



# ROADPAC '14

VIANIV Interactive Design of Vertical Alignment

## ***User Guide***

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## 1. Introduction

VIANIV is a program for interactive design and edit of vertical alignment. The program is part of a Roadpac 2014 program package, but it can also work as stand alone program out of the package.

VIANIV is connected with road package through standard binary data files of type .SNI (vertical alignment), .SHB, (horizontal alignment), .SSS (system of chainage) and .SPP (longitudinal terrain profile).

Besides file .SNI, program automatically creates file .XNI, which includes data of vertical alignment and fixed points in XML format.

## 2. Data files .XNI and .SNI

System Roadpac for many years work with vertical alignment data format of .SNI type only. Starts with version RoadPAC 14 was implemented new data format. The files of XNI format are concerned now. (Data format XML) where are stored PV's beside fixed points data. This new format implementation was necessary due to feedback compatibility of system. Definition of File SNI was not able to modified and added finally.

In intermediate period , which should be relatively long (road projects commonly takes several years) both formats XNI and SNI will be supported side by side..

While handling with files .XNI and SNI next principles should be under consideration:

- Program VIANIV offers to read files XNI first. If is vertical alignment still stored in old type format SNI, program read it automatically. During saving program stores both types of files *name* .XNI and *name* .SNI at ones. During reading of files. XNI and .SNI is matching of both files content always checked (Alignment data). If any incompatibility is detected, program will require response of user.

Notice:

Incompatibility of files contents may be caused by alternately running of programs SI31 and VIANIV. (SI31 is able to store file SNI only). Structure clash should be generated by copy of very old data format files SNI itself.

Other RoadPAC programs are working with files of SNI type. If exists file XNI only, and file SNI is not present in active directory, program create file XNI according the content of SNI file itself.

**Caution** - New data format of SHB a SNI files

From the start of the year 2006 was a new data formats of SHB files and SNI files implemented, due to required actual increasing precision of some alignment geometry

points values specification. Current Roadpac system installation kit, since 12.06.2006, contains programs working with these new data format (SHB, SNI) archive files only.

Full feedback compatibility is ensured - new RoadPAC programs are able to read new and old SHB and SNI data format files, but to create new files only. If you re-install your RoadPAC from actual installation CD, no turns would be registered by the users while handling with system RoadPAC. Re-installation must be done on all company computers indeed.

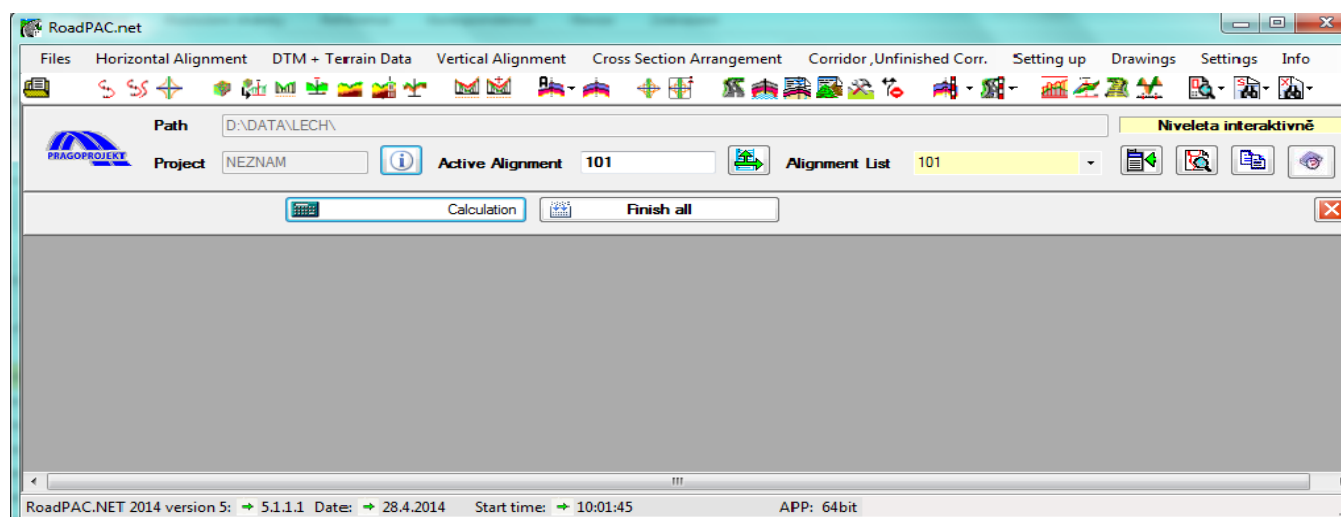
Troubles during data file interchange with whichever companies which have not upgraded Roadpac yet, may occurred. Old type programs RoadPAC don't read well the new type files and an error occurs while reading. In transition period following proceeding is recommended:

