

# **Xsection Modeller – Survey Assistant**

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**Main window of the application (in a short form):**

The screenshot shows the main window of the XSection Modeler application. The title bar reads "XSection Modeler - Version 3.6.61 (@railway-000a.rwu)". The interface is divided into several functional areas:

- Terrain Line:** A table with columns for Chainage, Offset, and Level. The Chainage is set to 0. The table contains 16 rows of data.
- Objects and Labels:** A table for defining track and other objects with columns for Offset, Level, and Cell Name. It includes fields for Existing Tracks, Proposed Tracks, Borders, Traction, and Other Objects.
- Table Settings:** Includes checkboxes for "Use Table and Labels", input fields for "Table Coords." (0 to 43) and "Cell Name" (20Table), and a "Linked Object" field.
- Label Settings:** Includes a "Font number" field (1) and checkboxes for "Offset Labels", "Labels in upper frame", and "Labels in lower frame".
- Saving Settings:** Includes text boxes for "Save Data to File", "Save to Archive", and "Description", along with checkboxes for "Quick Copy", "Create 2D data", and "Create 3D data".
- Tools:** Includes a "Chainage" input field, a table for "Terrain Line", and a "GENERATE FILE" button.

Chainage	Offset	Level
1	-15.34	51.14
2	-10.68	51.14
3	-6.65	48.45
4	-6.25	48.45
5	-5.50	48.95
6	0.00	49.17
7	5.50	48.95
8	13.12	43.86
9	13.52	43.86
10	14.79	44.70
11	30.00	45.00
12		
13		
14		
15		
16		

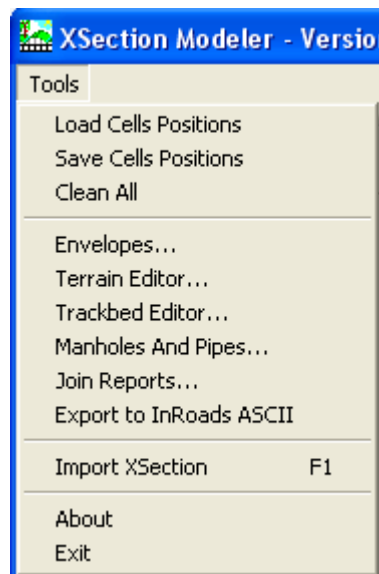
Object Name	Offset	Level	Cell Name
Existing Track 1			
Existing Track 2			
Proposed Track 1	-2.00	49.86	@0.1a
Proposed Track 2	2.00	49.86	@0.1a
Border (L)			
Border (R)			
Traction (L)	-4.70	49.86	TracPoleL3D
Traction (R)	4.70	49.86	TracPoleR3D
Other Object 1			HVPole3D
Other Object 2	-13.90	51.14	TelePole3D
Other Object 3			
Other Object 4			

The main purpose of the application is to generate a report that can be fully imported to MicroStation as a drawing of a railway track, road, terrain or any other object. Every drawing is automatically fully labelled with its own frame. Additionally, every 2D or 3D object can be also labelled. There is also possibility to check the ground line in Graph Viewer before generating a report file. The wider form of application allows to define more cells and to export custom key-in to MicroStation.

One of the biggest advantages of the program is that the survey levels can be input as absolute values (msl) or readings from the staff.

The application is very good for quick survey measures, additional cross sections measures or "after built" measures. In this case **80%** of time can be saved or even more!

