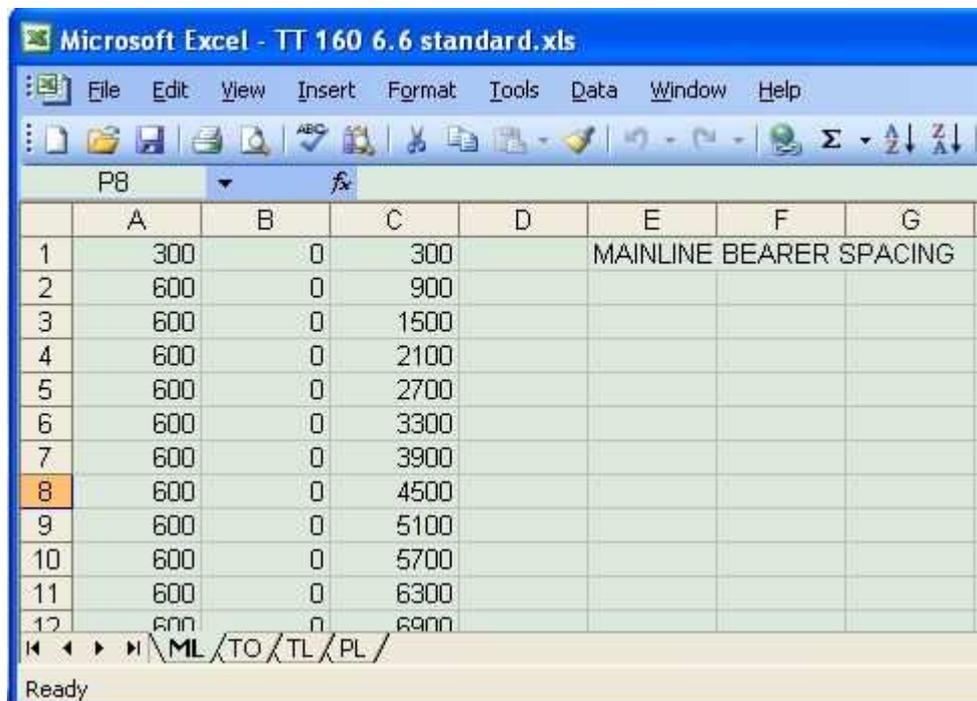




## Data preparation:

All the data required for precise calculation of curved turnout are stored in .xls file in separate tabs.

### ML Tab (Main Line):



	A	B	C	D	E	F	G
1	300	0	300		MAINLINE BEARER SPACING		
2	600	0	900				
3	600	0	1500				
4	600	0	2100				
5	600	0	2700				
6	600	0	3300				
7	600	0	3900				
8	600	0	4500				
9	600	0	5100				
10	600	0	5700				
11	600	0	6300				
12	600	0	6900				

Column A contains information about distances between consecutive bearers (measured along running edge of rail) at the main track's side.

Column B contains information whether given space may be changed after bending or must remain unchanged. Value 0 – space unchangeable, 1- space changeable. If it is permitted that all the spaces are adjusted, the value in the whole column should be 1.

Column C contains information about cumulative distance between bearers. This information is not required by the programme. However it is advisable to have it in order to check correctness of the entered data.

## TO Tab (Turnout):

	A	B	C	D	E	F	G
1	299	0	299		TOURNOUT BEARER SPACING		
2	597	0	896				
3	597	0	1493				
4	597	0	2090				
5	597	0	2687				
6	597	0	3284				
7	597	0	3881				
8	597	0	4478				
9	597	0	5075				
10	597	0	5672				
11	597	0	6269				

Column A contains information about distances between consecutive bearers (measured along running edge of rail) at the turnout route's side.

Column B contains information whether given space may be changed after bending or must remain unchanged. Value 0 – space unchangeable, 1- space changeable. If it is permitted that all the spaces are adjusted, the value in the whole column should be 1.

Column C contains information about cumulative distance between bearers. This information is not required by the programme. However it is advisable to have it in order to check correctness of the entered data.

