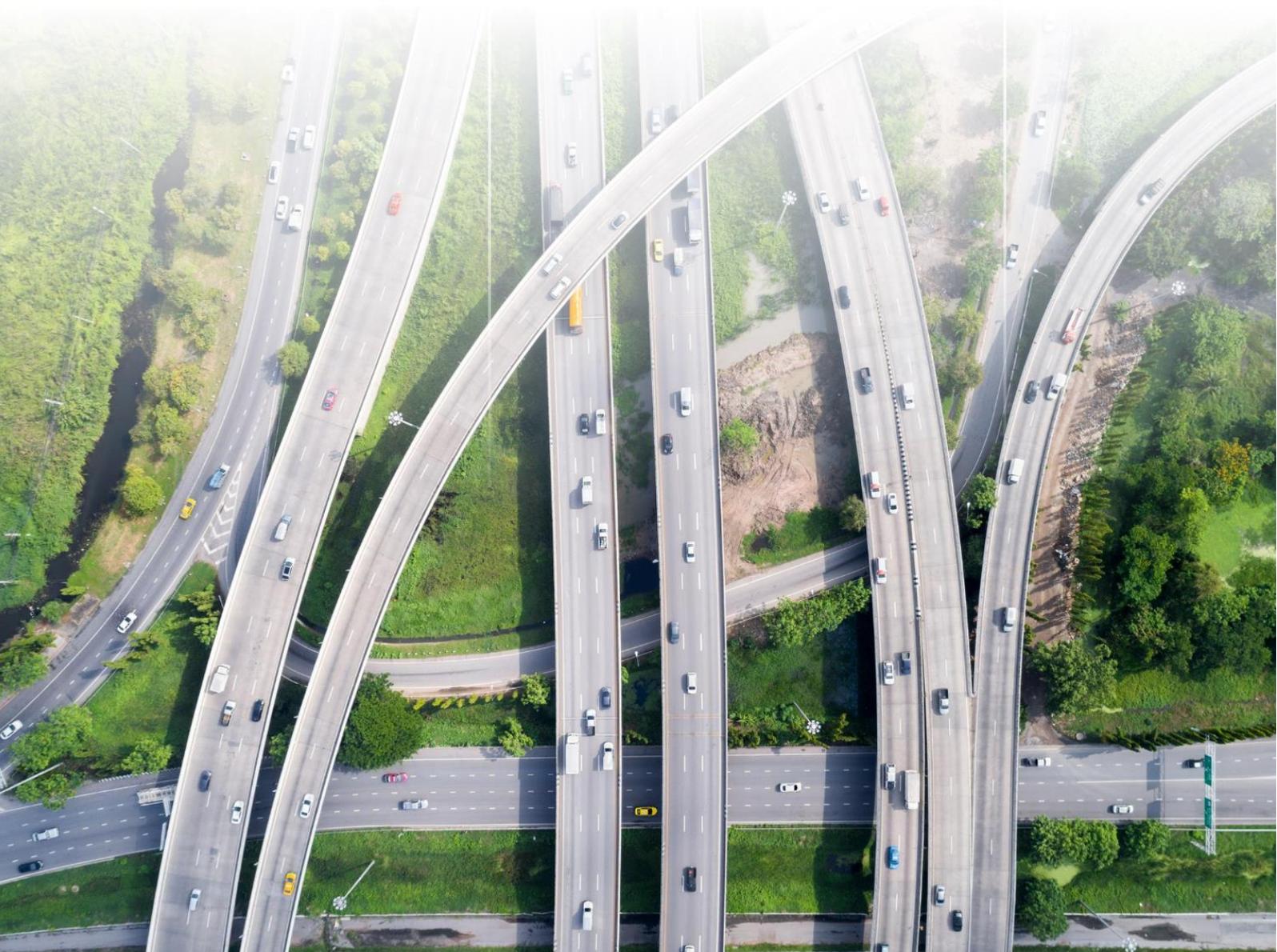


Krzysztof Ruszyński  
Izabela Cholewa

# ZW Traffic



# ZWTraffic 2021

Version 2021.0.00 (10.09.2020)

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## **1 Description**

This application helps to design signs and road markings in the following areas:

1. Inserting vertical road signs (this application has a database of typical polish road signs), It's also possible to update the database by adding your own signs. In our application, there is also a module which helps to create guide and informational signs.
2. Automation in creating horizontal signs
3. Simulation of vehicle movement
4. Automation in designing islands according to parameters.
5. Automation in designing car park spaces

## **2 Requirements**

The new version of ZWTraffic acts as an addon application for ZWCAD 2021 Professional. Hardware requirements of ZWTraffic do not exceed the requirements of ZWCAD 2021.

## **3 Support**

Technical support is available from 8am to 4pm from Monday to Friday, we are more than happy to answer any questions by phone or e-mail.

E-mail: [pomoc@zwcad.pl](mailto:pomoc@zwcad.pl)

Phone: 33 474 04 03

## **4 Installation**

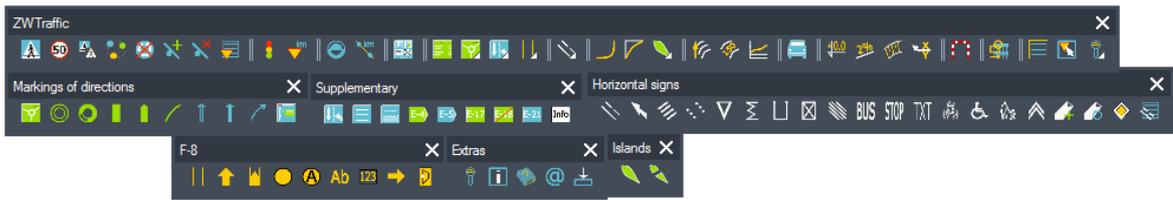
**Installation must be completed on an account with administrative privileges.**

Application installs automatically after running the downloaded installation package.

The Default installation path is C:\Szansa\ZWTraffic\2021. It is possible to choose a different installation path, however it is not recommended. Installing the program in the folder Program Files on the operating systems such as Windows Vista, Windows 7, Windows 8 and Windows 10 can cause major implications because of the built in User Account Control in the given operating systems. The User Account Control can block numerous functions of the program.

After correct installation of ZWCAD, the application ZWTraffic should load automatically. ZWCAD should display a toolbar similar to the one below:

If for some reason the application menu does not appear, it can be loaded manually. You can load it manually by following the instructions listed in the chapter 8.2.



## 5 Activation

A trial period that lasts for 30 days with full functionality is available after installation of the application.

[Activation must be completed on an account with administrative privileges.](#)

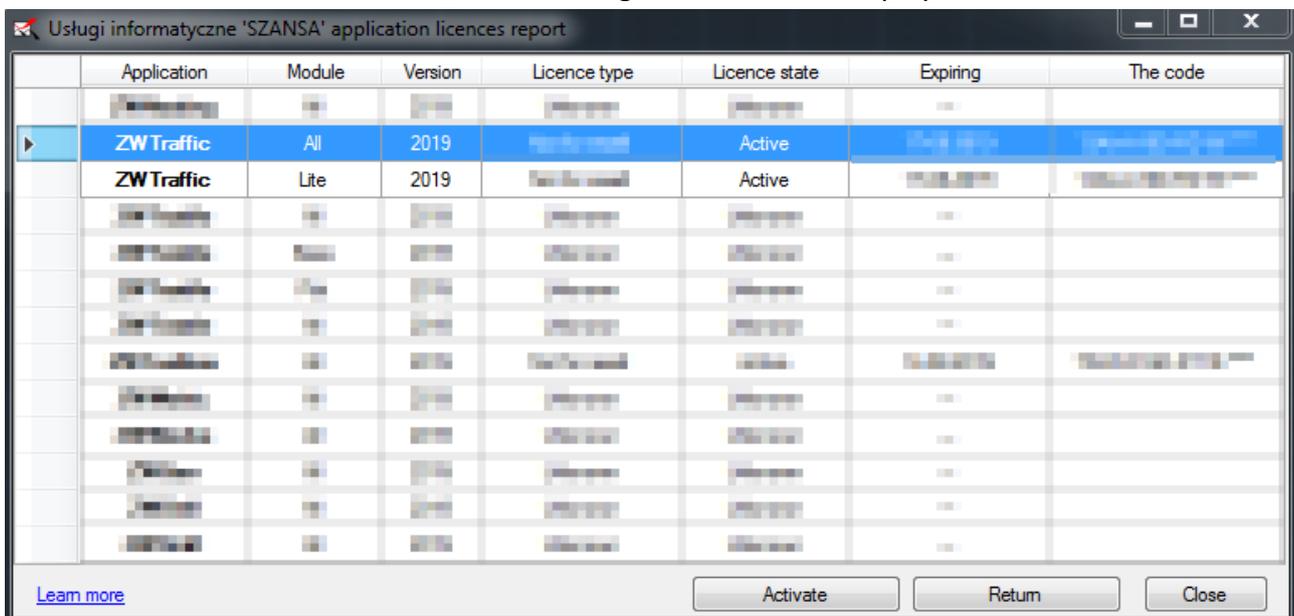
Once the trial period of 30 days runs out, a license will be needed in order to use the program. After receiving the payment, an e-mail with an activation code will be sent.

Activation is available directly in ZWCAD or by using the function “Activation” from menu of the application. It is also possible to activate the program from its installation folder. By default located in: **C:\Szansa\Aktywator\2021\EN** and run **Aktywator\_2021.exe**.

**In operating systems such as Windows Vista, Windows 7, Windows 8 and Windows 10 it is necessary to right click on ZWCAD icon and select *Run as Administrator*.**

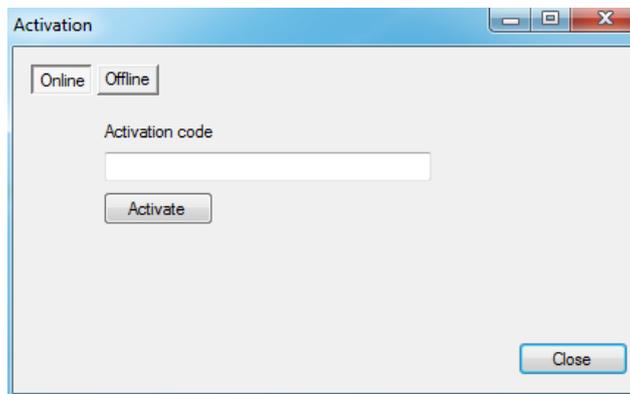
Full license code is only visible on the license certificate that is sent out during completion of the order due to security reasons.

Once Activator has been launched, the following window will be displayed:



Please click on “Activate”.

A choice between activating the application online or offline will be present.

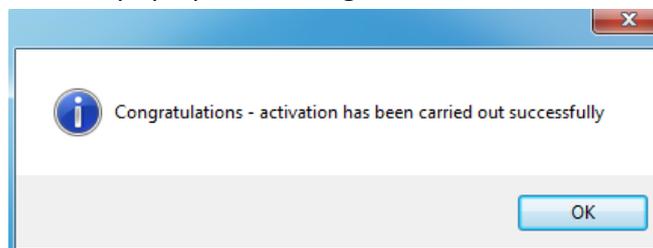


## 5.1. Online activation

**Please note:** Online activation requires an Internet connection. If there is no internet connection available please use the Offline Activation (**Błąd! Nie można odnaleźć źródła odwołania.** Offline Activation).

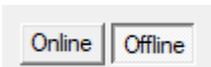
In the field “**Activation code**” please type in the information sent during realization of the order, afterwards click on “**Activate**”.

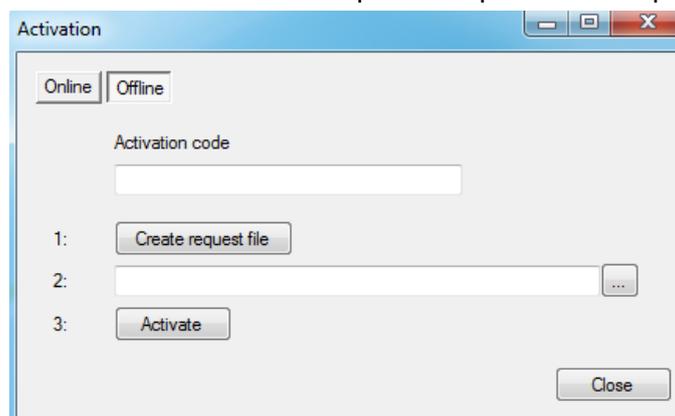
An information window will pop up confirming the activation.



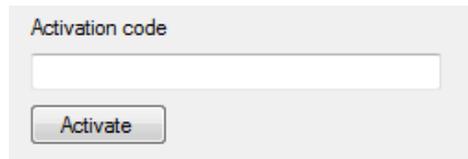
Once ZWCAD is launched, all functions of the program should be loaded and available.

## 5.2. Offline activation

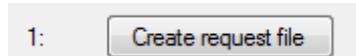
In the “**Offline**” tab  additional steps are required to complete the activation.



In the field “**Activation code**” please type in the information sent during realization of the order.



Afterwards it is necessary to click on “Create a request file”, it will create an additional file which needs to be saved on the desktop or in any other directory of the computer.



The file needs to be sent in a form of an attachment to, [pomoc@zwcad.pl](mailto:pomoc@zwcad.pl) and a reply will consist of response file which then needs to be loaded in the activator:

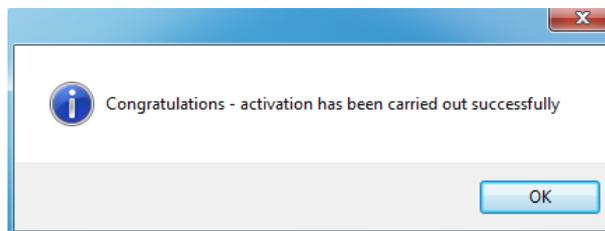


Response file needs to be saved on the computer and its localization needs to be determined by clicking on the following icon .

Once the response file is loaded, click on “**Activate**”.



An information window will pop up confirming the activation.



Once ZWCAD is launched, all functions of the program should be loaded and available.

## 6 License transfer

The license of UISZANSA applications in the form of a program code can be transferred to a different workstation.

In order to transfer the license to a different computer, it is necessary to return the active license and once that is done, it will be possible to activate the license on a different Workstation.

In order to transfer the license to a different computer, it is necessary to return the active license and once that is done, it will be possible to activate the license on a different Workstation.

### 6.1. Returning the license

License return is available in the UISZANSA Activator window.

Uслуги информатyczne 'SZANSA' application licences report

	Application	Module	Version	Licence type	Licence state	Expiring	The code
	ZWTraffic	All	2019	Full license	Active	2020-01-01	XXXXXXXXXX
	ZWTraffic	Lite	2019	Full license	Active	2020-01-01	XXXXXXXXXX
	ZWTraffic	...	...	...	...	...	...
	ZWTraffic	...	...	...	...	...	...
	ZWTraffic	...	...	...	...	...	...
	ZWTraffic	...	...	...	...	...	...
	ZWTraffic	...	...	...	...	...	...
	ZWTraffic	...	...	...	...	...	...
	ZWTraffic	...	...	...	...	...	...
	ZWTraffic	...	...	...	...	...	...

Learn more    Activate    **Return**    Close

Once "Return" has been clicked on, an additional window will appear in which it will be possible to return the license, either online or offline.

License return

Online     Offline

Activation code

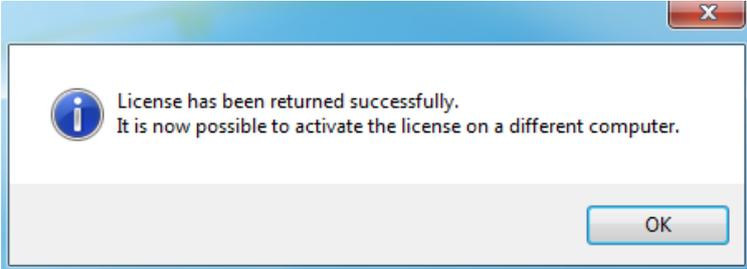
Return

Close

### 6.2. Online return

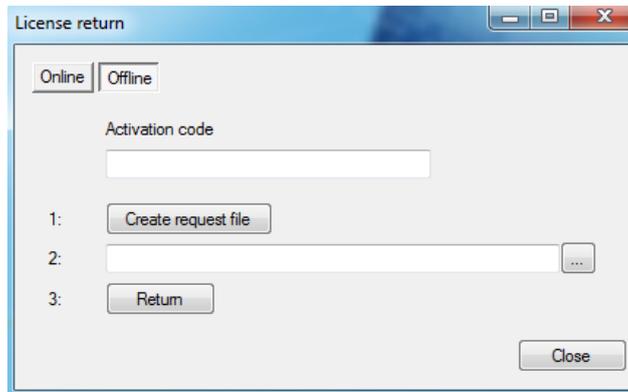
**Please note:** Online return requires an Internet connection. If there is no internet connection available please use the Offline return (3.1.2 Offline return).

To carry out the online return, please type in your license details followed by clicking on "Return". Once confirmed, the license will be usable on a different workstation.



### 6.3. Offline return

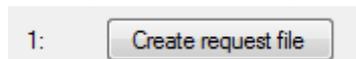
In the „Offline” tab  Online  Offline additional steps are required to complete the return of a license.



In the field „Activation code” please type in your license details.



Afterwards it is necessary to click on “Create a request file”, it will create an additional file which needs to be saved on the desktop or in any other directory of the computer.

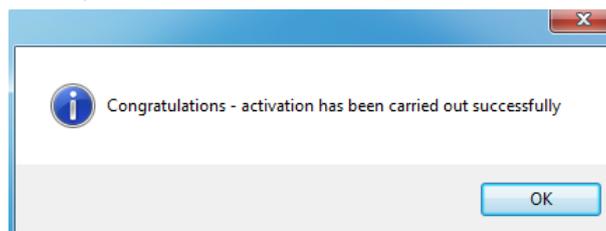


The file needs to be sent in a form of an attachment to, [pomoc@zwcad.pl](mailto:pomoc@zwcad.pl) and a reply will consist of response file which then needs to be loaded in the activator:



Response file needs to be saved on the computer and its localization needs to be determined by clicking on the following icon .

Once the response file is loaded, click on “Return”



Once ZWCAD is launched, all functions of the program should be loaded and available.

## 7 Settings

You can define your own settings in the program. To do so, run the command Ustawienia or click the following icon: .

You can select the layers on which the signs will be placed on. You can select one of existing layers, or you can enter a new layer name, which will be created and defined automatically [1].

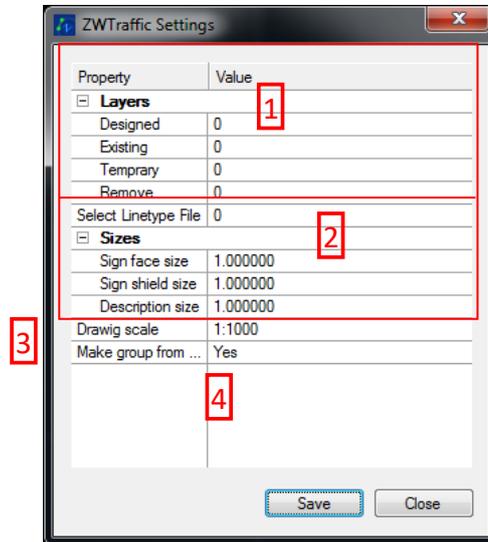
Sign size. On vertical signs you can define the size of the inserted faces of a sign.

Another option is the ability to define the size of the face of the sign, mounting of the sign

and a description of the sign to be inserted [2].

To easily manage sign mounting, sign face, description lines and description blocks can be grouped up. This setting is on by default, therefore groups will be created [3].

You can also set a default scale of a project. It's useful to set sign sizes. Available scales are 1:1000 or 1:500 [4].

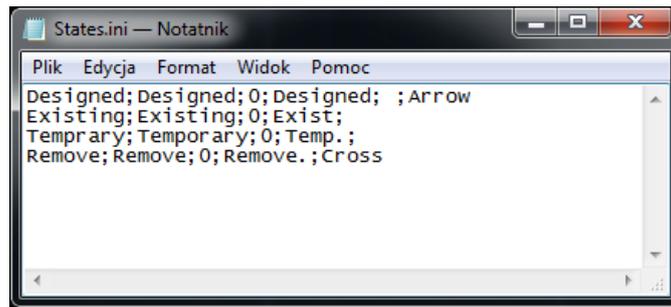


The user can modify the states of signs: designed, existing, removable or temporary. The settings are saved in a text file. Its default path is:

C:\Szansa\ZWTraffic\2021\EN\Configuration

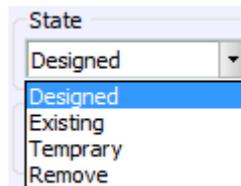
A States.ini file can be found there and the user can modify or complete the states of signs.

After opening that file, a window similar to the one below appears:

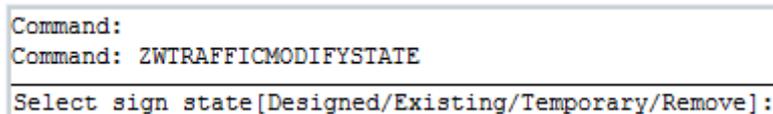


Each line determines the settings of one sign state.

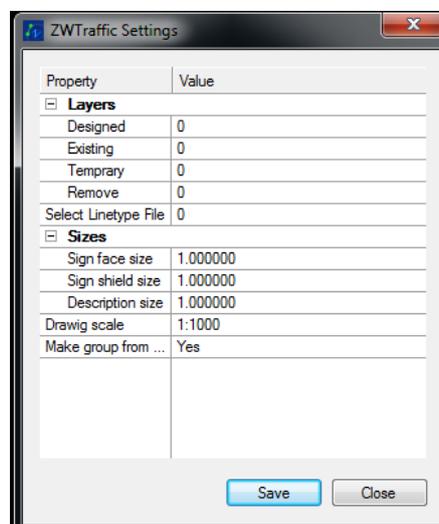
The first part for example: "Designed" is the name of the state that is displayed in the window which is responsible for entering signs.



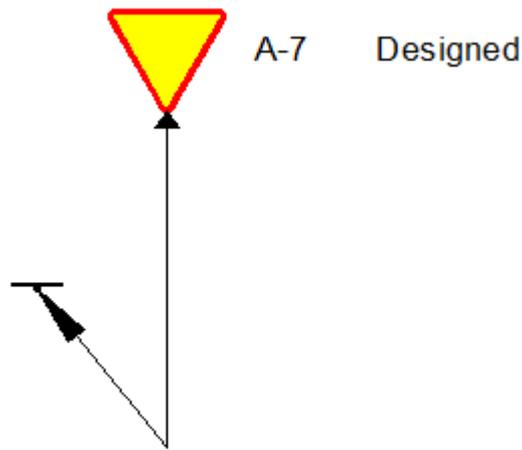
The second part, also called "Designed" is responsible for selecting the state of character in the command bar, where you should write the equivalent of "P" or other, depending on the state.



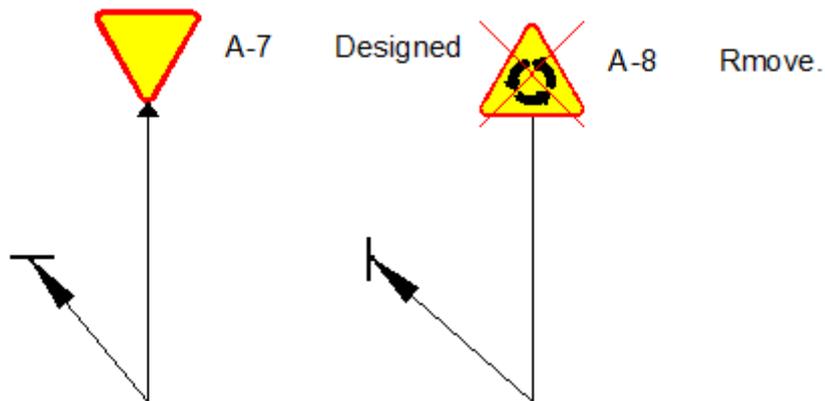
The next element, e.g. 0, is responsible for the layer on which signs will be inserted to.



The fourth element eg. Designed, is a symbol of sign that will be inserted in the description of the drawing.



The last element for example, Arrow is responsible for the extra elements that can be inserted on signs. If you insert "Arrow" to the state of the sign will be inserted arrow on a link under board of signs. A "Cross" is considered to be a display for the state "Remove".

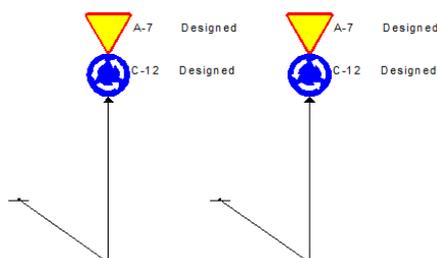


These elements can be modified by the user, even whilst working in the program, by entering different changes to the file States.ini and saving them.

Remember: Existing elements will not be rebuilt.

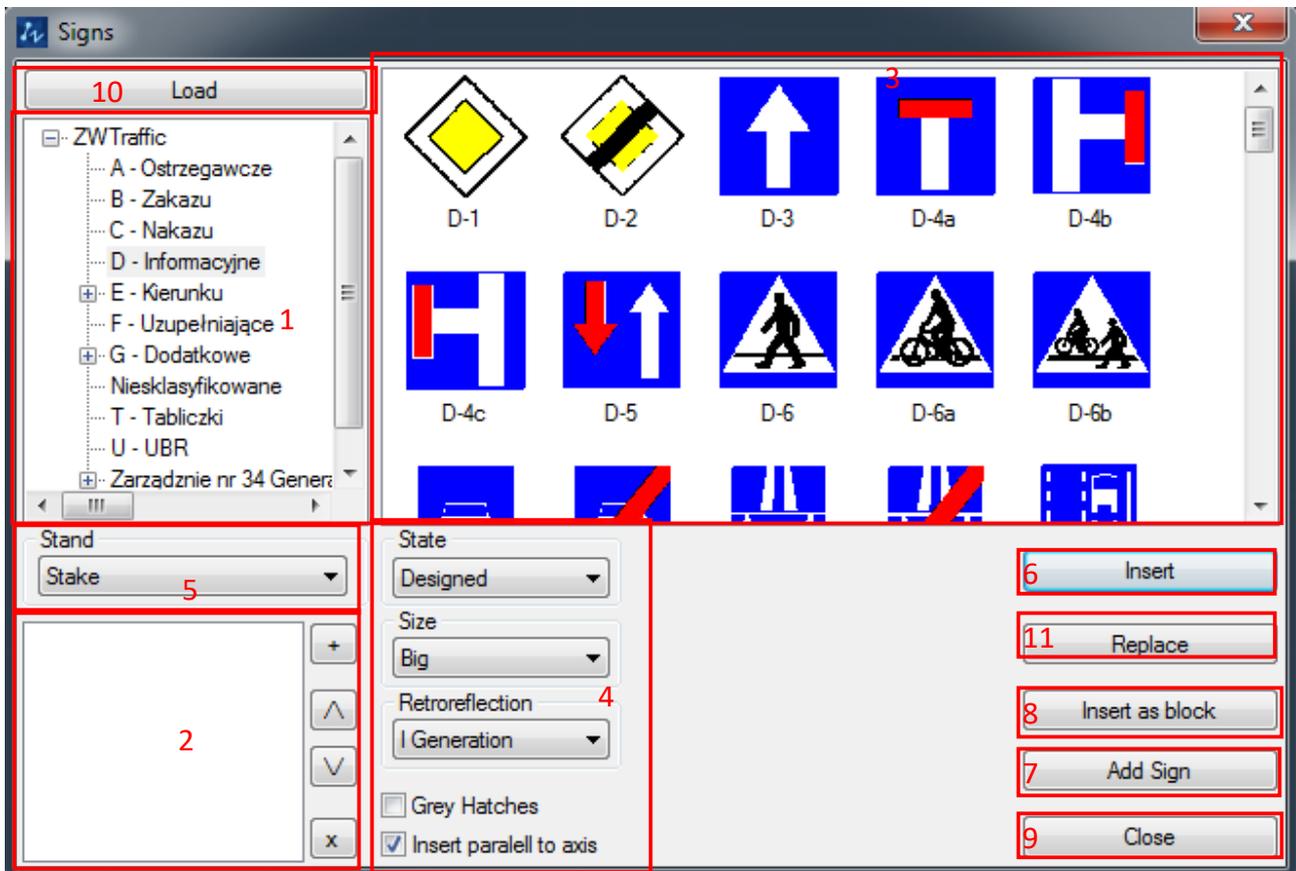
### ***Selecting elements separately***

This command allows you to ungroup an element and select a single part of a group. The function also allows turning grouping of existing elements on and off.



## 8 Vertical signs

To run this function use the command: Znaki, or by clicking on this icon . This function should look similar to the window below:



*A picture of a window which is used for inserting vertical signs*

In this window, you can see the following elements:

1. A list of available signs
2. A list of selected signs to insert
3. Sign preview
4. Inserting options
5. A button to load own signs
6. A button to open report window
7. A button to add sign to existing one.
8. A button to insert sign

9. A closing window button
10. Additional options button
11. The option to replace a sign with the selection

Signs can be inserted in following ways:

### 8.1. Inserting as a block

It's the easiest way to insert signs. After clicking on the button [Insert as block] [8] a sign will be inserted as it was defined in the parameters. This mode is especially useful when creating tables F-5, F-6

### 8.2. Inserting as a sign

This method is useful when inserting signs for road projects. To use it, click on the tab "Sign" The parameters that can be defined here are as follows:

- Drawing scale. The typical values available are: 1:500, 1:1000
- State of sign. – available values are: Designed, Temporary, Deleted, Existing
- Sign size Huge/Large/Medium/Small
- Irradiation of the sign. Available values are I, II or III generation

To insert a sign into a drawing you should follow these steps:

1. Select one or more signs from the available list. To add a sign to selected signs list, you need to double click on the selected sign or select a sign and click the button [+] [2]

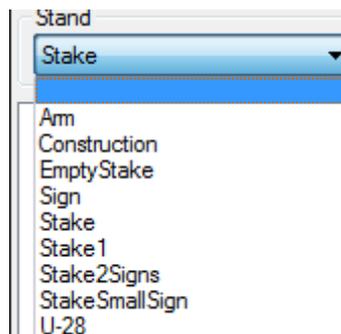


You can add more signs to this list, and you can control their order by pressing these buttons: [^] [3] and [V] [4]. If a sign was added to the list by mistake, it can always be removed by pressing the button [x] [5].