## Menu of the application:

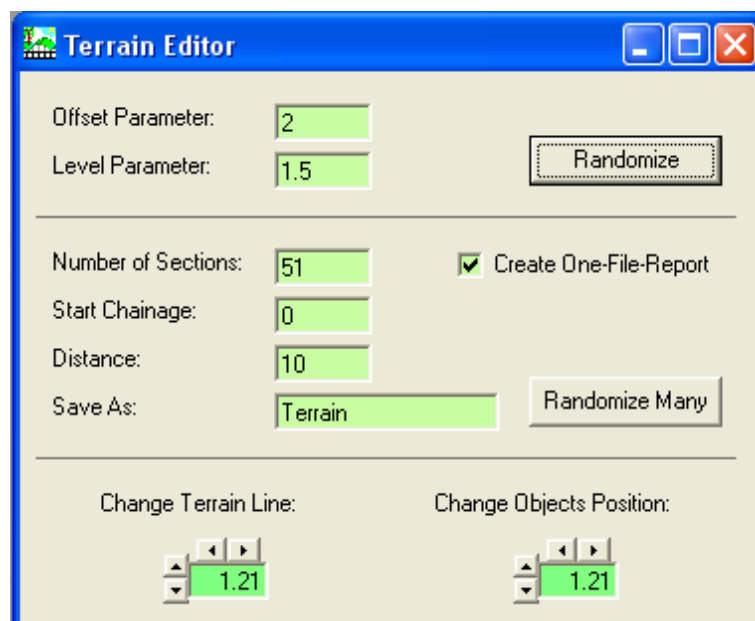


**Load Cells Positions** – allow loading of an user-defined setting for cells

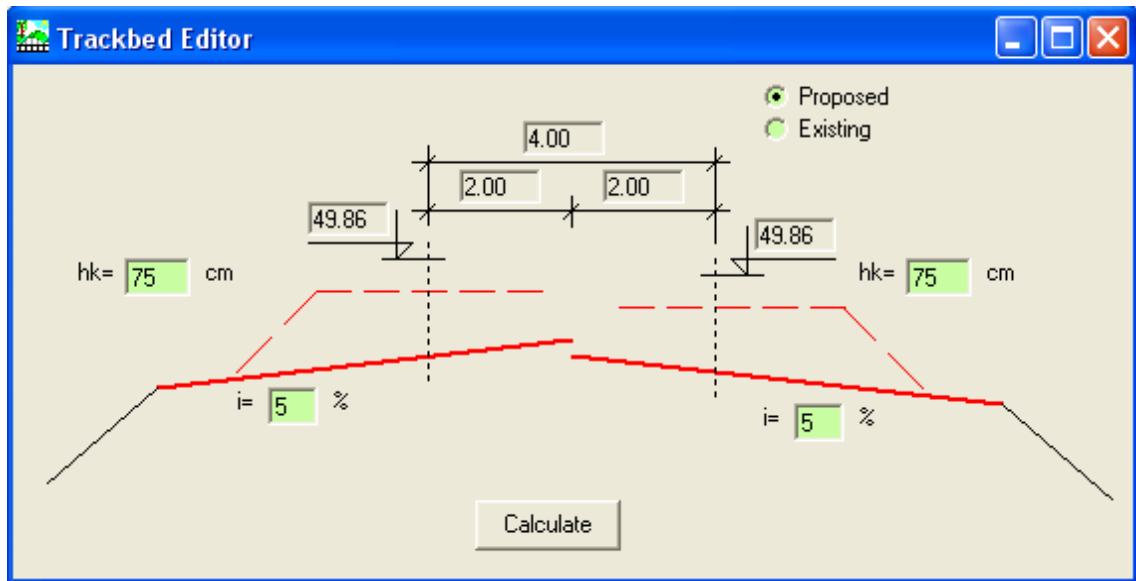
**Save Cells Positions** – allow saving of an user-defined setting for cells

