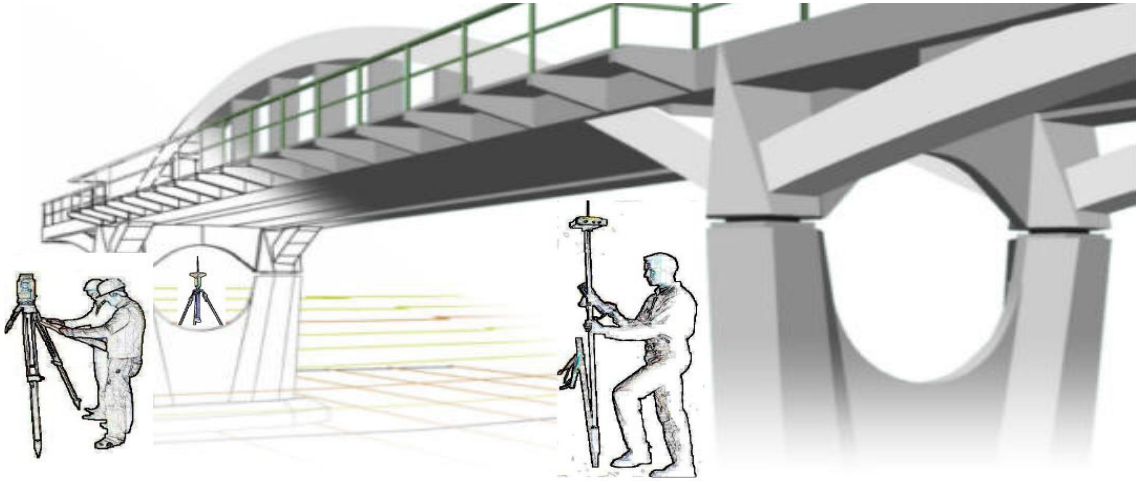
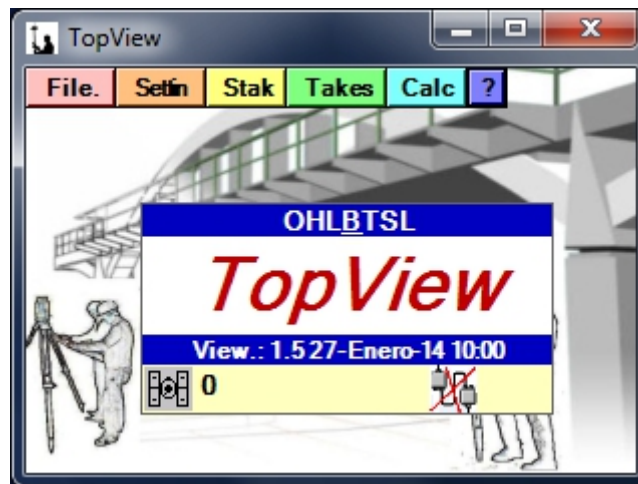


# USER MANUAL TOPVIEW



**WORK PROGRAM FOR TOTAL STATION SURVEYING AND GPS**



**Versión 1.3 - February - 2014**

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## INTRODUCTION:

Professionally, surveyors need to handle large amounts of data taken from computers that contain projects. Our professional effectiveness depends on the speed and accuracy with which we treat such information. The surveying equipment that we use today contains technical enhancements for the manipulation of large quantities of data and to store them on Pcs. However, the applications integrated into topographic devices are mostly scarce and inadequate, with limited memory and unwieldy to use due to small keyboards. Moreover our data storage inside the measurement equipment requires us to use only them and not others, or we would have to copy and even transform the data from one computer to another.

Therefore, an external tool is needed that can use the data transmission capacity of the topographic devices and manipulate this data in a more comfortable environment with a more versatile keyboard, a screen with acceptable resolution, and with a faster microprocessor. It also permits the use of any measuring device without having to pass data from one to another.

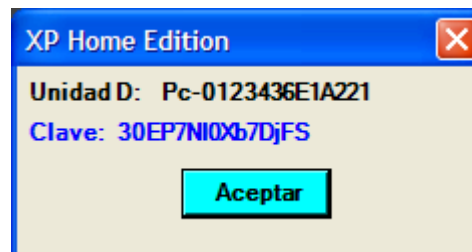
To meet this need we have developed a powerful, fast, easy and intuitive to use application. It integrates into any PDA and Tablet that has Windows Operating System, either Windows CE 3.0 or above , Pocket PC 2003 or higher , Windows Mobile, and Windows 95/XP/Vista/7.

## **PRELIMINARY SUGGESTIONS:**

In all PDAs the Ram Memory is a volatile memory with the corresponding risk of losing all stored information when the batteries are depleted. They all also include one or two sockets that allow for the use of non-volatile memory cards such as PCMCIA, Compact Flash, MMC or SD types , and these offer another file system directory. We designed the application so you can choose any of these as the " Base Directory " on which to create the " Working Directory " so that if we choose a directory belonging to the Memory Card we will not lose anything if the batteries drain. Only the program uses the RAM on the PDA. If the PDA runs out of energy the program will be lost, but nothing else. By simply running the installation program on the Memory Card, the software is recovered . Also if we want to check the program on a different PDA simply remove the card, insert it into the new PDA and run the new installation and the program will continue working with the same recent data that was in the previous PDA.

## **Beginning with Topview**

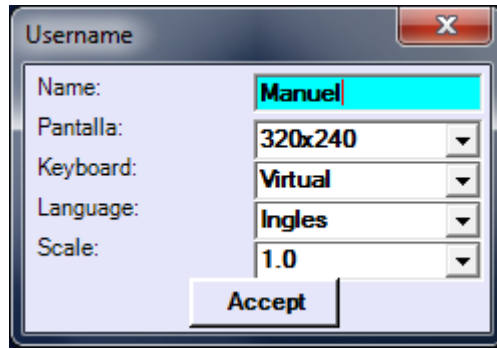
When you run the program it informs you of the Serial Number and Password for the collector:



then it reads a file called "inicia.cfg" containing the last value of all program variables (work directory, device, height Jalon base height, base coordinates, etc ...). Then we are asked to confirm the name of the user or company that is to be shown at the top of the screen.

Main program, if the version is TopviewPc we indicate the Screen Size we want to emulate, and if we want to use the physical keyboard of the PDA or the Virtual Keyboard designed by us:

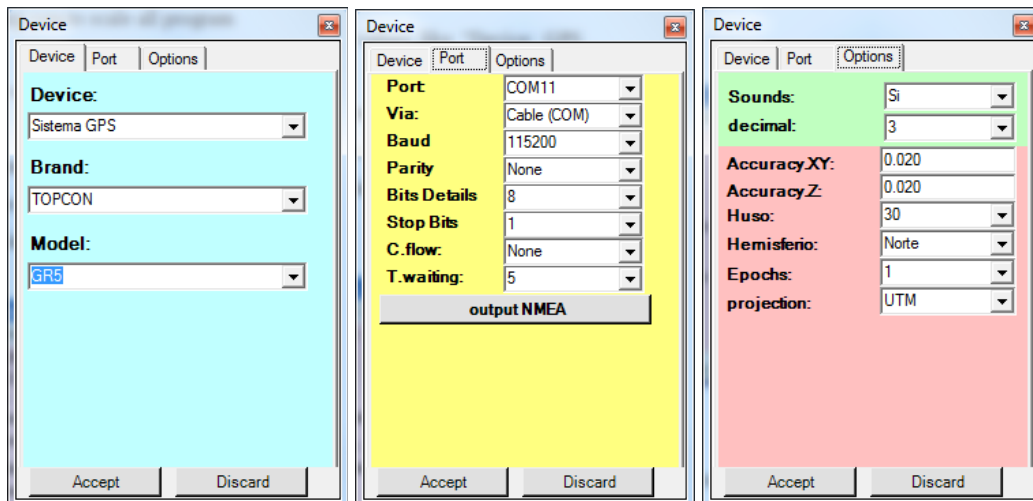
# USER MANUAL TOPVIEW



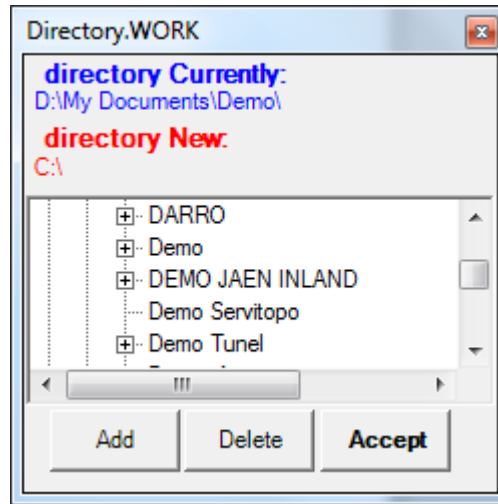
The "Scale" option only appears in the PC version allowing you to scale all program windows for better viewing on high resolution equipment.

If this is the first time it runs, it show some default values like "Device: GPS Emulator".

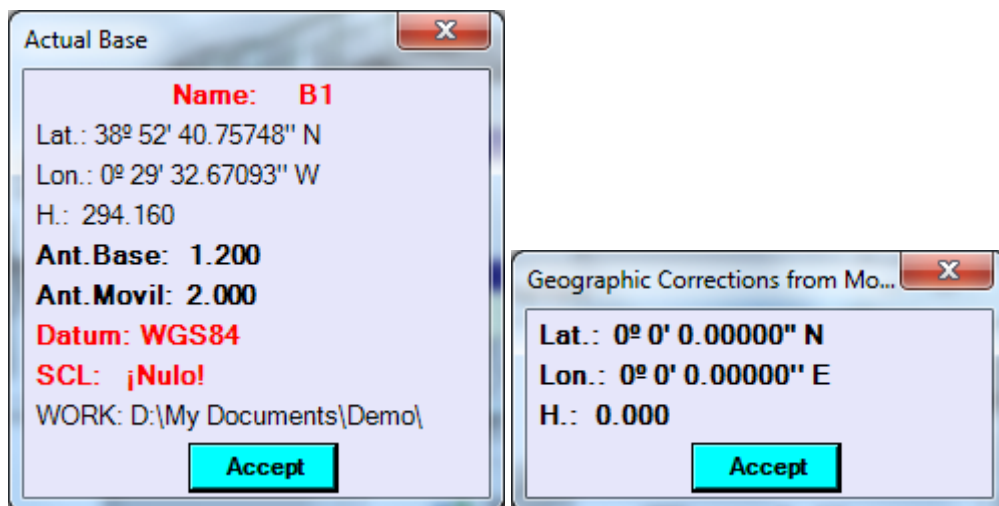
To choose a device we have to go to the Device Setup menu to a form where you are asked choose between using a GPS or Total Station, we indicate the appropriate communication parameters and other options that are illustrated in the picture.



Similarly to delete, create or choose a working directory to house the data files we go to the Config menu. "Dir.OBRA".