2. Afterwards, you should select the parameters of signs: scale, state, size, irradiation.



3. Before inserting a sign, you have to select the type of a stand on which the sign will be mounted.



The program has several standard types of construction. You can select them from the list, as well as introduce new designs to the template directory, which by default is located in the following path:

C:\Szansa\ZWTraffic\2021\EN\Templates\Mounting

4. Confirm the settings by pressing the button [Insert sign]
5. Pick two points parallel to a road axis
6. Pick an insertion point of the sign
7. Now we can draw a line connecting the insert point with insertion of a sign face
8. In the end point of description a face of a sign will be inserted
9. Next to the sign face, a description block will be inserted. Based on information stored in this block, reports will be created. The description block will contain information listed below:
  - Symbol of the sign
  - Size
  - State

- Irradiation

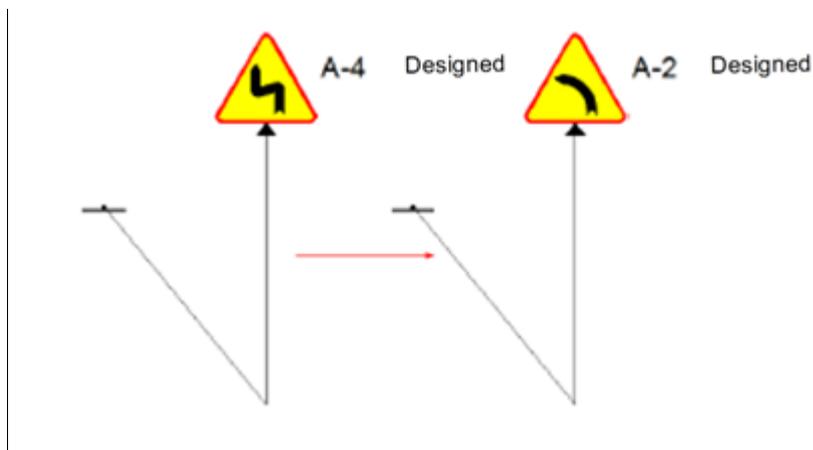
All elements of the inserted sign will be placed on a suitable layer. Layers are connected with state of the signs. Connecting the states of the signs with layers can be done by clicking on this icon: .

If the field Grey hatches is marked, a sign face will be inserted in grey scale.

If the field Parallel to road axis is marked, in exactly the same way a face of a sign will be inserted. If this field is turned off, the face of a sign will be rotated correspondingly to the two last points of the descriptive arrow.

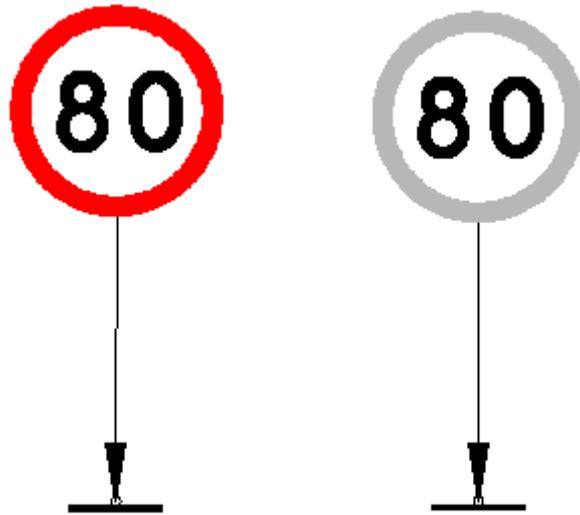
### 8.3. Replace

This function allows the user to quickly change the sign on an existing stand. The command is available in the library of signs. Once called for, it is necessary to choose the sign that we want to add, choose the option replace and pick the sign that you want to replace with your selection.



### 8.4. Changing signs to grey

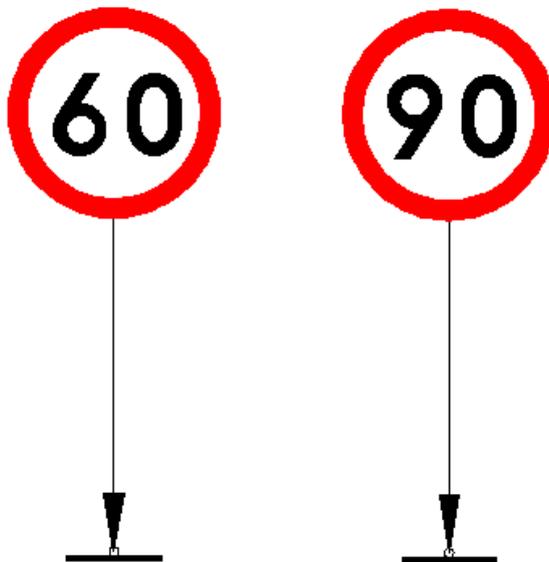
A function to change colors of signs is available in this program. To change the color you can press the command SZARYZNAK . This tool is extremely useful when a project changes a state of the sign. After running this function, out of two available options, you have to choose whether you want colored (option K) or a gray (option S) sign. Next step requires you to choose the signs that need changing and once that is done, press ENTER. You can go back to the signs previous color by going back to the function and choosing Kolorowe (K). After picking the signs, the color will be restored.



*Changing the colour of a sign*

### 8.5. Changing sign attributes

This function  allows the user to change the attributes that are currently placed on the road sign. For example, a user might want to lower the speed limit of the sign. After running the function, the user has to choose the sign with the attributes that need amending and in the window which allows us the change the attributes, the user has to enter wanted values and confirm by pressing ok. Changes can be made to signs which have the limitations of width, height length and the overall weight of the vehicle.

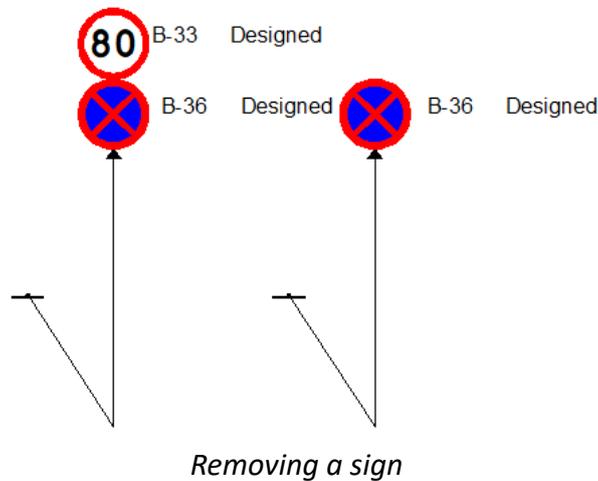


*Decrease in speed limit*

## 8.6. Removing a sign

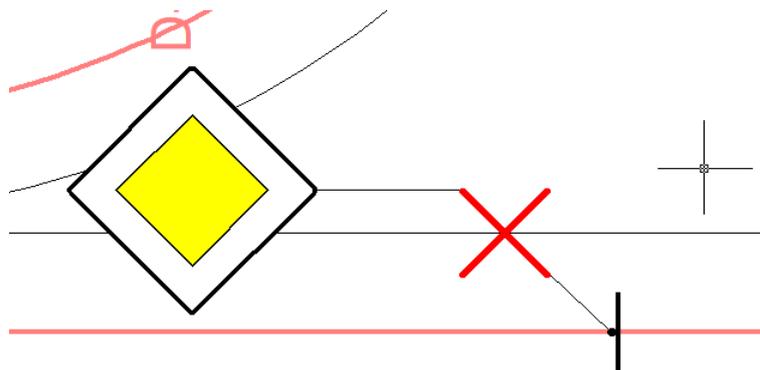
This program allows you to remove the board on which a sign is placed. To do this, click on "Remove sign" which can be found here:  .

Once the command is activated, you have to choose the sign boards that you want removed from the stand.



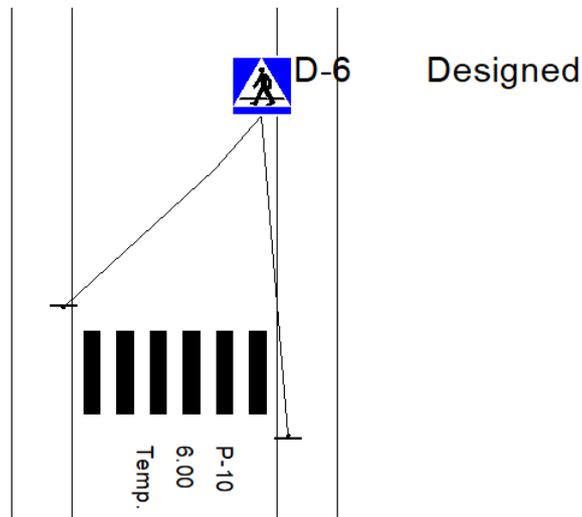
## 8.7. Add Cross Symbol

To add a cross symbol, click on the corresponding function and select the desired position of a cross symbol as well as its size.



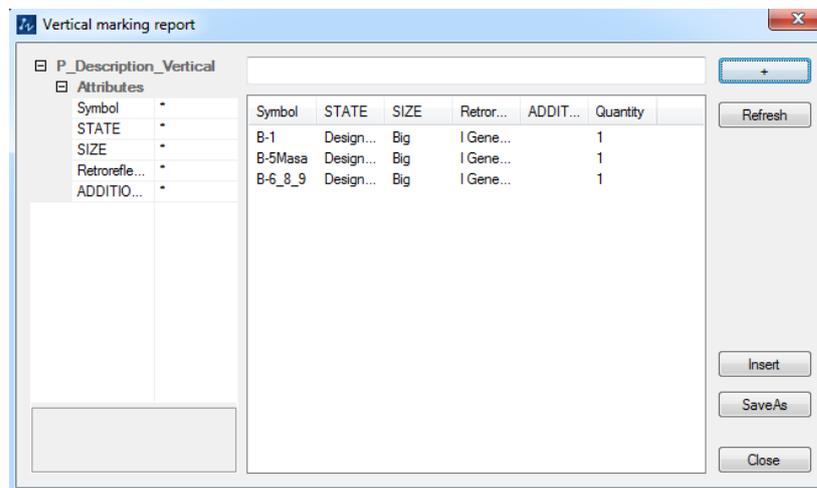
## 8.8. Additional signpost to an existing sign

It is possible to add a signpost to an existing sign. In order to start the function you should press the icon:  . Once the function is active, it is necessary to choose the sign and a direction of the additional signpost. An example:

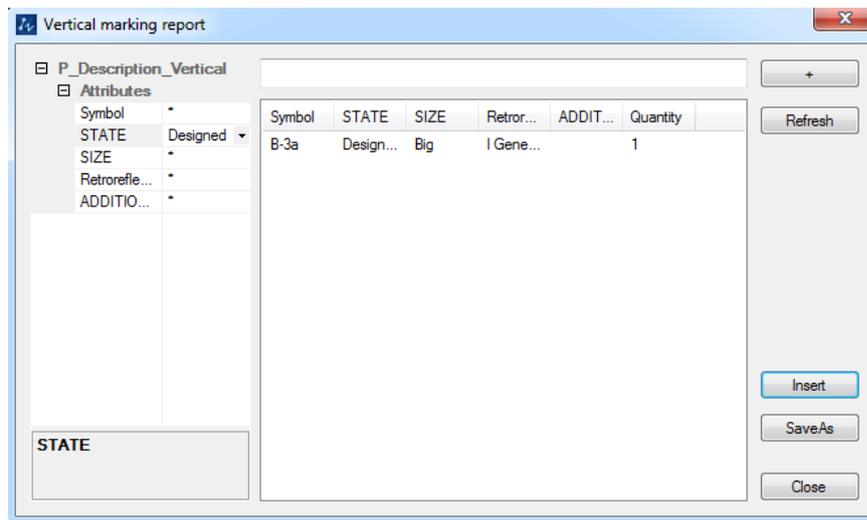


## 8.9. Vertical signs report

The command allows to create a collection of vertical signs in a form of a table. Once activated, a window will appear where on the right hand side a “+” will be available and it will let you add elements to the collection of elements. It is possible to either choose “All” or “Select” depending on the user’s needs.



The parameters of signs are present on the left hand side of the dialogue window, thanks to them it is possible to choose a certain group of signs e.g. according to their states. The list can be extended. If we only want to see the signs with certain parameters, it is necessary to select the desired parameters and click on “Refresh”. The program will display the vertical signs that present set criteria.

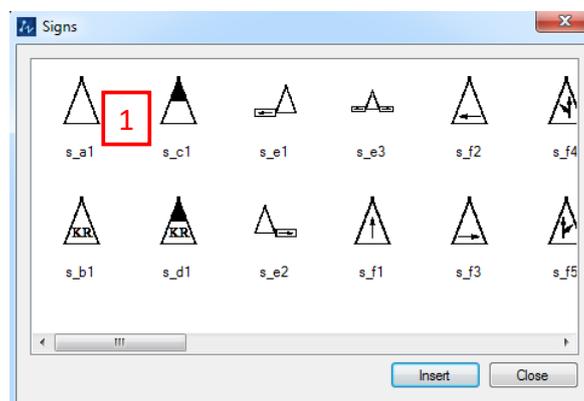


Selected vertical signs can be added with detail to the drawing in form of a table by using the button “Insert” or to an external CSV file by means of “Save as”.

Symbol	STATE	SIZE	Retroreflection	ADDITIONAL	Quantity
B-3a	Designed	Big	I Generation		1
B-7Mass	Exist	Big	I Generation		1
B-8	Exist	Big	I Generation		1

## 8.10. Traffic lights

The module to add traffic lights can be launched by clicking on this icon:  or typing in the command D\_Swiatla. The following dialogue window will pop up.

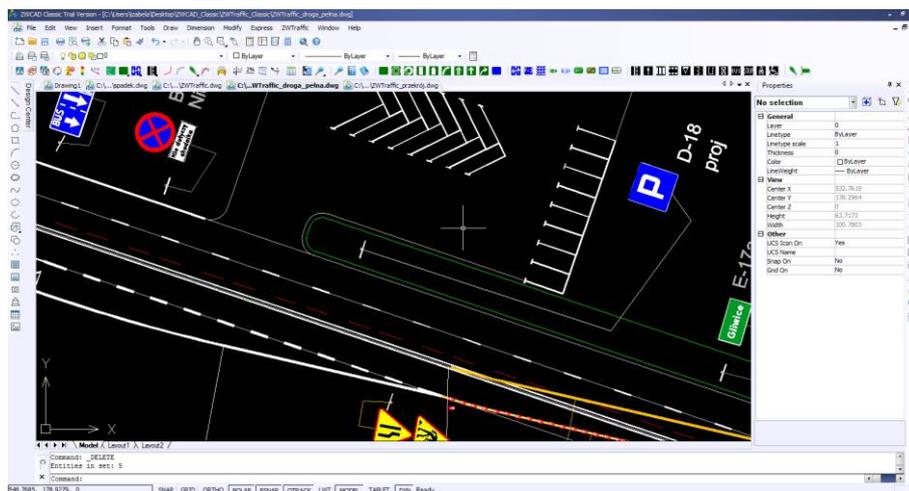


*Dialogue window for traffic lights*

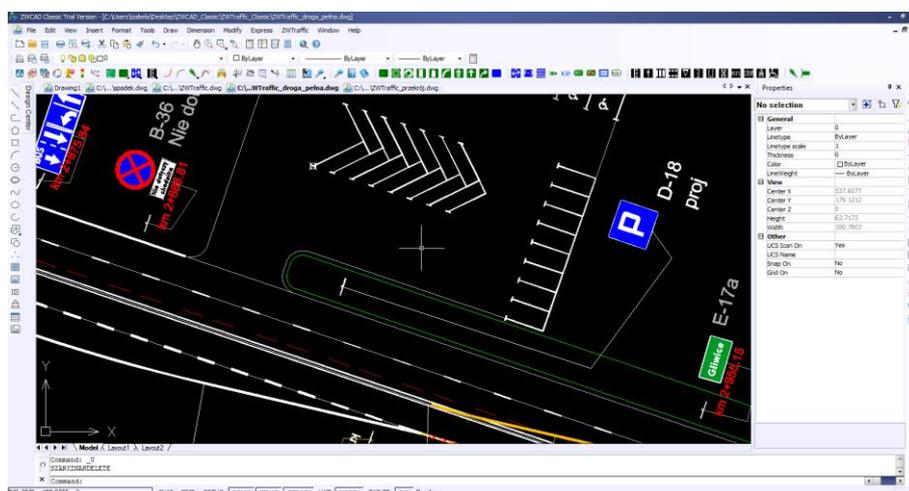
Once launched, we can choose a traffic light [1] by clicking on it with the mouse. When clicking on “Insert” the program will ask for a location on the drawing, the direction of the light as well as the description line.

## 8.11. Kilometrage of signs

The kilometrage lets you describe the position of the sign in the axis of the road. An example of a part of a project is shown below:



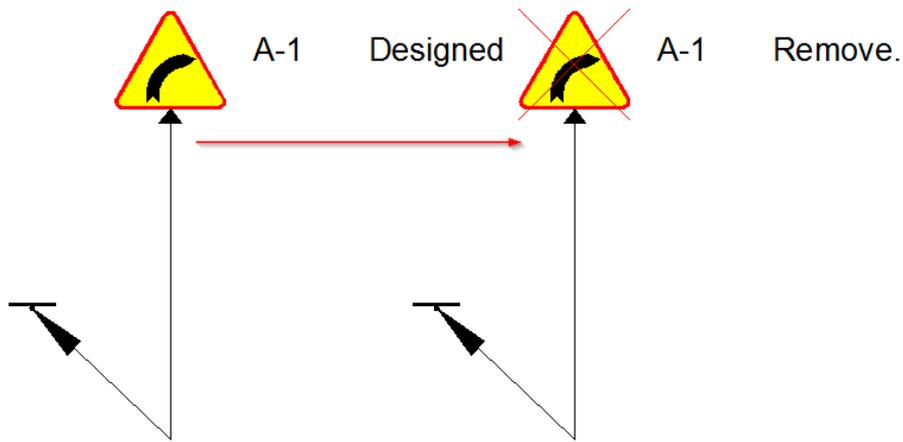
To mark the kilometrage signs you have to run the command `D_Kilometraz`, you can do this by entering it into the command bar or by clicking this icon . Then, you should click on a polyline which represents an axis of the road, click on the signs that are to be described and you should give the whole starting kilometrage of the polyline. You should determine whether the polyline is drawn according to the road direction. The function will take into the account only the mounting of the signs, a text will be added next to them in a form of “km x+yyy”. “x” stands for kilometers and “yyy” are the meters showing the length of the sign compared to the road. Results that we obtain are a version of the project. We have to remember that the starting kilometrage should be given in a form of a value which needs to be entered in the command bar.



## 8.12. Modifying the state of a sign

The function allows you to change the status of an existing sign in its descriptive block.

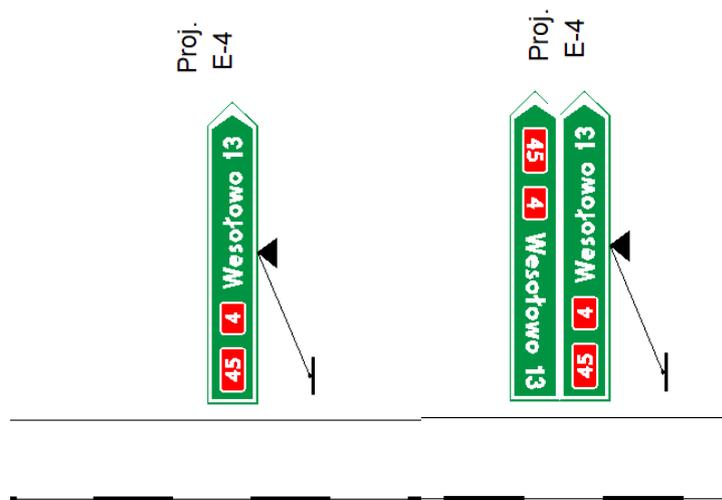
You can run function by clicking on the icon:  To change the state of a sign, run the command, enter the corresponding shortcut in the command bar, which is selected. Then select the board of a sign and its description.



*Modifying the state of a sign*

## 8.13. Mirror Sign

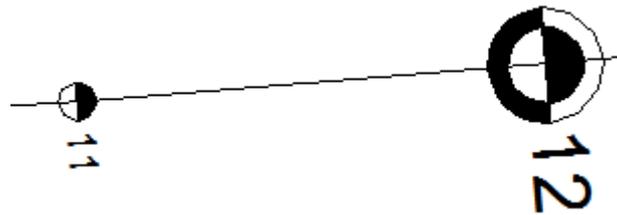
ZWTraffic allows mirroring of signs with the same attributes and that share the same signpost, for example:



## 8.14. Road Kilometrage

The function Road Kilometrage allows to enter certain signs every 100m, at the beginning

and at the end of a road. In order to launch and use this function it is necessary to click on this icon:  or to enter the command: ZWTraffic\_PerpMarks\_ByDist. Once the function is turned on, the user is asked to enter the starting kilometrage and to determine whether the direction of the road is in accordance to the axis. Lastly, the beginning and the end of the kilometrage has to be specified on the previously selected axis.

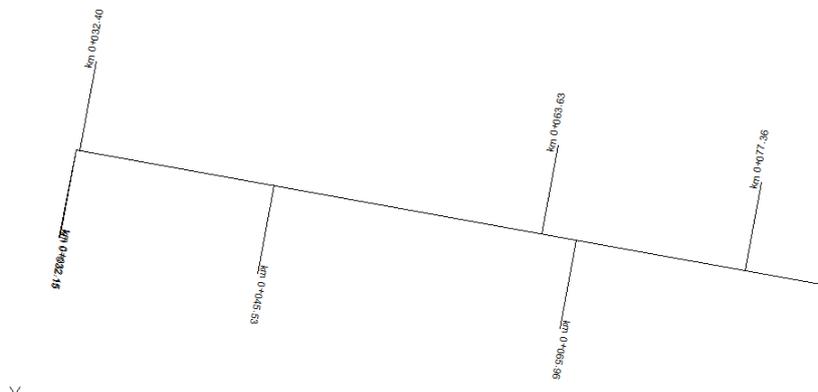


### 8.15. Changing road parameters

ZWTraffic 2020 introduced a new function that allows modification of parameters of a road (selected polyline). The function can be launched by using the command ZWTraffic:Trasa. It amends road parameters, so that a kilometrage can be completed with different starting parameters or signs or the length.

### 8.16. Kilometrage by Point

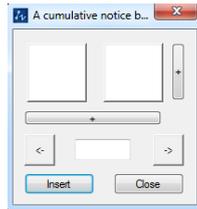
The kilometrage by point allows to create a kilometrage between certain points. In order to use the function it is necessary to click on this icon:  or to enter the command ZWTraffic\_PerpMarks\_ByPoints. The program will ask you to choose the axis and to select the insertion points in order to show the desired result.



### 8.17. Informational signs

This command is used to a collection of informational signs with many sign descriptions and

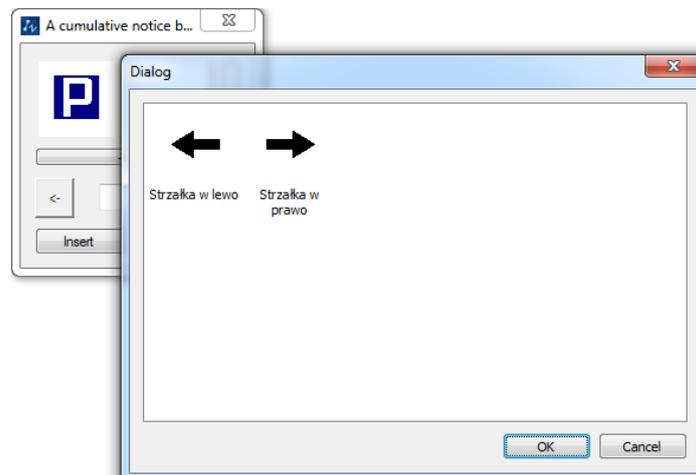
distances. Once called for, a window with white fields will appear.



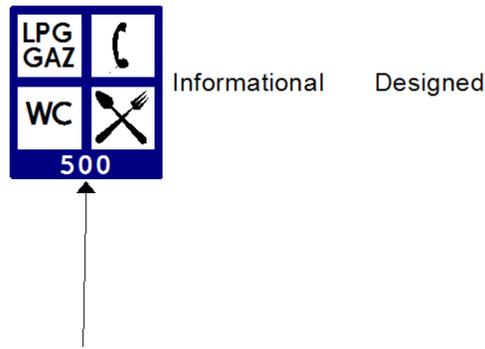
When clicking on the white field a library of available signs will appear, where it is necessary to pick a desired sign.



Additionally there is an option to extend the sign by using the "+" which is located at the bottom and on the right of the visible window. Below the selection of signs we can enter extra information, for example the distance as well as direction of an arrow by using the function "->".

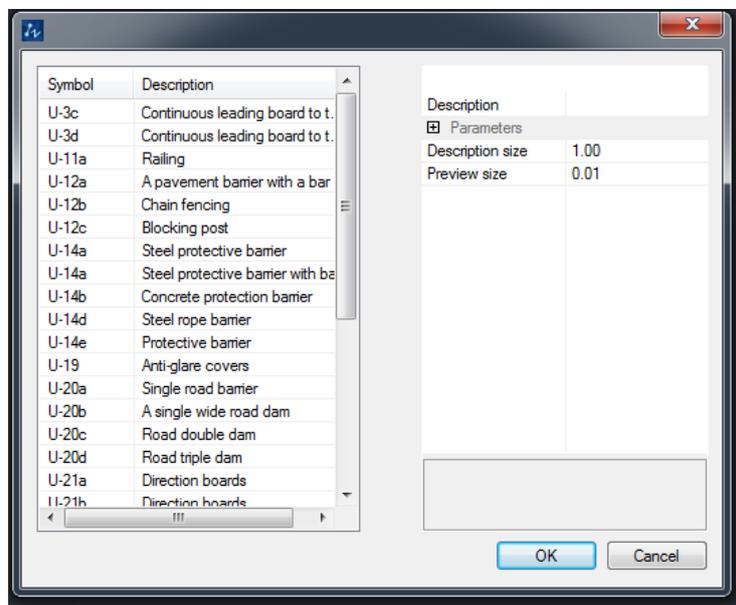


Lastly, it is necessary to click on "Insert" and select a sign in the drawing. The command bar will ask for the name of the sign as well as its state.

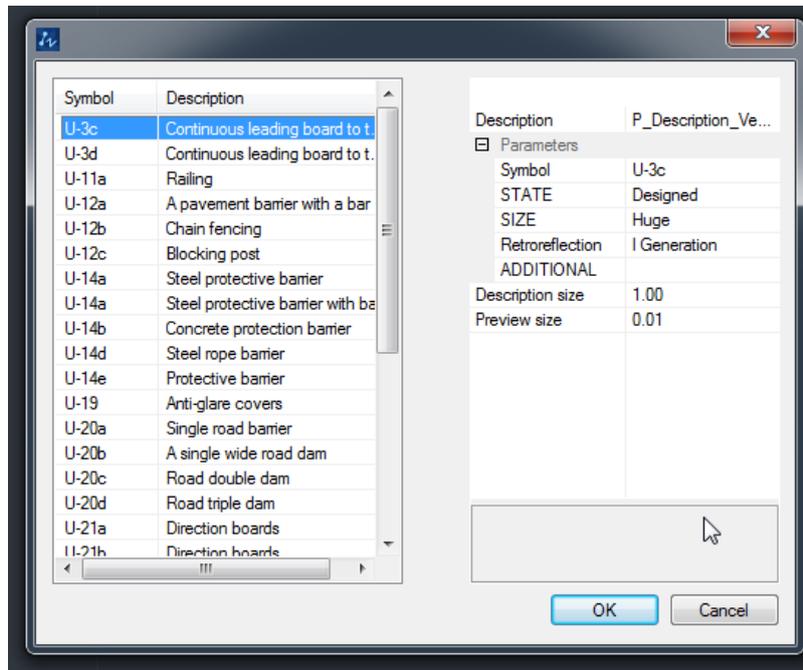


## 9 Inserting barriers and fences

This function automatically adds barrier and fence markings to the drawing. Once the function is activated, choose the type of barrier that you would like to add to your drawing. The barriers and fences can be added to an existing element within a drawing, for example to a line or a polyline. When the function is turned on, a dialogue window will appear in which you can choose the type of barrier or a fence that you would like to add.



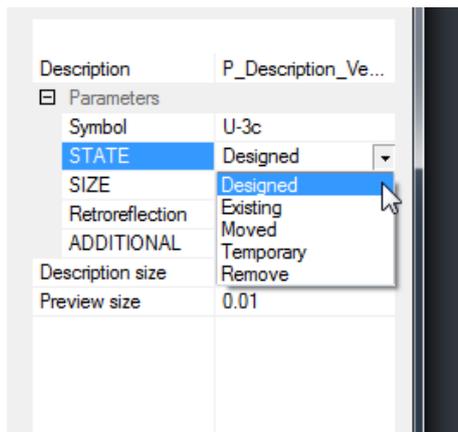
Left side of the dialogue window corresponds to types of barriers/fences that we can choose. After selecting the desired one, parameters will be displayed showing details of the element.



The description block is assigned to every element but we can input our own description block by specifying a file previously created and saved.



The state can be selected by clicking on the arrow:

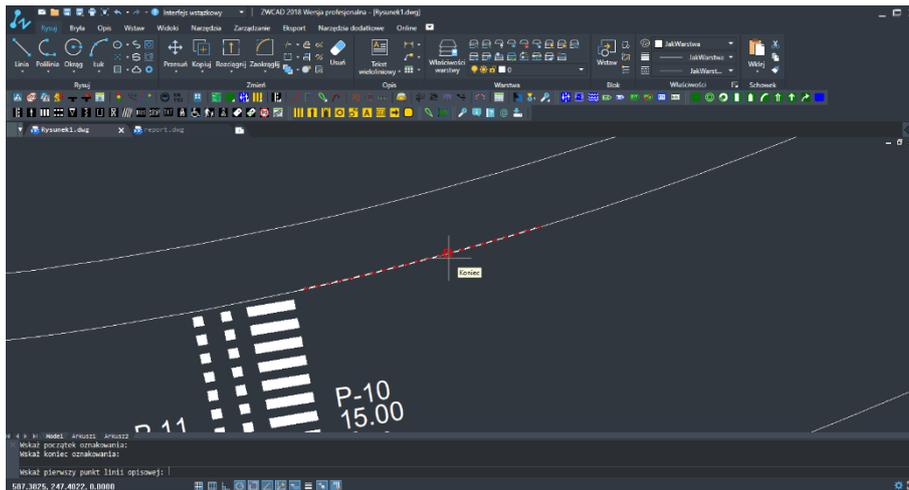


There is an option in the dialogue window to set the size of the description and preview.

