat to pedestrians and cyclists.

A range of grades from 0 to 5 was assumed. A rating of 0 indicates a very high risk of fatal road accidents involving vulnerable road users. A rating of 5 means that there is a negligible risk of road accidents involving vulnerable road users, and if such an event did occur, the consequences should not be serious.

After issuing an assessment in the field, the Auditor, while entering data into the database in laboratory conditions, reconsiders its legitimacy and often corrects it on the basis of the analysis of additional data such as pedestrian traffic, vehicle traffic or information about road incidents. Assessments are consulted among the Auditors and finally determined by discussion.

Ocena	Description
0	Very high risk of vulnerable road users – a serious risk of death in the event of a road accident.
1	High risk of vulnerable road users - risk of death in the event of a road accident.
2	Average risk of vulnerable road users – risk of death or injury in the event of a road accident.
3	Average risk of vulnerable road users – the risk of injury in the event of a road accident.
4	Low risk of traffic incidents
5	Very low risk of road accidents

Table 6 Ratings given to the threat levels of vulnerable road users







#### Car speed

Figure 23 Principle of ratings

#### 6.1 Auditor's opinion

Finally, after analysing all the data, the Auditor implements the main text of the Audit, in which he indicates the hazards, their level, potential consequences of road accidents and proposes improvements aimed at increasing the level of road safety.

#### 6.2 Base

#### 6.2.1 Database Basics

A database is built for all pedestrian crossings according to the attached example. The database contains:

- crossing number,
- Auditor
- the crossing metric according to the inventory provided by the ordering party,
- GPS coordinates,
- link to the map,
- A link to a pass-through penalty
- subjective assessment of the crossing,
- Threats
- Recommendations





#### 6.2.2 Risks and recommendations

On the basis of the site inspection at pedestrian crossings, the Auditors assess the threats they have identified in the infrastructure and user behaviour. A set of predefined hazards and recommendations aimed at increasing the level of road safety has been developed.

Table 6.7 shows the interpretations of hazard groups and Table 6.8 shows the set of predefined recommendations.

GROUP	PROBLEM AREA	CASES	
		Curb too high	
	Waiting zone: Mobility	Too steep ramp to the road	
		Uneven curb height or, ramp correct only on part of the crossing width	
	Waiting zone:	No system of tactile paths for people with visual impairments	
	of tactile paths	System of tactile paths for people with visual impairments poorly applied	
		System of tactile paths for people with visual impairments in poor technical condition	
Y	Waiting zone: Obstacles	Obstacles in the waiting area, directly at the exit from the roadway	
		Waiting zone too short, waiting space too small	
	Waiting zone:	Waiting zone narrower than crossing	
	Condition	The surface of the waiting area is in poor technical condition	
		Lack of continuity of the route after leaving the crossing	
	Technical condition of the roadway	Poor condition of the road surface hindering and slow down the movement of pedestrians	
	Parking - Identified	Parked vehicles reduce visibility (identified during the vision)	
	Parking - potential	Parked vehicles reduce visibility (no vehicles during the vision, but clear parking marks are visible)	
	Parking by the road with priority	Parked vehicles by the road with priority, restricting visibility to the waiting zone on the crossroad onto which the vehicle is turning. (Applies to the right turn manoeuvre only)	
	Fences, posts, supports	Fences, poles, supports and other objects accompanying road infrastructure, due to their size or number, limiting visibility	
VISIBILITY	Buildings, walls, stairs, advertisements , others	Buildings, walls, stairs, advertisements limiting visibility	
	Signs	Signs restricting visibility, mainly on the refuge island	
	PT Vehicles	Buses limit visibility during passenger exchange at PT stops	
	Vegetation	Trees, tree branches, shrubs, tall grasses that limit visibility	
	Access in the	Parking on access, restricting visibility	
	crossings	Vehicles merging into traffic from access before the crossing reduce visibility	
	Parking at a	Vehicles parked in the crossing area	
	waiting zone	Vehicles parked in the waiting zone	