If we go to the Config menu CURRENT the program informs us of the current Base Total Station height, Jalon, Base Antenna, Mobile Antenna, Working Directory, Datum, SCL, Corrections from Mobile, etc...



After selecting the device and the working directory we can click on the drop-down menus to access all program options.

The drop-down menu "File" allows the creation and deletion of files used in other applications as well as the import and export of our project data or fieldwork.

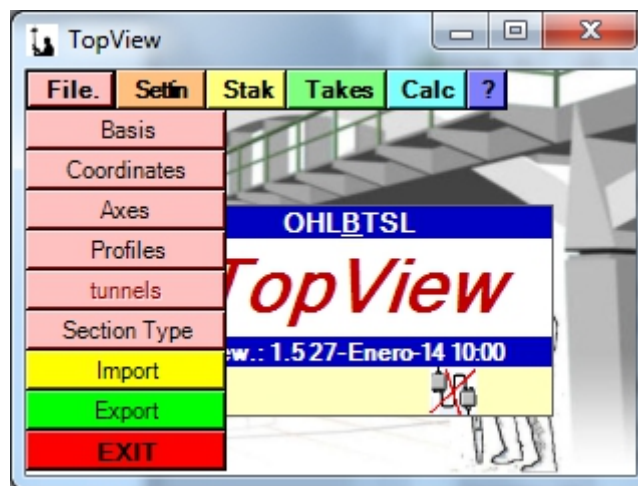
The Setup menu allows configuration of certain parameters for starting work. The "Repl" menu allows setting out different dot structures such as files, Sections, digital models, etc.. The "Shot" menu is designed for data collection such as Highlights, Coordinates (stadia), Transversal, Longitudinal, etc.. The "Calc" menu allows additional calculations that do not require communication with the measuring device such as transformations or adjustments, "Utilities Cogo" recalculation of coordinates (stadia), etc..

# USER MANUAL TOPVIEW

In any information screen from a calculation allows us to act on it, press Enter to save the data or Esc to discard and exit to a lower level of the application.

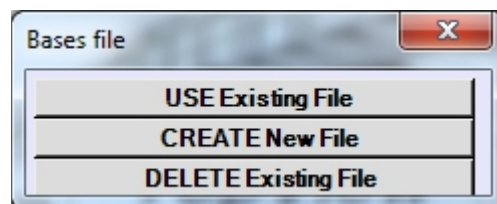
## FILE MENU

Selecting Files within TOPVIEW menu allows us to select the following options:



## EDITOR OF BASES:

By selecting this option the following generic menu is shown:



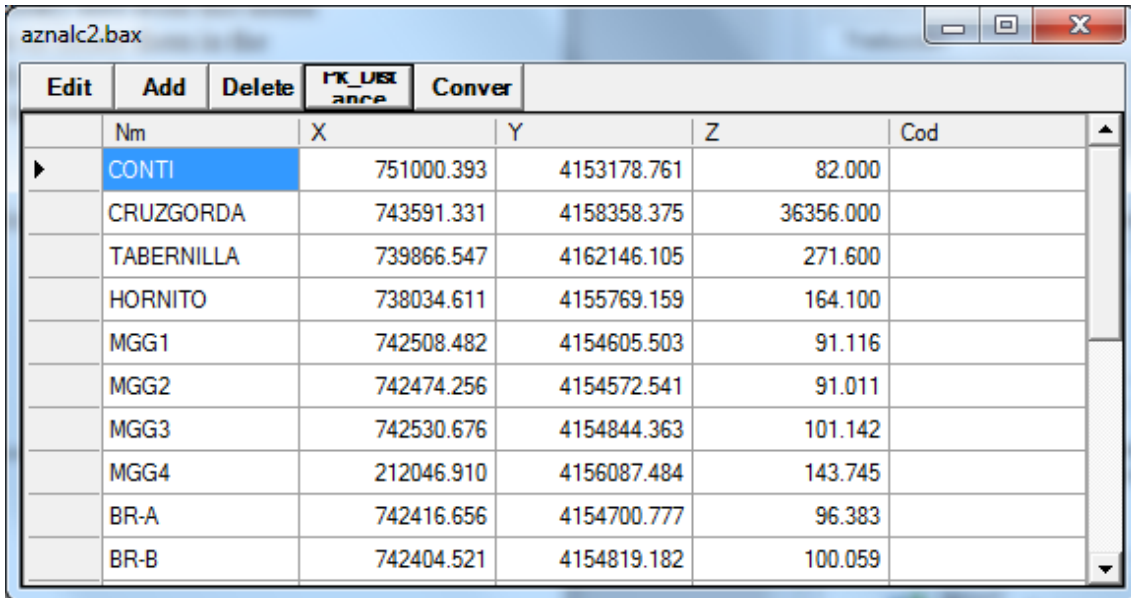
The first time you want to do a job you can create all necessary files from this menu with the options from "Create New File" from the relevant module or create them in the Stakeout or Data menus in the relevant modules. If they are already created, we can go to "Use Existing File" and use the editing options. If the computer is to use a GPS, the program previously asks if we want Cartesian or Geographical coordinates.

Browsing the directory you can choose the desired file. We have the option, with the bottom tab of the dialog box, to choose geographical or xyz.

If we choose XYZ a table appears as follows:



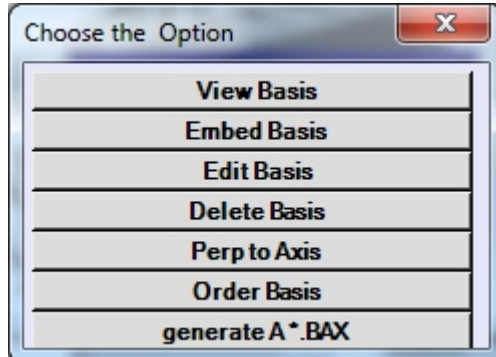
# USER MANUAL TOPVIEW



Edit	Add	Delete	PK_DIST ance	Conver		
	Nm	X	Y	Z	Cod	
▶	CONTI	751000.393	4153178.761	82.000		
	CRUZGORDA	743591.331	4158358.375	36356.000		
	TABERNILLA	739866.547	4162146.105	271.600		
	HORNITO	738034.611	4155769.159	164.100		
	MGG1	742508.482	4154605.503	91.116		
	MGG2	742474.256	4154572.541	91.011		
	MGG3	742530.676	4154844.363	101.142		
	MGG4	212046.910	4156087.484	143.745		
	BR-A	742416.656	4154700.777	96.383		
	BR-B	742404.521	4154819.182	100.059		

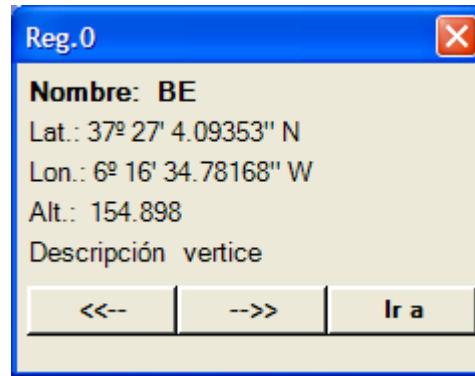
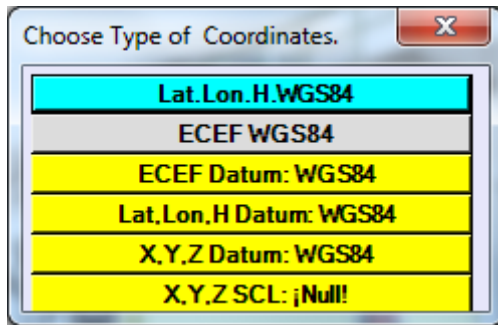
Where we can perform all the actions that appear in the header of each column. The Pk\_Dist option allows you to analyze any base with respect to an axis. the Conver options (PC version) allows calculation of a geographical basis taking into account the chosen SCL and Datum. The result is expressed in WGS84 geographical.

If you have chosen geographical bases, the editing options are:



## See Bases

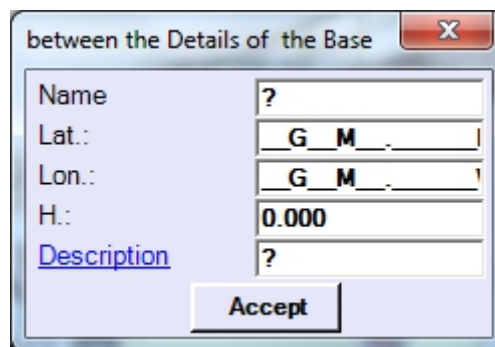
We can easily move using the cursors (←→) or go to a specific one by displaying the list of bases available in the file.



## Bases: Insert Base or Add Base

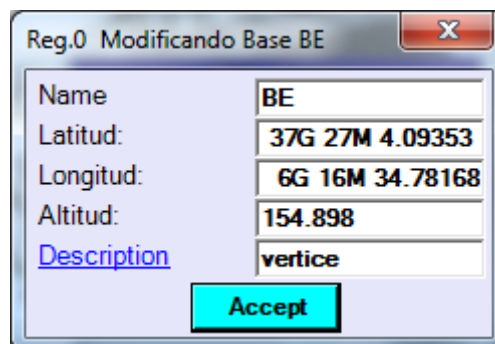
Insert is a function that allows you to insert bases. If the base already exists, TOPVIEW informs of the fact and forces you to change the name.

The data for insertion of the base are:



## Bases: Edit Base

Once the data has been modified the following scheme is presented:

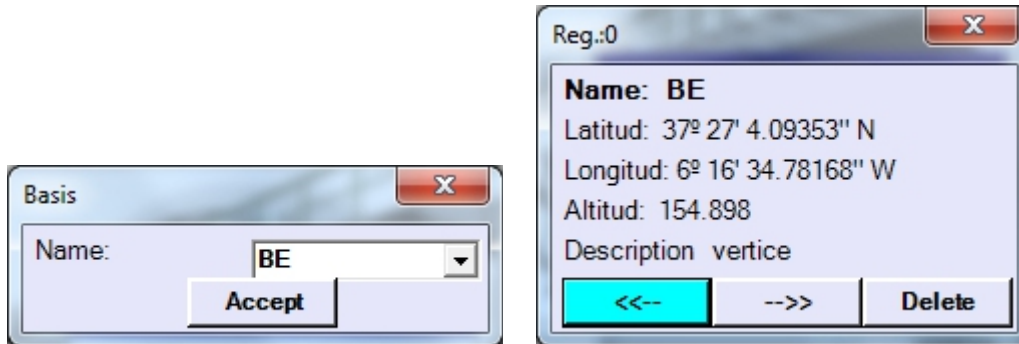


If you press <Enter> the base adopts the modified data as the new values, otherwise the base will still show the pre-edited data. If we have renamed and this already exists, the program lets us know and returns to the data to change screen.

## Bases : Clear

This option deletes an existing base in the Bases file. It displays a dialog with the list of available bases, presenting the data on the screen and allowing us to move graphically in different records with cursors (←→) until we choose the base record we want to delete, by clicking "Delete".