**Clean All** – cleans every text window in the main form

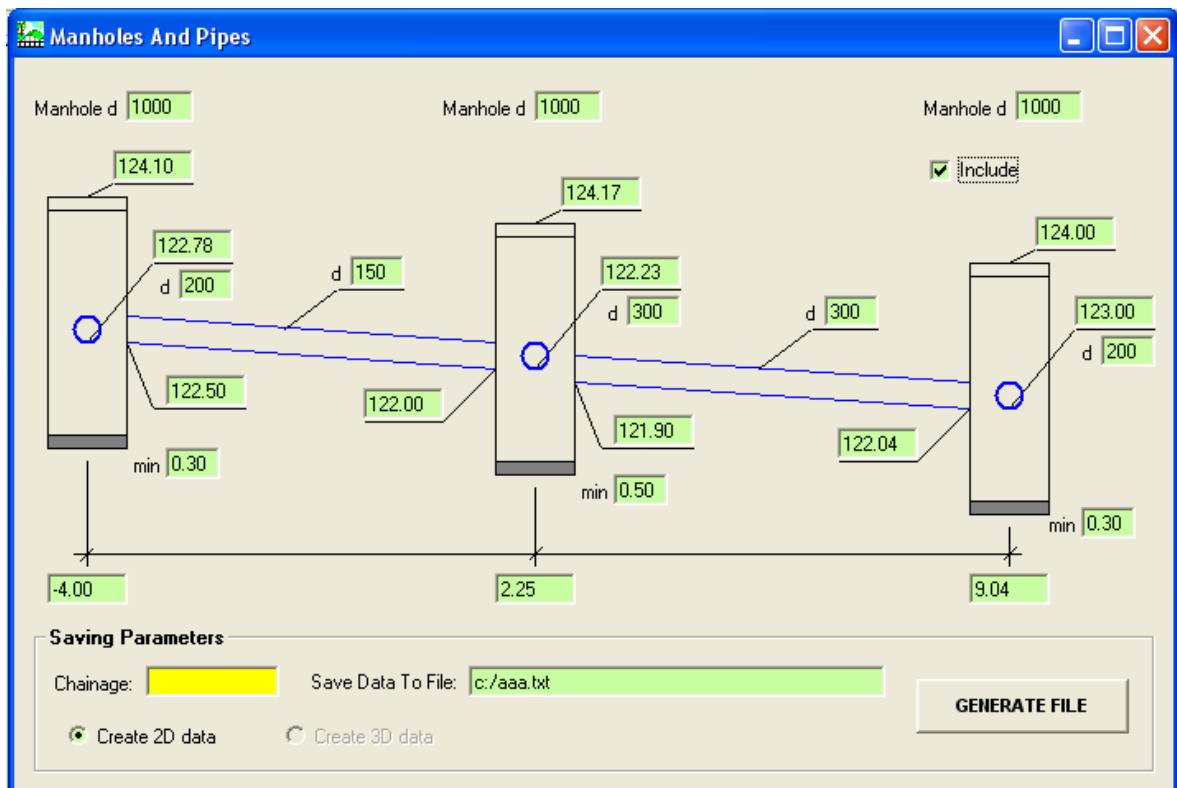
**Terrain Editor...** - allow creating one or many cross sections of a ground using randomisation; also allow changing position of the terrain line and cells horizontally and vertically



**Trackbed Editor...** – (in preparation) allow to generate the upper line of the trackbed



**Manholes And Pipes...** – allow generating 2D and 3D data report with information about storm and sanitary equipment. A drawing with track or road structure can be completed by this functionality.



**Envelopes...** – allow checking if the envelopes of two tracks intersect each other. There is also a possibility to take into consideration a curvature of the tracks and to add additional object (a structure) to analyse.

The 'Envelopes' window displays the following data:

Envelope 1: C:\Program Files\Reko Engineering\RailLab\skrajnia.xls    x= 0    y= 0    E= 90  
 Envelope 2: C:\Program Files\Reko Engineering\RailLab\skrajnia.xls    x= 3.90    y= 0    E= 110

Coords of Envelopes before Transl.:				Coords of Envelopes after Transl.:			
x1	y1	x2	y2	rx1	ry1	rx2	ry2
0	0.055	0	0.055	-0.003	0.100	3.896	0.110
1.275	0.055	-1.275	0.055	1.269	0.180	2.625	0.012
1.52	0.3	-1.52	0.3	1.498	0.440	2.361	0.238
1.725	0.3	-1.725	0.3	1.703	0.453	2.157	0.222
1.725	1.12	-1.725	1.12	1.651	1.271	2.094	1.039
2	1.12	-2	1.12	1.926	1.288	1.820	1.018
2	3.05	-2	3.05	1.805	3.214	1.672	2.943
1.9	3.85	-1.9	3.85	1.655	4.007	1.710	3.748