**TL Tab (Tie Length):**

The screenshot shows a Microsoft Excel spreadsheet titled "TT 160 6.6 standard.xls". The spreadsheet has five columns labeled A, B, C, D, and E. The data is as follows:

	A	B	C	D	E
1	2605		TIE (BEARER) LENGTH		
2	VARIES				
3	VARIES				
4	2619				
5	2628				
6	2639				
7	2652				
8	2668				
9	2686				
10	2706				
11	2729				

The status bar at the bottom shows "Ready" and navigation icons for "ML", "TO", "TL", and "PL".

Column A contains information about lengths of bearers in mm. These data are not included in calculations but used while annotating the final drawing.

## PL Tab (Plates):

	A	B	C	D
1	PLATES LOCATION			
2		FROM SLEEPER	TO SLEEPER	
3	ZONE 0:	1	1	
4	ZONE 1:	2	17	
5	ZONE 2:	18	23	
6	ZONE 3a:	24	40	PS
7	ZONE 3b:	24	40	PS
8	ZONE 3c:	41	41	
9	ZONE 4a:	41	46	
10	ZONE 4b:	47	49	
11	ZONE 4c:	50	51	
12	ZONE 5:	42	49	
13	ZONE 6:	50	51	
14				
15				

Ready

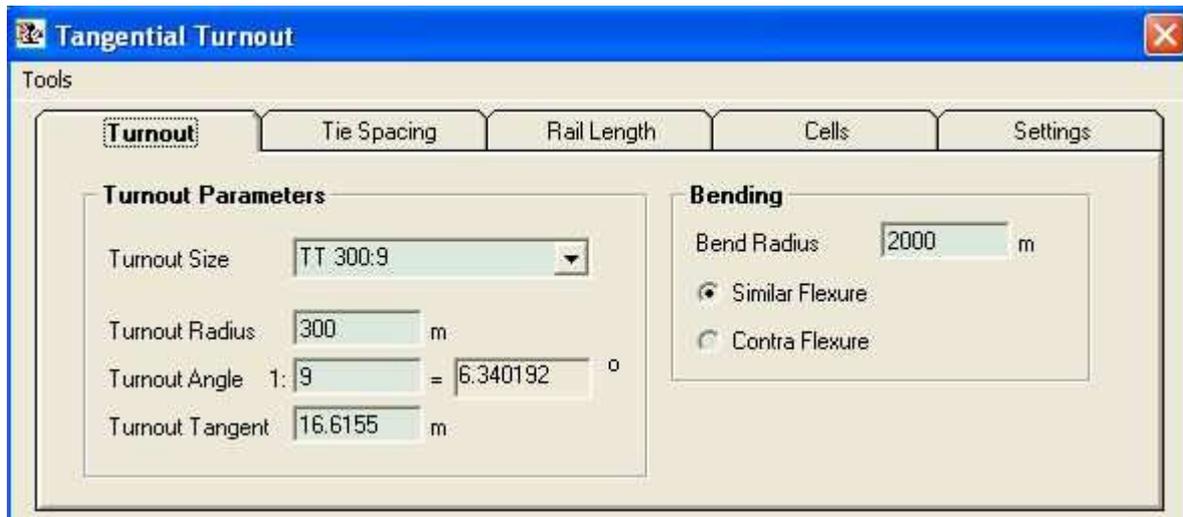
Column B contains information about number of the bearer on which plate zone begins.  
Column C contains information about number of the bearer on which plate zone ends.  
It is possible to code another fastening type – Pandrol Shoulder (PS) in column D at 3a and 3b zones.

## Programme window

### Programme menu:

- Turnout Report (displays report regarding type of turnout and radii of both tracks)
- Spacing Report (displays report regarding standard and adjusted spacing of bearers, cumulative distance between bearers and beginning of a turnout, values of single adjustments etc.)