The program will request confirmation of the deletion.



## Perp to Axis

In this option we can choose a base and an axis by the name of the file it defines, indicating an approximate search PK to analyse, showing the station and resulting displacement.

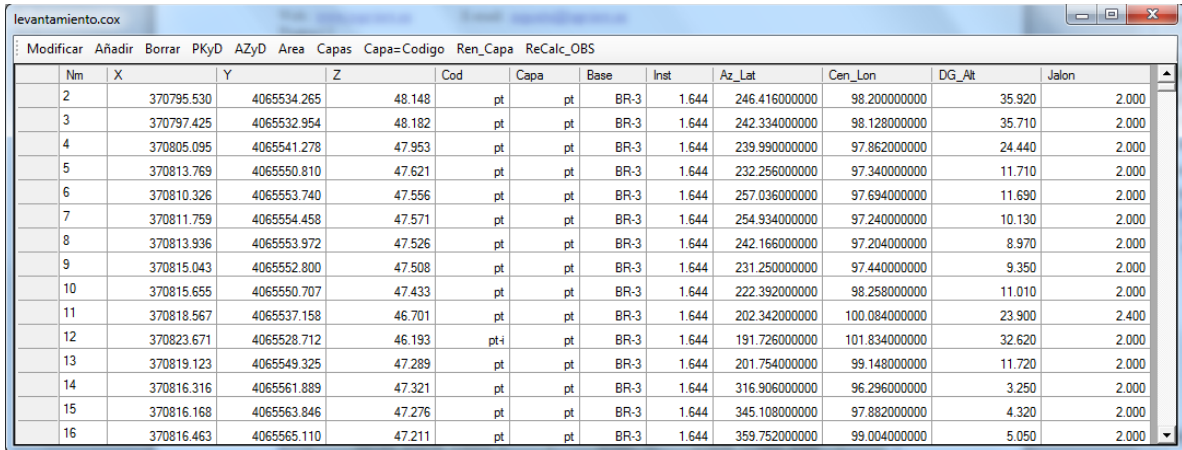
## Bases: Order Bases

This option allows you to sort numeric and alphanumeric bases by name. If you have used both designations, the program places the bases with umerical designation first and then the bases with alphanumeric esignation.

# USER MANUAL TOPVIEW

## EDIT COORDINATES:

In the new version the coordinates editor has the same appearance for ET both GPS and is this:



Nm	X	Y	Z	Cod	Capa	Base	Inst	Az_Lat	Sen_Lon	DG_Alt	Jalon
2	370795.530	4065534.265	48.148	pt	pt	BR-3	1.644	246.416000000	98.200000000	35.920	2.000
3	370797.425	4065532.954	48.182	pt	pt	BR-3	1.644	242.334000000	98.128000000	35.710	2.000
4	370805.095	4065541.278	47.953	pt	pt	BR-3	1.644	239.990000000	97.862000000	24.440	2.000
5	370813.769	4065550.810	47.621	pt	pt	BR-3	1.644	232.256000000	97.340000000	11.710	2.000
6	370810.326	4065553.740	47.556	pt	pt	BR-3	1.644	257.036000000	97.694000000	11.690	2.000
7	370811.759	4065554.458	47.571	pt	pt	BR-3	1.644	254.934000000	97.240000000	10.130	2.000
8	370813.936	4065553.972	47.526	pt	pt	BR-3	1.644	242.166000000	97.204000000	8.970	2.000
9	370815.043	4065552.800	47.508	pt	pt	BR-3	1.644	231.250000000	97.440000000	9.350	2.000
10	370815.655	4065550.707	47.433	pt	pt	BR-3	1.644	222.392000000	98.258000000	11.010	2.000
11	370818.567	4065537.158	46.701	pt	pt	BR-3	1.644	202.342000000	100.084000000	23.900	2.400
12	370823.671	4065528.712	46.193	pt-i	pt	BR-3	1.644	191.726000000	101.834000000	32.620	2.000
13	370819.123	4065549.325	47.289	pt	pt	BR-3	1.644	201.754000000	99.148000000	11.720	2.000
14	370816.316	4065561.889	47.321	pt	pt	BR-3	1.644	316.906000000	96.296000000	3.250	2.000
15	370816.168	4065563.846	47.276	pt	pt	BR-3	1.644	345.108000000	97.882000000	4.320	2.000
16	370816.463	4065565.110	47.211	pt	pt	BR-3	1.644	359.752000000	99.004000000	5.050	2.000

### **Mod.-**

It allows us to modify data in the table

### **Añad.-**

It allows you to add records in the table

### **Borr.-**

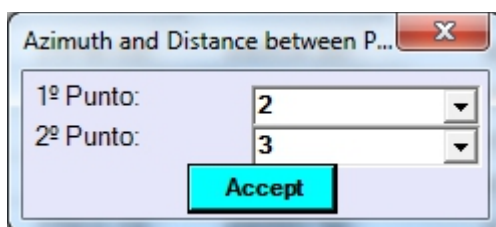
It deletes rows from the table

### **PkD.-**

It allows us to analyze any point on the table with respect to an axis in TopView. Requests use the shaft and then shows the analysis of the result.

### **AzD.-**

It allows to calculate azimuth, distance and increase in dimension between points

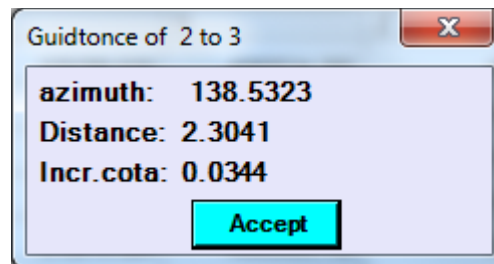


Azimuth and Distance between P... X

1º Punto: 2

2º Punto: 3

Accept



Guidtonce of 2 to 3 X

azimuth: 138.5323

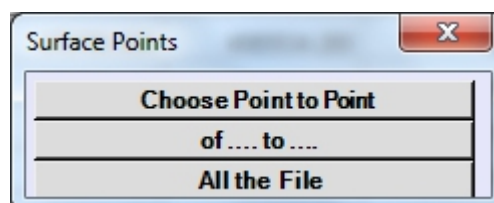
Distance: 2.3041

Incr.cota: 0.0344

Accept

### **Area.-**

This option allows us to calculate a surface and its perimeter from the names of the points that we choose, until you want to close with the first. A sketch of the figure formed by the chosen points, perimeter in metres and the surface in m<sup>2</sup>, Areas, will be displayed and you.



Surface Points X

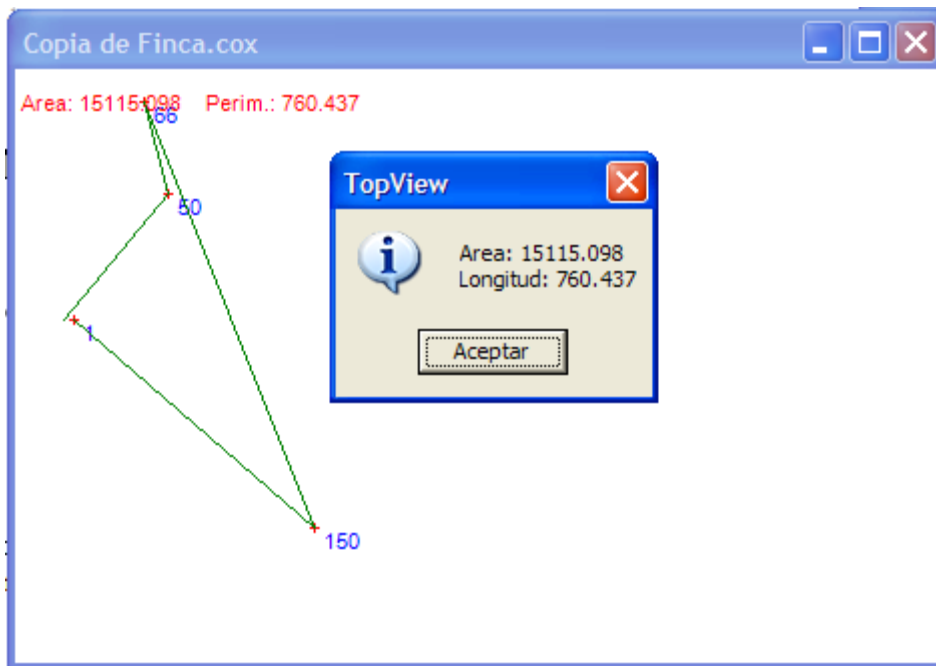
Choose Point to Point

of ... to ...

All the File

# USER MANUAL TOPVIEW

You can choose one to one the points we want to make up the figure, several sequences of points in ascending or descending order, or all the file in the order in which it was taken.



TopView in the extension of the files of coordinates is \*.cox. This kind of file is not editable from the outside environment of TopView. However on leaving the editor coordinates always asks us if we are to generate the file equivalent \*.coo, which can be edited with Notepad, Excel...-

# USER MANUAL TOPVIEW

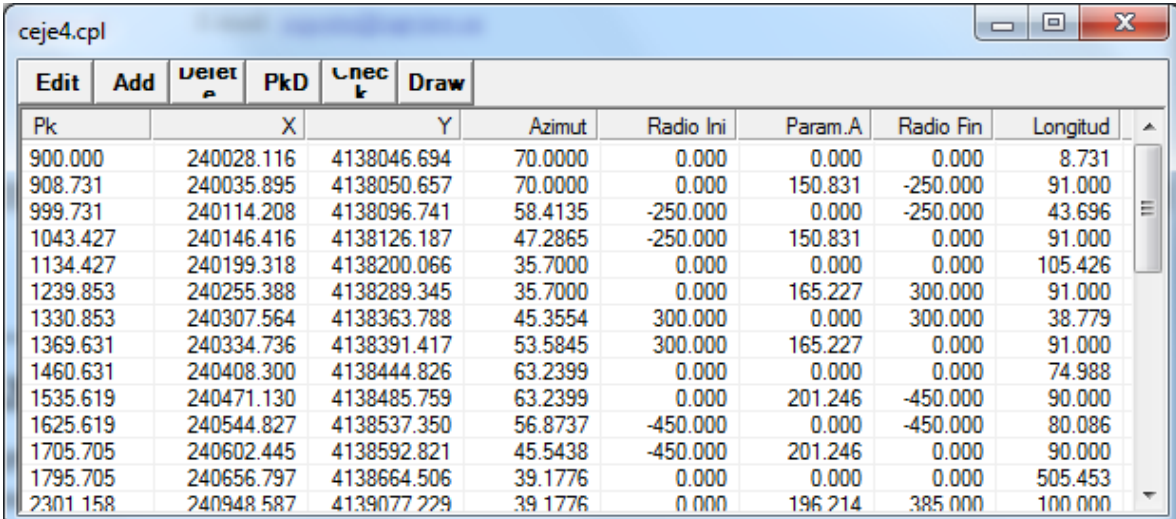
## EDIT AXIS:

TOPVIEW allows the introduction of plants (importing files) automatically, manually or semiautomatically.