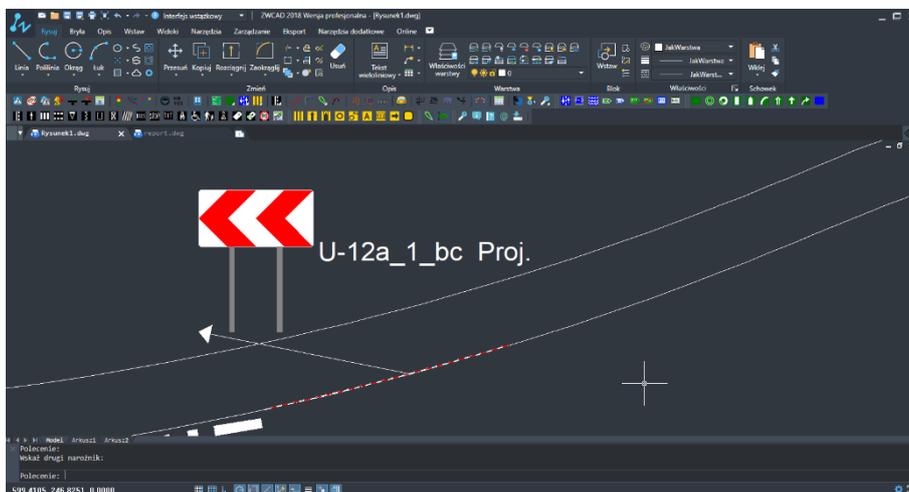
The sizes will automatically adjust according to the values entered in ZWTraffic settings, however it is possible to set the sizes when inserting:

Description size	1.00
Preview size	0.01

Confirm the settings and specify an element on which you would like to place the marking. Now specify the beginning and ending of the marking.

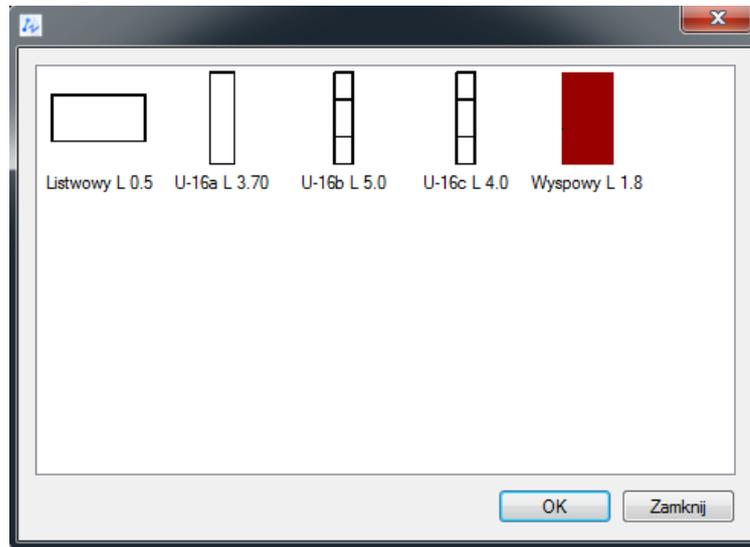


Afterwards specify insertion points of the description line and confirm. Once the line appears, a preview of a barrier or fence will be visible. Once completed, the function will add a symbol alongside a description.

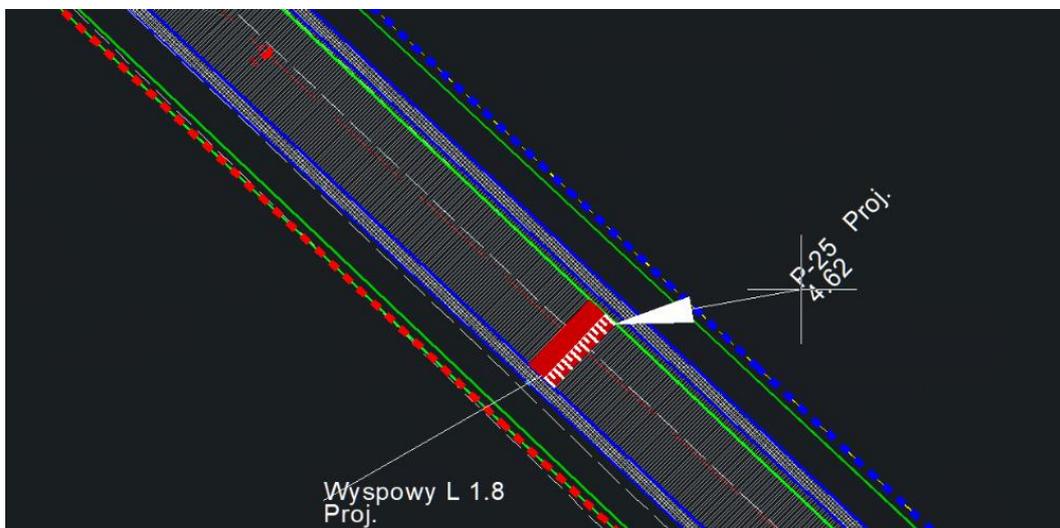
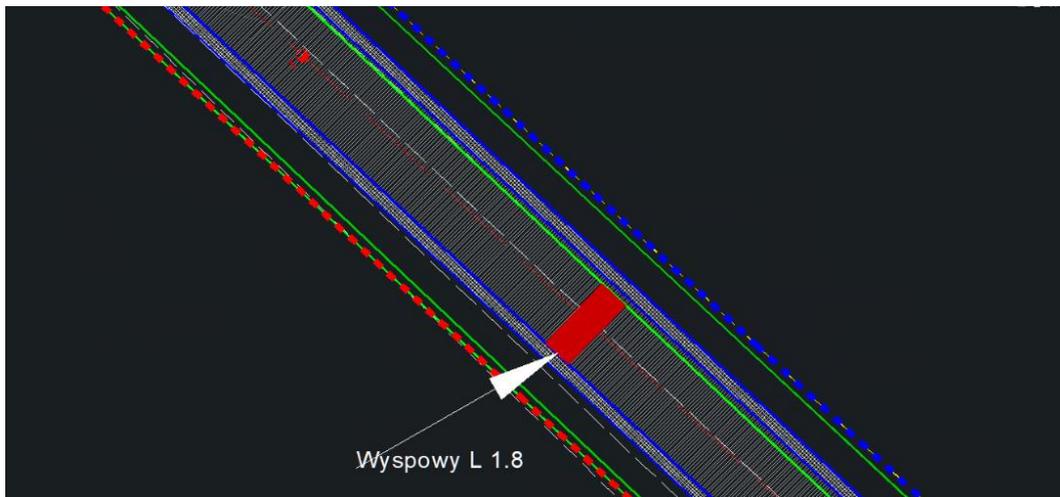


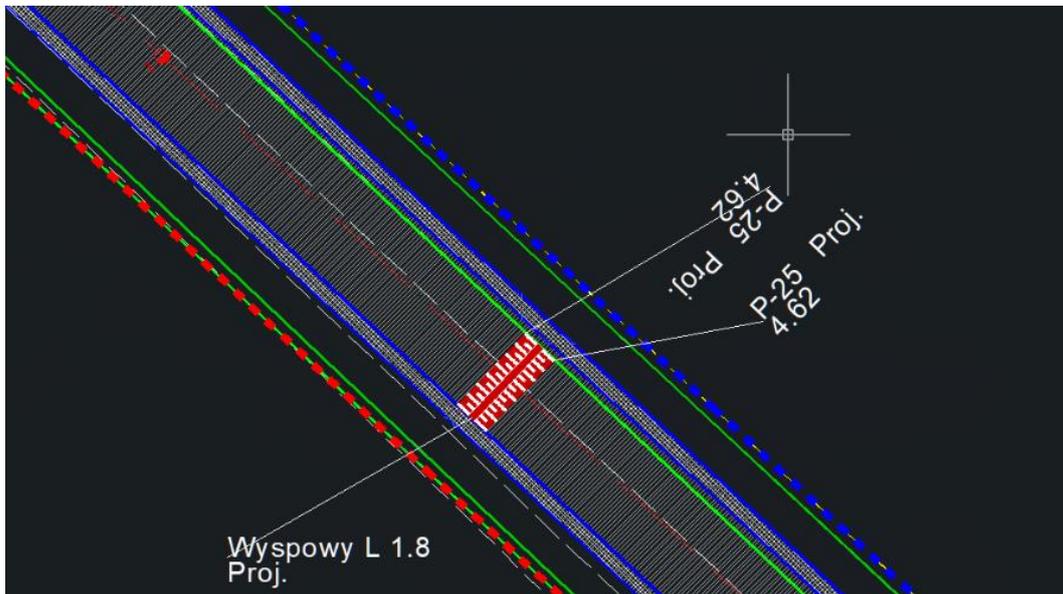
## 9.1. Speed Bumps

After activating the command, select the appropriate type of speed bump to insert into the drawing. A dialog box will appear in which you should select the type of threshold you want to insert:



Now insert the speed bump in your desired location on the drawing:



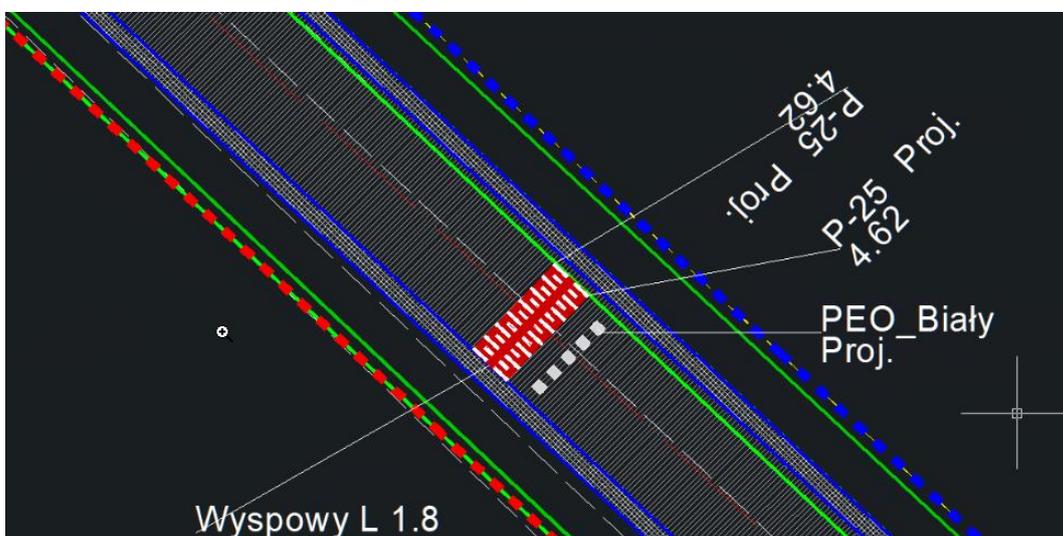


It is possible to add a description to the speed bump based on its state. The option to do that appears whilst adding the bump to the drawing.

## 9.2. Reflective Points

Reflective road elements can be added to projects via ZWTraffic. In the example below we can see how the reflective elements were added to the speed bump.

To create reflective elements, click on the icon or type in the command ZWTraffic:Retroreflectors, then select a place on the drawing.



## 10 Horizontal marks

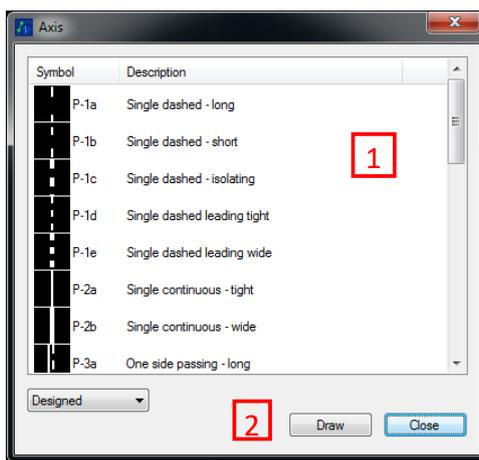
This application contains functions that allow you to make horizontal markings of roads.

You should look at:

### 10.1. Axis, edges, stop lines

To create marks of horizontal lines you should use the command D\_Lineie or click on this icon .

After running this command, following window will be displayed:



The application lets you mark lines with variations listed below:

- **Longitudinal signs**
  - Single dashed: P-1A (long) , P-1B (short), P-1C(isolating), P-1D (leading tight), P-1E (leading wide)
  - Single continuous: P-2A (tight), P-2B (wide)
  - One way passing line: P-3A(long), P-3B(short)
  - Double continuous: P-4
  - Double dashed: P-5
  - Warning line P-6
  - Warning leading line P-6a
  - Edge line: P-7A (dashed wide), P-7B(continuous wide), P-7C (dashed tight), P-7D (continuous tight)

- Stopping place lane P-19.
- **Stop lines**
  - absolute stop line - P-12
  - Line of conditional stop made up of the triangles - P-13
  - Line of conditional stop made up of rectangles - P-14

Horizontal markings module is not intended for drawing lines, it is only used to convert polyline properties into symbolic marks, that is why it is necessary to draw a polyline that is geometrically correct before creating the label.

The process of marking is as follows:

1. Draw a polyline
2. In the window above, choose the type of a line to be used [1](confirm with "Draw" [2])
3. Then, specify the line to be marked
4. Afterwards, you can select the range of marking. To do it, just click on the points of beginning and ending of the marking
5. The last step is to draw a description line by clicking on the coordinates of a description line. In the last selected point of the description, a block will be inserted. Description block which marks the horizontal symbol, contains information about the character, its state and in a case of a line, its length.

When adding a horizontal and vertical marking, it is possible to add one marking to different horizontal lines.



## ***Transverse marks***

Horizontal transverse marks handled by the program are listed below:

- Pedestrian crossings P-10
- Bike crossing P-11

If you want to draw a pedestrian crossing or a bike crossing, you need to follow these steps:

1. Pick two points parallel to a road
2. Pick two points – an axis of a crossing. An axis cannot be perpendicular to a road
3. Write the width of crossing, by default it is 4m.
4. Draw a description line. In the last selected point a description block will be added.

### **10.2. Arrows**

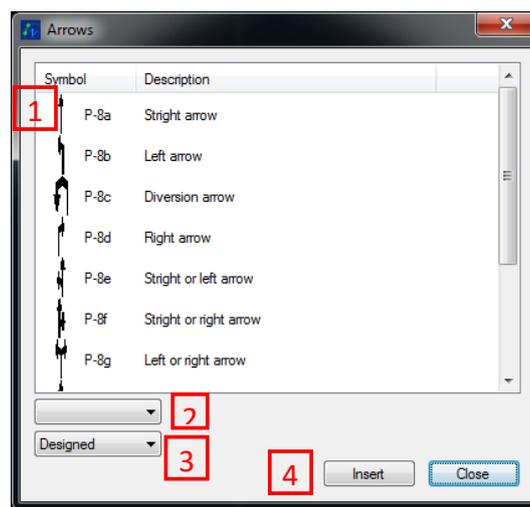
Arrows available in the application are:

- Direction arrows:
  - P-8a – Straight arrow
  - P-8b - Left arrow
  - P-8c – Diversion arrow
  - P-8d - Right arrow
  - P-8e - Straight or left arrow
  - P-8f - Straight or right arrow
  - P-8g - Left or right arrow
  - P-8h - Straight left or right arrow
  - P-8i - Straight or diversion arrow
- Guide arrow (left – P-9A or right– P-9B)

The process of inputting arrows is as follows:

1. Run the command „D\_Strzalki” or click on this icon 
2. Select the type of arrows that you want to use [1]

3. Some of the arrows require you to select whether they have to be long or short. You can choose their length on the list.[2]
4. Depending on whether the sign is designed, temporary, existing, or removable, you can choose it in the appropriate field [3]
5. After clicking [Insert] [4], You have to pick two points parallel to a road , and an insertion point, where the arrow will be placed.
6. The last step is to draw a description line and at the end of it description block will be added.



### 10.3. Complementing signs

Next available horizontal signs are:

- Standard Road description signs: STOP Sign(P-16) and BUS Sign (P-22), as well as the Surface Excluded From Traffic sign (P-21).
- Subordination triangle P-15
- Bike symbol P-23
- Disabled person symbol P-24

All complementing horizontal signs can be implemented using the same method:

1. Run the command which is the same as a name of a sign like P15, P24 and so on

2. Pick two points which make a line perpendicular to a road
3. Pick an insertion point of the symbol.
4. Define the placement of points which create the description line (the last point is a point of insertion for a description block).

An exception of this rule is the sign P-21.

The command P21 hatches selected area (outside of the traffic), so that its hatching angle is correct to the direction of the vehicles path.

The following hatching is made out of a collection of parallel lines which are slanted in accordance to the direction of vehicles path.

Excluded areas (P21) are used to:

Show the exact path of certain vehicles

- To extend the distance of the path from certain obstacles
- To "Surround" islands on roads or to substitute them.

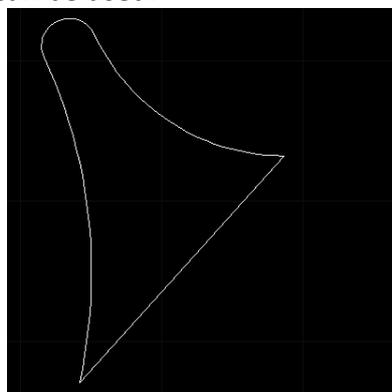
There are 2 kinds of P-21 signs:

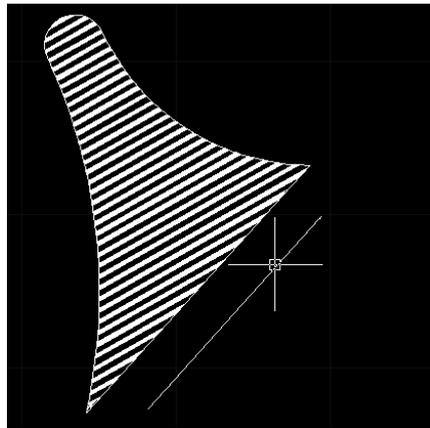
- P-21a (narrow) – width of the line = 0,24m and the distance of =0,39m – when the speed limit is lower or equal to 70km/h
- P-21b (wide) – width of the line = 0,60m and the distance of -0,98m – if the speed limit is higher than 70km/h

The command can be run by clicking on an icon on this toolbar:



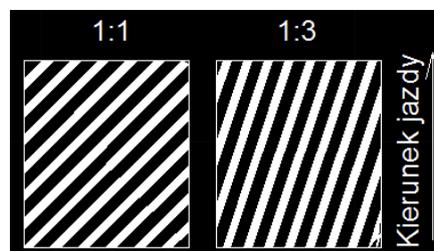
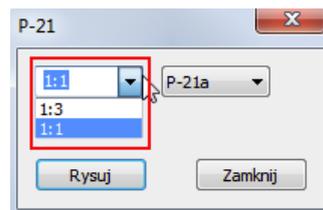
Below is an example of how P-21 can be used:





P21 options:

After running the function we can choose the angle of the line and whether the sign is going to be P-21a or P-21b.



Following these actions, the command bar will ask for specific parameters:

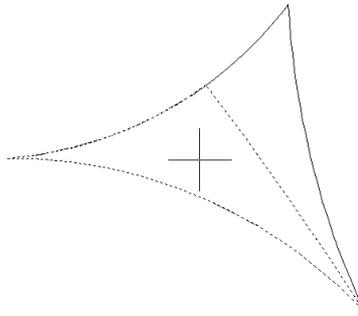
Select parameters: [Area/Direction/Begin/AX/Continue]<Area>:

- **Area** – selecting a certain area in which the hatch will be created.
- **Direction** – it asks for the direction of the road (the angle of the line is dependent on the direction of the road)
- **Begin** – Specifying the starting point of a hatch (useful when connecting hatches)
- **Axis** – Allows the user to draw on excluded from traffic surfaces on horizontal arcs
- **Continue** – Draws a hatch on an excluded surface

After the hatching is complete we have the option to add a description.

Steps to complete:

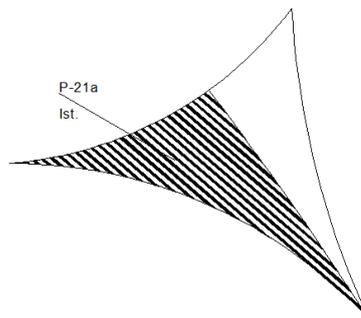
1. Activate the command for P21
2. Define the type of marking that you want to add – the angle and type of line
3. Using the cursor, select a point inside the area which will have the marking added to it



4. Now determine the direction of the road. In the command bar enter the shortcut “D” and define the direction by clicking on the screen

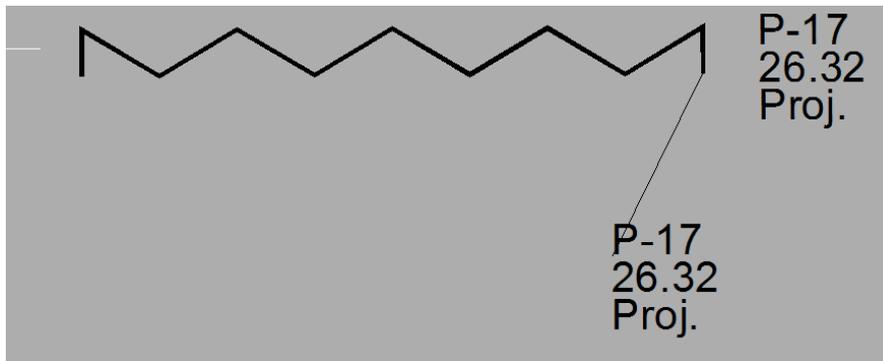
```
Command: P21
Select parameters: [Area/Direction/Begin/AX/Continue]<Area>:
Select parameters: [Area/Direction/Begin/AX/Continue]<Area>:D
Pick drive direction: |
```

5. Now define the state as well as the points of a description line.



#### 10.4. Add horizontal marking description

A new feature of ZWTraffic 2021 allows users to add a description to a horizontal mark. ZWTraffic automatically adds the description after clicking on:  or after typing in the following command Horizontal\_Description\_add. Then you have to select a place in which the additional marking will be added. Below you can see an example of this function. The first description has been added with the mark originally whereas the one below is a result of this function:

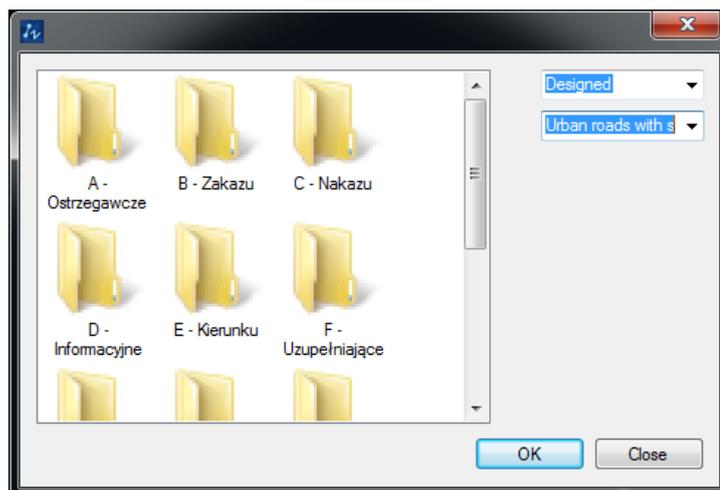


### 10.5. Update horizontal description

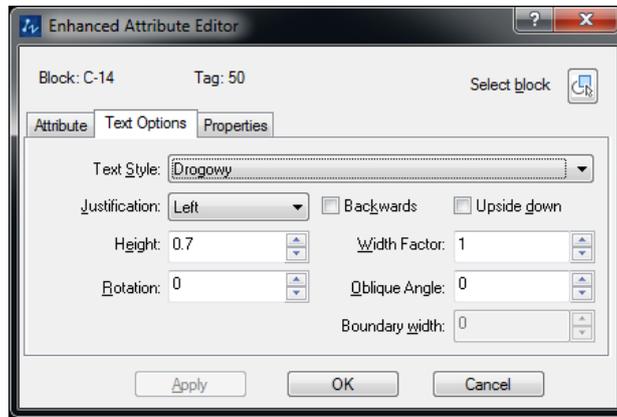
ZWTraffic 2021 also has a function which updates horizontal description. After adding a sign and after modifying it, all you need to do is press on this icon:  or type in the following command Horizontal\_Description\_Update. Then the program will ask you to select the sign which is to be updated. Finally, new values will be present after updating the description.

### 10.6. Vertical as horizontal

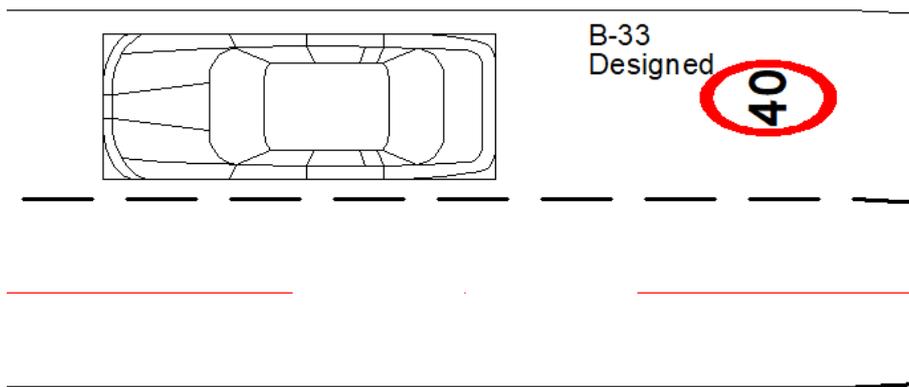
This function helps to input modified vertical signs to the drawing. Once the command has been activated, folders will show up with the options to choose from.



Once a sign has been selected, it will be added to the drawing. It is necessary to note that in order to change sign with attributes such as speed limits, you need to click twice on it in order to launch the Attribute Editor. Following window will pop up:

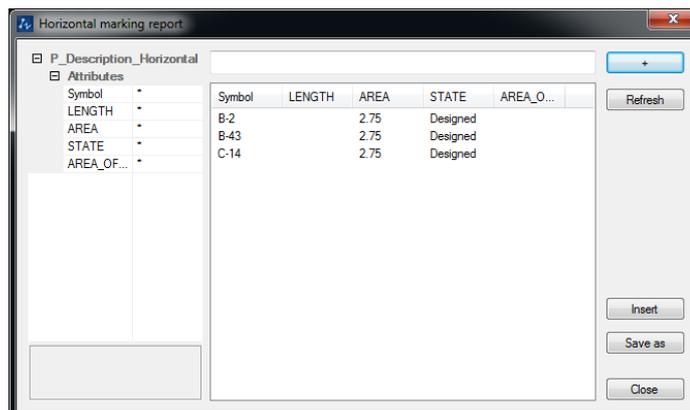


It is possible to change the height or width to make sure that your sign first the value.

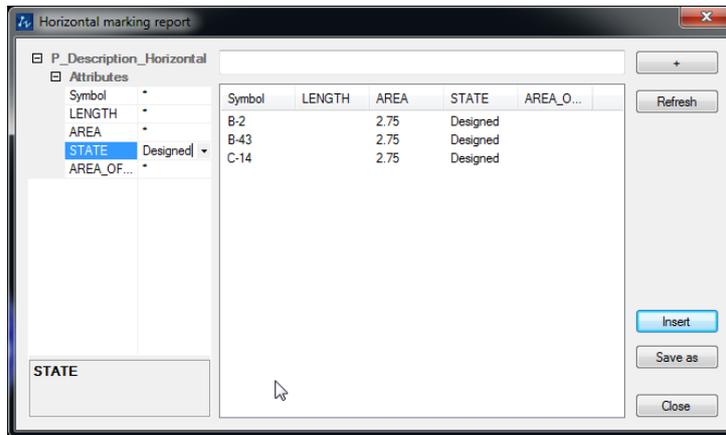


## 10.7. Horizontal marking report

The command allows to create a collection of horizontal signs in a form of a table. Once activated, a window will appear where on the right hand side a “+” will be available and it will let you add elements to the collection of elements. It is possible to either choose “All” or “Select” depending on the user’s needs.



The parameters of signs are present on the left hand side of the dialogue window, thanks to them it is possible to choose a certain group of signs e.g. according to their states. The list can be extended. If we only want to see the signs with certain parameters, it is necessary to select the desired parameters and click on “Refresh”. The program will display the vertical signs that present set criteria.



Selected vertical signs can be added with detail to the drawing in form of a table by using the button “Insert” or to an external CSV file by means of “Save as”.

Symbol	LENGTH	AREA	STATE	AREA_OF_RUNNING_METER
B-2		2.75	Designed	
B-43		2.75	Designed	
C-14		2.75	Designed	

## 11 Designing of signs

The library of signs is not limited to the amount of symbols. You can create your own signs which can be added by using the application.

Rules of designing a sign:

- Each sign has to be defined in separately
- Signs are drawn in a 1:1 scale in millimeters.

- Centre of the bottom line should be in the point 0,0,0. As You can see in the attached drawing.