#### Table 7 Description of threat groups – selected examples



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GROUP		CASES
GROOP		All or part of the signs is missing
	Signs - missing, incomplete, in	Signs shields damaged, covered with stickers, smeared
	poor condition,	There is a suspicion of a lack of adequate reflectivity
	rotated	Shields signs rotated
SIGNS.		Signs obscured by vegetation
MARKINGS	Signs - illegible	Signs obscured by other signs
		Signs obstructed by fixed objects, parked vehicles, other
	Markings -	Lack/incomplete/wrong road markings
	missing, incomplete, in poor condition	Markings in poor technical condition
	Too long	Crossing multiple lanes
	crossing	Lanes wider than required for vehicle traffic
	Crossing 2 or more lanes in one direction	Crossing 2 or more lanes, in one direction, straight ahead
	Refuge island	Refuge island narrower than necessary. 2.5 m as standard or wider when
	too narrow or	local conditions require - 2.0 m in difficult conditions
	too snort	Refuge Island too short Narrowing of traffic lanes, shortening of the crossings and other elements
	Markings that	of organization in the area of the entrance to the crossings and other elemented by
	do not protect	marking (area excluded from traffic).
	pedestrians	A "Refuge island" marked only by road markings
GEOMETRY	Insufficient	
	separation of the pavement from the roadway	Low, blended, or no curb on the access section to the crossing. Risk of easy swerving into pedestrian space
	Hazard in the waiting zone - passability	Risk of vehicles entering the waiting zone. Mainly when turning right at intersections. It can occur when turning left (when there is no assured passability)
	Crossing too	Too short a distance between the crossing and the intersection – vehicles waiting to merge into traffic or entering the crossing will be partially waiting at the crossing
	intersection	Too much distance between the crossing and the intersection – vehicles exiting the intersection will develop too high a speed.
SPEED	Very high/high speed vehicles	Subjective assessment of expected speeds in the crossing area to be too high than desired
	Cully drain in	Long straight road sections of road before crossing
	the crossing area	Gully drain in the crossing area
DRAINAGE	Areas with no drainage,	Puddles caused by lack of gullies, clogged drains, improper shape of the catchment, degradation of the surface.
	drainage	Gullies drains in the wrong location – rainwater flows through the crossing towards the drain.
LIGHTING		Lack of lighting
(implemented when there is	Lack of or improper	Improper lighting
no separate	lighting of the	Lack of lighting uniformity
inspecion)	crossing	Unlit waiting zones











GROUP	PROBLEM AREA	CASES
OTHER	Other unusual ones described in the audit text	Other rare issues not included in the predefined threat groups above.
NO REMARKS	No remarks	No serious road safety hazards or technical defects.