When you create a file with plant generated another elevation law, one for the left elevation, and one for Cambers table that are related to the plant to have the same name but different extensions, thus deleting of plant elevation file is deleted and peraltes associates.

## EDIT Plant Axis:

Shows a table with this structure:

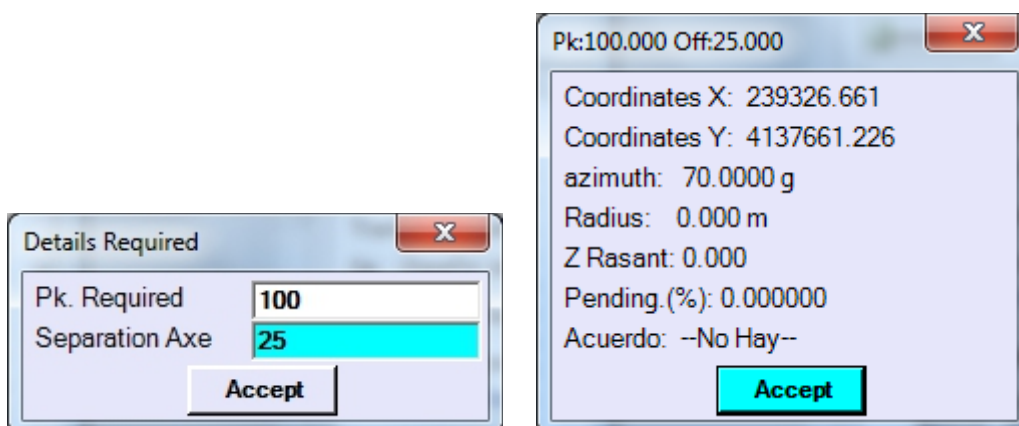


Edit	Add	Delete	PkD	Cnec	Draw	Pk	X	Y	Azimut	Radio Ini	Param.A	Radio Fin	Longitud
						900.000	240028.116	4138046.694	70.0000	0.000	0.000	0.000	8.731
						908.731	240035.895	4138050.657	70.0000	0.000	150.831	-250.000	91.000
						999.731	240114.208	4138096.741	58.4135	-250.000	0.000	-250.000	43.696
						1043.427	240146.416	4138126.187	47.2865	-250.000	150.831	0.000	91.000
						1134.427	240199.318	4138200.066	35.7000	0.000	0.000	0.000	105.426
						1239.853	240255.388	4138289.345	35.7000	0.000	165.227	300.000	91.000
						1330.853	240307.564	4138363.788	45.3554	300.000	0.000	300.000	38.779
						1369.631	240334.736	4138391.417	53.5845	300.000	165.227	0.000	91.000
						1460.631	240408.300	4138444.826	63.2399	0.000	0.000	0.000	74.988
						1535.619	240471.130	4138485.759	63.2399	0.000	201.246	-450.000	90.000
						1625.619	240544.827	4138537.350	56.8737	-450.000	0.000	-450.000	80.086
						1705.705	240602.445	4138592.821	45.5438	-450.000	201.246	0.000	90.000
						1795.705	240656.797	4138664.506	39.1776	0.000	0.000	0.000	505.453
						2301.158	240948.587	4139077.229	39.1776	0.000	196.214	385.000	100.000

Through which, with the use of each one of the functions listed in the table header, we can edit the axis to our choice. It is always advisable to check it after the Cheq option.

## **PkD**

This option allows you to consult the X coordinate, and azimuth and radius of any point on the path through a Pk and a shift to the left or right of the axis, returning the following information:



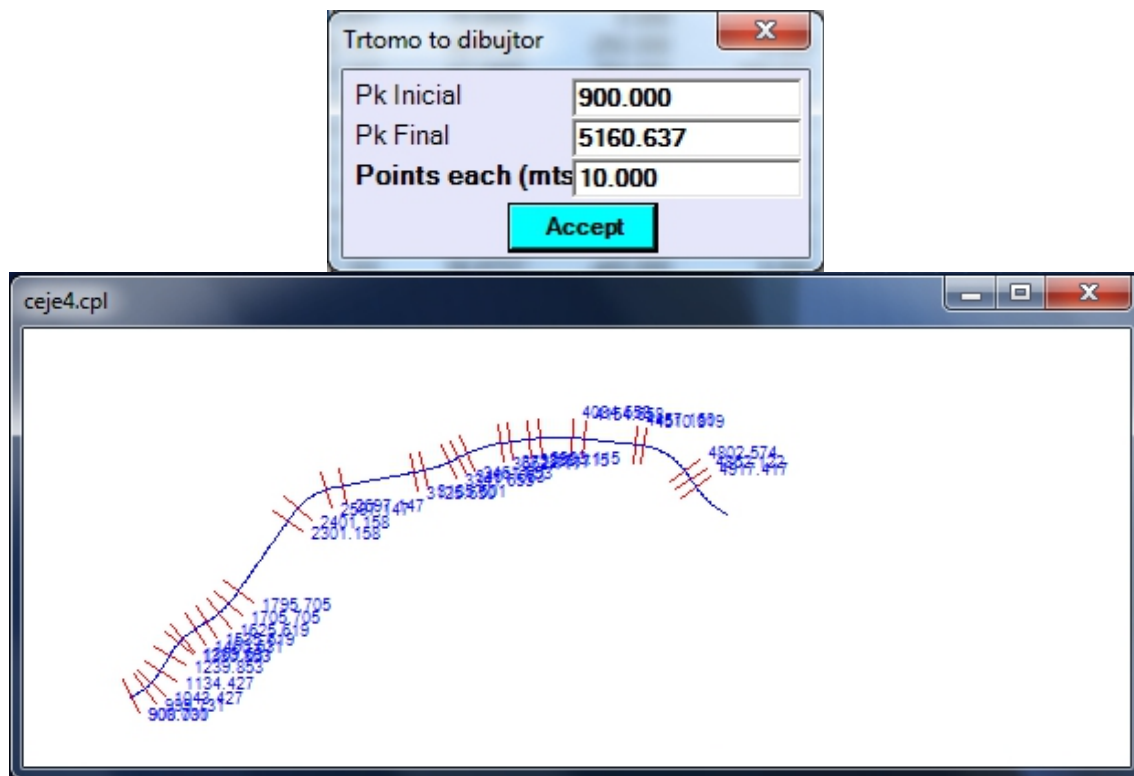
# USER MANUAL TOPVIEW

## Check Axis

With this option you can verify that data entered manually or via an import from a file, alignments are correct and that there are no errors of overlap which give rise to the calculations of the PK data. the path they are erroneous.

## Draw

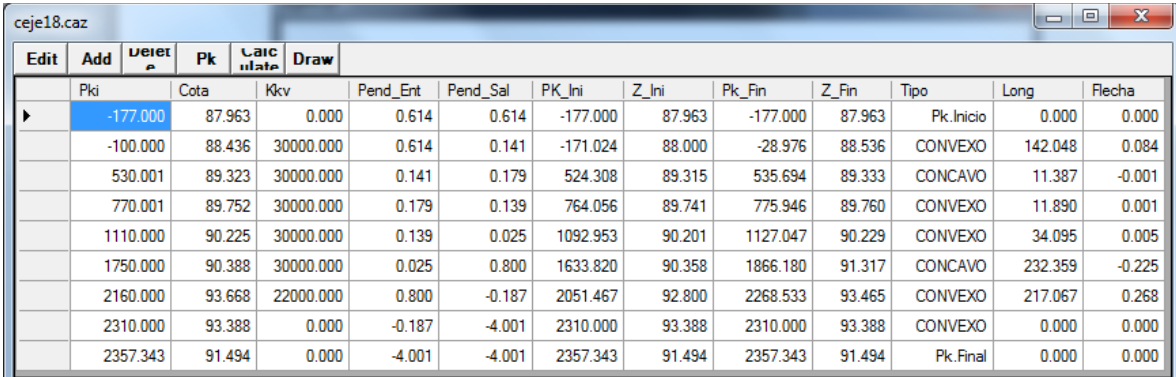
With this option you can draw the whole or a part of the axis by selecting Start Pk, final Pk, and the distance between points with which you get is the polygonal that will form the drawing of the shaft. A transverse lines in the starting point of the elements that compose the axis (straight line, curve, ovoid, clotoide) will also be drawn.



# USER MANUAL TOPVIEW

## EDIT Elevation Axis :

This option files, cannot be created because they are created to create plant file, as we have outlined above. The name of an existing shaft is requested to operate subsequently with him:



Edit	Add	Delete	Pk	Calculate	Draw								
	Pki	Cota	Kkv	Pend_Ent	Pend_Sal	PK_Ini	Z_Ini	Pk_Fin	Z_Fin	Tipo	Long	Flecha	
	-177.000	87.963	0.000	0.614	0.614	-177.000	87.963	-177.000	87.963	Pk.Inicio	0.000	0.000	
	-100.000	88.436	30000.000	0.614	0.141	-171.024	88.000	-28.976	88.536	CONVEXO	142.048	0.084	
	530.001	89.323	30000.000	0.141	0.179	524.308	89.315	535.694	89.333	CONCAVO	11.387	-0.001	
	770.001	89.752	30000.000	0.179	0.139	764.056	89.741	775.946	89.760	CONVEXO	11.890	0.001	
	1110.000	90.225	30000.000	0.139	0.025	1092.953	90.201	1127.047	90.229	CONVEXO	34.095	0.005	
	1750.000	90.388	30000.000	0.025	0.800	1633.820	90.358	1866.180	91.317	CONCAVO	232.359	-0.225	
	2160.000	93.668	22000.000	0.800	-0.187	2051.467	92.800	2268.533	93.465	CONVEXO	217.067	0.268	
	2310.000	93.388	0.000	-0.187	-4.001	2310.000	93.388	2310.000	93.388	CONVEXO	0.000	0.000	
	2357.343	91.494	0.000	-4.001	-4.001	2357.343	91.494	2357.343	91.494	Pk.Final	0.000	0.000	

## Elevation: Edit

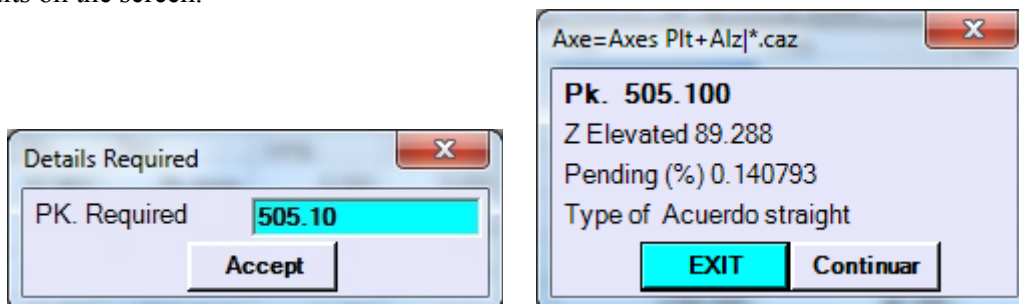
This option allows us to modify an agreement or point previously entered, asking the Pk that we want to modify.