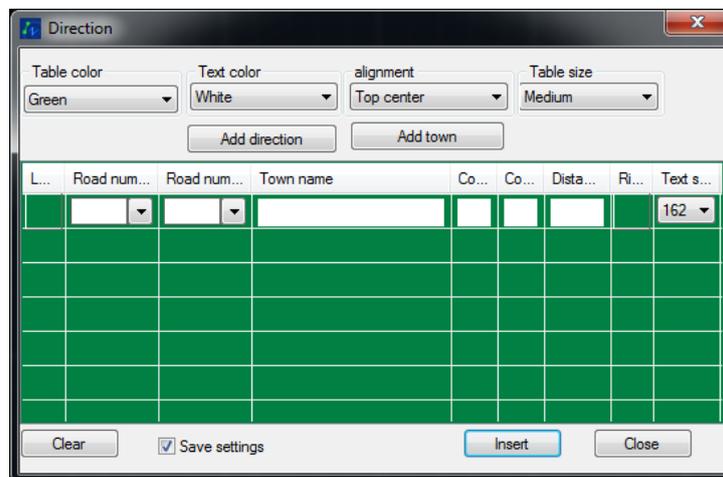


## 12 Modules helpful in designing vertical signs.

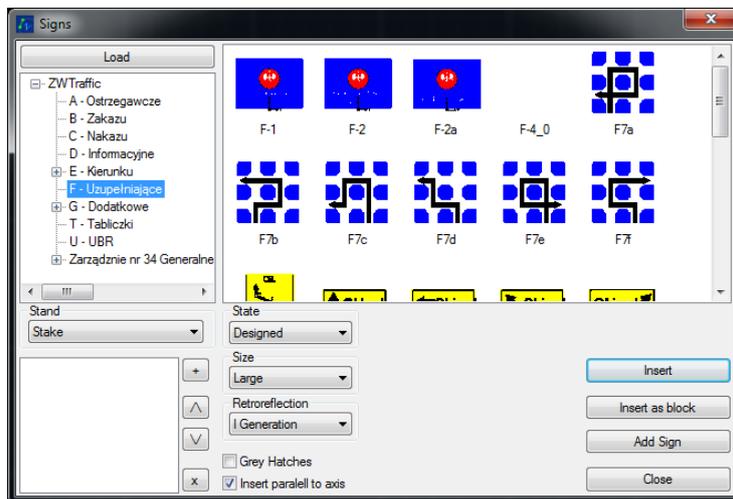
### 12.1. Signpost tables

One of the most developed module is module which helps to create road signs. It lets you create many different road signs:  E-1, E-2, E-4, E-5, E-13, E-14, E-15, E-16, E-17a, E-18a, E-21 and informational road signs can be added as well.

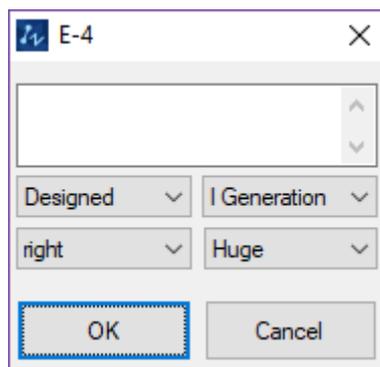
These are the windows which help in developing road signs:



*Window of the function Direction*



*Window the function Signs*

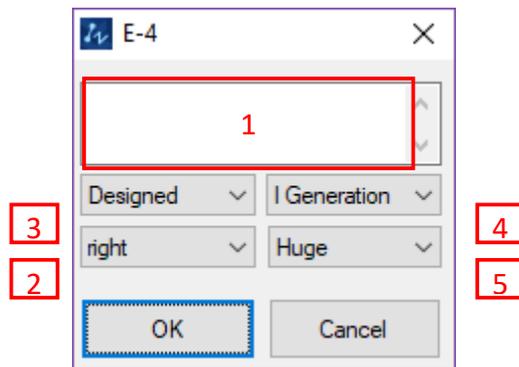


*Window of the function E4, E5, E17a, E18a, E21*

The way in which the module works is easy to represent on a few of examples:

### **E4, E5, E-17a, E18a, E21**

Creating these signs comes down to a certain set of functions: E4 , E5 , E17a , E18a , E21 . Depending on the chosen function, in the shown field [1] you have to write the name of a city, the amount of kilometers or the name of a district. In the second field [2] we have to choose the direction that the sign has to be in (left or right). Depending on the type of the sign, in the third field [3] you have to choose whether the sign is designed, temporary, existing or removable. In the fourth field [4] you can choose the kind of irradiation you would like. It is also possible to annotate the size of the sign, ranging from small to huge. [5]



In the case of entering the sign alone  and E-5  default insertion point is located in the middle of the bottom edge of signs as marked in the picture below:



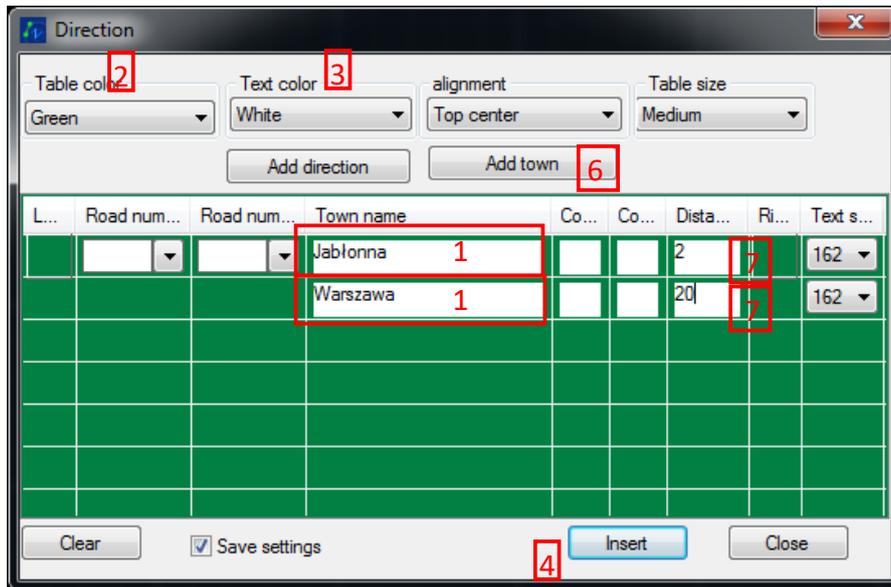
In the case of inserting signs: E-17a , E18a  i E-21 , default insertion point is middle of the bottom edge of a sign. This point is marked on the picture below:



### E-13

In order to create this sign, please run the command: Kierunek , afterwards click the button [Add town] [6] in fields of city name [1] and distance [7] enter the correct values. In the list of table color, we select green [2]. In field text color [3] select white. Then confirm by pressing the button [Insert] [4].

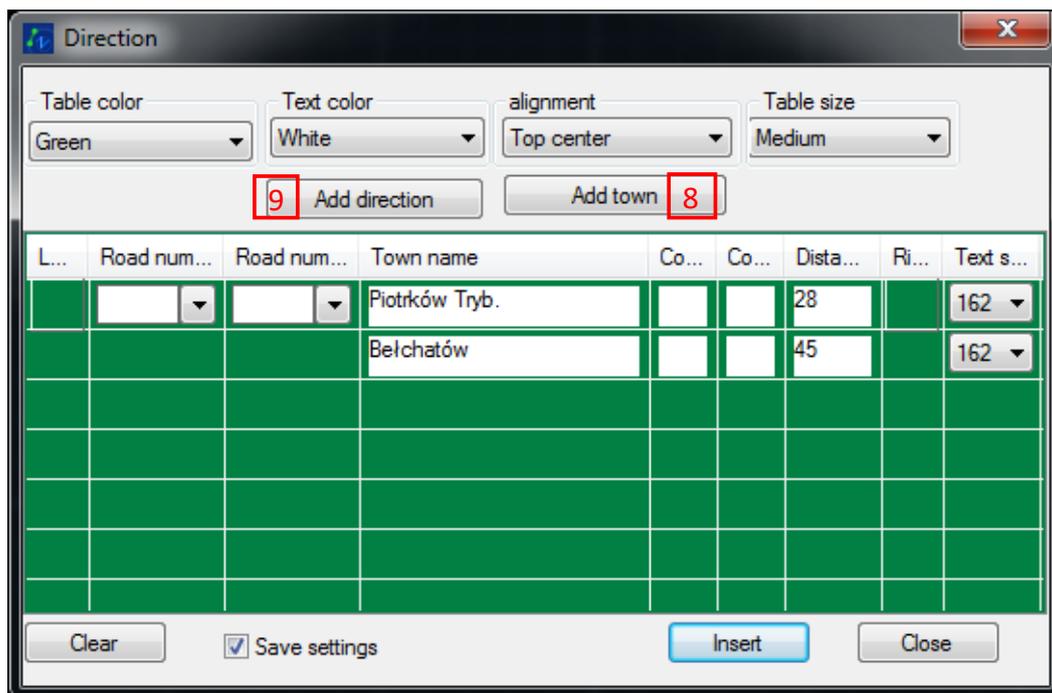
It's possible to describe many directions on one sign.



Pressing [Close] will save the values. Clicking close in the right top corner (the cross) will make all the data disappear when you re-enter this window.

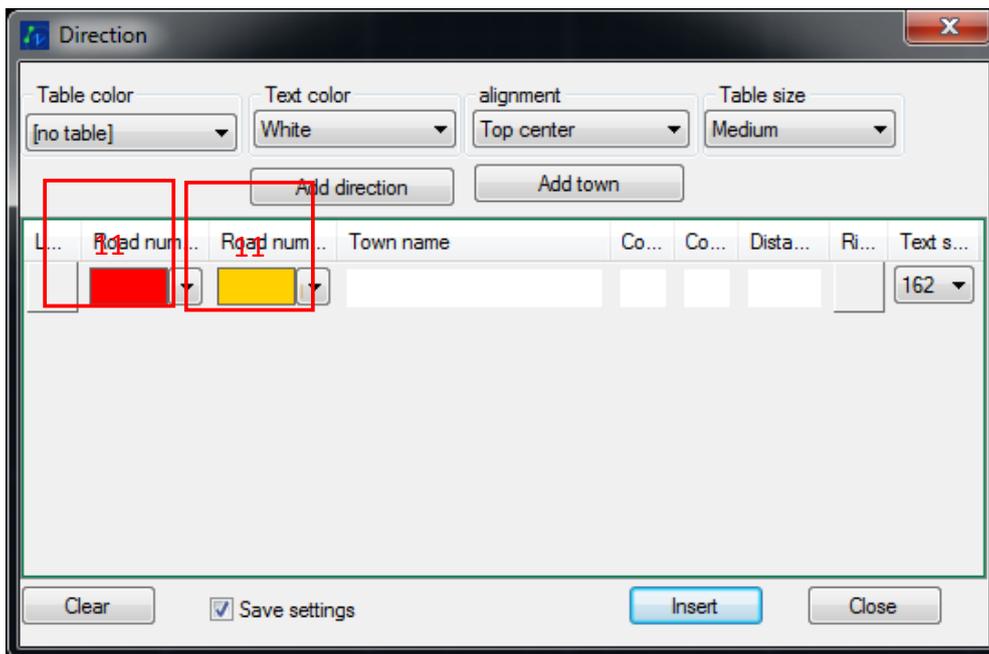
#### E-14

In the beginning phase of sign design, we do the same as in the previous function.



1. If a city that we want to include on the sign is next to a different road from the one that we are designing, it is necessary to not only add the name of the city, but also the name of the road. In order to do this, we have to click [Add direction] [9]. In the new fields we enter the required information.

2. Confirm by clicking [Insert sign] and select the insertion point.
3. In the next step, we can add the number of the road. We must once again run the function Kierunek  and in field “numbers of road” [11] type symbols, and numbers of the road.



4. It's important not to mark “color of the table”. If color is marked, table-background would also be added. This table wouldn't include all the information, only numbers of the road. The green needs to be inserted only once – in the end after defining cities and numbers of paths. To draw a background table, it's enough to run a command E1T  and then pick two points – diagonal of the table.

### E-1 before y-cross of national roads

1. Drawing a main road: click on this icon: , once you do that, click on wanted points in your drawing which will define the main road.
2. Drawing side roads: we can do it in the same way as the main road, only difference is that you should input a smaller line width.
3. You can also draw arc segments of road signs. In order to do so, use the command E1Luk or this icon . After running this command, you should pick a start point, a direction, an arc angle, and width in mm with the default being 100.
4. Now, the directions need to be marked. This can be done in the same way as in the previous examples.

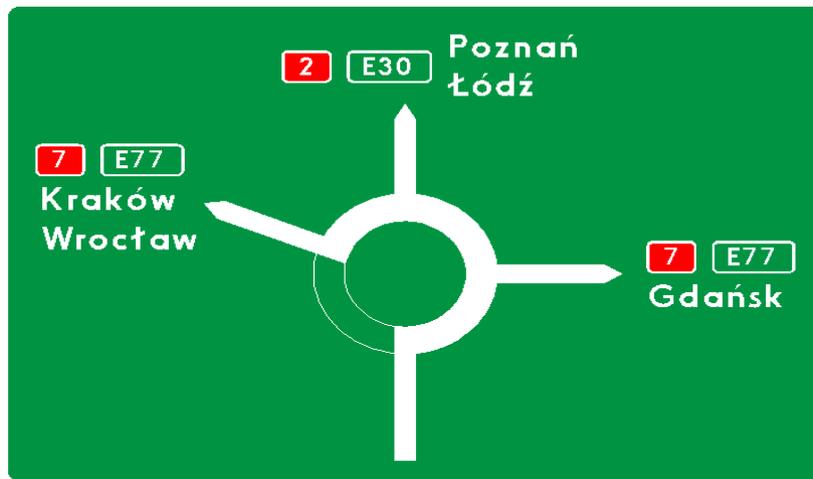
5. At the end You have to add background coloured table. It's enough to run the command E1T  and then pick two points – diagonal of the table.
6. You should remember, that You have to move the whole table. The middle of the bottom edge has to be in the point 0,0,0

Follow these steps in order to produce something like this:



#### E-1 before roundabout

7. The first step in designing a roundabout is inputting the command E1R or clicking on this icon: . Afterwards, pick a point where the centre of a roundabout will be placed. Two concentric circles will be added to the drawing.
8. Then, you have to draw a symbol for an entrance to the roundabout by using the command E1ID or by clicking on this icon .
9. Draw a schema plan of exits from the roundabout using the function E1OD .
10. Now, you have to fill the symbol of a roundabout. In order to do it, you should use the function E1RFill or the icon . You have to click on the center of the roundabout and on the direction of the last exit from the roundabout.
11. You should describe the names of the cities and numbers of roads just like in the previous examples. .
12. At the end you have to add a background colored table by using this function . It is important to remember that the centre bottom edge should be located in the point 0,0,0.



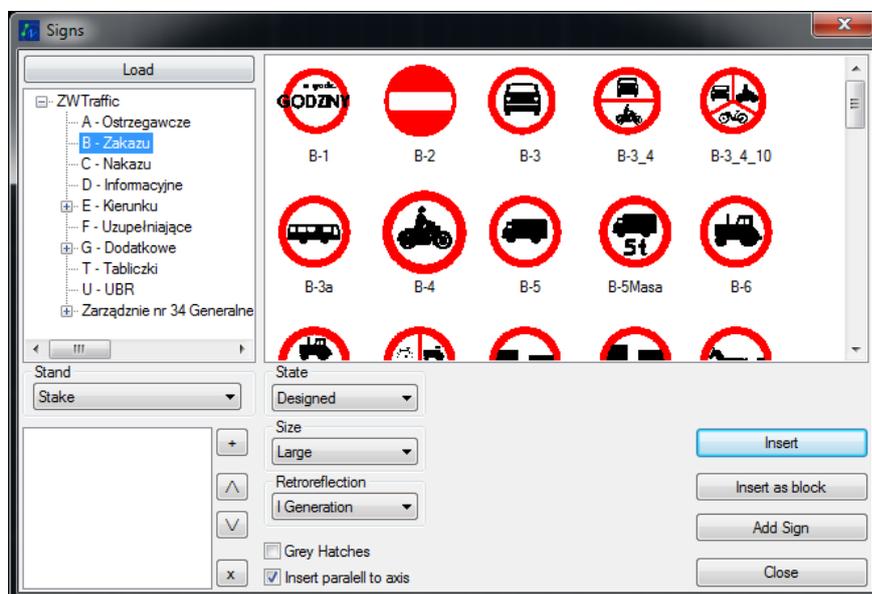
### E-1a on a highway before crossing with a national road

This is one of the most complicated type of signs that you can create in ZWTraffic.

1. First You need to draw a symbol of a highway:  select two points defining an axis of a highway symbol.
2. Draw a symbol of an exit , then pick insertion point and its direction.
3. If it's necessary, we can also add a sing of limitation (for example speed limitation) to do it, you should insert a sign in mode block. Click: .

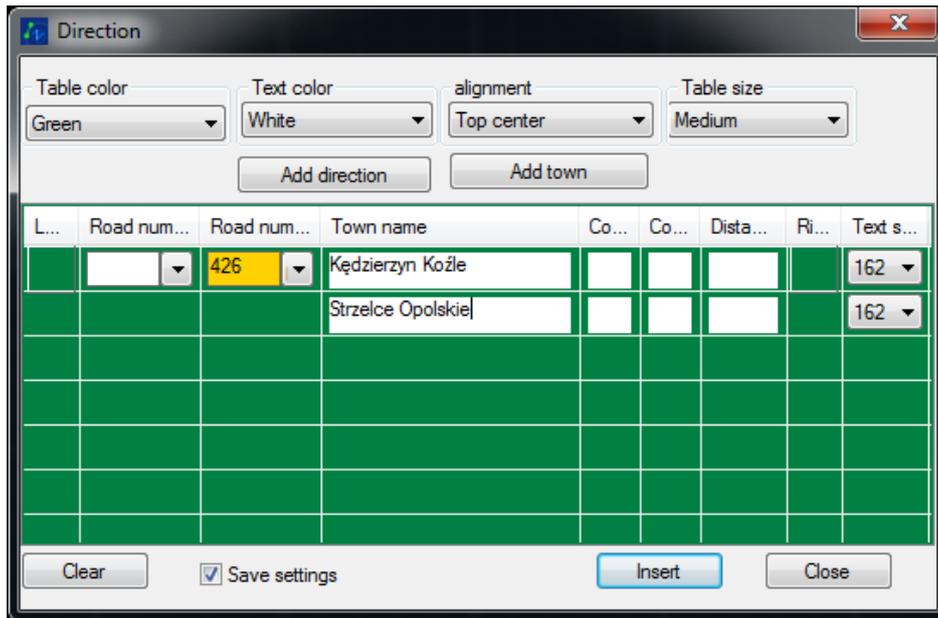
In a new window we choose the following settings:

- Select a sign that you want in the project
- Set the scale and the rotation and click the button: [Insert as block]



4. Here you need to mark the directions, in an analogical way. The same as in previous

examples:



5. We can enter the distance to exit by using the ZWCAD command xtext or dtext and drawing a background table by using the function FT or by the function which marks direction, as for the background color, we choose blue.
6. Last step is to insert the background table. We can do it in a simple way by using the function FT or by clicking on this icon: 

Effects can be seen on the drawing below:

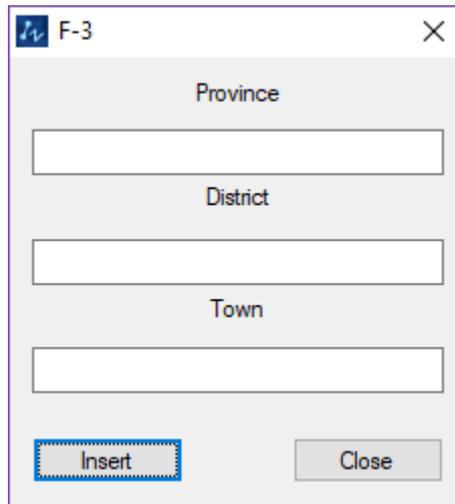


## 12.2. Complementary signs

### F-3 Borders of administration area and name of river

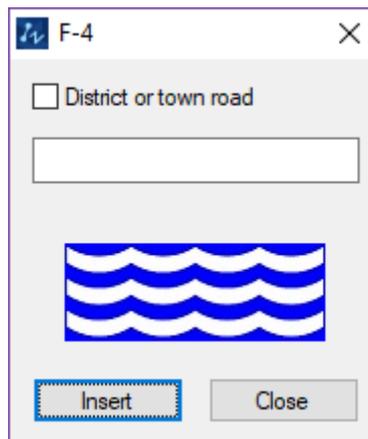
Amongst all the complementary signs supported by the application, the easiest functions are used to create signs of administrative borders and river names. In order to mark the border, we use

the function F3 or by clicking on this icon:  In the window below, we have to input the town, district and the province. We confirm it by pressing the button Insert and by choosing the placement for the sign on the project.



*F-3 sign window*

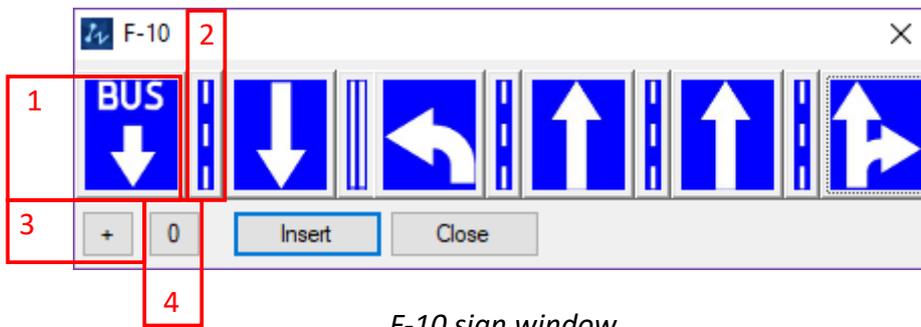
In the same way we can design a sign which names a river. In order to do it we have to use the function F4 or by clicking on this icon . Additionally, it is a function which allows us to choose whether the sign has to be next to the road of the district or the town. The size of the sign will be calculated automatically depending on the road type.



*F-4 sign window*

### **F-10 Description of traffic lanes**

Another function which can be used to create complementary signs is the function F10. Below is a screenshot of this function:



F-10 sign window

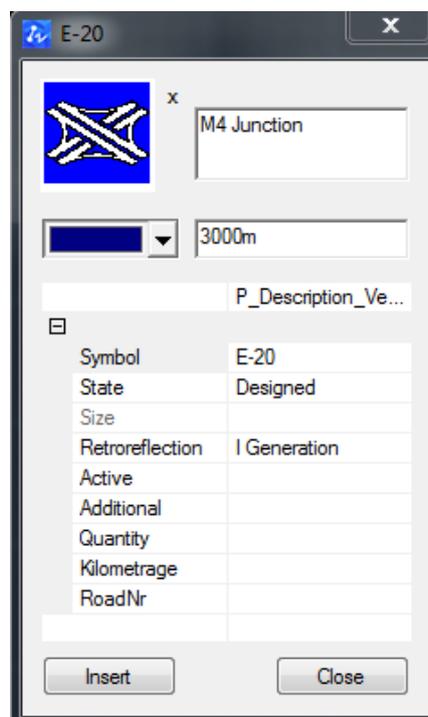
This function helps to describe each lane on the road. You can also use it to define other road signs such as F-15, F-16, F-17, F-18, F19.

This window contains few buttons marked [1] and [2]. Clicking on them will change the descriptions of certain lanes – meaning of selected lane [1] or meaning of separating lines [2]. By using this module, you can mark any number of lanes. In order to add another lane, click [+][3]. To clear the border of a sign click “0”.

In the end, You can insert the table into the drawing or a project, by click on the button [Insert], then choose a place where the sign is going to be placed.

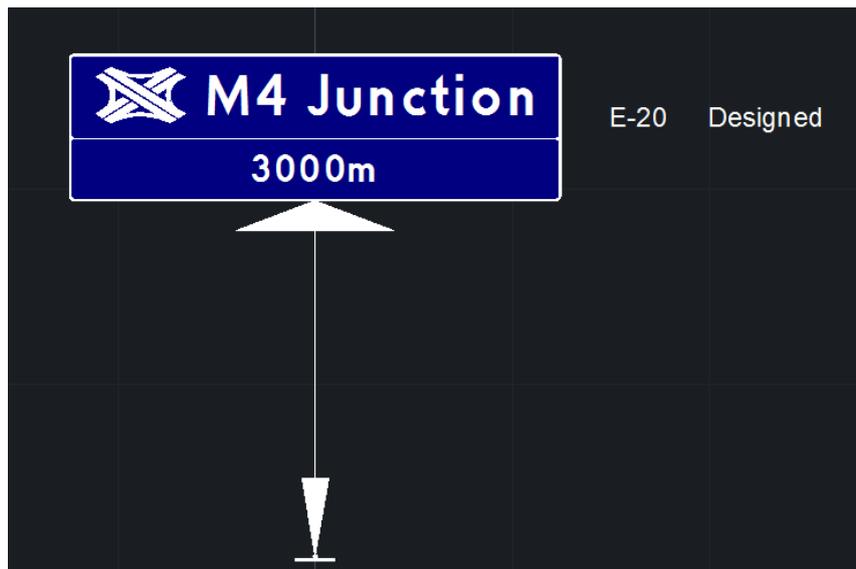
### 12.3. E-20 Sign

E-20 signs are used to display crossroads. Once the function is called for, a window with settings will appear where we can define the color of a table and distance.



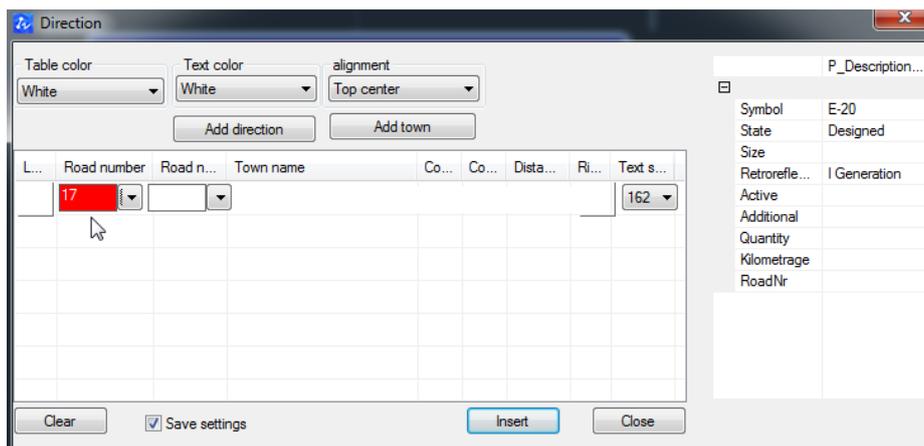
When all settings correspond to your needs, click on “Insert”. Select a point within your drawing.

An angle and description line points.



### Adding a road symbol

Run the Direction function  and in the field with road number enter a symbol and the road number.



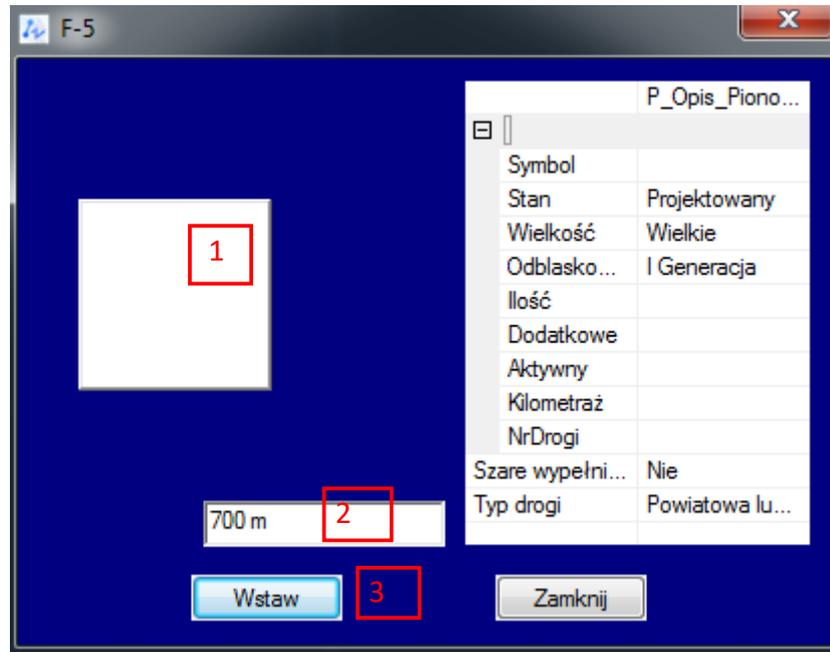
Important to note: The table colour needs to be defined as [no table] from available options.

## 12.4. F-5 Signs

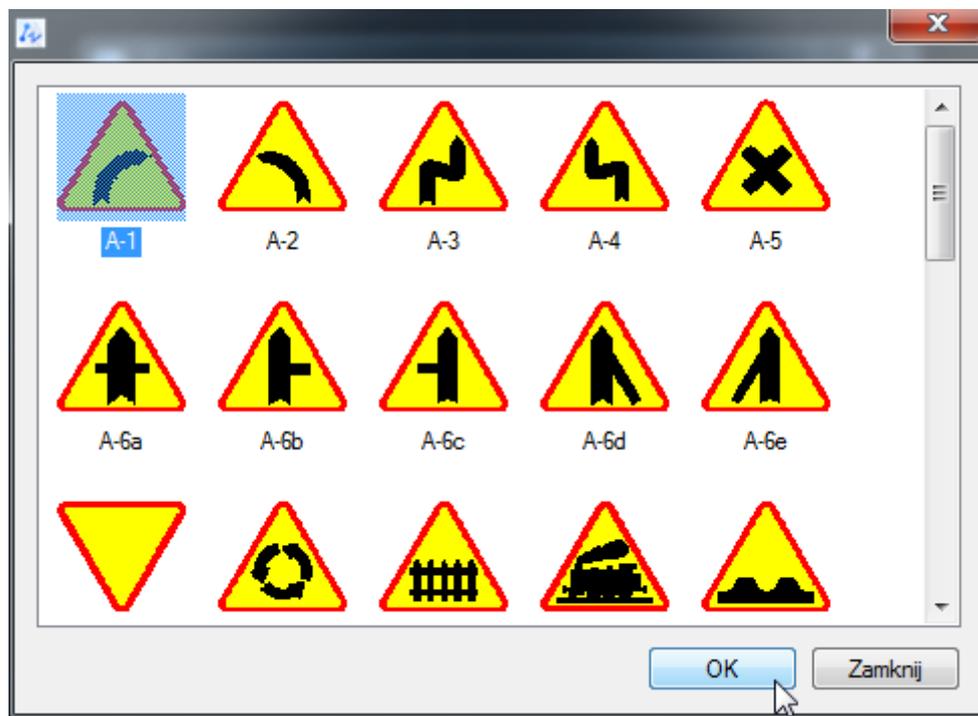
Table F-5 is a road sign from the group of complementary signs. The F-5 sign warns of a ban

on the road.