GROUP		CASES					
		Construction of a ramp in a place where there is none					
	Waiting zone Ramn	Construction of a ramp with a lower slope					
	realization/correction	Improvement of the uneven curb line at the edge of the					
		pedestrian crossing.					
	Waiting zone	Implementation of the system of tactile paths					
	Implementation/correctio	Supplementation/correction/overhaul of the system of tacti					
	n system if tactile path	paths					
	Waiting Zone: Removing	Removal of obstructions in the waiting zone, directly at the exit					
ACCESSIBILIT	Obstacles	inom the roadway					
T	Mail 7-2-2	Enlargement of the length of the waiting zone					
	Wait Zone: Zone Enlargement/Correction	Adjusting the width of the waiting zone to the width of t					
	Lindigonicity controllon	crossing					
		Construction of a walkway for the crossing					
	Waiting Zone: Improving	Improvement of the condition of the pavement in the waiting					
	the Pavement Condition	zone					
	improvement of the	Renovation of the road surface through which the crossing					
	road surface (crossing)	leads					
	Increased parking	Applies to illegal parking that restricts visibility					
	surveillance	Applies to illegal parking that restricts visibility.					
		Implementation of fences, poles to physically eliminate park					
	Physical/legal exclusion	and in places where vehicles limit visibility.					
	of parking	Implementation of signs, if effective					
		Moving poles that limit visibility to the zone in front of the					
	Correction of fences,	pedestrian crossing					
	posts, supports	Removal of fences that limit visibility.					
		Use of lower fences (e.g. in the dividing strip in front of a pedestrian crossing).					
VISIBILITY	Removal of fixed	Removal of obstacles unrelated to the road (walls stairs					
	obstacles not related to	advertisements, etc.) limiting visibility					
	Visibility - correction of	Correction of road signs restricting visibility (mainly on the					
	signs	refuge island)					
	Poloostion of BT stone	Relocation of public transport stops in situations where the bus					
	Relocation of FT stops	exchange of passengers					
	Removal/maintenance of	Demove/meintain vegetation that and vegetation with the					
	vegetation	Remove/maintain vegetation that reduces visibility					
	Relocation of access	Relocation of access to improve visibility					
	Relocation of crossing	Changing the location of the crossing to improve visibility					
		conditions					
	supplementation,	Implementation of missing signs					
	replacement of signs	Replacement of signs in poor condition.					
SIGNS.	Improving the visibility of	Relocate signs					
MARKINGS	signs	Repositioning of signs obstruct crossing signs					
	Implementation.	Implementation of markings when a lack is recognized.					
	supplementation,						
	restoration of markings	Renewal of markings in poor technical condition.					
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GROUP	RECOMMENDATION AREA	CASES				
	Shortening the length of crossing	The use of various measures to shorten the overall length of the crossing (narrowing the width of the lanes, closing the lanes, realizing the refuge island, moving the crossing from the area of large turning curves, reducing the radius of the curves)				
	Adapting the refuge Island to its needs	Suspension of the width of the refuge islands Increasing the length of the refuge islands Rebuilding the refuge islands				
GEOMETRY	Replacement of a marking area with an elevated surface	Replacement of traffic-free areas (in an area where a pedestrian would expect, such as an refuge island, or at the edge of a roadway) with an elevated island				
	Separation of the pavement from the roadway	Construction of the elevated pavement Use of road safety devices to separate pedestrians from the roadway				
	Protection against	Application of a high curb on an intersection curve				
	vehicles entering the	The use of posts, fencing at the intersection curve				
	waiting zone	Improving passability				
	Distance/moving crossing to/from intersection	Adjusting the distance of the crossing from the intersection in order to create a zone of 4-7 m in length, accommodating 1 vehicle.				
SPEED	Traffic calming in the crossing area	Any means of reducing the speed in the area of pedestrian crossings (narrowings, refuge islands, narrowing of lanes, narrowing of sections, island thresholds, elevated crossings, reducing the speed limit)				
DRAINAGE	Elimination of gullies from the crossing	Moving drains outside the crossing area				
	Elimination of non- draining areas	Changing the surface solution, or drainage, in the crossing area to eliminate the puddles				
	Lighting Application	Construction of a lighting solution				
LIGHTING	Lighting correction	Correction, repair, improvement, cleaning of the lighting solution				
	Traffic lights	The use of traffic lights. In most cases, it is indicated as one of many solutions.				
OTHER	Crossing in the second level	Implementation of the crossing in the second level. (NOTE: Auditors are aware that the construction of tunnels and footbridges is being abandoned, for reasons of cost and subjective security and comfort, but this is one of the recommendations. Auditors only consider the problem in the context of the safety of vulnerable street users. The decision always depends on the road authority).				
	Other unusual remarks described in the text	Other specific or rare solutions. The solutions are described in the Auditor's opinion.				
NO REMARKS	No remarks	No recommendations. The crossing does not require urgent action. The level of security is acceptable. The crossing may have minor flaws.				