## Elevation: Delete

This option allows us to delete a PK of the elevation.

## Elevation: Pk

We cannot ask the dimension corresponding to a PK of the elevation, showing us the results on the screen.



## Elevation: Draw Axis

With this option you can draw the whole or a part of the axis by selecting Start Pk, final Pk, and the distance between points with which you get is the polygonal that will form the drawing of the shaft. A few vertical lines at the points of beginning of the elements that compose the axis (straight or parabolic agreement) will also be drawn. After clicking "OK", the lines connecting the vertices of the parabolic agreements will be drawn.



# USER MANUAL TOPVIEW

Trtomo to dibujtor

Pk Inicial: -177.000

Pk Final: 2357.343

Points each (mts): 5.000

Accept



## EDIT CAMBER:

This table defines the applicable bankings in the traces. You can enter one by one, can be automatically generated according to a previously-defined parameters and editable by the user, or can be imported from the corresponding PC via the import menu program.

Edit.	Add	Dele	Pk	Draw	Pk_Der	Perit_Der
	Pk_Izq		Perit_Izq		Pk_Der	Perit_Der
	2000.000		5.060		2000.000	-5.060
	2020.000		5.000		2020.000	-5.000
	2040.000		4.890		2040.000	-4.890
	2060.000		3.900		2060.000	-3.900
	2080.000		2.950		2080.000	-2.950
	2100.000		1.730		2100.000	-1.730
	2120.000		0.070		2120.000	-0.070
	2140.000		-1.370		2140.000	1.370
	2160.000		-2.800		2160.000	2.800

Header options have the functions already described in other sections of the program.

# USER MANUAL TOPVIEW

## PROFILE EDITION:

As in the rest of the preceding sections we have the same options, use, create and delete.

The program asks us if we want to edit, create, or delete a file of Transversals, longitudinal, or tunnels Transversals.

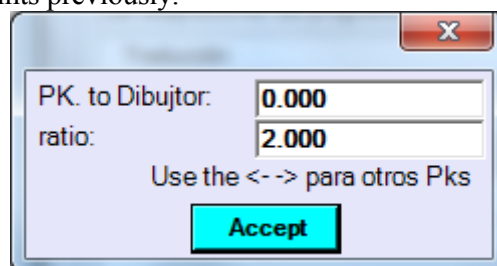


This module shows us this table:

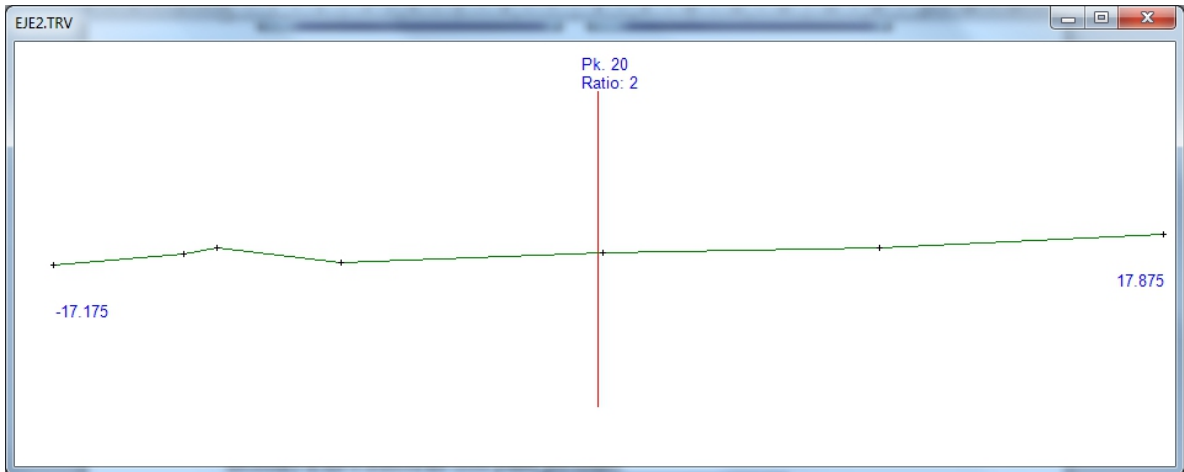
Edit.	Add	Dele	PKyD	Draw									
Pk	X	Y	Z	Dist_Eje	Cod	Base	Inst	Azmut/Lat	Cenital/Lon	DistG/Alt	Jalon		
0.000	742504.780	4154659.879	94.363	9.710	EJE2 Pk:0.000 D...	*GPS.Base?..9.3...	1.655	37.505183044	-6.257951881	138.677	2.000		
0.000	742506.876	4154662.467	94.873	13.041	EJE2 Pk:0.000 D...	*GPS.Base?..9.3...	1.655	37.505205796	-6.257927337	139.187	2.000		
0.000	742506.926	4154662.527	94.875	13.118	EJE2 Pk:0.000 D...	*GPS.Base?..9.3...	1.655	37.505206318	-6.257926752	139.189	2.000		
0.000	742509.518	4154665.362	95.124	16.949	EJE2 Pk:0.000 D...	*GPS.Base?..9.3...	1.655	37.505231165	-6.257896529	139.439	2.000		
20.000	742472.352	4154651.222	94.992	-17.175		*GPS.Base?..6.3...	1.655	37.505113620	-6.258321214	139.307	2.000		
20.000	742474.973	4154654.374	95.161	-13.077		*GPS.Base?..5.3...	1.655	37.505141304	-6.258290555	139.476	2.000		
20.000	742475.604	4154655.206	95.265	-12.033		*GPS.Base?..6.3...	1.655	37.505148628	-6.258283148	139.580	2.000		
20.000	742477.964	4154658.373	95.022	-8.085		*GPS.Base?..6.3...	1.655	37.505176527	-6.258255433	139.338	2.000		
20.000	742483.064	4154664.894	95.186	0.193		*GPS.Base?..6.3...	1.655	37.505233897	-6.258195649	139.502	2.000		
20.000	742488.602	4154671.646	95.265	8.925		*GPS.Base?..6.3...	1.655	37.505293234	-6.258130835	139.581	2.000		

whose Edition is very similar to that described in other modules.

Just comment that the draw option allows us to draw on screen a specific profile, using the entire width of the same and the ratio needed to use all upper screen. It is not necessary to have ordered the cross points previously.

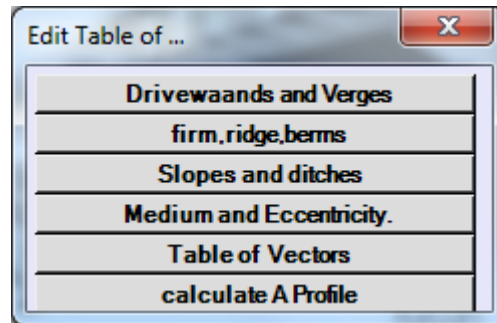


# USER MANUAL TOPVIEW



## TYPE SECTION

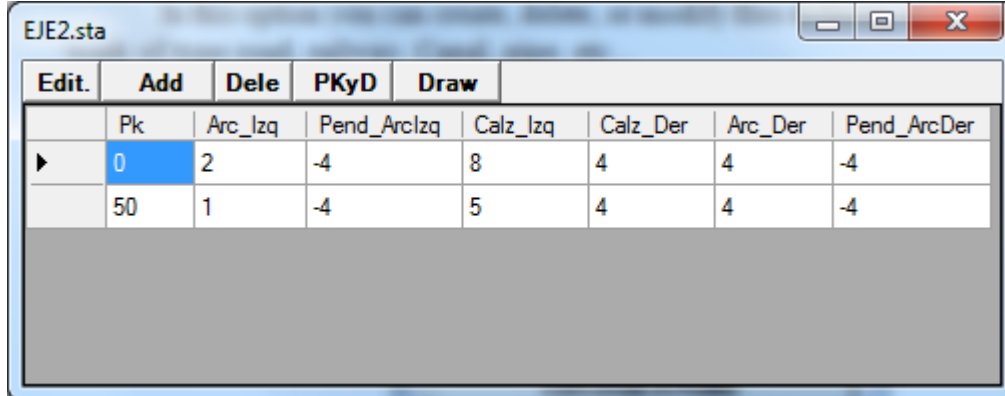
In this option you can create, delete, or modify files defining of the sections of a linear work of type road, railway, Canal, pipe, etc...



There are elements that are defined Parametrically and other renewed. Define renewed all ditches, slopes of cut and fill (including benches, berms of clearance, crowns, etc.), inadequate fixed platforms (i.e., car parks, steely, etc.), and inadequate fixed sub-grade (i.e., different thicknesses under zones of parking, steely, etc...). All of them are defined as parameters.

### - Driveways and Verges

Upon entering each of the tables there is a menu of identical to all of them is asking us if we want to change, add, delete, view, or calculate the result in a particular Pk.

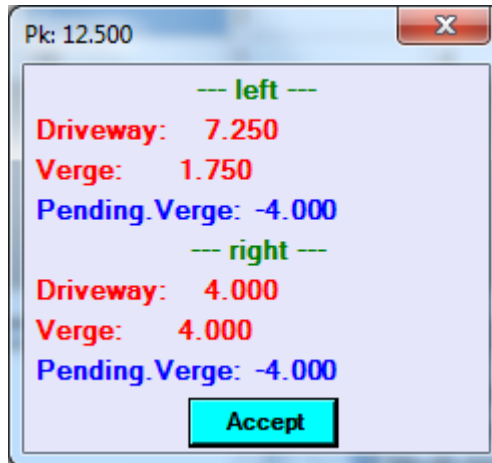


Edit.	Add	Dele	PKyD	Draw	Pk	Arc_lzq	Pend_ArcLzq	Calz_lzq	Calz_Der	Arc_Der	Pend_ArcDer
					0	2	-4	8	4	4	-4
					50	1	-4	5	4	4	-4

On the road shoulders you can specify a slope for that item will be applied provided that the cant deficiency is less than this. Walkways will apply the resulting slope of cambers table interpolation.

If we consult a particular Pk we will get the result of the interpolation in the absence of knowing the corresponding banking in the Pk.

# USER MANUAL TOPVIEW



Should take into account that they are also interpolated applicable slopes on the road shoulders and that they will be or not modified by the applicable bankings in the Pk.