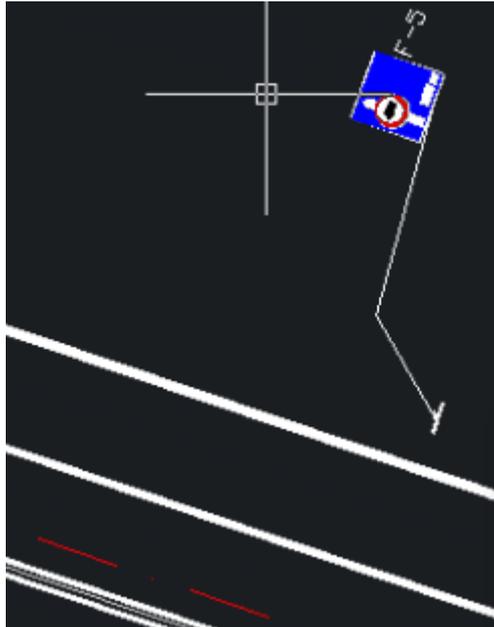
In order to create F-5 boards we use the F5 function. In the window below, click on [1] to select the sign. Then set the length [2] and click on insert [3].



When you click on Insert [3], a window will appear to select the character. Select the character you are interested in and click on OK.

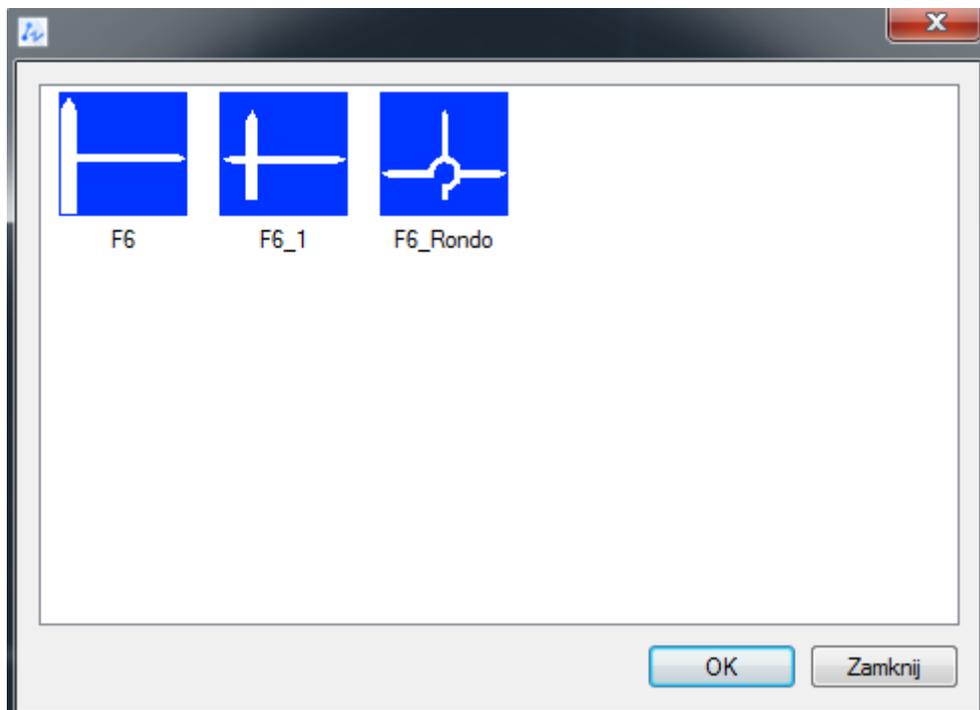


After approval we have to add a sign to the drawing. Choose a place and insert the ready F-5 character into the drawing.



## 12.5. F-6 Signs

Table F-6 is a road sign from the group of complementary signs. The F-6 sign warns about the ban placed before the crossroads. The functionality of F-6 signs in ZWTraffic allows to create complete F-6 signs with different elements. The F6\_NEW function calls available signs.

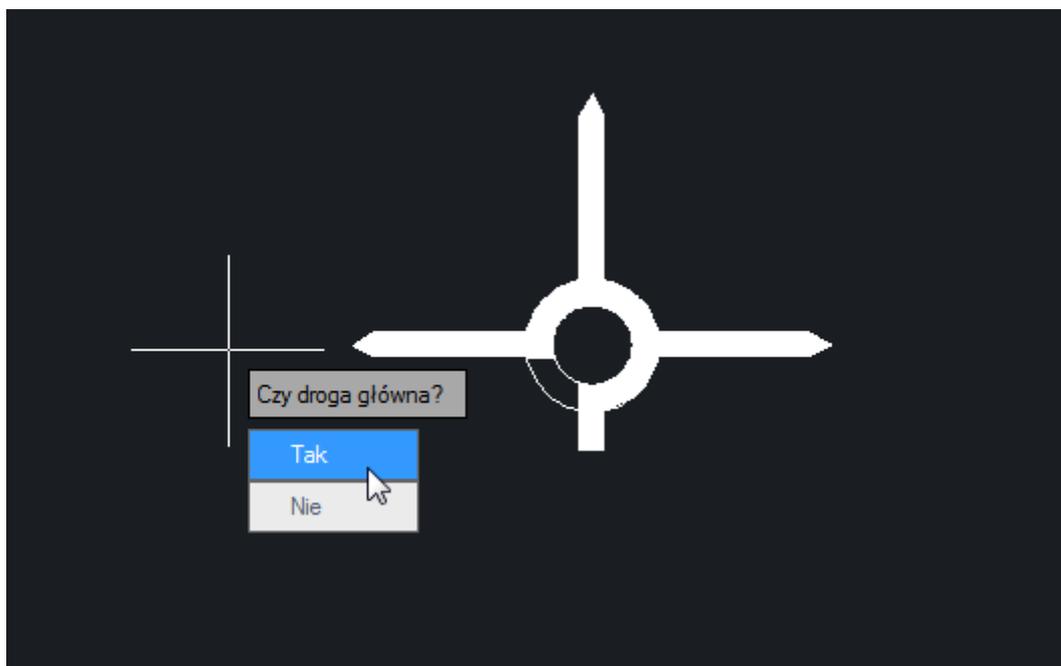


After selecting the sign, it appears on the drawing. The functions related to F-6 signs allow us to:

add a path , a sign , a comment , a comment frame , a distance , a board sign  as well as the ability to save the signs to the template .

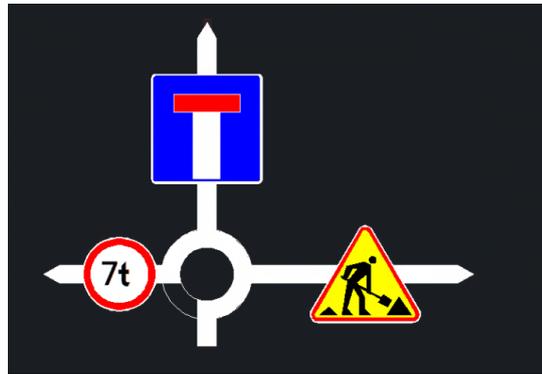
### Add a path

Adding a path allows us to extend the previously inserted sign. If you need to extend a path or change it, the F\_6Road function allows you to add it. After clicking on the icon , the program will ask if it is the main road. Depending on your choice, you will be given an appropriate route



### Add a sign

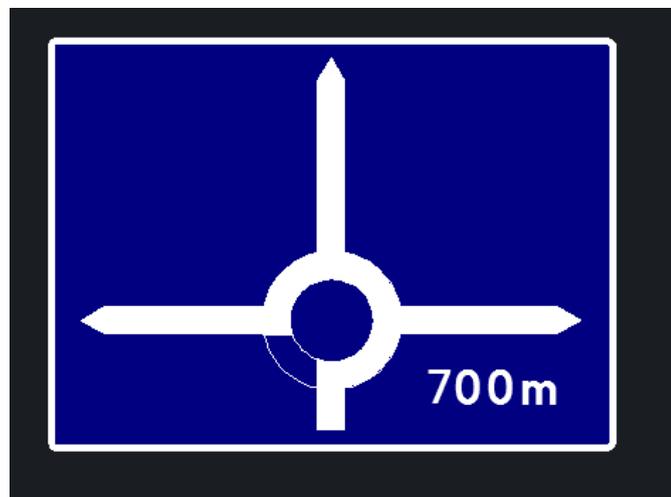
Adding the sign(s) allows us to create the correct F-6 sign. After clicking on the icon  we will call the F\_6Sign function, which will display all available signs



The selected signs are added to our F-6 table.

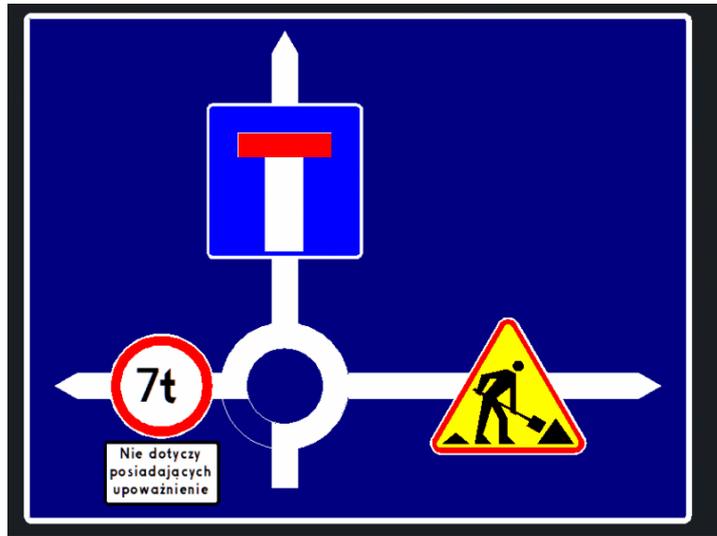
### Distance

Distance allows the user to choose where the distance is displayed on the board. Click on the icon  or type F6\_Dist and then select the place where the distance is to be added or moved. You can edit the distance by double-clicking on the value.



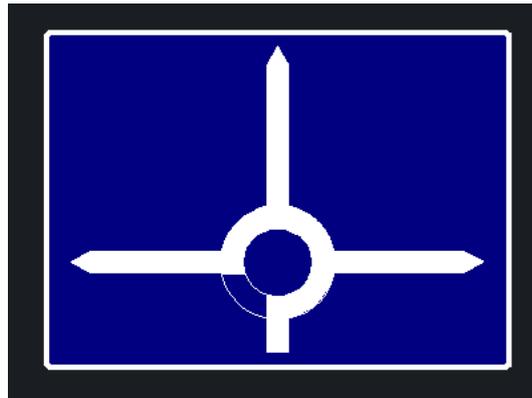
### Comment and Comment Frame

To add a comment, click on the icon  or type F6\_Comment. After calling the function, the program asks us to indicate the place in the drawing where the comment is to be made. Then the user can freely edit the comment. To create a comment frame, click on the icon  or type F6\_CommentFrame. Then the program asks us to select the comments, after approving the selection, it creates a fully dimensioned comment frame.



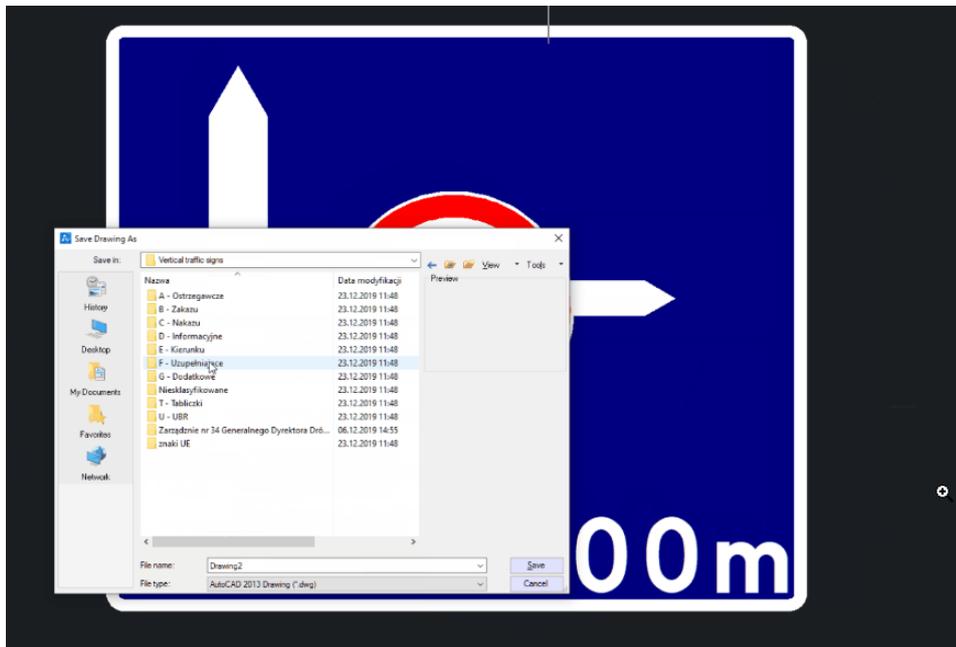
### Board Sign

The F\_6Table function is called by entering its name in the command bar or by clicking on . To add an board sign to the drawing, click on the function and then select the objects to be included in the board sign. The final result:



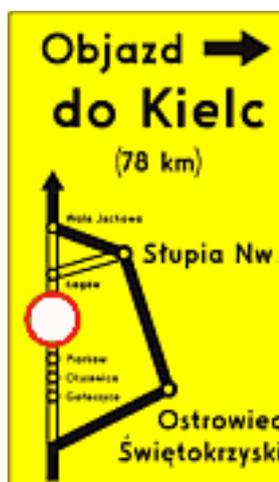
### Save to a template

ZWTraffic allows you to save a ready-made F-6 table for reuse. Typing in the F\_6Export command bar or clicking on the icon , saves the drawing. In order for the sign to be reused and detected by the program, you need to save it in the addon installation folder (default: C:\Szansa\ZWTraffic\2021\PL\Templates\Vertical traffic signs). In the Vertical traffic signs folder you need to select the folder to which you want to add your sign. After saving the sign in the selected folder it will be available in the sign library.



## 12.6. F-8 Signs

One of new functions added to the 2021 version of ZWTraffic is the option to add F-8 signs. This sign is used in situations where a road is blocked and another route needs to be proposed to drivers because of undergoing development or some other situations. The parts of a road which are the new route are made out of one wide line whereas the parts of the original route that are closed will be made into two thin lines. Below you can find an example of a F-8 sign created by using ZWTraffic 2021.



On the picture above you can see all the functions that are included within the F-8 toolbar.

### Closed Road

This function allows for creation of a closed road in the F-8 sign style. The closed road can be created by either specifying points on the drawing or by clicking on a previously created polyline. The function is located on the toolbar called F-8, it is also possible to turn on the function by writing F8\_Closed in the command bar.

After selecting the function you can:

- a) Choose a polyline which will be used as an axis to draw the closed road
- b) Type in d for draw and create your closed road by specifying points

Warning: Please change your ZWCAD background to grey, as some symbols might not be visible on a black background.

### Detour 1 and 2

This tool helps you to mark a detour route between roads on the sign F-8. There are two sign options in ZWTraffic: with an arrow and without.

After clicking on the function you can:

- a) Choose a polyline which will be used as an axis for the detour
- b) Type in d for draw in the command bar which will let you create the detour by specifying points on the drawing.

### Town Description 1 and 2

Those two functions let the user input a symbol for a certain town or a symbol with a description on the F-8 sign. After entering the symbol we have the option to type in the town name or we can edit it in the future.

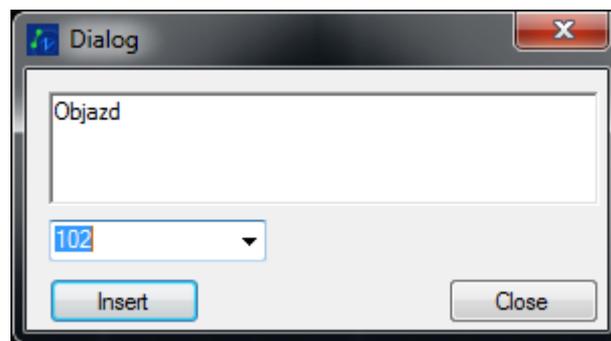


After selecting the function by clicking on the icon or by entering F8\_Town, F\_8Town2 (symbol

without a description and a symbol with a description), we have to specify the insertion point and the angle of the description if one is chosen.

### Road Description

Road Description adds a text to a selected element within a drawing. In order to use the function, it is necessary to click on a correct icon or to use the command F8\_Txt. Afterwards it is necessary to input a name or a road description and its size. After clicking on Insert, the program will ask for the position on the drawing.

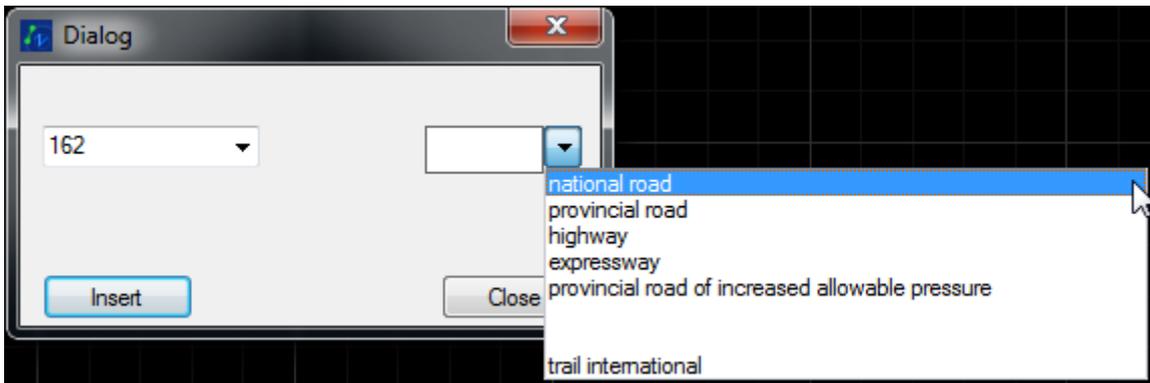


Once an insertion point is chosen, the result should be similar to this:

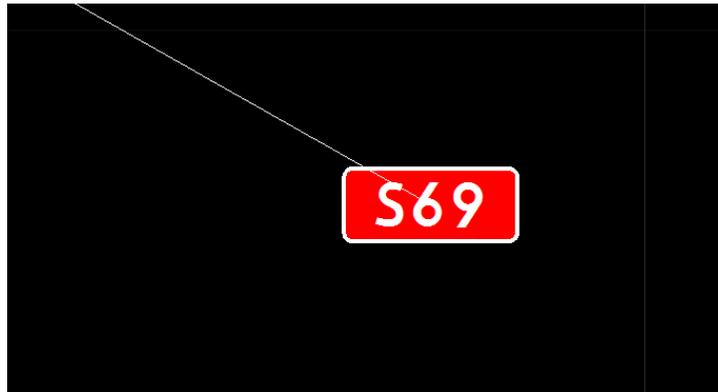


### Road Description

This function helps to add a road number to a certain road. Firstly, we need to click on an icon shown above or enter the command F8\_Nr. The program will ask for the size as well as the road number. It is possible to pick signs such as a motorway, express way and many others.

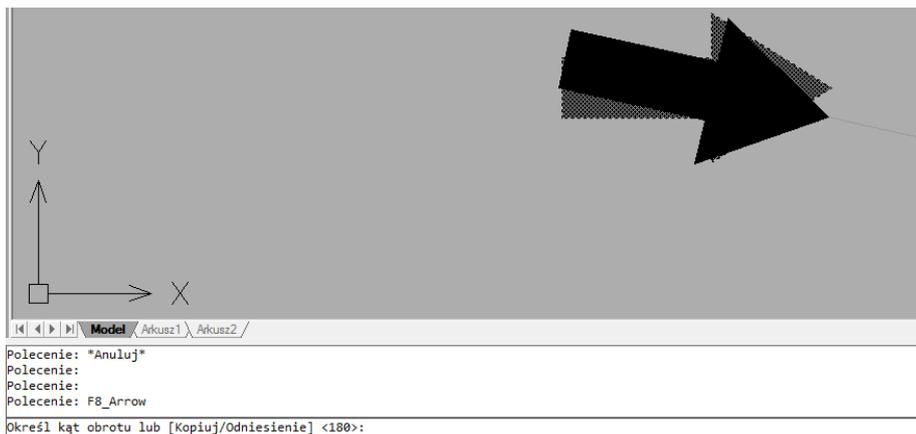


The last step is to select the road as well as a place for the new sign, the end result:



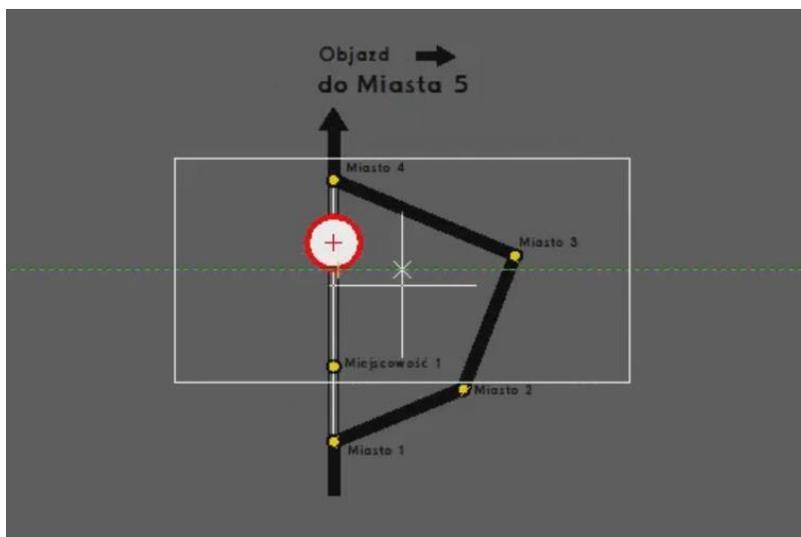
## Arrow →

ZWTraffic can also add arrows to the F-8 sign. In order to complete this function you need to click on the icon above or enter the command F8\_Arrow. Afterwards, the program will ask for a rotation angle. Additional options such as copying and creating it in reference are also available. It is possible to determine the additional options before specifying the rotation angle.



## Table – Background Sign

This is the last and the most important function of creating the F-8 sign. It asks the user to select the rotation of the sign and the elements which are to be included within the sign. First of all it is necessary to determine the elements from which the table is to be made and then the rotation and a specific place of it.



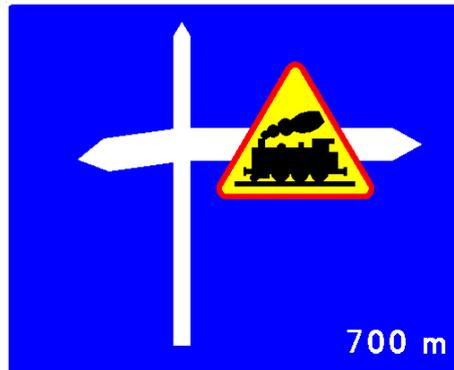
The results after selecting all of the elements and the direction of the sign:



## Warning before road limitations

ZWTraffic lets you create a sign with a warning about a certain road limitation by using some of the functions that are available. For example signs F-5, F-6

1. Firstly, click on this icon:  Draw a symbol of a main road. You can also draw other roads.
2. By using the function Znaki:  and mode block you can insert a sign of limitation.
3. Afterwards, you need to set distance to a place where the limitation starts. You can use here the standard function of ZWCAD \_dtext, and as text style you can use DROGOWY.
4. In the end, you should set background table by using the function FT or by clicking on this icon: .

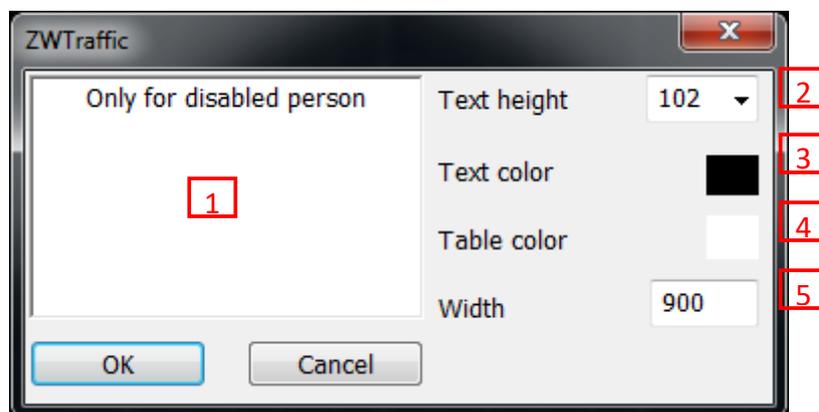


*Sign F-6*

#### **Additional information about tables**

ZWTraffic has a separate function which allows you to enter information about tables. If, for example the limitation does not concern a certain vehicle type, you can include this below the limitation sign.

To design this table, you can use the command D\_InfoTab or click on this icon: . Once you click it, you shall see this window:



*Window to design information tables*

In this field [1] you need to write the text which will be the information about the sign. You

can set the size of the text by choosing your desired size on the drop down menu. [2]. The list contains typical text size, additionally, you can set any other size of text by writing the number in the list. Default text color is set to black [3] and color of table is white [4]. You can also pick any other colors by clicking on the buttons [...] text [3] and table [4]. Width of the table should be set manually in this field [5]. Height of the table is calculated by analyzing the amount of text.

**Only for disabled person**

*Information table*

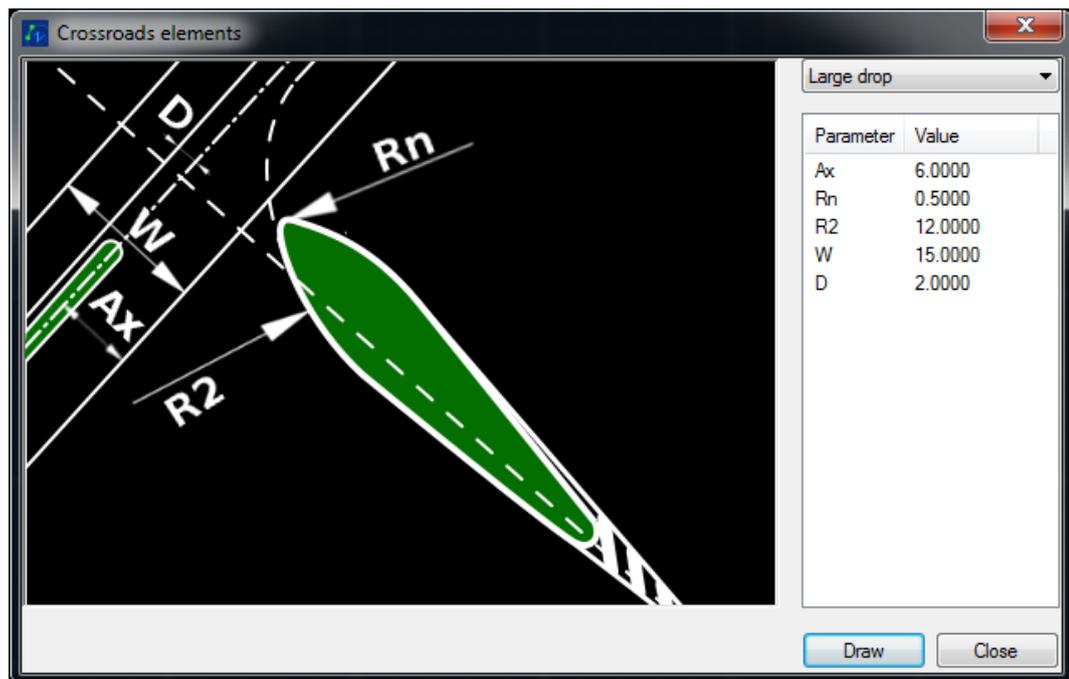
**Warning:** If the width of a single word is bigger than the width set in the field [5], words will be bigger than the table – they will not be split.

### **13**      ***Elements of crossings***

This function can help you in drawing elements of crossings, mostly islands. You have to set the parameters such as width, radius of the drawing and then pick points on which the drawing will be placed. The drawing will be completed automatically. You can run this function by typing the command Wyspy or by clicking on this icon: .

Following constructions have been developed so far:

## Large drop



In order to create the large drop, certain parameters have to be filled in:

Ax – Distance from the main axis to the edge of the roadway

W – The width of the main road

D – Island width

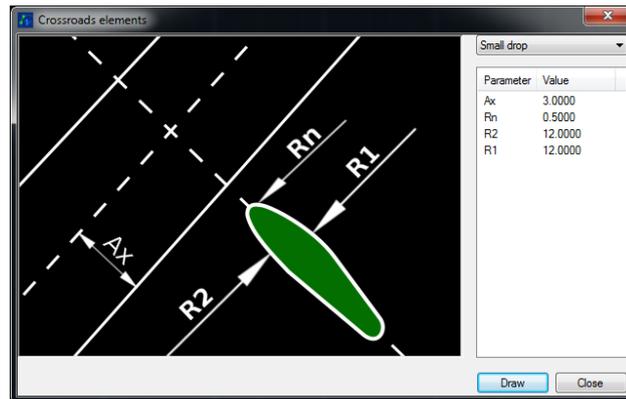
R2 – Bend radius for turning left from side road.