#### 7 EXAMPLE OF A FIELD DATA COLLECTION FORM



Figure 24 Field Form – Sheet 1





AREA TARGETED ROAD SA	<b>FETY INSPECTION FORM AT P</b>	EDESTRIAN CROSSINGS Sheet						
PC NO. 100011 PRIMARY DIRECTION S								
	CHARACTERISTICS							
AREA	Built-up	Non-built-up						
	Marked							
ТҮРЕ	Unmarked							
	Signalised							
ONE WAY STREET								
ONE-WAY STREET		Yes No						
	Between intersections	Entry/exit of intersection						
LOCATION OF PEDESTRIAN	Entry/exit of roundabout	Access road / driveway						
CROSSING	PI station/parking lot	Bicycle path						
	Separated tramway track	Other						
		Ves						
PC ON A ROADWAY WITH PRIOF	NTY	Vec turning priority intersection						
		res, turning priority intersection						
		N/A m						
DIST. FROM THE EDGE OF A PER								
SPEED LIMIT ON PERPENDICULA	RROAD							
	No biovelo crossing	With bicyclo crossing						
	With biovelo crossing	marked PC						
BICTCLE CROSSING (BC)	Other							
	other							
	N/A Between intersec	tion and PC Behind PC						
	N/A Detween intersect	uon and PC Bennie PC						
	No	1						
TRAMWAY TRACKS	Separated	1 2 3 Tracks						
	In the roadway	1 2 3 Tracks						
	in the roadway							
1	N/A Rubber	Bituminous Concrete						
TRACK CROSSING PAVEMENT	Concrete cube	Other						
	Bituminous	Stone cube						
ROAD PAVEMENT ON THE	Concrete cube	Concrete						
PEDESTRIAN CROSSING	Tramway track	Other						
		0.000						
PAVEMENT CONDITION*	Good	Acceptable Bad						
* bad: will significantly impede movement,	for example, for a person in a wheelchair	r; sufficient: may slow down people with special needs.						
STREET GEOMETRY IN THE CROS	SING AREA Straight	Horizontal curve (small radius)*						
	Joine	* that can affect visibility						
LENGTH OF PEDESTRIAN CROSS	NG FOR DIRECTION S	m						
WIDTH OF THE REFUGE ISLAND		m when there is refuge Island						
LENGTH OF PC IN THE OPPOSITE	DIRECTION	m						
TOTAL LENGTH OF PEDESTRIAN	CROSSING	m when there is no refuge Island						
		the second						

WIDTH OF PC

Figure 25 Field Form – Sheet 2



m



	AREA TARGETED ROAD SAFETY INSPECTION FORM AT PEDESTRIAN CROSSINGS								
PC	NO.	100011	PR	IMARY DIRECTION	S				
TH	THE SPEED LIMIT ON THE ROADWAY ON WHICH THE PC IS LOCATED								
	SPEED LIMIT	ZONE		<b>RESIDENTIAL ZONE</b>					

ELI	MENTS OF THE	CROSS-	SECTI	ON	FROM THE LEFT LOOK	INC	6 IN TH	E DIRECTION OF	THE	S
	LEFT SIDE			R	EFUGE ISLAND /MEDIAN			RIGHT SIDE		
Bay	Bicycle lane	La	ane				Lane	Bicycle lane		Bay
No	No	Ν	٧o	No			No	No		No
1	1	1	L		Refuge island		1	1		1
2	2	2	2		Markings		2	2		2
		3	3		Median		3			
		>	>3		Median with tramway		>3			
		-								
UCHTING			Lac	:k	Only dedicated			Standard and	d deo	licated
LIGHTING			Sta	inda	ard street lighting	Ot	her			
					TRAFFIC LAYOUT	_				
DIRECTIO	N OF TRAFFIC (C/	ARS)				S	_			
S Kra	snoludków									
_										
DIRECTIO	N OF TRAFFIC (T	RAMS)					_			
_										
_										
DIRECTIO	N OF TRAFFIC (BI	CYCLE)	S		_ ND					
S Kra	snoludków									
					SCHEME					
					BUS STOPS					
BUS STOP	S LOCATED ON T	HE ROA	D WI	TH	THE PEDESTRIAN CROS	SIN	G	Ye	s	No
									_	
		LOCAT	TION,	TYP	PE, DISTANCE FROM TH	EC	ROSSIN	IG		
					On the lane					
	ln f	ront of	PC		Bus bay			Distanc	e*	m
	s 🚽				On the lane					
	Bel	nind PC			Bus bay			Distanc	e*	m
DIRECTIO	N				On the lane					
	In f	ront of	PC		Bus bay			Distanc	e*	m
					On the lane				+	
	Bel	nind PC			Bus hav			Distanc	e*	m
* measuring t	he distance to the poi	nt where t	he bay	reac	hes its full width or to the P-17	mar	kings on t	the lane		
	the state of the pol		- in many	- sector to	the second secon	Carl				