If you will share the alignment data (vertical and horizontal) with somebody who has not upgraded Roadpac yet, hand down both files SHB/XHB and SNI/XNI principally. Data files XHB and XNI correct reading is always ensured both by old programs and new programs in any cases. User is able to read alignment by old versions of VIAAXI and VIANIV programs and by the simple save the old type data format of SHB and SNI will be stored. On this account are no conversion programs for interchange between old and new types of alignment files SHB a SNI available.

Please, recommend to your partners who are still using old data format SHB and SNI to upgrade their RoadPAC as soon as possible.

### 3. *Description of environment*

Program VIANIV is started on by menu item **Vertical alignment | Interactive design of vertical alignment** from main program RoadPAC 2014 (next picture). It can also be started from directory Roadpac (NIVW32.EXE) or by shortcut. Program VIANIV communicates with RoadPAC by means of file CONFIG.RDP.

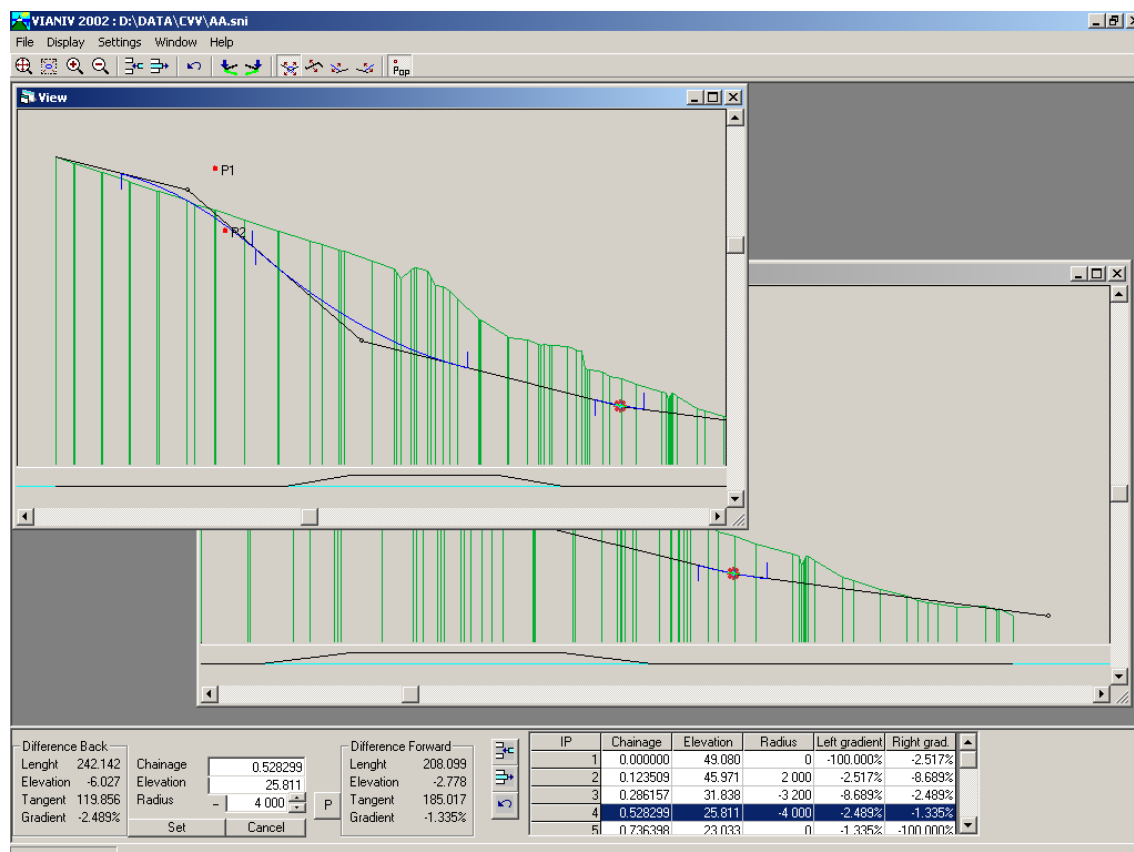


Main window of VIANIV program includes following parts:

**Main Menu** - details are described in chapter 4 - function menu description

**Main Toolbar** - includes icons of view control functions (see 2.1 Description of View control functions) and icons of functions for design and edit of vertical alignment (see 3.)