## - FIRM, RIDGE, BERMS

This table defines the thickness of the firm, the earrings of the subgrade, the type of subgrade (automatic or parallel Ridge), the slope of the firm (in per one and negative, the widths) of the berms of the firm and its slope (in so many per cent and negative). Here we also note the call to a family of vectors in the entries of "Plt.Fija. I."(Plataforma Fija Izquierda), "Plt.Fija.D"(Plataforma Fija Derecha), "Sub.Fija.I"(SubRasante Fija Izquierda), "Sub.Fija.D"(SubRasante Fija Derecha). These are names of group or family of vectors that are defined in the table of vectors and applied between the end of the hard shoulder and the top of the berm of the firm. These vectors are usually used to define zones of parking, steely, and a host of unusual elements.

Edit.	Add	Dele	PKyD	Draw											
Pk	Espesor	Pend_Sub	Limatesa	Vector_Flqz	Vector_FDer	Talud_Izq	Berma_Izq	Pend_Blzq	Berma_Der	Pend_BDer	Talud_Der	Vector_SRIzq	Vector_SRDer		
2000	0.97	0	2			-1	1	-10	1	-10	-1				
3500	0.97	0	2			-1	1	-10	1	-10	-1				
3500.001	0.92	0	2			-1	1	-10	1	-10	-1				
9002.1	0.92	0	2			-1	1	-10	1	-10	-1				

We can check the operation of the program if we request the result of the interpolation of a particular Pk will get result of this interpolation.



# USER MANUAL TOPVIEW

In the elements where calls are defined family of vectors are two names that are found in Pks anterior and posterior to the one requested. Interpolation vector to vector of these families will get a new set of vectors that form the figure of the type section. The slopes of the subgrade and the berms of the firm can be altered in its final application depending on the slopes of the bankings in the Pk.

## - SLOPES and DITCHES:

In this table only defined in that Pk is going to apply family of vectors that define the figure of ditches and slopes.

Edit.	Add	Dele	PKyD	Draw	Pk	T_Izq_Desm	T_Izq_Terr	Cun_Izq	Cun_Der	T_Der_Desm	T_Der_Terr	Pos_Cun_Izq	Pos_Cun_Der
▶					2000	D	T	C1	C1	D	T	2	2
					3050	D	T	C1	C1	D	T	2	2
					3060	D	T	C2	C2	D	T	2	2
					4860	D	T	C2	C2	D	T	2	2
					4870	D	T	C3	C3	D	T	2	2
					5800	D	T	C3	C3	D	T	2	2
					5810	D	T	C2	C2	D	T	2	2
					9002.1	D	T	C2	C2	D	T	2	2

## - MEDIUM and ECCENTRICITY:

The introduction here of a record makes that he is considered a section type dual carriageway and single carriageway, regardless of that there is or no data on the left elevation axis. If there are no data on this axis, but there is data in this table shall be deemed the section of dual carriageway and shall apply the same dimension (elevation right shaft dimension) in both white bands. If any data on both axes and data also in this table applies each dimension for each white band. There is no data in this table are considered single carriageway.

Edit.	Add	Dele	PKyD	Draw	Pk	Arc_Izq	Nulo1	BerIntIzq	PendBerIntIzq	SemiAncIzq	Excentricidad	Profundidad	SemiAncDer	BerIntDer	PendBerIntDer	Arc_Der	Nulo2
▶					2000	1	0	0	0	1.5	0	0	1.5	0	0	1	0
					2500	1	0	0	0	1.5	0	0	1.5	0	0	1	0
					2600	1	0	0	0	0.5	0	0	0.5	0	0	1	0
					3050	1	0	0	0	0.5	0	0	0.5	0	0	1	0
					3150	1	0	0	0	1.5	0	0	1.5	0	0	1	0
					3500	1	0	0	0	5	0	0.92	5	0	0	1	0
					8450	1	0	0	0	5	0	0.92	5	0	0	1	0
					8900	1	0	0	0	0.5	0	0	0.5	0	0	1	0
					9002.1	1	0	0	0	0.5	0	0	0.5	0	0	1	0

Define eccentricity of plant with respect to the cross-section axis, the depth of the internal gutter and the halfwidth of the same ("SemiA.Izq"), the width of the internal hard-shoulder ("A.int.Izq:"), the width of the inner berm and its slope ("B.Int.Izq:" and "GDP.)Left").

## - VECTORES:

# USER MANUAL TOPVIEW

This is where lies the power of this module as it is where the families of vectors that make up the figure of ditches, slopes of clearing embankment slopes, fixed platforms and sub-grade fixed are defined. These figures or family of vectors have a unique name, which used to be called from the previous tables. It is important not to confuse the names of these families for not applying a ditch where is a slope or a fixed platform, etc., so we recommend starting the name designating them with the following key words:

Edit.	Add	Dele	PKyD	Draw												
	Vtipo	IncD1	IncZ1	IncD2	IncZ2	IncD3	IncZ3	IncD4	IncZ4	IncD5	IncZ5	IncD6	IncZ6	IncD7	IncZ7	
▶	D	3.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	T	3.000	-2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	C1	0.100	-0.500	0.400	0.000	0.100	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	C2	2.500	-0.500	0.000	0.000	2.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	C3	0.100	-0.500	0.400	0.000	0.100	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

If a name of a family of vectors for gutter is called "C1 v of..." can be called from the table of EMBANKMENTS and DITCHES as "C1 \*", i.e. we can use wildcards for short calls to names.

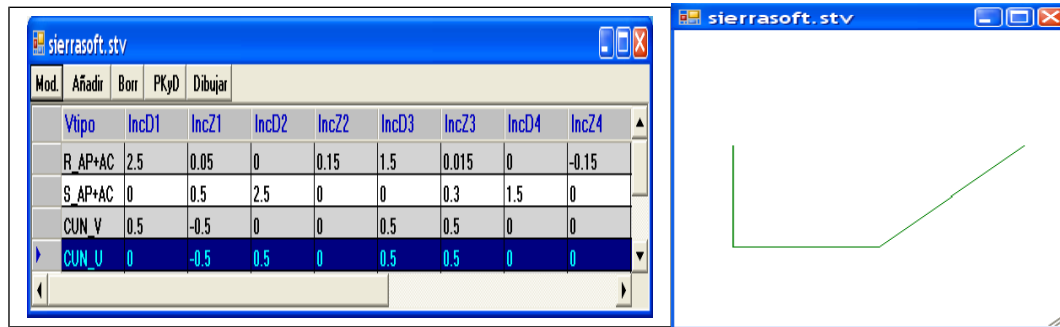
You can define a maximum of 7 vectors to define a figure of the complex who wants to. To define vectors SeudoVerticales recommend to put "0.001" as a horizontal component.

When the Pk to be treated between two families of different vector program will proceed to interpolate vector to vector components of these families. This allows us to perform such complex shapes such as transitions between v-shaped ditches u 'U' ditches, slopes bermed climbing and low, slope inclination changing gradually, berms that appear and disappear, berms and coronas of clear change tilt and width, etc., and an endless number of possibilities.

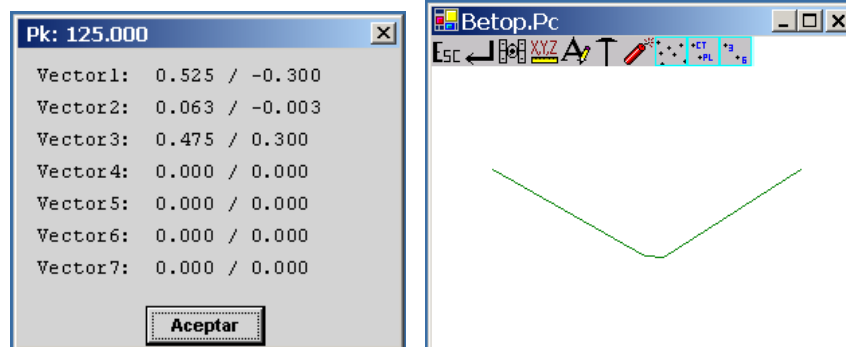
To understand this philosophy of work we will give you a simple example. Suppose we have a ditch in "U" shape in a Pk 0 + 100 and another in "V" shape in the KP 0 + 200 and want to occur a progressive transition in a way that the horizontal part of the "U" turns into the apex of the "V". For them we need to have the same vectors in both families and apparently don't have them. The solution is to insert a vector of increments is zero which is going to grow up to become the horizontal part of the "U" at the top of the "V".

Mod.	Añadir	Borr	PKyD	Dibujar											
	Vtipo	IncD1	IncZ1	IncD2	IncZ2	IncD3	IncZ3	IncD4	IncZ4						
	R AP+AC	2.5	0.05	0	0.15	1.5	0.015	0	-0.15						
	S AP+AC	0	0.5	2.5	0	0	0.3	1.5	0						
▶	CUN_V	0.5	-0.5	0	0	0.5	0.5	0	0						
	CUN_U	0	-0.5	0.5	0	0.5	0.5	0	0						

# USER MANUAL TOPVIEW



In these images we see two different types of gutters, one V-shaped and one in form of u. can check as it operates the program when it comes to interpolate two families of vectors option consult a Pk-attending. Program will not request a Pk of application for each family of vectors, and a Pk to check the result of the interpolation:



If we look at the '2 Vector' we can check if the desired interpolation has actually been. Other vectors have not changed because they are the same in both families. If any of them were also different had obtained a vector product of two vector interpolation.

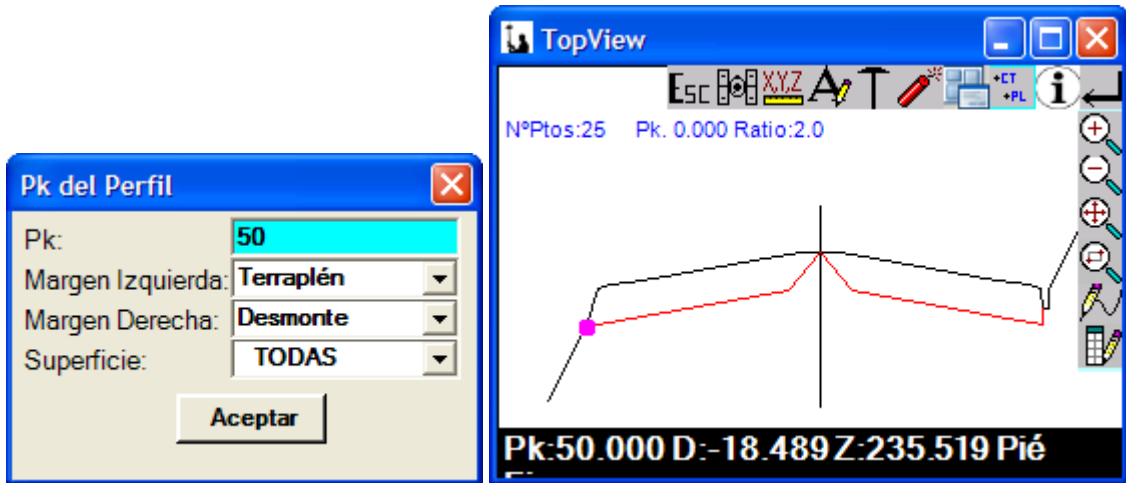
This philosophy applies to all the elements that are defined in this way are EMBANKMENT slopes, slopes of DISASSEMBLE, and sub-grade fixed, fixed platform.