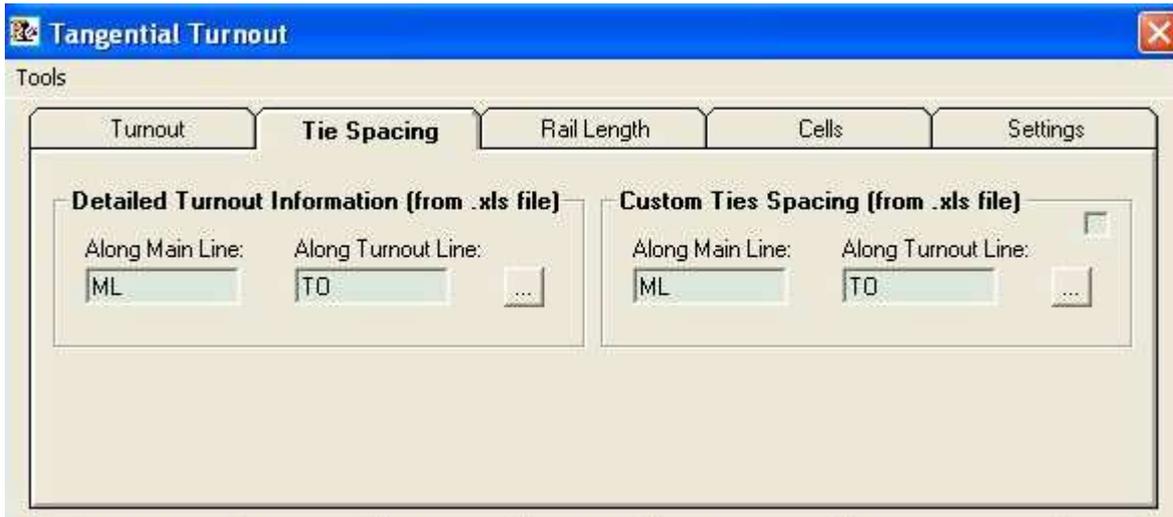
**Turnout Tab** allows choosing turnout, type and radius of bending.



The screenshot shows a software window titled "Tangential Turnout" with a "Tools" menu. The "Turnout" tab is selected, showing the following parameters:

Turnout Parameters		Bending	
Turnout Size	TT 300:9	Bend Radius	2000 m
Turnout Radius	300 m	<input checked="" type="radio"/> Similar Flexure	
Turnout Angle 1:	9 = 6.340192 °	<input type="radio"/> Contra Flexure	
Turnout Tangent	16.6155 m		

**Tie Spacing Tab** allows importing data about distribution of bearers in standard location as well as user's data regarding distribution of bearers for curved turnout.

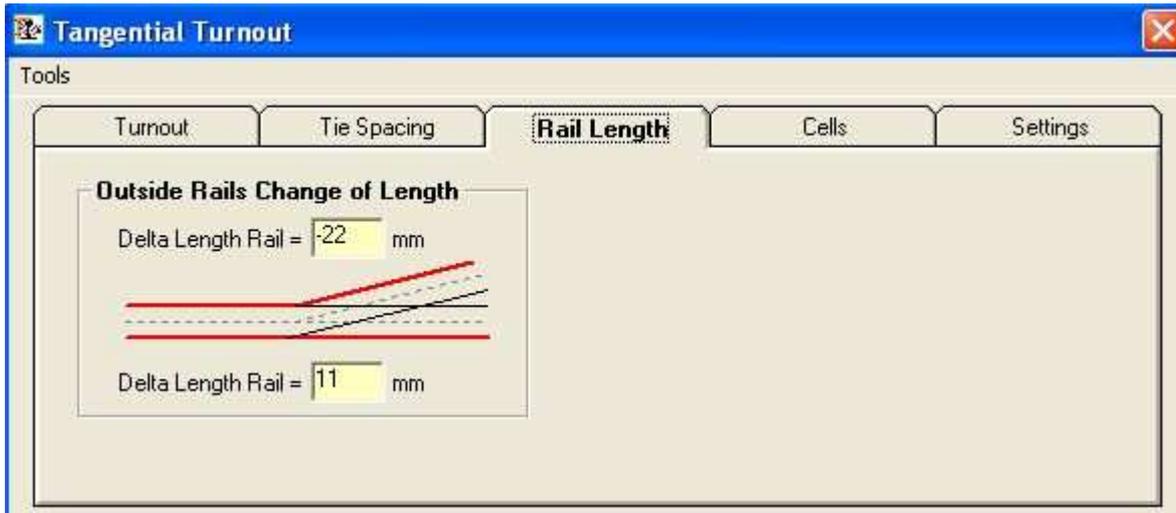


Way of data preparation when the user wants impose non-standard distribution of bearers (columns A hold information about decreasing or increasing spacing between bearers):