Points of Intersections:  
 x0(5,6)=1.800  
 y0(5,6)=1.280  
 x0(7,7)=1.709  
 y0(7,7)=3.723  
 NO MORE INTERSECTIONS

Clean Older Graphics

**ANALIZE** [Dropdown Arrow]

There is a simple but very useful viewer for checking the intersections. Sending a drawing to MicroStation is also possible by Generate File button.

The 'Envelopes - Drawing' window shows a graphical view of the track envelopes on a grid. Two intersection points are highlighted with red circles. The window includes navigation controls (L, U, R, D, +, -) and buttons for 'Original View' and 'Generate File'.

**Join Reports...** - allow joining the MicroStation key-in reports

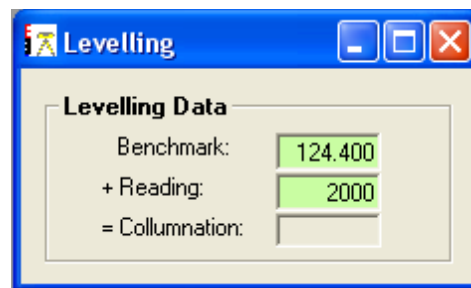
**Export to InRoads ASCII** – allow creating a \*.soe file with data that can be imported to InRoads' cross section model

**Import Xsection** – one of the main function of the application. Every previously created report can be imported once again to the program and can be edited and saved with changes.

**About** – calls “about” dialog. Contains also some hints and tricks.

**Exit** – exits the application

**Levelling Mode for input data:**



There is a **vba macro** created for managing of display in MicroStation. The macro has very important functionality – triangulating imported terrain model.