### Description of functions for design and edit of vertical alignment



Picture 2

**Viewports** - several windows of vertical alignment can be displayed in main window. Any changes made to the data are immediately displayed in all open windows.

**Editing table** - the table shows information on active IP and allows editing its data. The function “alignment through given point” is also available in this table.

**Information table** - shows information on all IP of vertical alignment in sequence of chainage. User can edit any data directly in this table.

Between both tables there are icons for adding and deleting of vertical alignment IP and for UNDO function.

### 3.1 View control icon

Vertical alignment view in particular window is controlled by icons of main window toolbar:



**Zoom Out** - decreases the apparent size of objects in the current window



**Zoom In** - increases the apparent size of objects in the current window



**Zoom Extents** - zooms to display the limits of road



**Set Limits** - allows set the window limits. Both chainage and elevation extents can be set.



**Show main points description** Switch on/ off of fixed points description.

**Zoom Window** - function can be performed by dragging a mouse with pressed left button.

## 4. *Functions description for design and edit vertical alignment*

At the begin of work existing data are displayed in the window. If the alignment does not exist yet, program displays longitudinal profile of terrain loaded from file SPP in active directory and two IP in the centre of screen (picture 3). Click on icon to place these IP on beginning or end of the terrain.




**Attach beginning** - attaches the first IP on beginning of terrain,




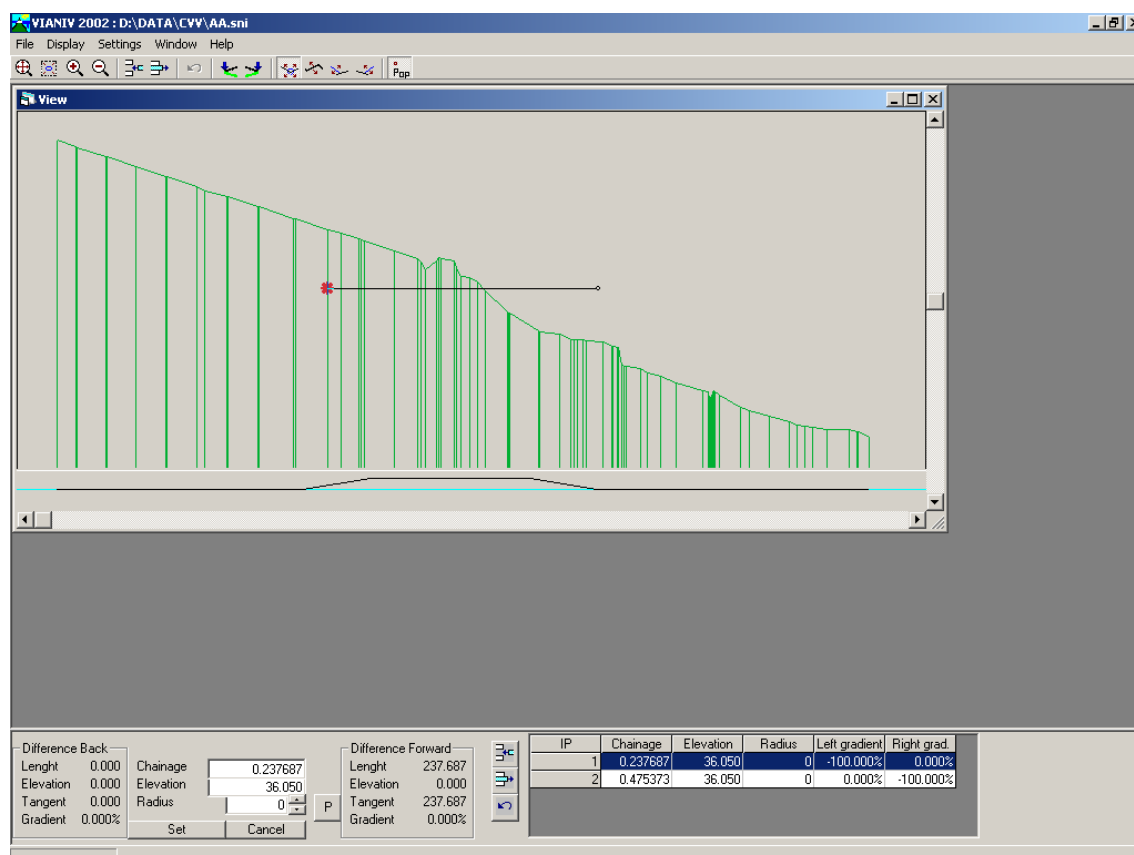
**Attach end** - attaches the last IP on the end of terrain.