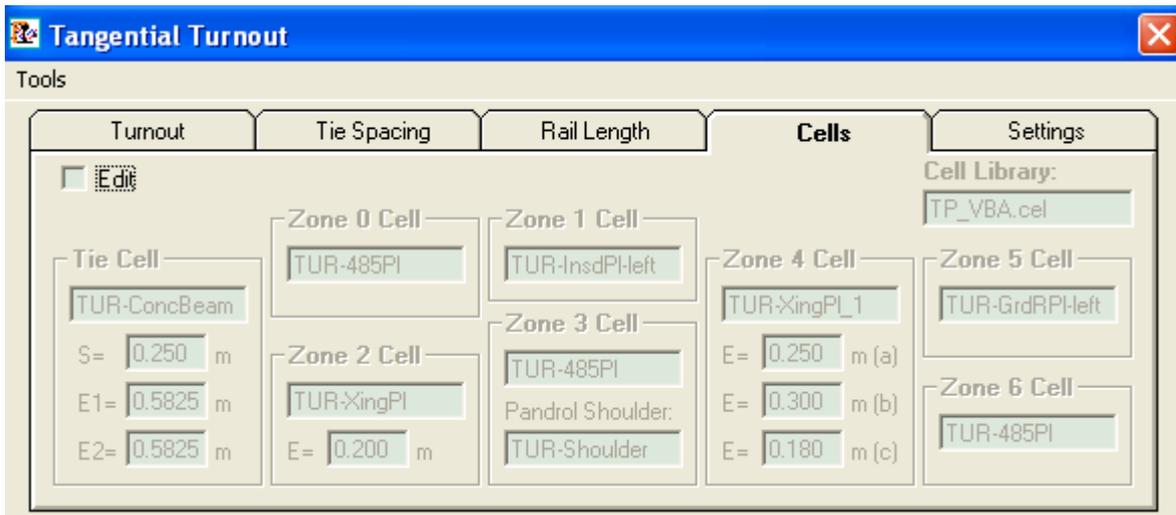
	A	B	C
1	0		
2	0		
3	0		
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	2		
11	2		
12	2		
13	2		
14	2		

	A	B	C
1	0		
2	0		
3	-1		
4	-1		
5	-1		
6	-1		
7	-1		
8	-3		
9	-3		
10	-3		
11	-3		
12	-3		
13	-3		
14	-2		

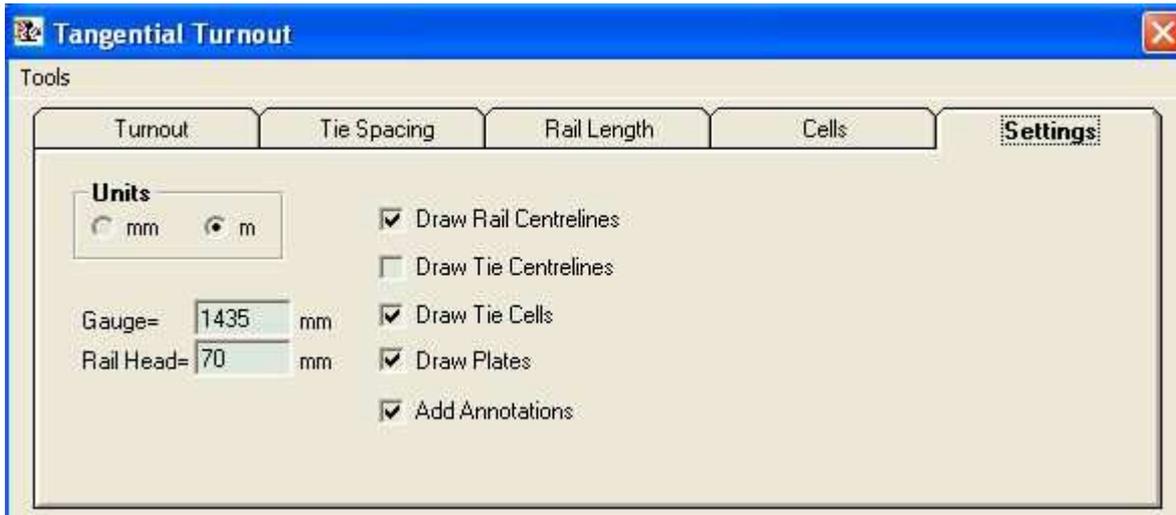
**Rail Length Tab** displays information about change of length of particular rails and centreline.