## - Calculate PK Profile

This option is the calculation of all the tables together resulting in the visual result of the generated section. To do this, the program prompts an axis, a Pk, disassemble or fill in each of the banks, and the surfaces that you want to draw that they may be: all flush + embankments, subgrade + slopes, single package of firm.

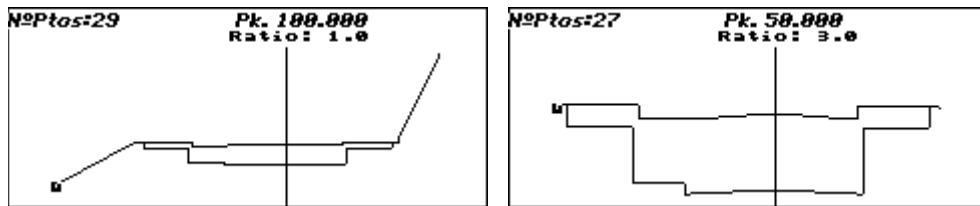


# USER MANUAL TOPVIEW



In this graphical display we can move through the points that comprise it showing on the top data on this point as it is distance to shaft, the dimension, the element that defines, and the slope of the same.

Here is an example of a street in a housing development with steely on both sides and parking on the left bank:



Composed of the following vectors:

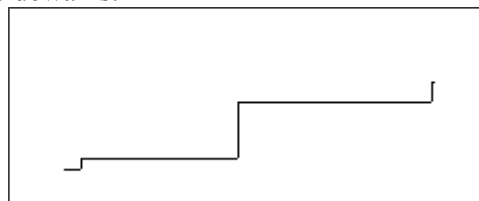
- Vectors of the firm in parking and sidewalks:

<b>Be1</b>	Vector 1	2.200 / 0.022	<b>la</b>
	Vector 2	0.000 / 0.150	
	Vector 3	3.000 / 0.030	
	Vector 4	0.000 / 0.000	
	Vector 5	0.000 / 0.000	
	Vector 6	0.000 / 0.000	
	Vector 7	0.000 / 0.000	
	Anterior Siguiente Dibujar		top
	FU: FZ APARC+ACERADO		teria



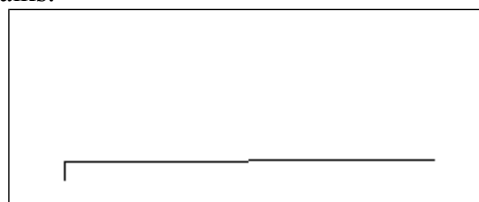
- Vectors of the subgrade in parking and sidewalks:

<b>Be1</b>	Vector 1	0.250 / 0.001	<b>la</b>
	Vector 2	0.001 / 0.150	
	Vector 3	2.200 / 0.022	
	Vector 4	0.001 / 0.760	
	Vector 5	2.750 / 0.027	
	Vector 6	0.001 / 0.300	
	Vector 7	0.000 / 0.000	
	Anterior Siguiente Dibujar		top
	FU: SZ APAR+ACERADO		teria



- Vector of the surface area of only sidewalks:

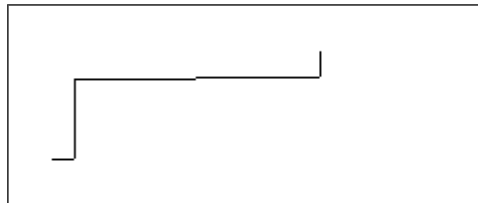
<b>Be1</b>	Vector 1	0.000 / 0.150	<b>la</b>
	Vector 2	3.000 / 0.030	
	Vector 3	0.000 / 0.000	
	Vector 4	0.000 / 0.000	
	Vector 5	0.000 / 0.000	
	Vector 6	0.000 / 0.000	
	Vector 7	0.000 / 0.000	
	Anterior Siguiente Dibujar		top
	FU: F1 ACERADO		teria



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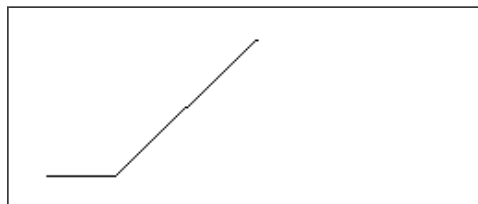
- Vectors of the subgrade in area of only sidewalks:

Be	Vector 1	0.250 / 0.000	la
	Vector 2	0.000 / 0.300	
	Vector 3	2.750 / 0.027	
	Vector 4	0.000 / 0.300	
	Vector 5	0.000 / 0.000	
	Vector 6	0.000 / 0.000	
	Vector 7	0.000 / 0.000	
Me	Anterior Siguiete Dibujar		top
fU: S1	ACERADO	→	Enter
			teria

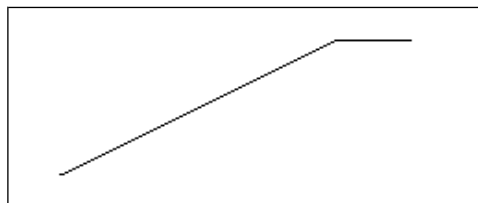


Here is an example of a clearing with a berm that rises up to change of inclination of slope 1/1 on the outside to 2/1 on the inside:

Be	Vector 1	0.000 / 0.000	la
	Vector 2	2.500 / 0.000	
	Vector 3	5.000 / 5.000	
	Vector 4	0.000 / 0.000	
	Vector 5	0.000 / 0.000	
	Vector 6	0.000 / 0.000	
	Vector 7	0.000 / 0.000	
Me	Anterior Siguiete Dibujar		top
fU: D3	←	→	Enter
			teria

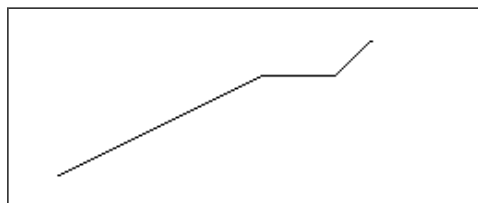
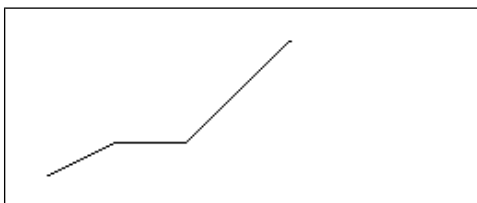


Be	Vector 1	10.000 / 5.000	la
	Vector 2	2.500 / 0.000	
	Vector 3	0.000 / 0.000	
	Vector 4	0.000 / 0.000	
	Vector 5	0.000 / 0.000	
	Vector 6	0.000 / 0.000	
	Vector 7	0.000 / 0.000	
Me	Anterior Siguiete Dibujar		top
fU: D4	←	→	Enter
			teria



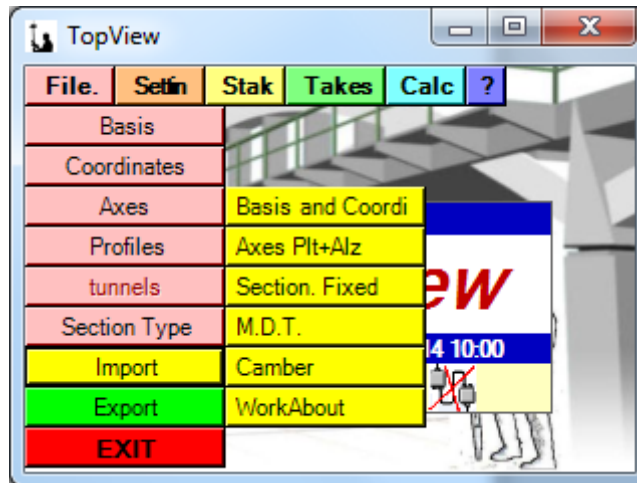
Consultar un Pk	
•Pk del Vector 1º	100
•Pk del Vector 2º	200
•Nombre 1º Vector	d3
•Nombre 2º Vector	d4
•Pk a Interpolat:	125

Be	Pk: 125.000		la
	Vector 1	2.500 / 1.250	
	Vector 2	2.500 / 0.000	
	Vector 3	3.750 / 3.750	
	Vector 4	0.000 / 0.000	
	Vector 5	0.000 / 0.000	
	Vector 6	0.000 / 0.000	
	Vector 7	0.000 / 0.000	
Web:			top
R_pai			ateria



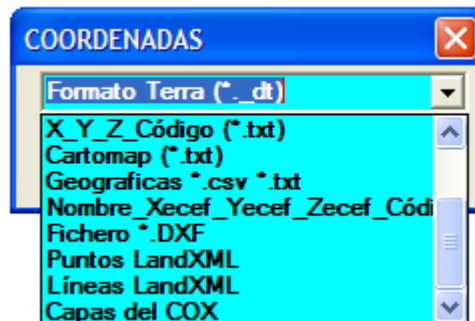
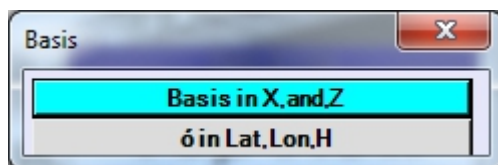
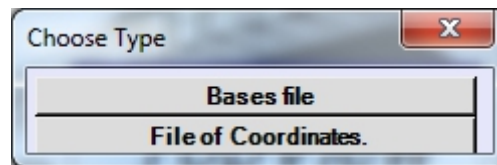
# USER MANUAL TOPVIEW

## IMPORT MENU



## Bases&Coord.

This option BASES & COORDINATE data, in the following formats of Ascii files are imported:

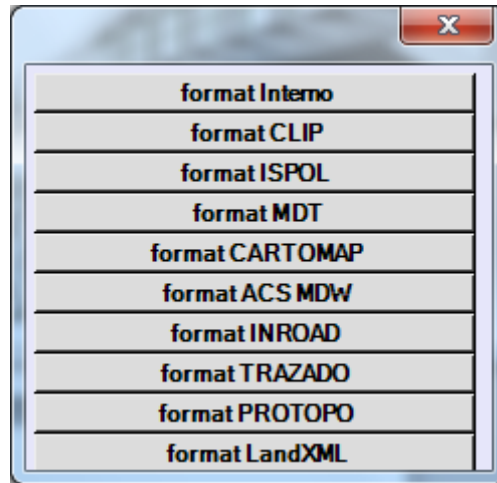


In all the options of the menu import can browse the Pc, and able to choose the file without having to type it. The program automatically detects which is the delimiter of the fields to avoid having to define it.