Other IP can be added by using the icon

 **Add IP of polygon** - inserts a new IP behind active IP. Active IP can be set by clicking on IP in information table or by double click on IP in graphic window.


After inserting IP change its properties (chainage, height, radius) in edit table and confirm the modification by clicking on **Set**. It is also available to change position of active IP by dragging the IP in graphic window (see later).


 **Delete IP** - deletes active IP from vertical alignment



Picture 3

During graphic interactive editing of IP press left button of mouse on active IP and drag IP (picture 4) to a new position. To control the type of change of IP position, there are following choices:

 **Moving IP** - positions of other IP are kept, grade of both tangents are changing.

 **Moving the tangent** - grade of both tangents is kept, position of IP changes



**Hold right tangent** - position of neighbour IP is kept. IP moves along right tangent, grade of left tangent changes.

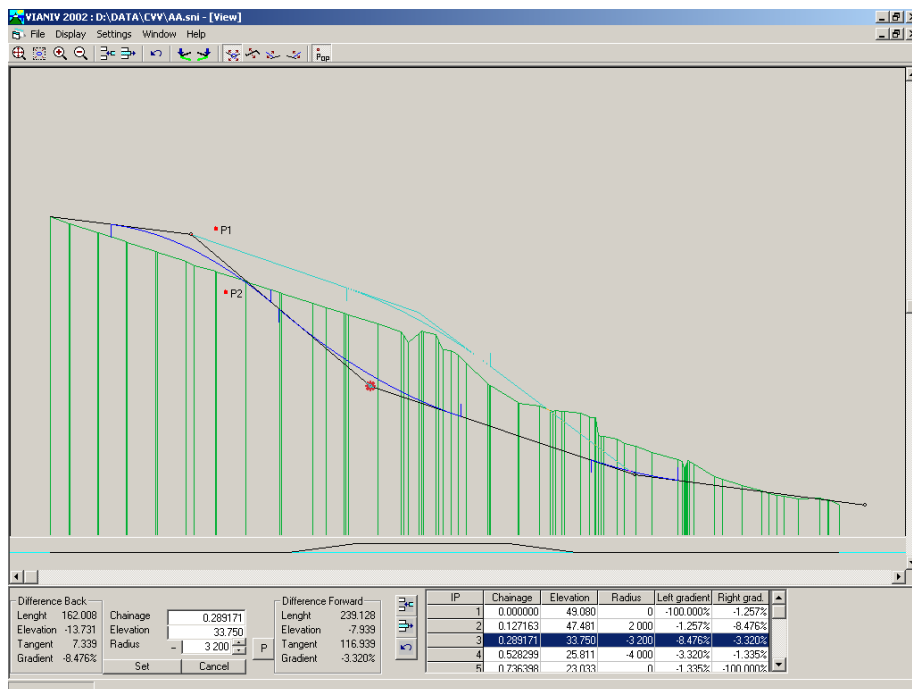


**Hold left tangent** - position of neighbour IP's is kept. IP moves along left tangent, grade of right tangent changes.

*Note: Radius of curvature is kept when moving the IP.*

*Program does not allow overlap two adjoining curves.*

Radius of curvature can be changed in edit table. Click icon **P = Pass through given point** on the right from button Radius edit table, it allows you to modify radius of curvature so the vertical alignment passes through given fixed points. (An Inserting of fixed points see 4.2. Menu DISPLAY).