Rn – Fillet radius of front island

After setting the parameters, you should click [OK] and then pick 3 points on the drawing:

1. Intersection point of axis of main road and side road
2. Direction of side road
3. Direction of main road

## Small drop



If you want to create this island, input the following parameters:

Ax – Distance from main axis of road to edge of road

Rn – Fillet radius of front of island

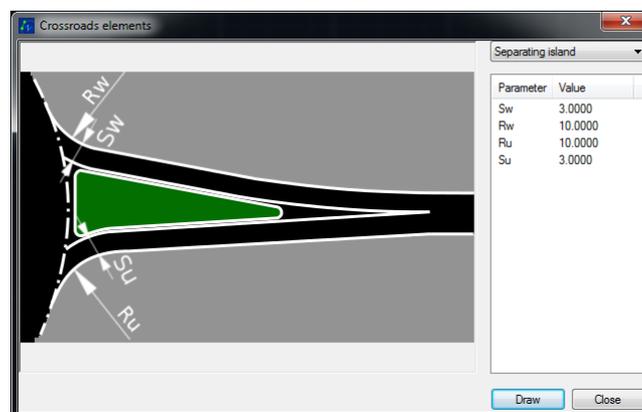
R1 – Turning radius for tightening the left from the road

R2 – Turning radius

After setting the parameters, you should click [OK] and then pick 3 points in the drawing:

1. Intersection point of axis of main road and side road.
2. Direction of side road
3. Direction of main road

## Separating island



In order to create this island, set the following:

Sw – Width of entrance road

Su – Width of exit road

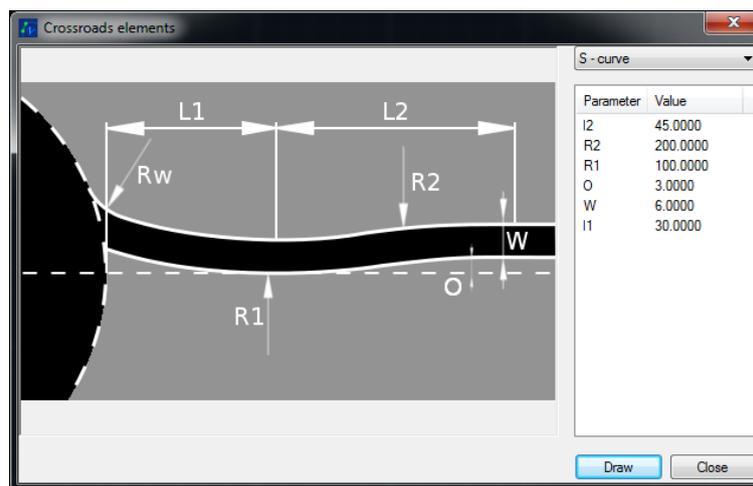
Rw– Fillet radius of entrance road

Ru – Fillet radius of exit road

After setting the parameters, confirm by [OK click on 2 points in the drawing:

1. Point where island starts,
2. Direction of side road

### **S curve**



This construction requires you to set the following:

R1, R2 – Curve radius

Rw – Fillet radius

L1,L2 – Distances

W – Roadway width

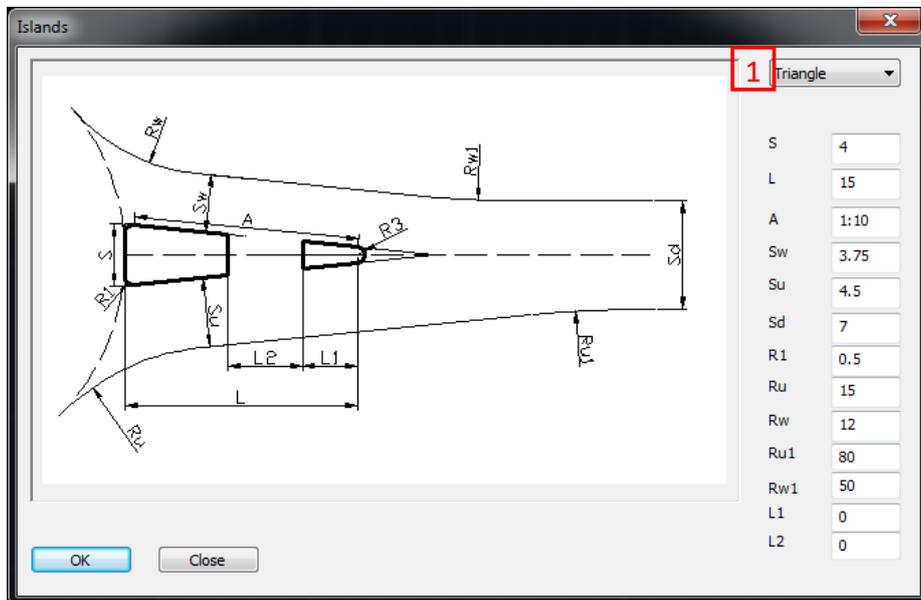
O – The offset of the inner edge of the roadway from the road

Find two points and click on them in the drawing:

1. Intersection point of the edge of a roundabout with a side road
2. direction of the side road

### ***Triangle Island***

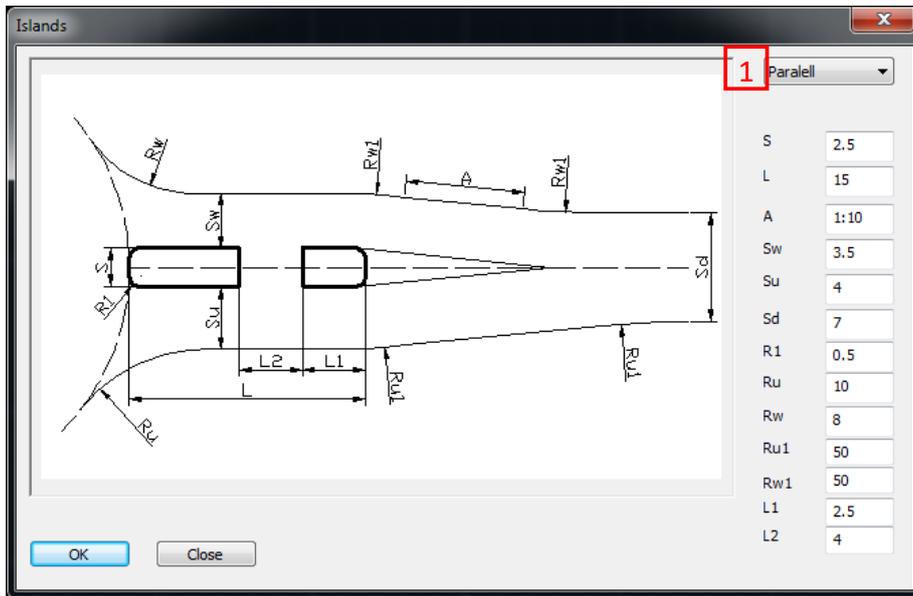
This function is used to create islands on small roundabouts. You can run this function by using the command `D_wyspy` or by clicking on this icon . The default function in this field [1] is to draw a triangle island. In order to draw a triangle island, you need to enter all the required parameters. Afterwards, you will be asked to pick the insertion point on the roundabout edge, and the direction of the road.



*Triangle island*

### ***Parallel island***

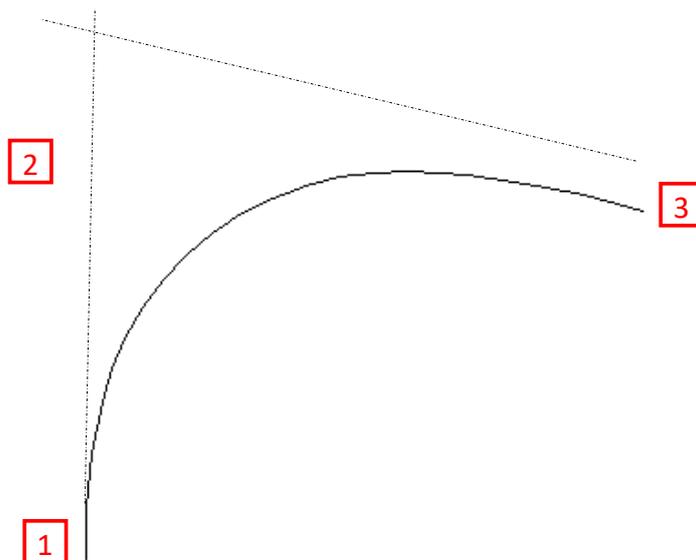
This function can be run by using the same command as in the previous example (`D_wyspy` or this icon ). In this field [1], it will be set to a triangle island, you need to choose a parallel option in the drop down menu. Afterwards, insert all of the parameters, confirm by clicking in [OK]. Lastly, pick a point on the diameter of the roundabout edge and pick the direction of the road.



*Parallel island window*

**Basket curve**

This function can be used by entering this command `D_Koszowa`, or by clicking on this icon . Afterwards, you should write the middle radius in a numeric value. Then, you should pick 3 points on an edge of a roadway.



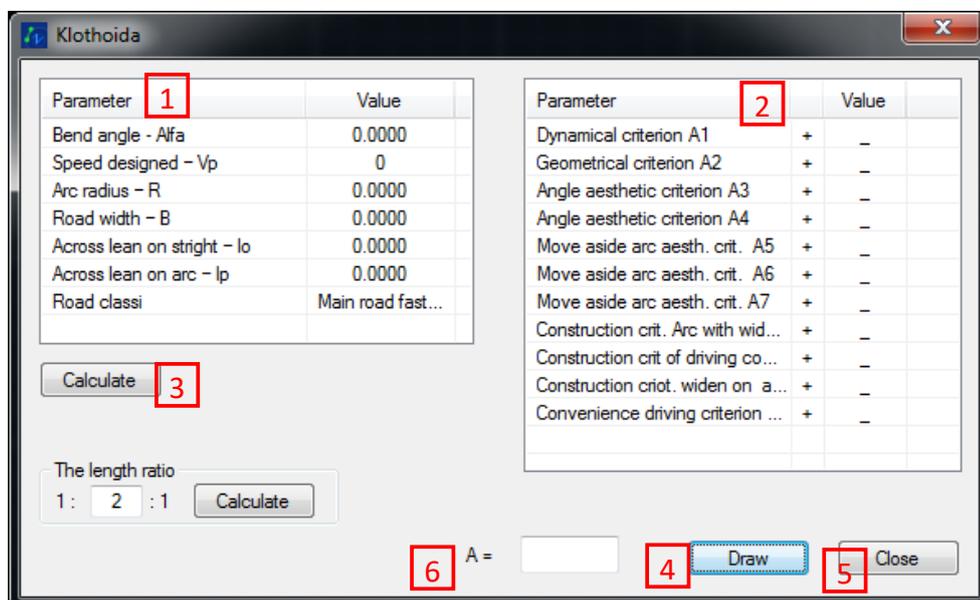
## Klothoide

You can run this function by entering the command `Klotoida` or by clicking on this icon . In the window that appears, you have to enter all the required parameters [1].

If entering the data is not possible, please enter the value of a parameter first [6]. After pressing Calculate [3] a designated parameter of an interval klothoid will be created.

After you type in the length ratio [6] and then press Calculate [3], the exact value of a parameter (A) will be calculated, it will take into the account relative lengths. After pressing the draw button [4], first and then the second line should be selected. A Klothoid will be drawn according to the parameters.

On the right side of the window [2] you can set the conditions that are to be taken into the account. Pressing the close button [5] will result in the closure of a window but the data will be remembered. Closing the application by pressing the cross in the top right hand corner will not save the data that was inputted.



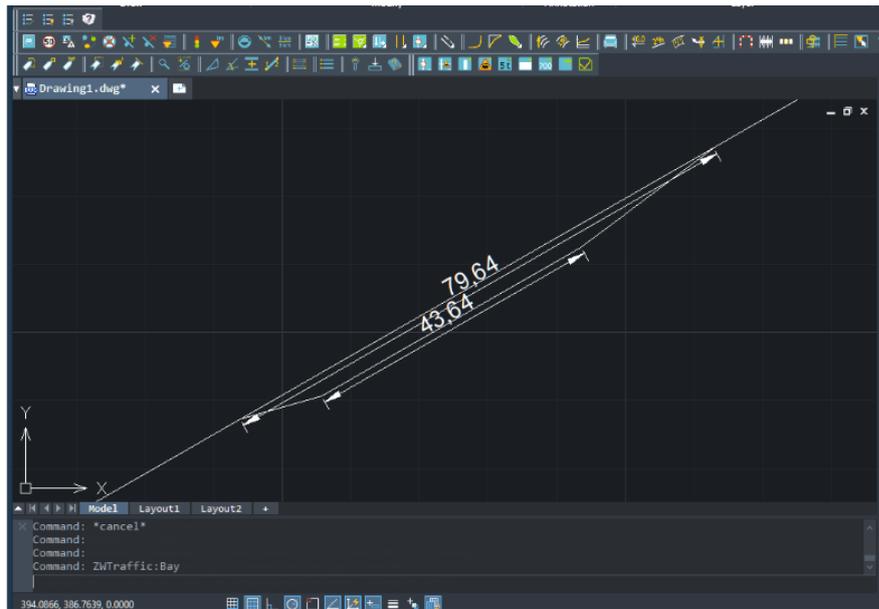
Window of klothoide function – tab Assumptions and Conditions

## 13.2. Bus stops

By clicking on this icon  or by typing in the command `ZWTraffic:Bay`, you can start the function of drawing a bus stop/bay.

First we have to choose a previously created polyline. Then choose the starting point of the bus stop. By moving the cursor over the polyline you can select the length of the bus stop. Confirm

with the left mouse button at the point where the bus stop should end. The dimensions are displayed dynamically on the screen.

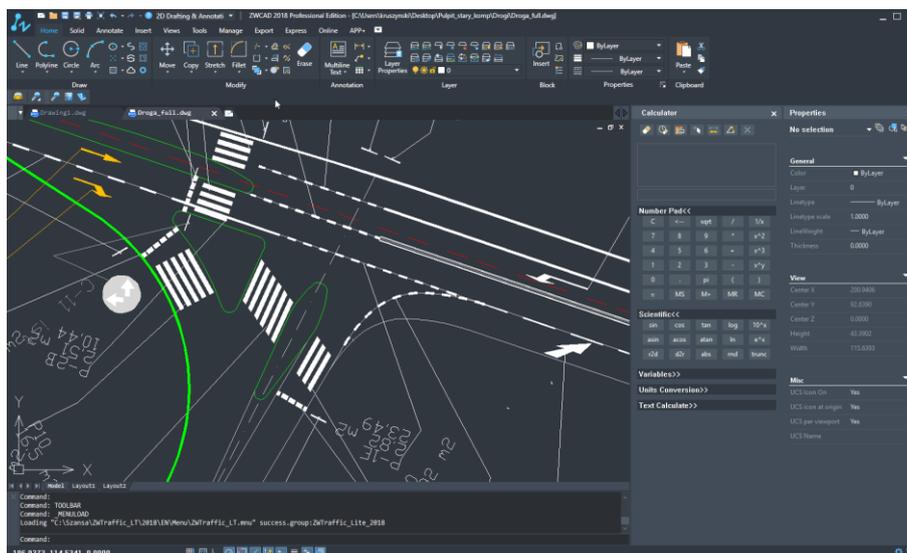


## 14 Path Analysis

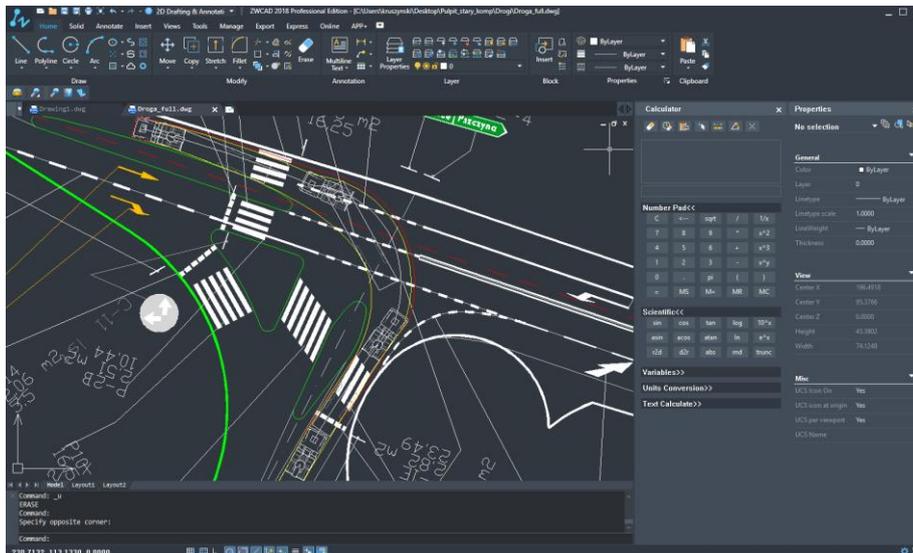
This module is a simulator of vehicle movement. You can use it to check if the road is wide enough for typical vehicles.

An example of the drawing is displayed below, where you can see how this function works:

Before carrying out the analysis, our drawing looks like this:



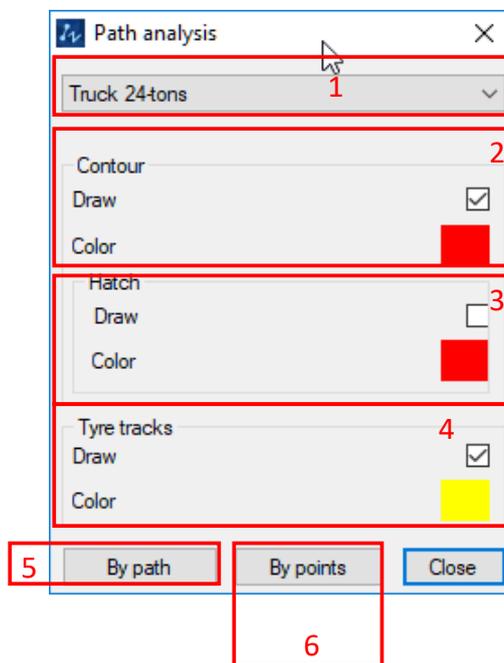
The example that we have used here allows us to see the correctness of all the chosen parameters for the given example.



The way this function works is as follows:

The function can be run by using the command *Przejedznosc* or by clicking on this icon 🚚.

The following window will appear:



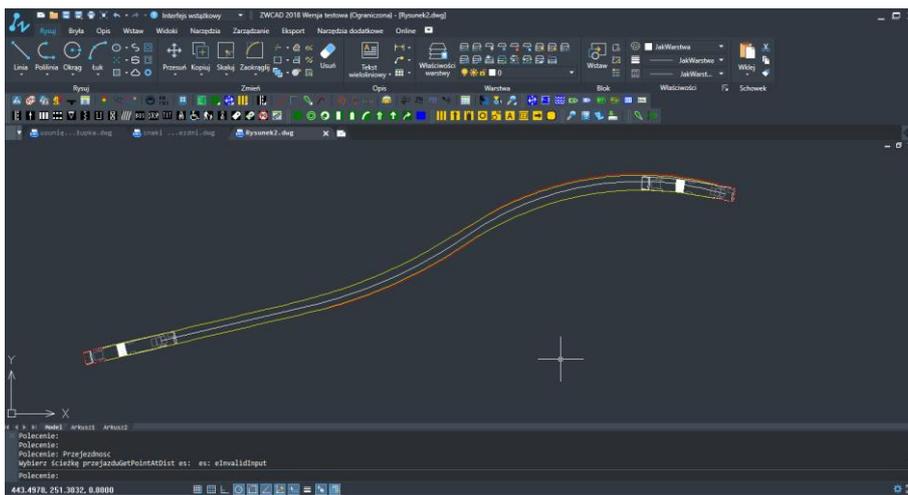
1. List of all available vehicles and dimensions are authoritative for each and own class.
2. Optional. You can choose whether the contour of the car is drawn during movement.
3. Another option allows you to fill in the area covered by the car and you can also set the color of the area.
4. You can also choose whether tire tracks are displayed and you can choose the color of the tracks.

5. Outline of the vehicle can be entered through a predefined path with the command “By the path” [5] or by entering the points of the vehicle “By points” [6].
6. To cancel the command, click “Close”.

### **Along the path**

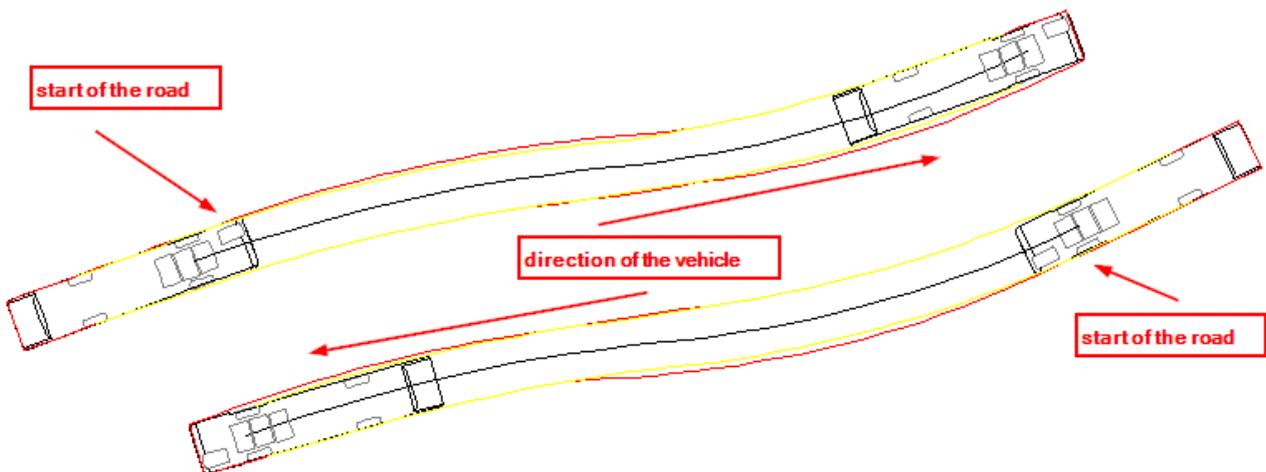
This command allows you to check the area which occupies the vehicle through already existing path on the drawing area, known as a polyline.

After drawing a path, you have to activate the command, select the type of vehicle and the vehicle contour insertion options. Then in the command window, click “Along the path” and by using the cursor indicate the existing path. When the command window reappears, close it.

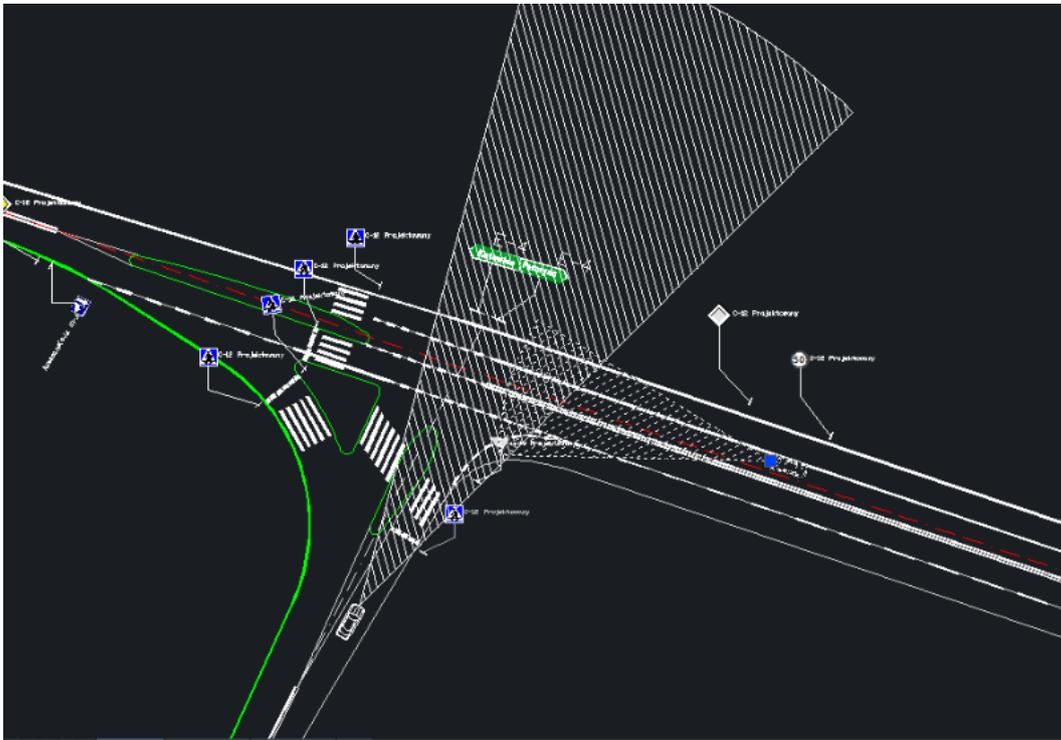


After closing the window, the outline of the vehicle will be added to the drawing.

Depending on the point that has been determined on an existing polyline, a vehicle will move in a certain direction.





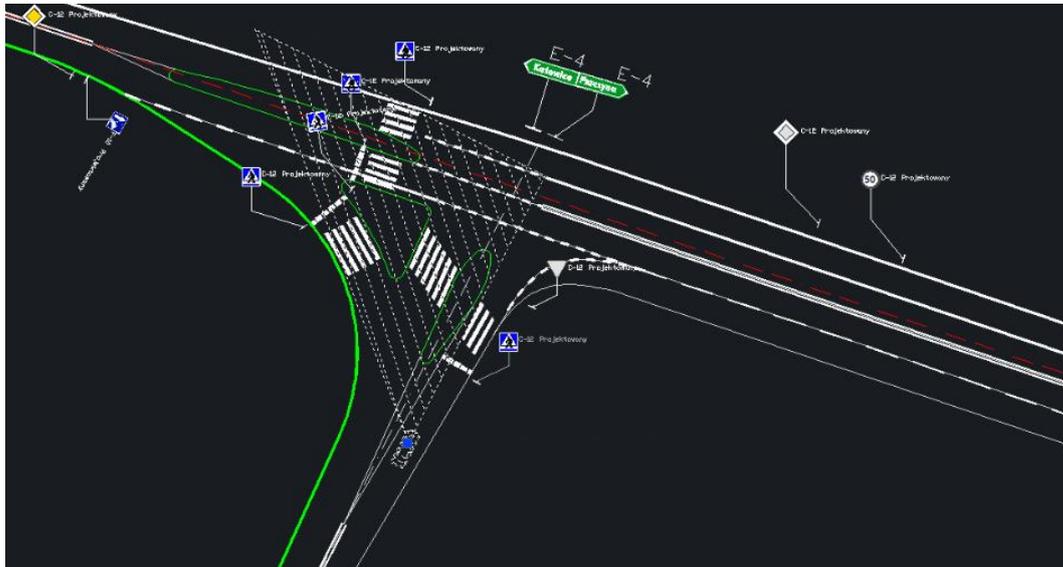


After next clicks you insert the vehicle visibility field. It is possible to manipulate the visibility field with the help of the attributes window, both the change of the speed of the subordinate road and the visibility distance will affect the visibility field of the vehicle.

ZWTraffic:pole widoczności	
Prędkość miarodajna na drodze podporządkowanej (V) [km/h]	50
Odległość widoczności (Lz) [m]	50

## 14.2. Visibility field before an intersection

To start the function, click the icon  or enter the command in the command bar: ZWTraffic:StopVisible. Afterwards specify the starting point and direction by left-clicking on the drawing area.



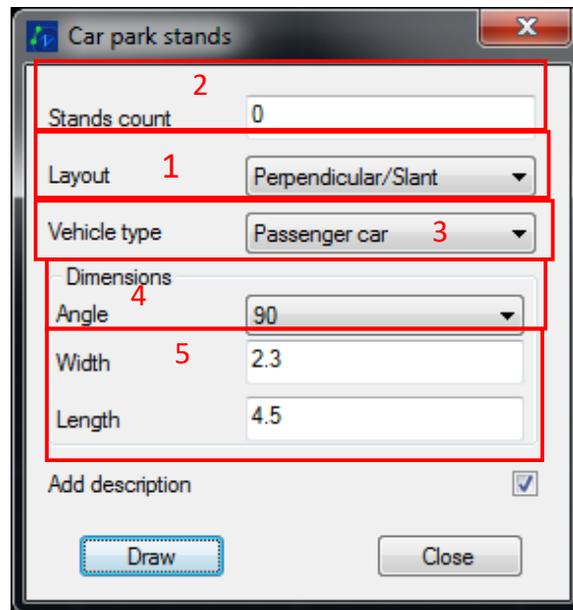
Both the visibility field and the stopping field before an intersection have special settings to allow manipulation of the field. In case of the visibility field for stopping, the user can adjust the following data in the attribute panel: speed on the subordinate road, speed on the road with priority, ascent/descent, car length, visibility distance for stopping and visibility along the road with priority. Each of these attributes affects the field of visibility for stopping before a junction.

ZWTraffic: pole widoczności	
Prędkość na drodze podporządkowanej	50
Prędkość na drodze z pierwszeństwem przejazdu	90
Wzniesienie/Spadek(wartość ujemna)	8%
Długość samochodu	4.75
S Odległość widoczności na zatrzymanie	37
L Widoczność wzdłuż drogi z pierwszeństwem	39.9

## 15 Car Park

This function helps in designing and marking parking spots.

You can run this function by entering the command P18 or by clicking on this icon . Once you enter the command or click on the icon, a window similar to the one below will appear:



Options which are obligatory to complete in order to carry out this function are: Layout, width, length of stand, additionally you can set the number of stands. In a case of a slant layout, we can set the angle of stands to the main axis.

Then we click [OK] and select two points defining the edge of stands.