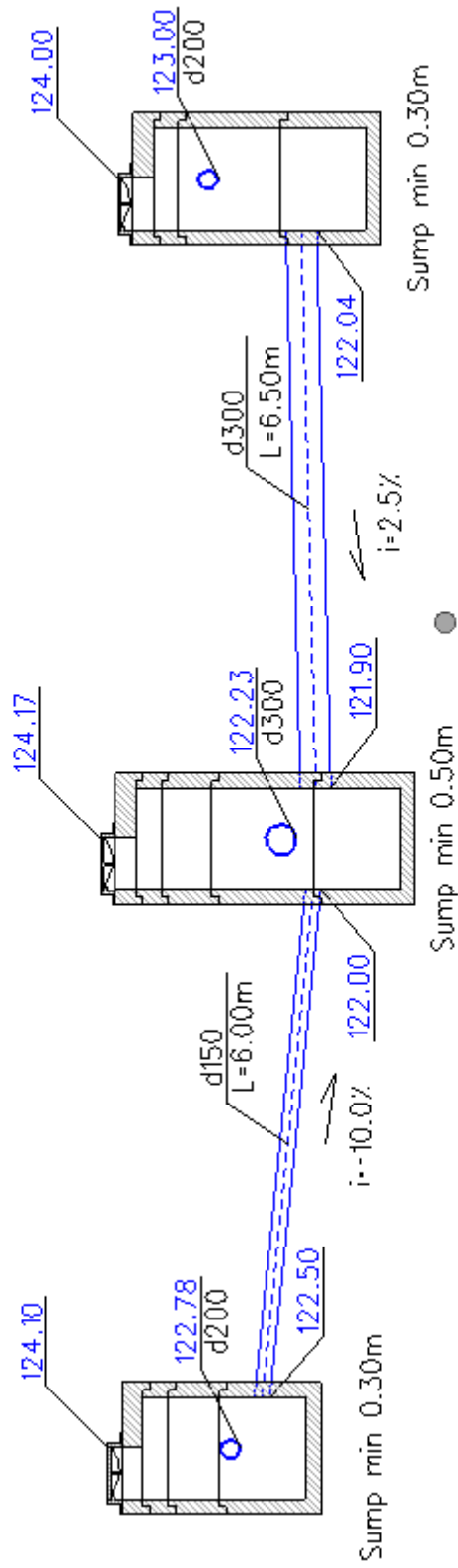


**Program is perfect for:**

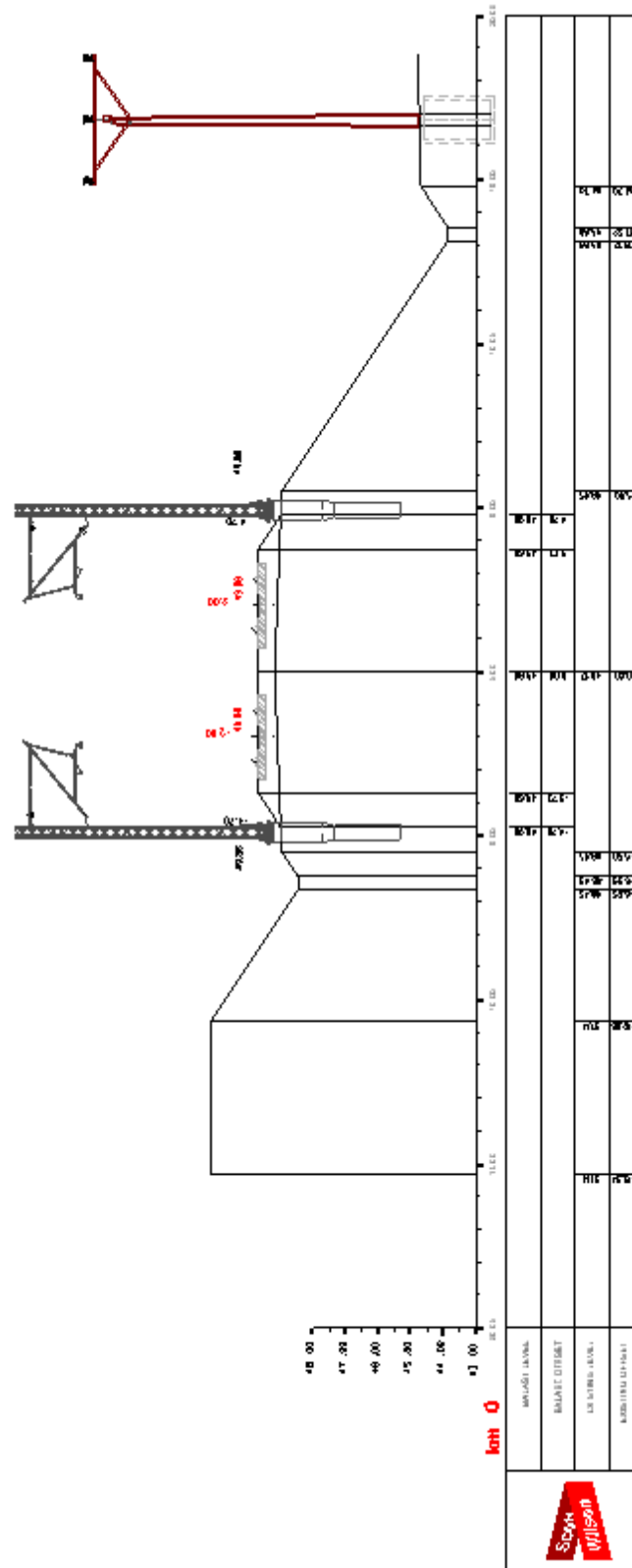
- very quick generating of terrain section from survey data
- generating of cross sections in 2D
- generating of cross sections in 3D
- generating of complete 3D model

# EXAMPLES:

## 1. Drainage drawing created in Xsection Modeler.



## 2. Cross section drawing created from txt survey data.





### 3. The whole 3D model.