Picture 4

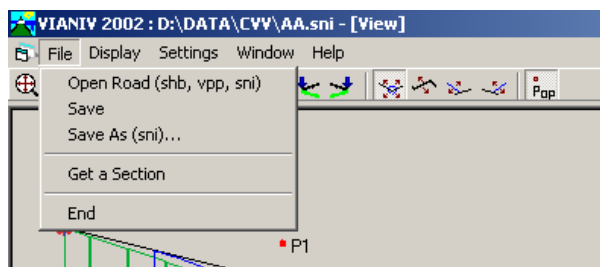
## 4 Function menu description

### 4.1 Menu FILE

- Open roadway** - loads files .SNI, .SHB and .SPP. Open vertical alignment .SNI for editing
- Save** - saves vertical alignment into the file .SNI in active directory

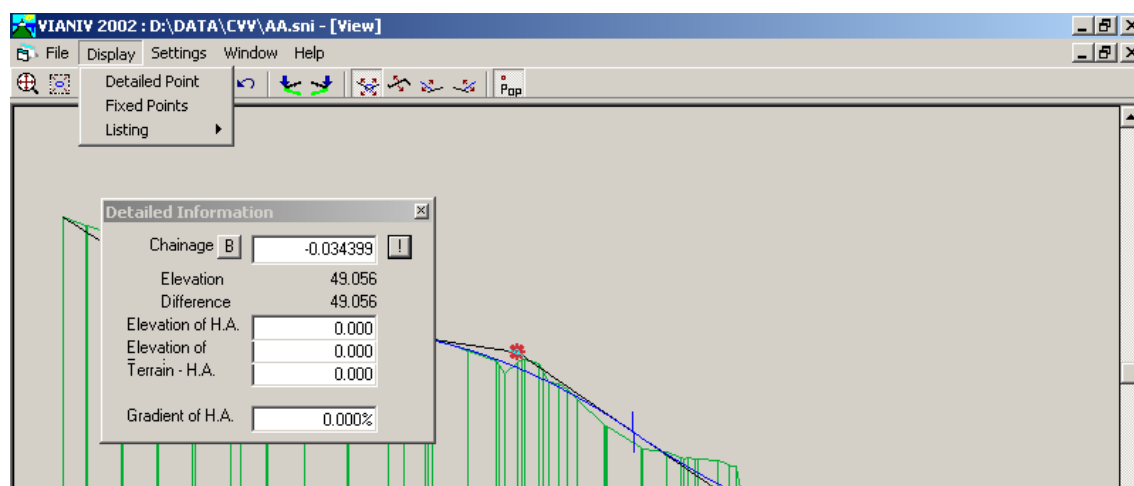


- Save as** Saves vertical alignment into the file .SNI using different file name
- Terrain Profile** - gets longitudinal profile of terrain on active model, creates file .SPP and loads it to the program VIANIV. It is necessary only in case that file .SPP does not exist yet.
- Exit** - quits the application



Picture 5

## 4.2 Menu Display



Picture 6

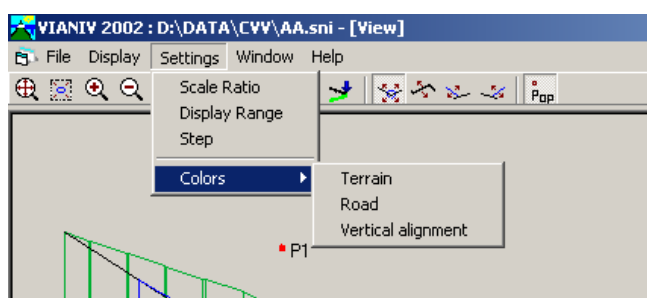
- Detailed point** - shows window **Detailed information**. While moving mouse in the window a detail information about vertical alignment is shown. Information corresponds to the position of mouse.
- Key in chainage and click on “exclamation mark” - you will get the information for assigned chainage. Click on **B**, if you need the information on assigned fixed point.
- Fixed points** - opens table for assigning fixed points.

*Note:*

*Table in window for insertion fixed points (as other tables in Roadpac 2004 program package) allows exchanging of data with MS Excel (**Load from excel, Save to excel**). Click right mouse button on header of the table. Data will be loaded/ saved from/to the current selection of active document MS Excel.*

**Protocols** - output listing of main points or detail points of vertical is displayed. Detailed points can be defined by given interval and/or set of individual chainage of roadway.

### 4.3 Menu **SETTINGS**



*Picture 7*

**Scale ratio** - assign horizontal and vertical scale to be displayed.

**Display range** - opens window, which allows set the extents of elevations and chainage (see 2.1. View control).

**Step** - opens window which allows set the step of the snap of chainage, elevation and radius. Default snap is 0,001 m.

**Colours** - allows control the colours of terrain, vertical and horizontal alignment.

### 4.4 Menu **WINDOW**

In this menu the item “**New view**” creates new window.

### 4.5 Menu **HELP**

Menu HELP gives information about program type.