Available options are following:

1. Layout of stands, available are following layouts:

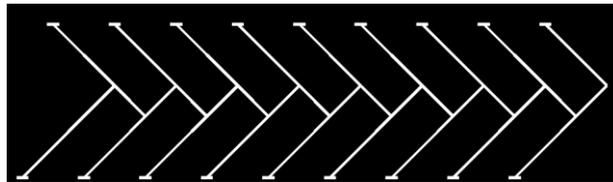
- Perpendicular



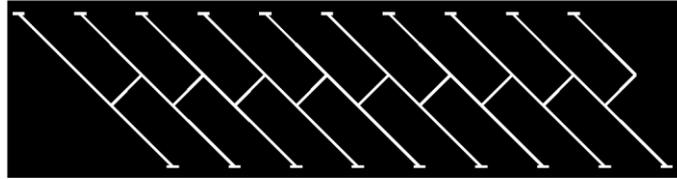
- Slant



- Packet



- Face to face



- Passage

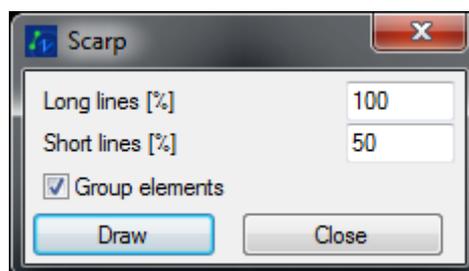


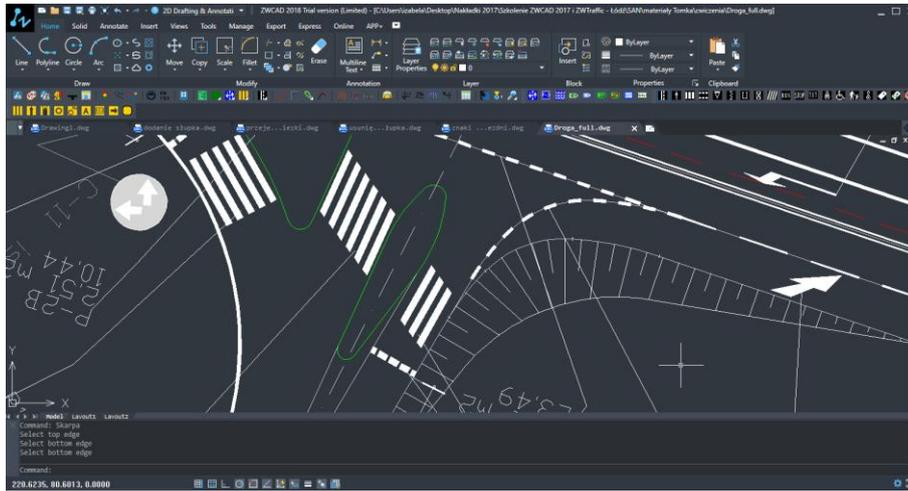
2. Quantity of stands– You can write how many stands will be drawn. If no value is entered, maximum amount of stand will be entered between the points specified.
3. Type of vehicle – You can choose the type of vehicle the stand is designed for. Depending on the type of vehicle, the stand will adjust accordingly to suit its needs. These settings can be changed.
4. Angle – If the layout of the stands are to be slant, face to face, or passage, you can determine the angle of those stands
5. Width/Length, values are necessary and they determine the dimensions of a single stand. They are loaded by default, depending on the type of vehicle.

## 16 Design of roads

### Scarp

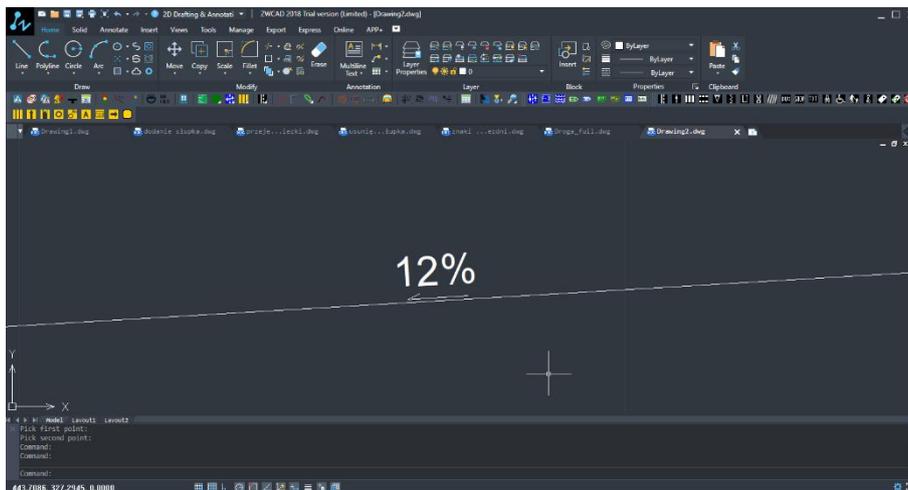
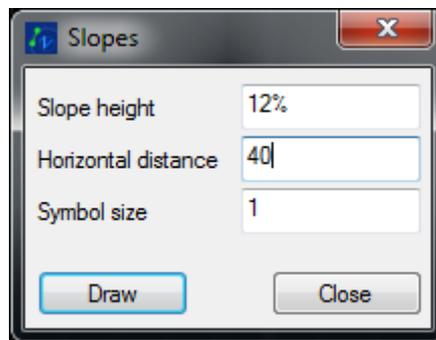
When you start Drawing Lines of a Scarp . It can mark slopes, giving them an upper and a lower edge. You can also determine the length of lines and their grouping.





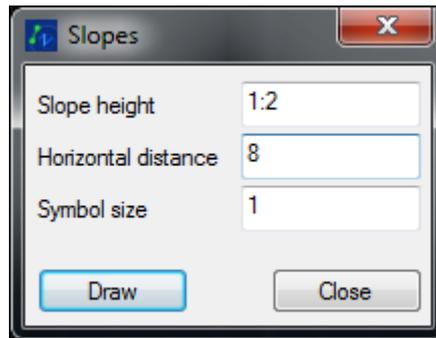
## Slopes

After starting the function Drawing Lines by Slope . It is possible to draw the line once the decline is determined (in percentage or relatively).

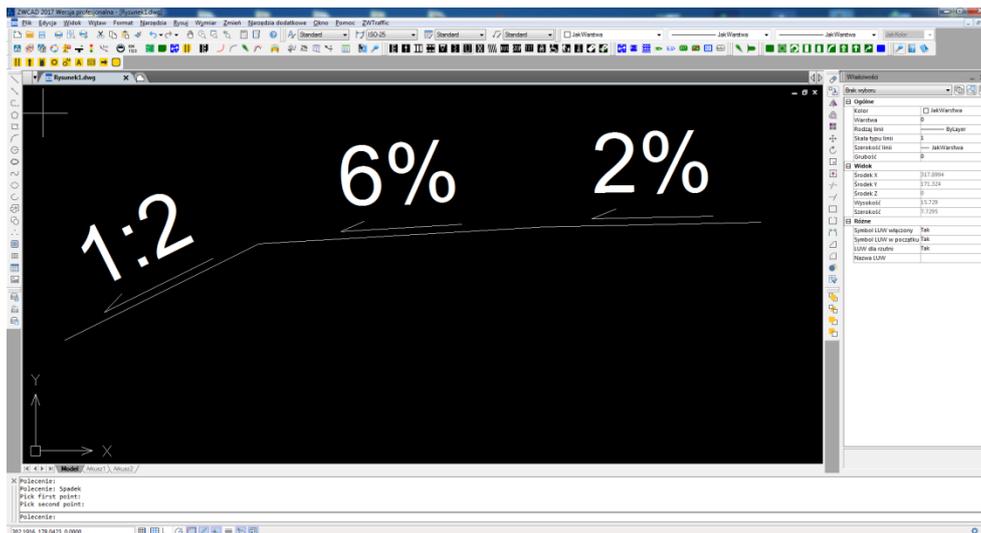


Example – of the Slopes function (percentage) – Firstly, run the command, pick two points defining default values of a slope with height in percentage, horizontal distance and symbol size.

Afterwards, we can draw different slopes using slope height written with relative values:

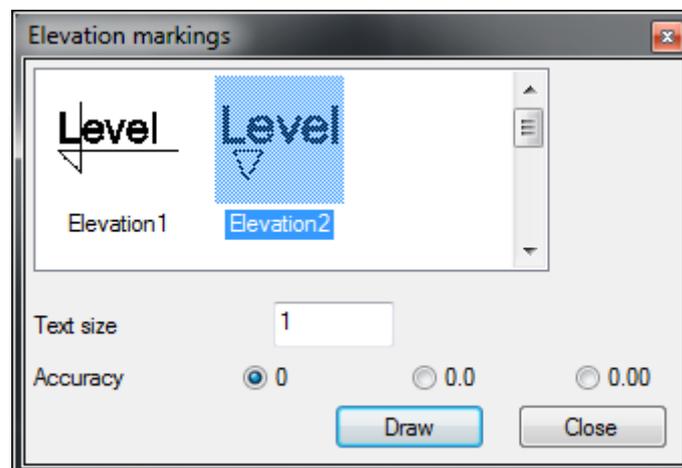


The results can be seen below:

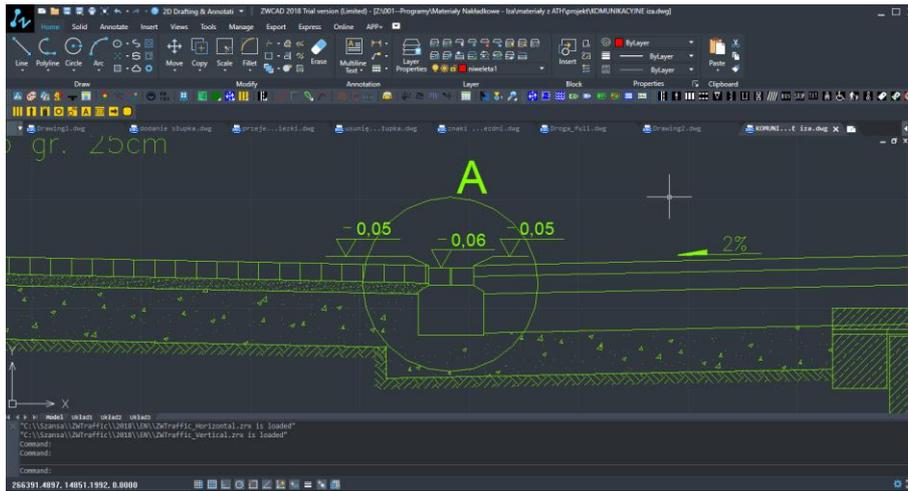


## 17 Elevation markings

The function Elevation markings  is used to mark the position of the pitch surface, edges or points. You can choose from several templates.



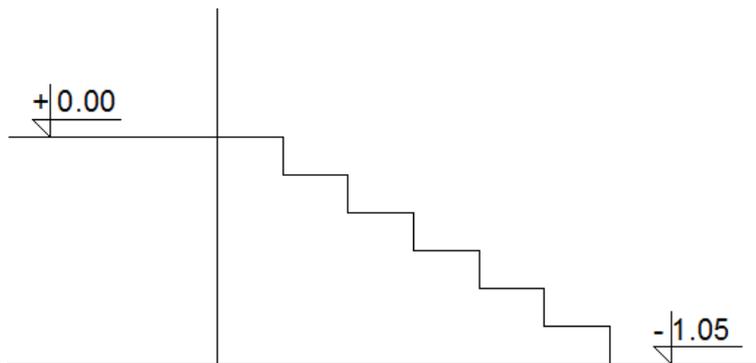
Just run the command, select a template, and click where you would like the markings to be.



By default, elevation Marks define the height from Y axis to the start of the drawing coordinates. In the function window, the option „0” stands for the level 0,00.

Level 0 can be defined before starting the drawing, as well as during it.

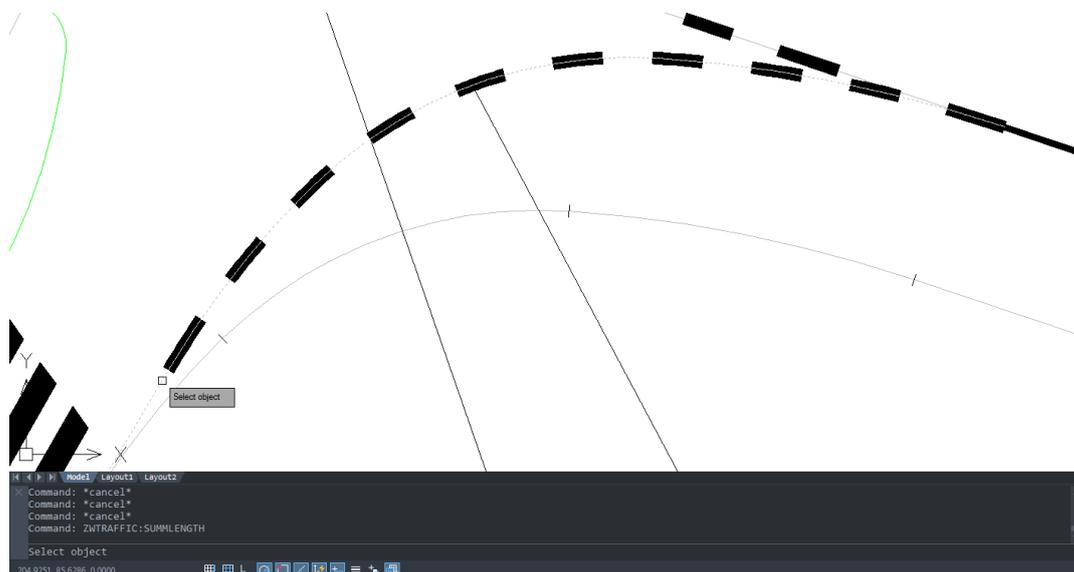
Once the function is activated along with the option "0", it is necessary to define a point which will be the level 0,00 if we are defining the level 0 before marking the elevation.



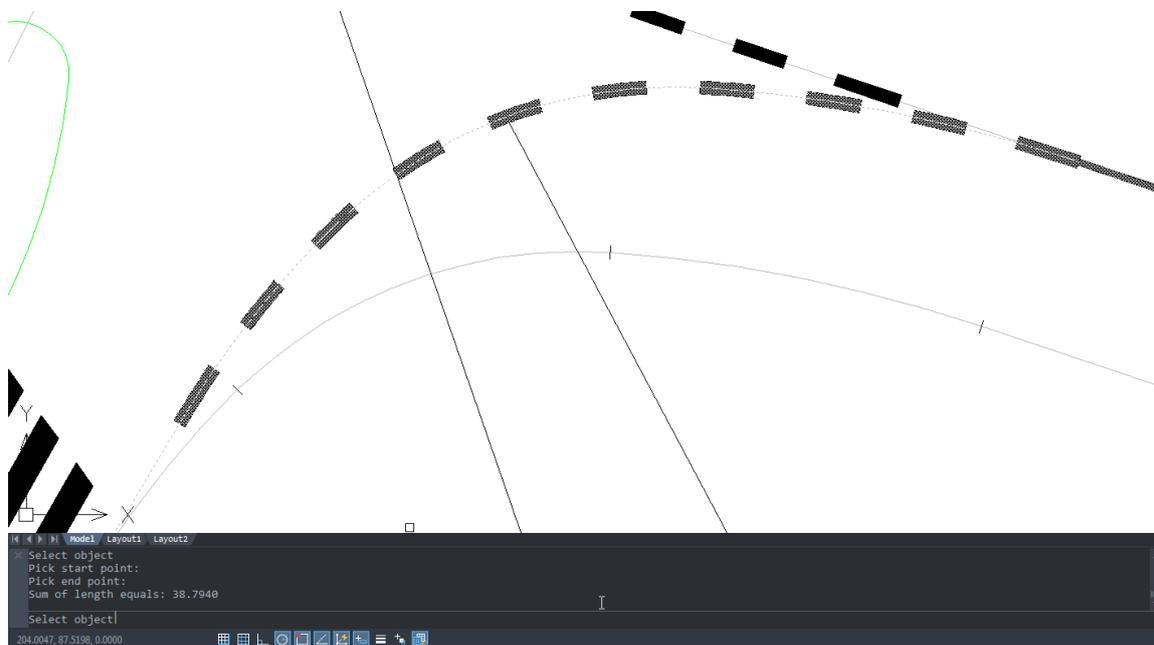
When updating existing markings you can choose whether you want to update all of them or selected few. It is possible by accessing the command "0" from the menu and choosing the desired option.

## Axis Length Sum

ZWTraffic:SummLength or a click on the icon allows to quickly and easily sum length, for example:



Once we select an object, objects, starting point and ending point of the measurement, we get the final result displayed in the command bar -> Length sum:



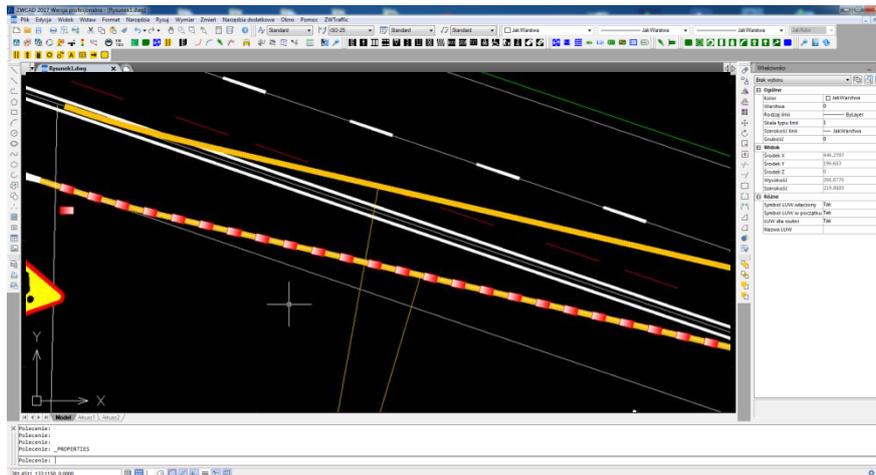
## 18 Insert blocks at equal intervals (measure)

By using the function `_Measure`, you can insert blocks on a specific area, in equal intervals. You should indicate where you want to place the selected blocks and in what distance.

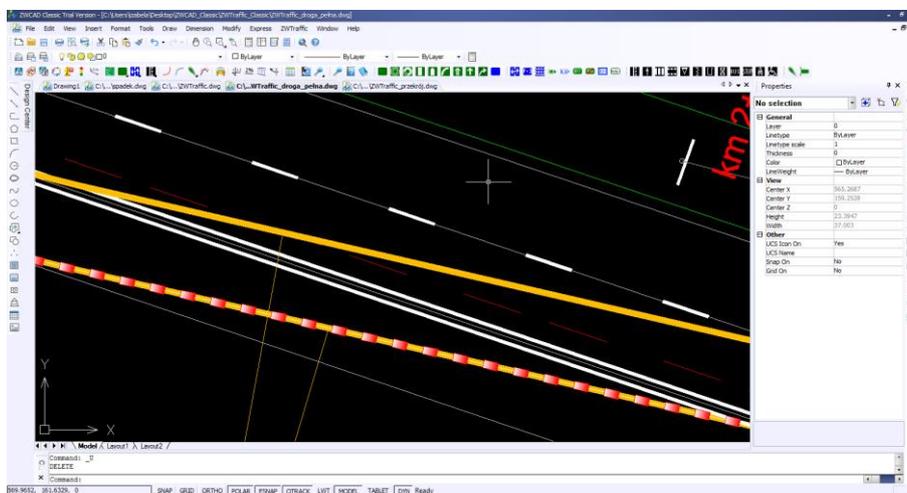
1. Create a block in drawing.
2. Run the command.
3. Select entity to divide.
4. Select the block and enter the name of the block.

```
Command: _MEASURE
Select entity to divide:
Block/<Segment length>:
```

5. Select the segment length – two point.



Example - placement of blocks in a particular section:

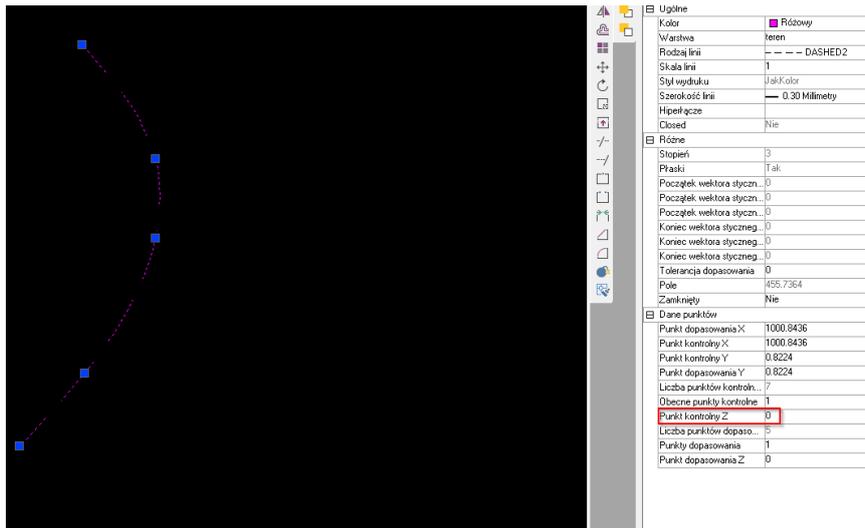


## 19 Longitudinal profiles

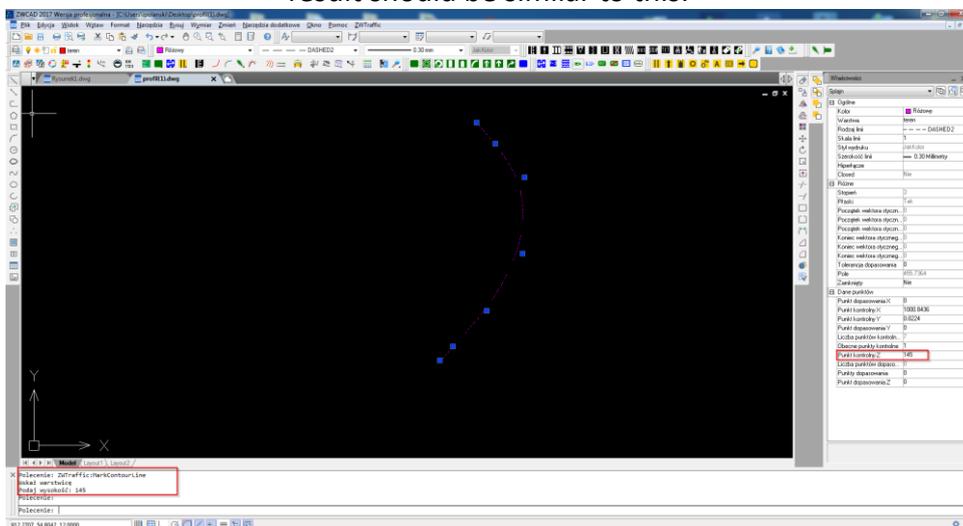
### Mark contour line

This function allows you to enter the height of a contour line in a drawing. When this function is completed, the height will be shown in the attributes on the axis Z. First of all, to start this function you need to click on this icon:  or enter the command ZWTRAFFIC:MarkContourLine. Afterwards the program will ask to specify the contour line which you would like to define. Once it has been selected, the value needs to be entered in the command bar and a new one will be available in the attributes under the name Control Point Z.

Warning! During defining the Control Point Z, we have to separate values with a full stop and not a comma e.g. 149.5. If we do not, the function will not be completed.



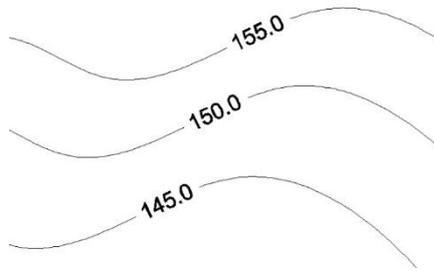
As we can see on the picture above, the control point Z equals 0. After completing the function the result should be similar to this:



### Describe contour line

Automatic markings of contour lines on existing elements. They are added once their height is established.

When activated, define the beginning and the end of a line that cuts through the contour line that is going to be described.

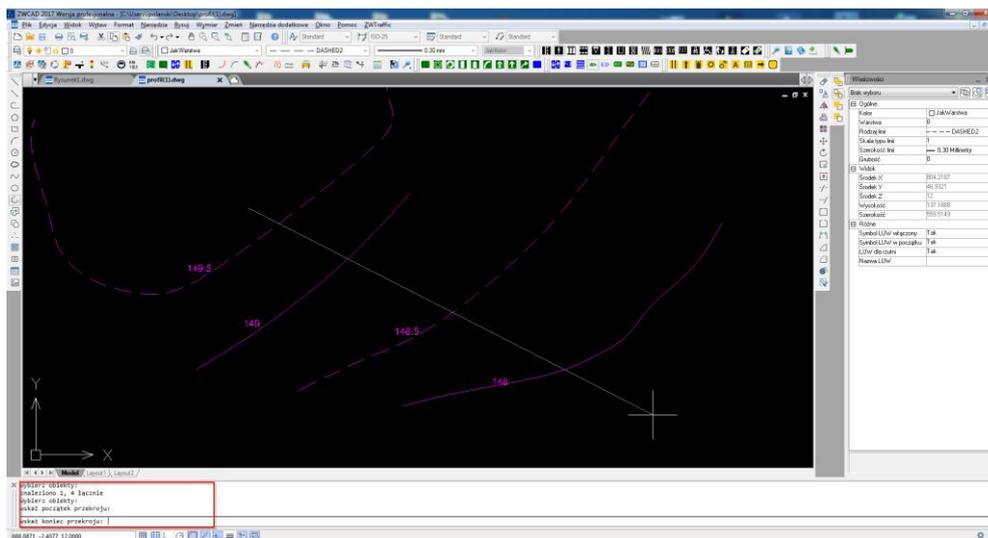


**Note:** The command does not add the description on polylines.

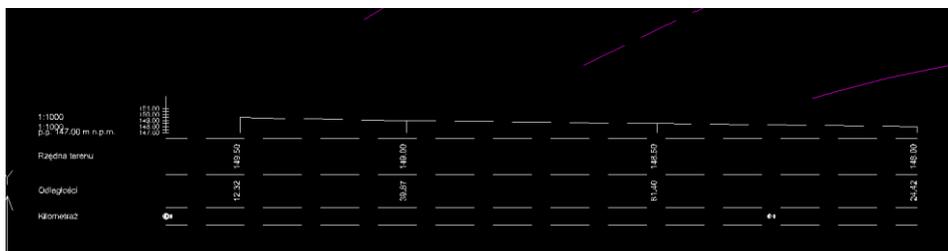
### Draw Longitudinal Profile

Drawing a longitudinal profile is a function which creates a line that goes through every selected contour line with defined heights. Thanks to this function a table is added to a drawing which shows all the attributes of selected contour lines. In order to use the function it is necessary to click on this icon:  or to enter the command ZWTraffic:DrawProfile. Afterwards, it is required to define the contour lines, press enter and a longitudinal profile will be created.

Creating a profile which goes through selected contour lines:



The table created by using this function:



## 20 Extras

### 20.1. Activation

This option enables the license manager. Please follow chapter: 4. Activation in order to activate

### 20.2. About ZWTraffic

This option allows you to display the details about currently installed version of ZWTraffic. Below is an example of how this function looks like in the command bar:

### 20.3. Help

Opens the user manual.

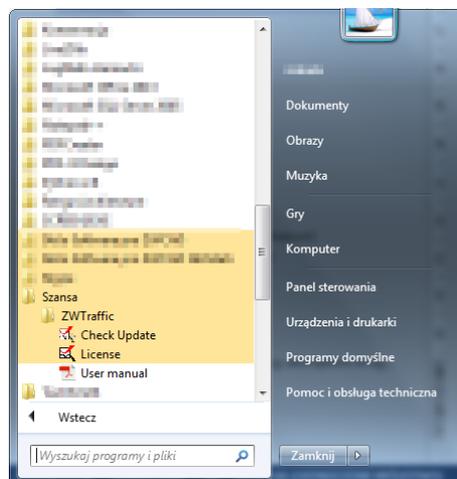
### 20.4. Online help

This option launches a website which informs of various ways to get technical support with usage of ZWTraffic.

### 20.5. Updating ZWTraffic 2021

You can check whether you have the most up to date version of the overlay.

1. Close the program ZWCAD.
2. Run the “**Check update**” from the Start Menu: **Szansa -> ZWTraffic**.





After clicking "Next", the program will download and install a newer version of the overlay, if it is available.

Now you can run the program ZWCAD and ZWTraffic should be updated.

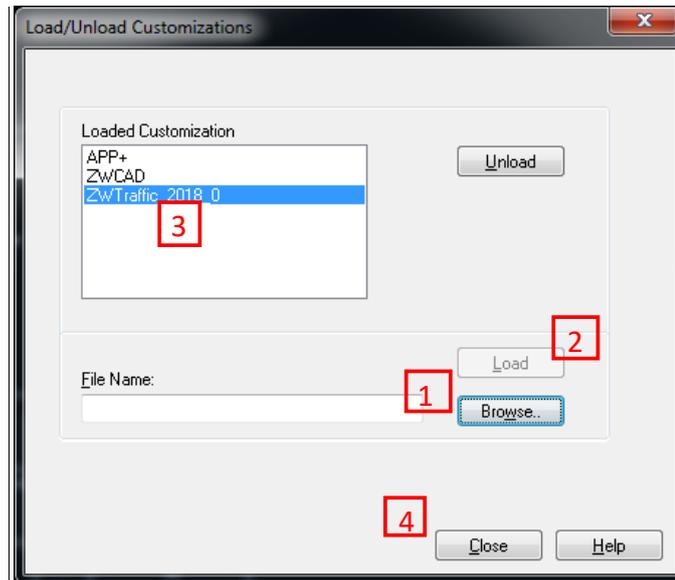
## 21 Additional information

### 21.1. Manual load icons

Manual load of menu is not sufficient enough to use the application commands. You also have to load the functionality, to do this, please look at the next chapter.

If the menu doesn't load automatically, you can do it manually in the following steps:

1. In the command line write the command `_menuload`. You will see this window:



Press button [Browse] [1]. In new window select file „ZwTraffic.mns“. Default location of this file is „C:\Szansa\ZwTraffic\2021\EN\Menu\“. But can be different and depends on path selected at the time of installation.

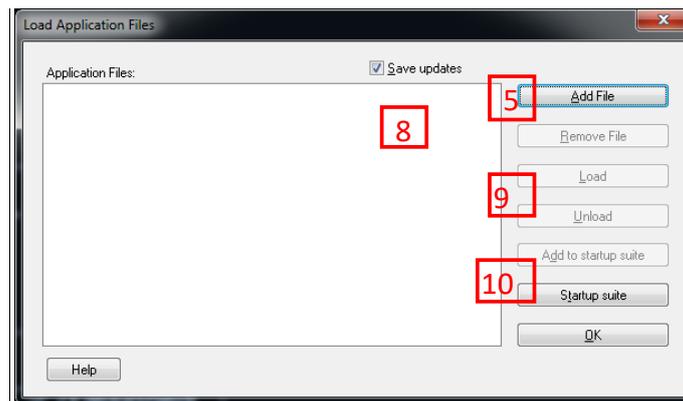
2. Select file then press [Open].
3. Load file by [Load][2].
4. In this list [3] a new entry will be added – this confirms whether the menu has been loaded correctly
5. Press button [Close] [4], in ZWCAD a new menu will appear.