Figure 26 Field Form – Sheet 3





AREA TARGETED ROAD SAFETY INSPECTION FORM AT PEDESTRIAN CROSSINGS									Shee	et 4		
PC NO.	N			S								
		SI	GNS*									
* only applies to s	signage I	related to pedestrian (and bicycle) traffic	4			A			Á	<u>A</u>		X
		SIGNS Part I	D-6	Stat	æ	D-6a	Stat	te	D-6b	State	T-27	Stan
		LEFT SIDE		G	В		G	В		G B		GΒ
DIRECTION	S	REFLECTIVE BACKGROUND										
		Additional remarks			_							
		RIGHT SIDE		G	В		G	В		GB		GΒ
DIRECTION	S	REFLECTIVE BACKGROUND										
		Additional remarks			_			_				
		LEFT SIDE	_	G	В		G	В		GB		GΒ
DIRECTION	_	REFLECTIVE BACKGROUND	_									
		Additional remarks	_									
		RIGHT SIDE		G	В		G	В		GB		GΒ
DIRECTION	—	REFLECTIVE BACKGROUND										
		Additional remarks										
				^			^			0		
				2		1	A		A	2	t.	-
		SIGNS Bart III	A 16	LStat		A.17	Ctol	to	A-24	State	T 14	State
			A-10		P.e.	A-17		D	A-24		1-14	
DIRECTION	S		-	19	-			D				GD
	5	Additional remarks	-		_							
		RIGHT SIDE	-		B			R		GB		GB
DIRECTION	S				-			-				
DIRECTION	5	Additional remarks	1		_							
				G	B		G	B		GB		GB
DIRECTION		REFLECTIVE BACKGROUND	-		-						<u> </u>	
	-	Additional remarks						_				
		RIGHT SIDE		G	вΤ		G	в		GB		GB
DIRECTION		REFLECTIVE BACKGROUND		1-1	-		<u> </u>	_				
	_	Additional remarks						_				
		1	6		_			_				
					2	2						
					1	Å	а,		K			-
		SIGNS Part III	2	Stat	e	1 FWL above	Staf	te	1 FWL	State	Other	State
F	ashin	g warning lights (FWL)	FWL			sign			sign			
	100.000	LEFT SIDE		G	В		G	В		GB		GΒ
DIRECTION	S	Operates			$ \rightarrow$							
		Does not work		<b>1</b>			r <del>-</del> r					1
	all set of the	RIGHT SIDE		G	В		G	В		GB	<u> </u>	GΒ
DIRECTION	S	Operates						_	<u> </u>		<u> </u>	
		Does not work						_				
			-	G	В		G	В		GB		GB
DIRECTION	<u> </u>	Operates										
		Does not work		T								
		RIGHT SIDE	_	G	В		G	В		GB		GB
DIRECTION	_	Operates										