**Cells Tab** stores data about cell names and their dimensions. User can upload their own cell library or use standard one, appropriate for specific operator (if it's available). The below example shows RailCorp's standards.



**Settings Tab** allows choosing unit of length, change of gauge and width of rail head. It also allows choosing elements of turnout, which will be inserted in the drawing.



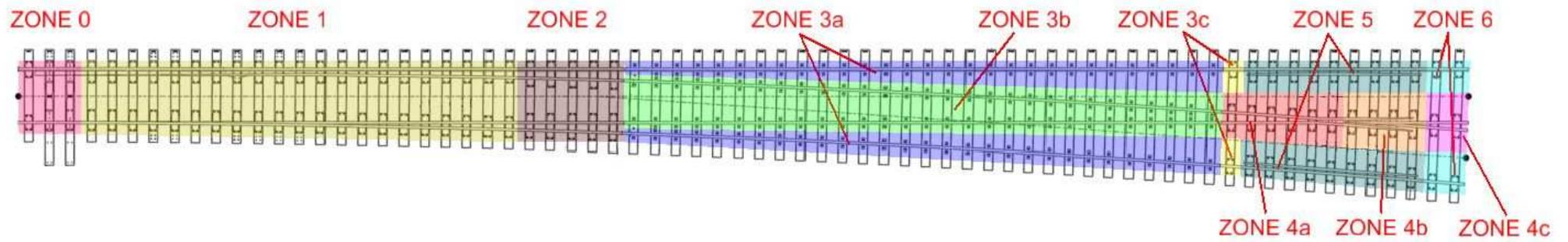
Bottom part of the window displays tables with information regarding spacing of bearers and adjustment method.

The screenshot shows the bottom part of the software window, displaying a table with the following data:

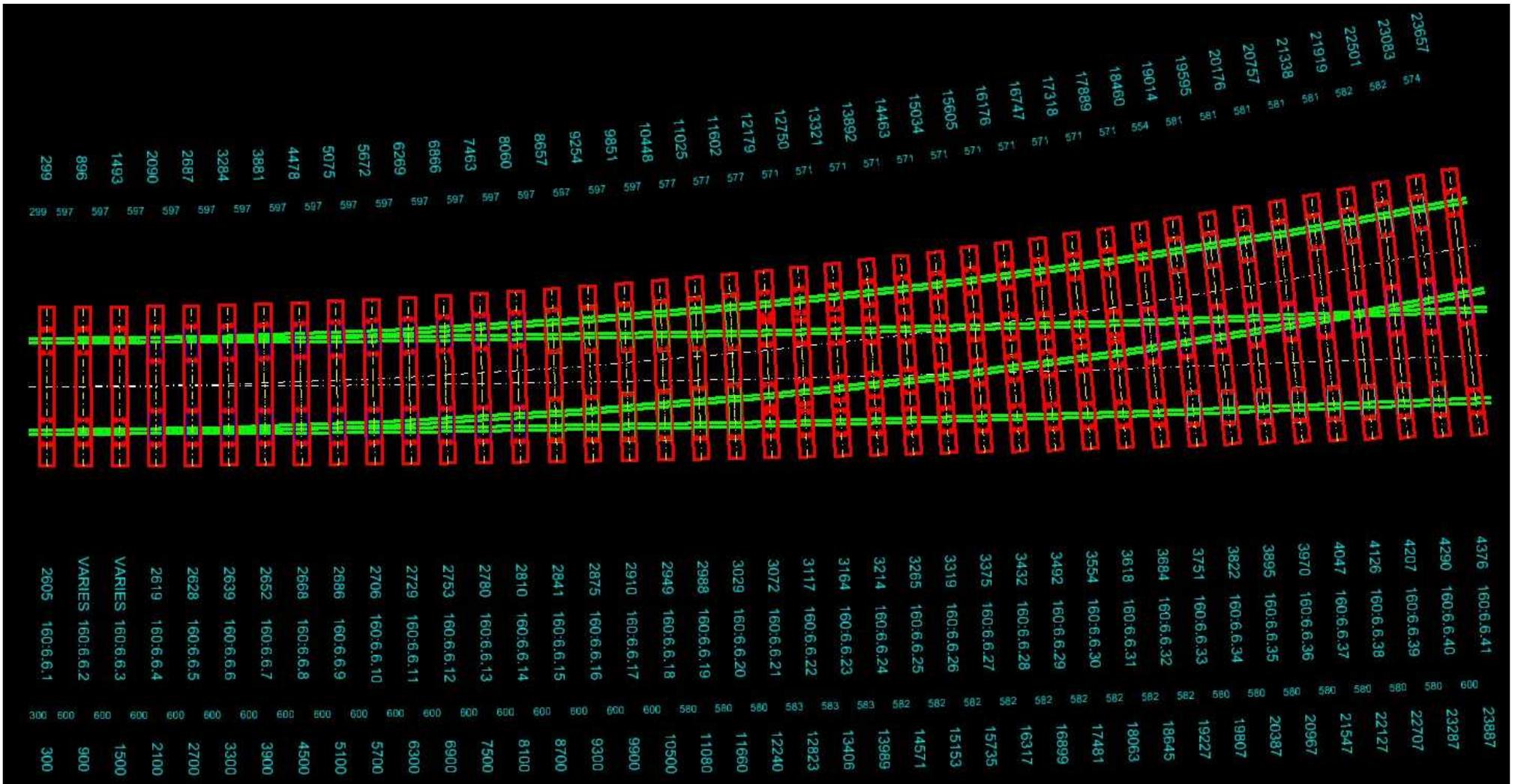
	M/L Spacing	M/L Code	T/O Spacing	T/O Code	M/L New Spac.	T/O New Spac.
22	600	0	599	0	600	599
23	600	0	598	0	600	598
24	600	0	598	0	600	598
25	600	1	598	1	601	596
26	600	1	598	1	601	596
27	600	1	598	1	601	597
28	600	1	599	1	601	598
29	600	1	598	1	601	597
30	600	1	598	1	601	597
31	600	1	598	1	601	597
32	600	1	597	1	601	596

At the bottom of the window, there is a checkbox labeled 'Show Script' and a button labeled 'CALCULATE'.

Zones according to type and method of plates' distribution:



Example of automatically generated drawing:



Generated drawing contains:

- Tracks axes, axes and edges of rails,
- Properly spaced bearers,
- Properly matched and spaced plates,
- Annotated lengths of bearers and their numbers, spacing between bearers and cumulative spacing.

**Notes:**

1. Due to multiple possible solutions regarding point motor it is assumed that bearers for the motor are standard ones and the plates on these bearers are spaced as in Zone 0. Once the drawing is generated, the user should change type of bearers to the preferred one.
2. Once the drawing is generated, the user should check if, due to the new radius, there is a need to add some plates individually.

**Drawing generating procedure:**

1. Choose type of turnout in Turnout tab, in Turnout Parameters.
2. Enter radius of the main track and choose type of bending in Turnout tab, Bending.
3. Choose appropriate .xls file with turnout data in Tie Spacing tab, Detailed Turnout Information.
4. Optionally – in case the user does not want the programme to calculate spacing between bearers and already has the spacing calculated, it is possible to upload the data in Custom Ties Spacing. Then tick the check box.
5. Optionally – the user can change cells names in Cells tab and use Settings tab to choose elements which will be shown on the final drawing.
6. Press Calculate.