### 21.2. Manual load application

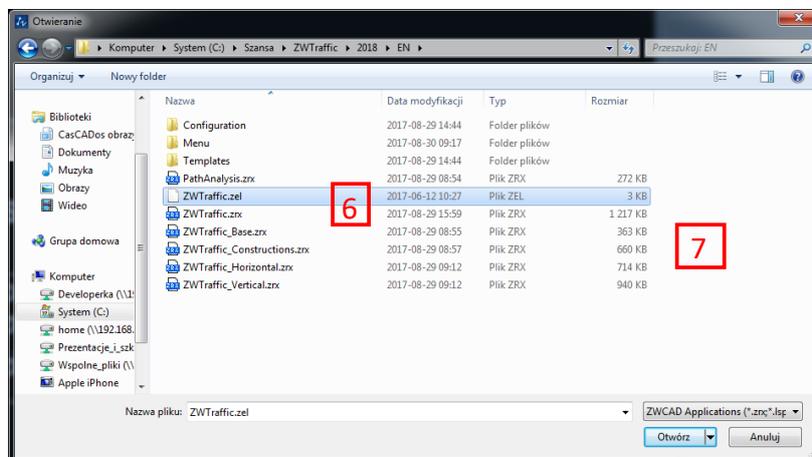
After installing the overlay, it should load automatically after running ZWCAD 2021. The functions should be available and the toolbar with the icons should be displayed. If after running ZWCAD the overlay does not appear, please follow these steps:

Run the command `_apload` or by using the menu in ZWCAD: Tools->Load Application:

To begin the process follow these guidelines:



2. Press the button [Add file][5], select the file ZWTraffic.zel [7] located in C:\Szansa\ZWTraffic\2021\EN. Confirm the file by clicking[Add] [8].



3. Afterwards, in the previous dialogue box, we select the file on the list[8] and load application by pressing the button [Load] [9]. The functions of the application should be loaded.
4. If you want the application to run every time ZWCAD starts up, press [Add to startup suite][10].

### 21.3. Changing the description block

The program is equipped with a few description templates. They can be used on signs which are vertical, horizontal, and traffic signs for the Polish and English versions.

If the look of the description block does not suit you, it is possible to change it. In order to do so,

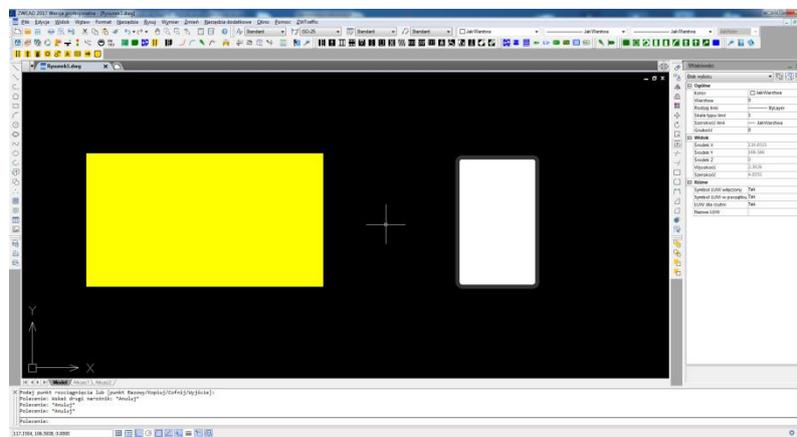
you need to find the directory in which the program is installed, the usual directory is C:\C:\Szansa\ZWTraffic\2021\EN

In the following directory, a folder called templates can be found and drawings of the descriptions are located in that folder. These templates can be edited in any way the user wants, but you have to remember that if those are removed, the functionality of the program might become limited.

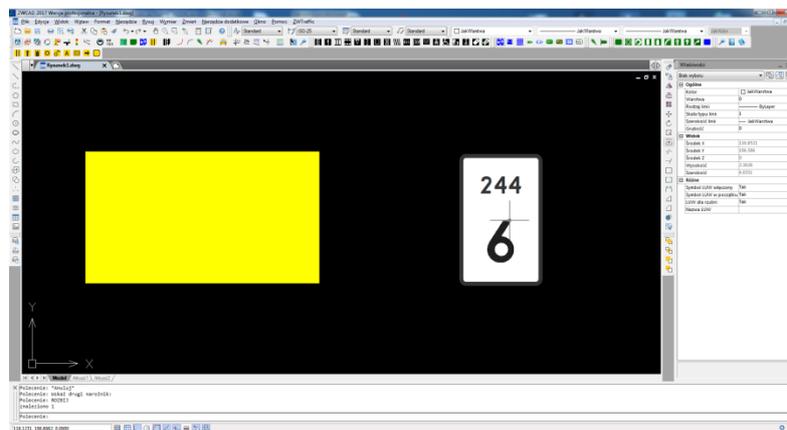
The change of a template will make the new template appear in the project whereas the old projects will require a change in the definition of the drawing block.

## 21.4. Problems with complementary signs

Whilst using the program, a problem May occur with visibility of the complementary signs of U-8 type. When you insert such sign into your drawing, the symbols might not be visible. Here is an example of a U-8 and U-1f sign.



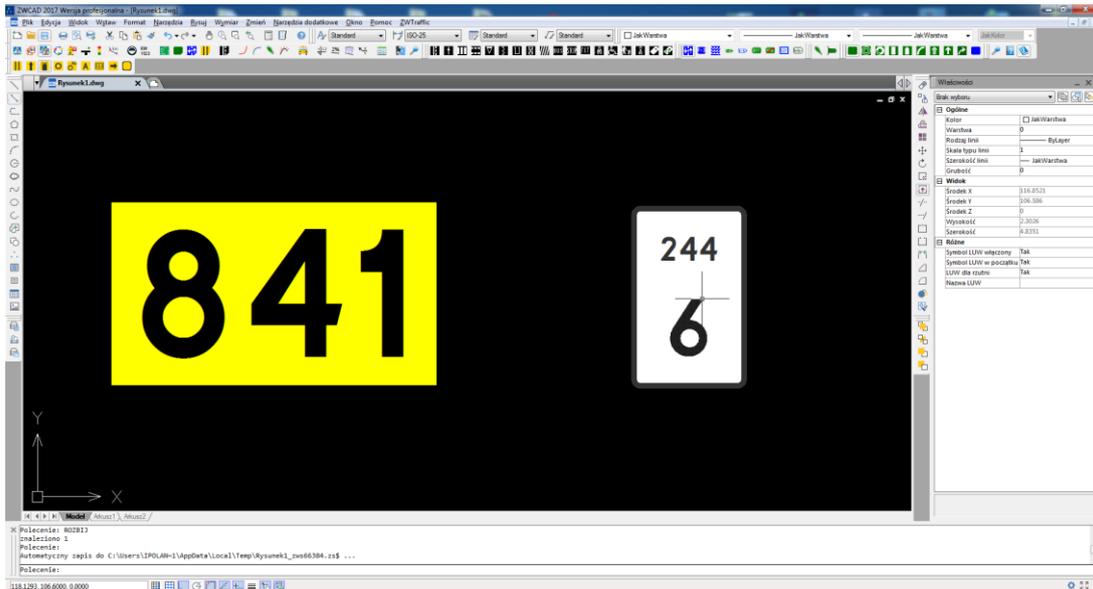
We can see that the signs do not have symbols on them. In order to solve this problem we need to click on the symbol and use the function “Break”.



Once that is complete, symbols should appear.

You should remember that the broken part block will not be included in the group.

After breaking the two signs, we can see their symbols.

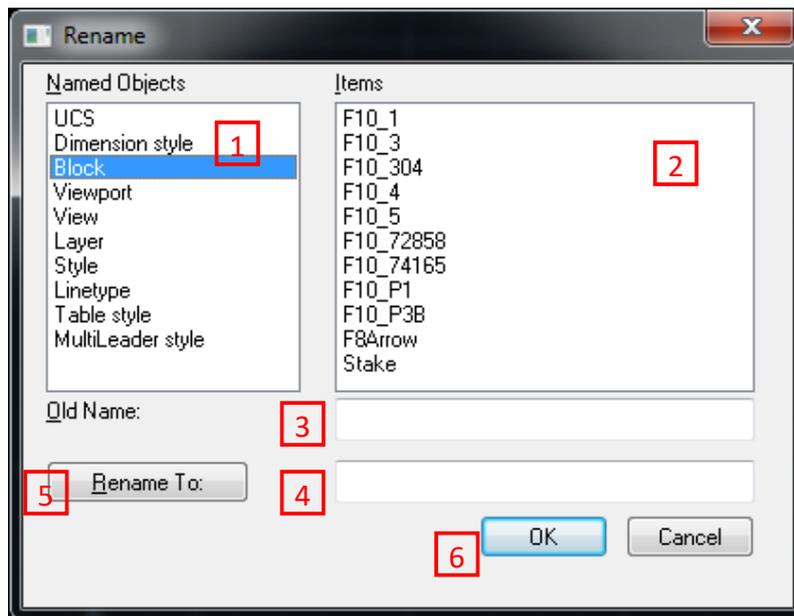


### 21.5. Cannot check whether the drawing is passable because vehicles from previous versions of the program were used.

This Message can appear when working on a project in which the roads were checked if they are passable with a program from a previous version. The vehicles did not include certain information which are necessary for the functionality in the current or future versions of the program. To resolve the problem, you need to use the command `_RENAME` and change the names of blocks which are defining the vehicles.

### 21.6. Rename block `_RENAME`

If the command "Path analysis" has been used previously in a different file, a problem with recognizing the vehicle might appear. If that is the case, you should use the function `_RENAME`. After activating the command, a window which allows you to change the name will appear.



Please click the block [1] and then on the right side of the window [2] find the vehicle in the list. In this window [3] its name will be displayed. Please enter below its new name [4], and click change to [5]. This window displays the new name of the vehicle [2]. Carrying out the operation will allow you to identify the vehicle.

## 22 Tips for working with ZWCAD

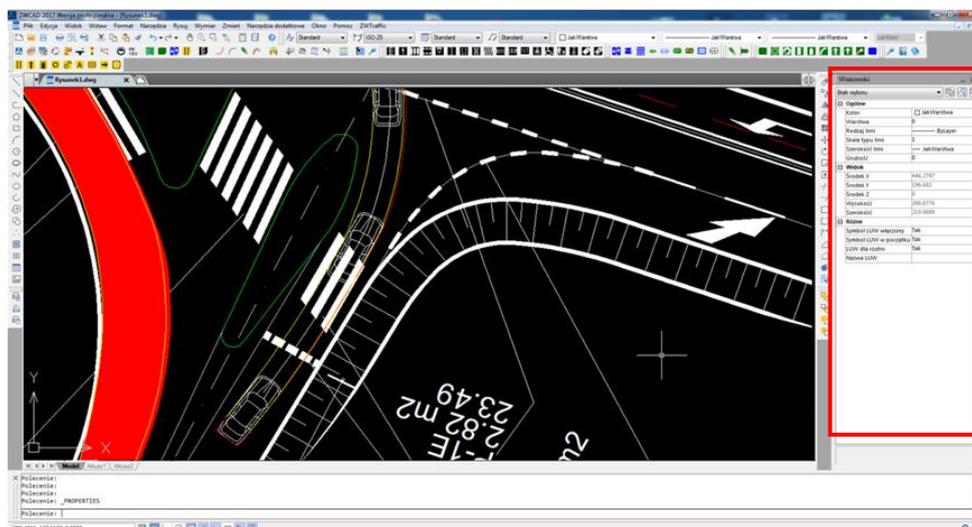
### 22.1. Modifying selected description elements

Using the properties of an object, you can edit many elements:

General: color, layer, etc.

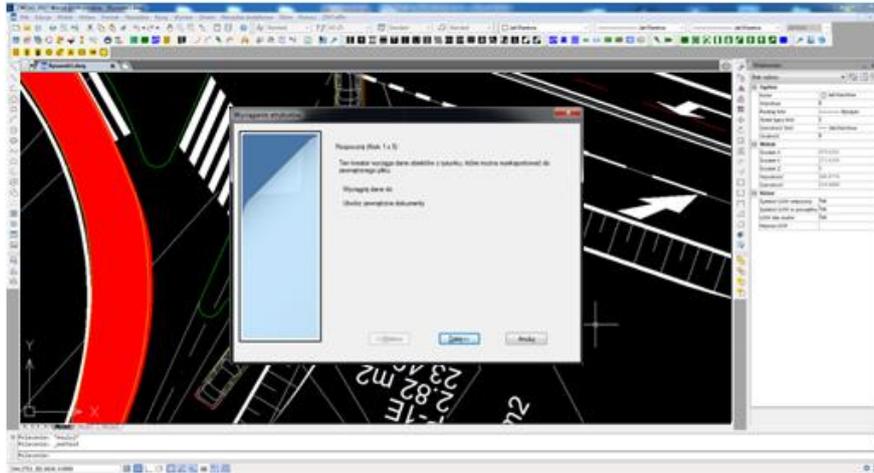
Text: style, height, incline, etc.

Others: rotating the text, hiding certain elements of the description, etc.



## 22.2. Create combinations of blocks e.g. descriptions of signs (\_eattext)

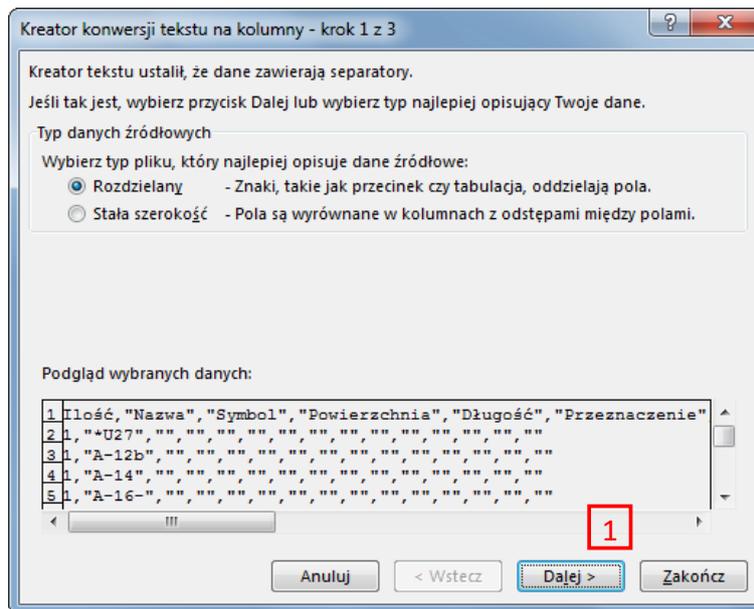
A simple way to create a list of blocks is to use the function - Attribute Extraction. In 5 steps we can export any data that is of interest to us from the blocks to a table.



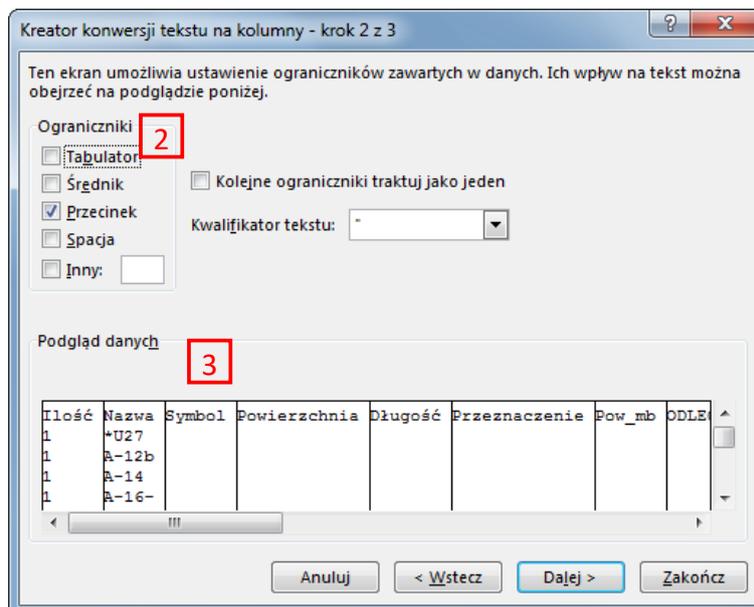
The exported data can be presented in a spreadsheet (Import External Data).

	A	B	C	D	E	F
1	Amount	Name	Symbol	Przeznaczenie	Wielkość	Odblaskowość
2	1	S_Znaki_OpisPionowe	A-12b	tymczasowy	W	I Generacja
3	1	S_Znaki_OpisPionowe	A-14	tymczasowy	W	I Generacja
4	1	S_Znaki_OpisPionowe	A-16	ist	W	I Generacja
5	1	S_Znaki_OpisPionowe	B-33	likwidowany	W	I Generacja
6	1	S_Znaki_OpisPionowe	B-36	ist	W	I Generacja
7	1	S_Znaki_OpisPionowe	C-11	ist	W	I Generacja
8	1	S_Znaki_OpisPionowe	D-15	proj	W	I Generacja
9	1	S_Znaki_OpisPionowe	D-18	proj	W	I Generacja
10	1	S_Znaki_OpisPionowe	E-13	proj	W	I Generacja
11	1	S_Znaki_OpisPionowe	E-17a			I Generacja
12	1	S_Znaki_OpisPionowe	E-18a			I Generacja
13	1	S_Znaki_OpisPionowe	E-4			I Generacja
14	1	S_Znaki_OpisPionowe	E-4		u	I Generacja
15	1	S_Znaki_OpisPionowe	E-5		Ř	I Generacja
16	1	S_Znaki_OpisPionowe	F10	ist	W	I Generacja
17	1	S_Znaki_OpisPionowe	Nie dotyczy chodnika	ist	W	I Generacja
18						

In the spreadsheet data is displayed with a comma. Please select the first column and go to the *Data tab*, then click the text as a column. A window will appear in which you need to click *Next* [1].



On the right side of the window [2] tabs are included as delimiters, please disable them by clicking on them, and please turn on a comma. In the bottom window [3], there will be a preview of the document.



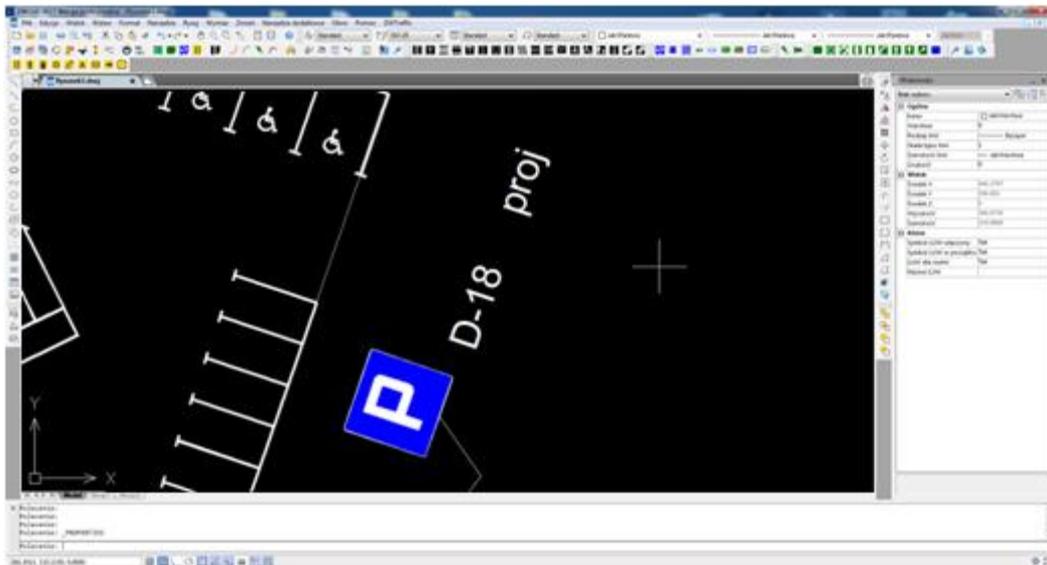
Please click *Next* and *Close*.

### 1.1. 22.3. Change the description

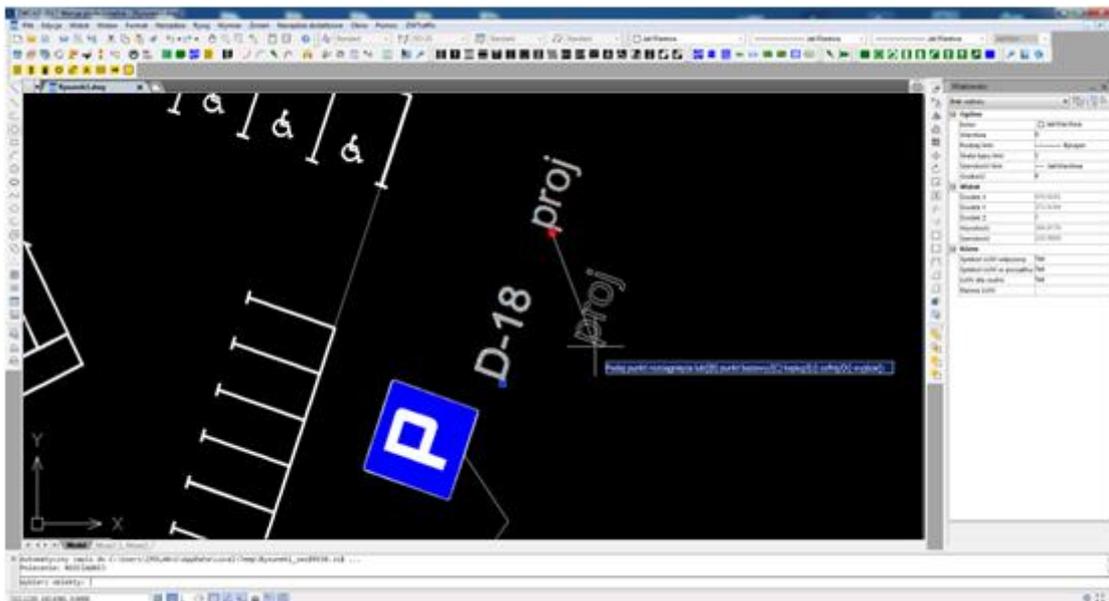
The user has the option of editing the description inserted with ZWTraffic overlay.

- In the case of one-time change of description, the user has the option to drag parts of the description directly into the drawing.

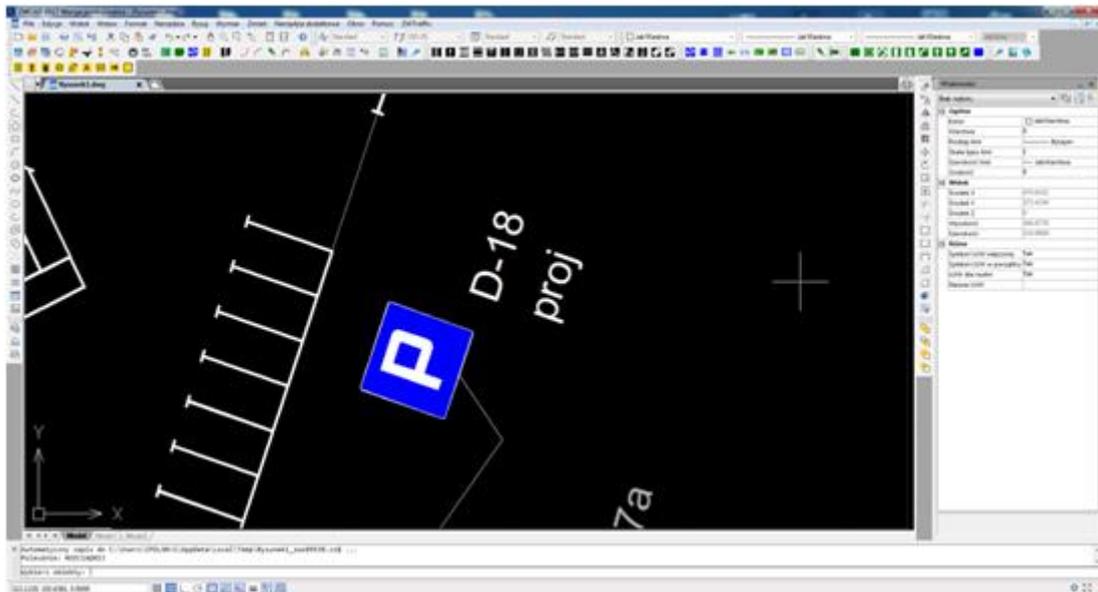
Please look at the signs and its description, they are located next to each other.



When you select it, handles will appear and they need to be clicked and placed in a space of your choosing.



After moving the element, the description is located underneath it.



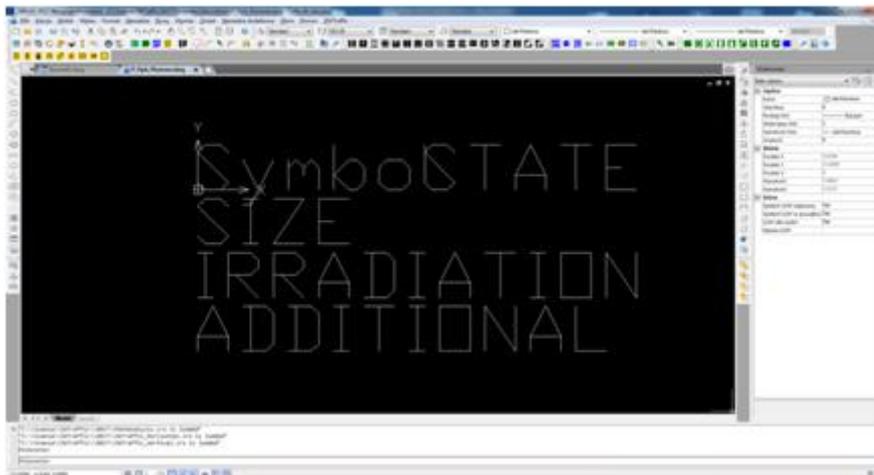
- Change the description in the entire document

To change the description, each time you insert a sign, you need to edit the template, which is located in a folder:

C:\Szansa\ZWTraffic\2021\EN\Templates\Description

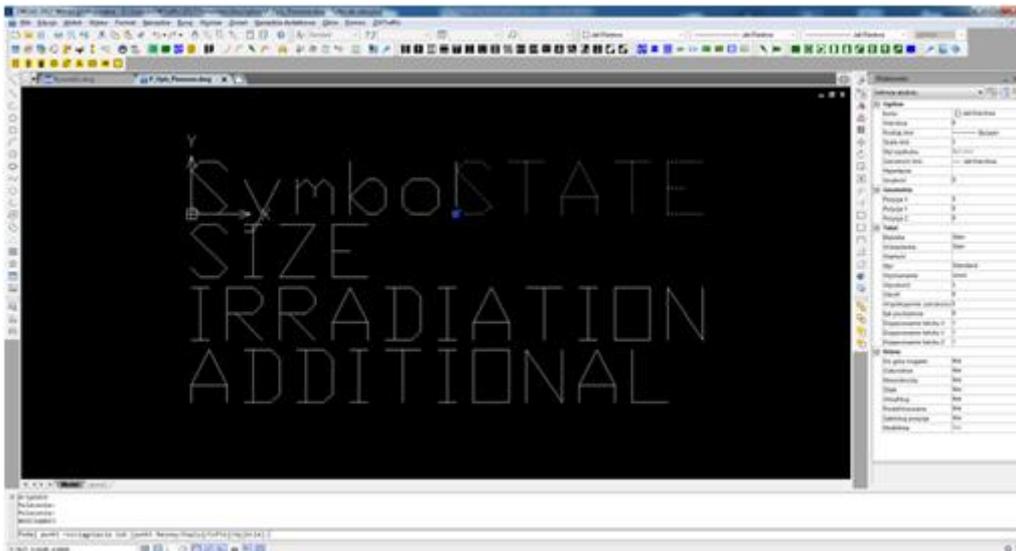
-  P\_Description\_Horizontal.dwg
-  P\_Description\_Light.dwg
-  P\_Description\_Vertical.dwg

Open a \*.dwg file name of a sign which is to be edited.

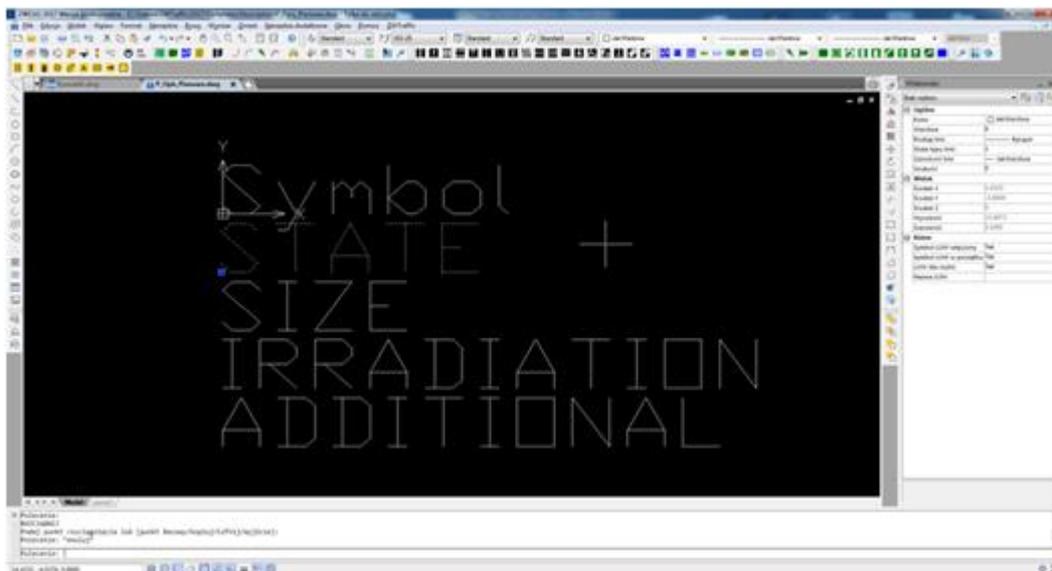


When you open the file, you can change the description of the element and save your changes.

If you click the object, a handle will appear allowing you to move it around.



By moving objects, you can place them anywhere you like.



Lastly, please save your changes in the document and close the file.

Other inserted signs and symbols will have a description which is the same as in the newly saved template.

## 1.2. 23.4. Grouping of elements

The elements inserted through ZWTraffic are inserted as a group by default. This setting can be switched off to edit one of the components of any objects.

The system variable, which is responsible for grouping of objects is called PICKSTYLE.

The variable PICKSTYLE has two options:

- value of 1 - groups inserted objects
- value of 0 - not groups of inserted objects

To change the value of a system variable PICKSTYLE enter the command in the command bar, or in

the drawing area and enter a new value.