Figure 27 Field Form – Sheet 4









AREA	TARGETE	D ROA	D SAFETY INSPECTION	FORM	AT PEDESTRIAN CRO	SSINGS Sheet 5
PC NO.			100011	PRIM	ARY DIRECTION	S
			MARKINGS AND T	RAFFIC S	AFETY DEVICES	
ТҮРЕ	1	Lack	"Painted"		Concrete cube	
			Stone cube		Other material	
BACKGROU	ĩ	Lack –	"Painted" in colour		Concrete cube	
* occurs when it i	is of a differ	ront mate	Rupper			
		d	Accontable	Pad		
* bad (obliterated	d edges of a	u It least o	ne "belt"), acceptable (partially	v wom out.	but have clear edges).	
SIGNAGE AN		IC I	Lack P-14	P-	14	LED cat's eves
SAFFTY FFAT			Elevated PC	Sr	eed humn - island	Speed hump - linear
FRONT OF TH	HE PC		Other		isteria	
NARROWING	G OF THE		Lack Elevation		Markings	Separators
SECTION - LE	FT SIDE	-	Fencing	Other	i Mentanta Linna i 🖬 Ne	10.000 percentracional any
				5. <b>1</b>		
NARROWING	<b>G WIDTH</b>	l.	N/A m			
NARROWING	G OF THE		Lack Elevation		Markings	Separators
SECTION - RI	GHT SID	E	Fencing	Other		
		15				
NARROWING	<b>G WIDTH</b>	<u>I</u>	N/A m			
_						
			DR	AINAGE		
NUMBER OF	GULLIES	<b>6</b> *	0 1 2	3	4	
*only in the space	e of the wic	ith of the	pedestrian crossing.		_	
DRAINAGE			Correct	orrect		
-					~	
			ACC	ESSIBILII	Y	
	<b>.</b>	FET SI	)E		Incorrect	Correct/no need
				N/A		Correct/no need
DIRECTION				PWA		Correct/no need
			IDL .		incorrect	concetynoneed
			VISUAL	IMPAIRM	/FNT	
	L	EFT SI	DE	Lack	Warning strip	Guiding stripe
DIRECTION	SR	EFUGE	ISLAND N/A	Lack	Warning strip	Guiding stripe
	R	IGHTS	SIDE	Lack	Warning strip	Guiding stripe

Figure 28 Field Form – Sheet 5









	AREA	TARGE	ETED RC	AD SAFE	TY INS	PECT	ION F		AT PED	ESTRIAN C	ROSSINGS	6 S	heet 6		
PC NO	D.			100	011			PRI	MARY D	IRECTION		S			
						POS	TS AN	ID FE	NCING						
					AT PEDESTRIAN CROSSING										
ROADSIDE EQUIPMENT				N/A*	/A* Lack		ck Posts		Grass fencing	Post and chain fence	Pipe fence	Road barrier	Anti-splash fence		
	c	LEFT S	SIDE												
DIN.	5	RIGHT	<b>SIDE</b>												
* when	, there ar	e other o	objects tha	t physically	prevent p	arking	; in the	vicinity	of the roa	dway					
						II	N FRO	NT O	F THE P	EDESTRIAN	CROSSIN	G			
ROA	DSIDE	EQUIP	MENT	N/A*	Lack	k	Post	ts	Grass fencing	Post and chain fence	Pipe fence	Road barrier	Anti-splash fence		
	c	LEFT S	SIDE												
DIK.	3	RIGHT	<b>SIDE</b>												
* when	, there ar	e other c	bjects tha	t physically	prevent p	arking	g in the	vicinity	of the roa	dway					
							BEH	IND 1	HE PED	ESTRIAN C	ROSSING				
ROA	DSIDE	EQUIP	MENT	N/A*	Lack	k	Post	ts	Grass fencing	Post and chain fence	Pipe fence	Road barrier	Anti-splash fence		
	· ·	LEFT S	SIDE												
DIR.	3	RIGHT	<b>SIDE</b>												
* when	, there ar	e other o	objects tha	t physically	prevent p	arking	; in the	vicinity	of the roa	dway					
							PAR	KING	ĺ						
				PAR	KING PA	ARTI	ALLY (	OR E	TIRELY	IN A LANE					
			IFFT		NP.		NF	In fr	ont of P	C	Distar	nce to PC			
		s	S RIGHT				NF	Behind of PC		2	Distance to PC				
DINE					NP.		NF	In front of PC		Distar	Distance to PC				
			Kion	SIDE	NP.	NP. NF			ind of PC	C	Distance to PC				
*NP 1	Not Prese	nt, NF - N	lot found o	during the s	ite visit, b	ut tra	ces of su	uch par	king are vis	sible.					
				1	PARKIN	IG EN	ITIRE	LY NE	XT TO A						
			LEET		NP.		NF	In fr	ont of P	C	Distar	nce to PC			
DIRE		S		SIDE	NP.		NF	Beh	ind of P(	2	Distar	nce to PC			
DIRE			RIGHT		NP.		NF	In fr	In front of PC		Distar	nce to PC			
				SIDE	NP.		NF Be		hind of PC		Distar	nce to PC			
*NP, - 1	Not Prese	nt, NF - N	lot found (	during the s	ite visit, b	uttra	ces of su	uch par	king are vis	sible.					
		_		PA	RKING	AT T	HE PE	DEST	RIAN CF	ROSSING					
DIREC	TION	S	LEFT S	IDE		Yes		No							
DIRE		J	RIGHT	SIDE		Yes		No							
					-										
					COMM	IENT	S REG	iard	ING PAR	KING					

Figure 29 Field Form – Sheet 6









7414674	TAF	GETED ROAD SAFETY INSPEC	тю	ON FORM AT PEDESTRIAN C	RO	SSINGS	Sheet 7
PC NO.		100011		PRIMARY DIRECTION			S
-			1	VISIBILITY			
		SIGHT	)IS	TANCE - MEASURED			
	_	LEFT SIDE	TR	IGHT SIDE	BA	CKWARD	; ;
DIRECTION	E	m		m		N/A	m
PEDESTRIAN	14/		Г			N/A	
	44	r	n 🗌	m		N/A	m
			-				
		SIGHT			DA		
			K		ВА		
DIRECTION	E	m		m		N/A	m
OF					┢		
PEDESTRIAN	w	m		m		N/A	m
		OBJECT	'S I	IMITING VISIBILITY			
	_	LEFT SIDE	R	IGHT SIDE	BA	CKWARDS	5
		Parked cars		Parked cars		Parked ca	rs
		Vegetation	L	Vegetation		Vegetatio	n
	E	PT vehicle at the stop		PT vehicle at the stop		PT vehicle	e at the stop
DIRECTION		Pole/sub-post	L	Pole/sub-post		Pole/sub-	post
OF		Signs		Signs		Signs	
PEDESTRIAN		Building/wall/object		Building/wall/object		Building/	wall/object
		Fencing		Fencing		Fencing	
		Horizontal/vertical arc		Horizontal/vertical arc		Horizonta	I/vertical arc
		Other		Other		Other	
					_		
	_	LEFT SIDE	R	IGHT SIDE	BA	CKWARDS	5
		Parked cars		Parked cars		Parked ca	rs
		Vegetation		Vegetation		Vegetatio	n
		PT vehicle at the stop		PT vehicle at the stop		PT vehicle	e at the stop
DIRECTION	Trainin	Pole/sub-post		Pole/sub-post		Pole/sub-	post
	\A/	Signs		Signs		Signs	
OF				Building/wall/object		Building/	wall/object
OF PEDESTRIAN	**	Building/wall/object		Ballanig, Wally Object			
OF PEDESTRIAN	**	Building/wall/object Fencing		Fencing		Fencing	
OF PEDESTRIAN	~	Building/wall/object Fencing Horizontal/vertical arc		Fencing Horizontal/vertical arc	E	Fencing Horizonta	l/vertical arc

Figure 30 Field Form – Sheet 7









AREA TARGETED ROAD SAFETY INSPE	ECTION FORM AT PEDESTRIAN CROSSINGS	Sheet 8
PC NO. 100011	PRIMARY DIRECTION	S
A	AUDITOR'S OPINION	
ASSESSMENT OF PEDESTRIAN CROSSING	0 1 2 3 4	5
OPINION	ADDITIONAL COMMENTS	

Figure 31 Field Form – Sheet 8