## AXIS

On this option path in plant and elevation data (both at the same time), are imported in format Ascii files:

# USER MANUAL TOPVIEW



## Formato Interno:

```

* PLANTA
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
0.0000      0.000      325180.945  4252061.317  229.5011      0.000      0.000      0.000      383.342
383.3420    383.342      325009.594  4251718.404  229.5011      0.000      200.000     500.000     80.000
463.3420    463.342      324971.949  4251647.840  234.5941      500.000     0.000      500.000     90.725
554.0670    554.067      324918.271  4251574.853  246.1456      500.000     200.000     0.000      80.000
634.0670    634.067      324862.128  4251517.894  251.2385      0.000      125.000    -270.000     57.870
691.9370    691.937      324821.899  4251476.335  244.4160      0.000      0.000      -270.000    189.543
881.4800    881.480      324758.810  4251301.707  199.7247     -270.000     125.000     0.000      57.870
* ALZADO
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
0.0000      0.000      576.908      0.000      -4.556      -4.556      0.000      576.908      0.000      576.908  PK.INICIO
36.0000     36.000      575.268      3350.000     -4.556      -2.476      1.162      576.855      70.838      574.406  CONCAVO
147.0000    147.000     572.520      3600.000     -2.476      -0.511     111.633     573.396     182.367     572.339  CONCAVO
378.0000    378.000     571.340      9000.000     -0.511     0.506      332.263     571.574     423.737     571.571  CONCAVO
486.0000    486.000     571.886      2500.000     0.506      -3.741     432.917     571.618     539.083     569.900  CONVEXO
620.0000    620.000     566.873      2100.000     -3.741     3.101      548.158     569.561     691.842     569.101  CONCAVO
818.0000    818.000     573.013      5700.000     3.101      -0.617     712.050     569.727     923.950     572.360  CONVEXO
    
```

## Formato Clip:

```

*PLT1
VILLANUEVA DEL DUQUE - CRUCE CUARTENERO
0.0000 , 325180.9450 , 4252061.3170 , 229.5011 , 0.0000 , 0.0000
383.3415 , 325009.5936 , 4251718.4039 , 229.5011 , 0.0000 , 0.0000
463.3415 , 324971.9494 , 4251647.8399 , 234.5941 , 500.0000 , 200.0000
554.0667 , 324918.2708 , 4251574.8529 , 246.1456 , 500.0000 , 0.0000
634.0667 , 324862.1276 , 4251517.8941 , 251.2385 , 0.0000 , 200.0000
691.9371 , 324821.8985 , 4251476.3347 , 244.4160 , -270.0000 , 125.0000* PLANTA
    
```

```

*ALZ1
VILLANUEVA DEL DUQUE-HINOJOSA DEL DUQUE
0.000 , 651.831C , OR
10.000 , 652.007C , 2000R
83.000 , 652.871C , 15000R
191.000 , 1.3096P , 500R
233.000 , 652.623C , OR
259.000 , 651.487C , 0.000T
    
```

### ó también

L VILLANUEVA DEL DUQUE - CRUCE CUARTENERO 24-04-2002 P g. 1

#### PUNTOS SINGULARES

P.K.	Longitud	Coord. X	Coord. Y	Azimut	Radio	Param.	X Centro	Y Centro
0.000	0.000	325180.945	4252061.317	229.5011	0.000			
383.342	383.342	325009.594	4251718.404	229.5011	0.000			
463.342	80.000	324971.949	4251647.840	234.5941	500.000	200.000	324543.972	4251906.365
554.067	90.725	324918.271	4251574.853	246.1456	500.000		324543.972	4251906.365
634.067	80.000	324862.128	4251517.894	251.2385	0.000	200.000		
691.937	57.870	324821.899	4251476.335	244.4160	-270.000	125.000	325028.808	4251302.874
881.480	189.543	324758.810	4251301.707	199.7247	-270.000		325028.808	4251302.874

VILLANUEVA DEL DUQUE-CRUCE DEL CUART. 24-04-2002 P g. 1

#### DATOS DE ENTRADA

Nº	P.K.	Cota	p(%)	L	Kv	Flecha
1	0.000	576.908ù				
2	36.000	575.268	-4.5551ù	69.653	3350ù	0.181
3	147.000	572.520ù	-2.4759	70.742	3600ù	0.174
4	378.000	571.340	-0.5108ù	91.455	9000ù	0.116
5	486.000	571.886ù	0.5053	106.148	-2500ù	-0.563
6	620.000	566.873ù	-3.7406	143.667	2100ù	1.229
7	818.000	573.013ù	3.1007	211.874	-5700ù	-0.984

## Formato ISPOL: Ficheros "cejel.res" y "rasal.res"

Istram5.12 23 Abr 2002 11:33  
 PROYECTO :  
 EJE : 1: VILLANUEVA DEL DUQUE - PEÑARROLLA PUEBLONUEVO

pagina 1

\*\*\*\*\* LISTADO DE LAS ALINEACIONES \*\*\*\*\*

# USER MANUAL TOPVIEW

Dato	TIPO	LONGITUD	P.K.	X TANGENCIA	Y TANGENCIA	RADIO	PARAMETRO	AZIMUT	Cos/Xc/Xinf	Sen/Yc/Yinf
1	RECTA	383.337	0.000	325180.945	4252061.317				-0.4469941	-0.8945369
2	CLOT.	80.010	383.337	325009.596	4251718.408		200.013	229.5011	325009.596	4251718.408
3	CIRC.	90.720	463.347	324971.947	4251647.835	500.000		234.5947	324543.972	4251906.365
4	CLOT.	80.000	554.067	324918.271	4251574.853		200.000	246.1455	324862.127	4251517.894
5	CLOT.	57.870	634.067	324862.127	4251517.894		125.000	251.2385	324862.127	4251517.894
6	CIRC.	189.543	691.937	324821.898	4251476.335			244.4160	325028.808	4251302.874
7	CLOT.	57.870	881.480	324758.810	4251301.707		125.000	199.7247	324763.189	4251244.032

Istram5.12 23 Abr 2002 11:33

pagina 1

PROYECTO :

EJE : 1: VILLANUEVA DEL DUQUE - PEÑARROLLA PUEBLONUEVO

\*\*\*\*\*  
ESTADO DE RASANTES  
\*\*\*\*\*

PENDIENTE ( % )	LONGITUD ( m )	PARAMETRO ( kv )	V E R T I C E p.k.	cota	ENTRADA AL ACUERDO p.k.	cota	SALIDA DEL ACUERDO p.k.	cota
					0.000	576.908		
-4.555556	69.676	3350.000	36.000	575.268	1.162	576.855	70.838	574.406
-2.475676	70.735	3600.000	147.000	572.520	111.633	573.396	182.367	572.339
-0.530823	91.474	9000.000	378.000	571.340	332.263	571.574	423.737	571.571
0.505556	106.165	2500.000	486.000	571.886	432.917	571.618	539.083	569.900
-3.741045	143.683	2100.000	620.000	566.873	548.158	569.561	691.842	569.101
3.101010	211.900	5700.000	818.000	573.013	712.050	569.727	923.950	572.360

## Formato MDT:

Planta:

0.000	9259.885	5391.355	31.36654	0.000	0.000
74.688	9295.213	5457.159	31.36654	0.000	0.000
89.269	9302.110	5470.006	33.27631	0.000	-46.500
95.961	9305.023	5476.025	24.15199	0.000	0.000
142.065	9322.097	5518.850	24.15199	0.000	0.000
213.841	9348.678	5585.523	25.73198	0.000	31.570
234.440	9362.179	5600.596	67.27033	0.000	0.000

Alzado:

0.000	16.000	0.000	0.000	0.000
234.440	18.344	0.000	0.000	0.000

## Formato CARTOMAP:

Planta:

P.K.	X	Y	Cota	Azimut	Longitud	Tipo	Radio	Parámetro
0+000.000		4622.835	9628.938	293.626	140.3711	130.223		Recta
0+130.223		4727.740	9551.782	294.110	140.3711	32.000		Clotoide -50.000 40.000
0+162.223		4755.263	9535.745	289.572	119.9992	53.789		Curva -50.000
0+216.012		4805.218	9547.113	291.218	51.5131	32.000		Clotoide -50.000 40.000
0+248.012		4823.093	9573.480	287.917	31.1412	58.625		Recta
0+306.637		4850.640	9625.230	278.343	31.1412	32.000		Clotoide 50.000 40.000
0+338.637		4868.514	9651.597	276.561	51.5131	70.269		Curva 50.000
0+408.906		4933.029	9655.404	289.258	140.9827	32.000		Clotoide 50.000 40.000

Alzado:

ALINEACIONES EN ALZADO

INICIO	0	150	-3.419
ENTRADA	6.586	149.7749	-3.419
VERTICE	25.353	149.1332	-1400
SALIDA	44.12	147.9884	-6.1
ENTRADA	271.8754	134.0954	-6.1
VERTICE	326.3254	130.7739	900
SALIDA	380.7754	134.0409	6
FINAL	384.1549	134.2437	6

## Formato ACS-MDW:

Planta:

1	7080.058	287236.375	4822172.866	153.1053	0.000	0.000	431.843
2	7511.901	287526.482	4821852.981	153.1053	-0.001	395.000	156.025
3	7667.926	287634.238	4821740.201	148.1389	-1000.000		0.000 624.655
4	8292.581	288189.243	4821476.309	108.3722	-1000.000		-395.000 156.025
5	8448.606	288344.734	4821463.922	103.4057	0.001	395.000	156.025
6	8604.631	288500.224	4821451.534	108.3722	1000.000	0.000	465.555
7	9070.186	288931.310	4821287.159	138.0103	1000.000	-395.000	156.025
8	9226.211	289055.573	4821192.875	142.9767	-0.001	265.000	127.682
9	9353.893	289158.199	4821117.040	135.5872	-550.000	0.000	365.526
10	9719.419	289507.854	4821036.385	93.2779	-550.000	-265.000	127.682
11	9847.101	289633.329	4821059.604	85.8883	0.001	265.000	140.450
12	9987.551	289771.516	4821084.016	94.8297	500.000	0.000	614.194

Alzado tipo 1:

1	7080.058	19.450	0.0060015	0.000	466.350	
2	7546.408	22.249	0.0060015	26000.000	456.912	
3	8003.320	29.006	0.0235750	0.000	398.690	
4	8402.010	38.405	0.0235750	-25000.000	716.113	
5	9118.123	45.031	-0.0050695	0.000	203.944	
6	9322.068	43.997	-0.0050695	20000.000	595.931	
7	9917.999	49.854	0.0247270	0.000	179.296	
8	10097.295		54.288	0.0247270	20000.000	445.484
9	10542.779		70.265	0.0470012	0.000	723.163
10	11265.941		104.254	0.0470012	-40000.000	1678.033
11	12943.974		147.926	0.0050504	0.000	410.407
12	13354.381		149.999	0.0050504	25000.000	771.260
13	14125.642		165.791	0.0359008	0.000	457.458

Alzado tipo 2:

# USER MANUAL TOPVIEW

```

1      7080.05819.450
2      7774.86423.620      26000.000      456.902      1.004      0.0175732
3      8760.06746.846      -25000.000      716.120      -2.564      -0.0286448
4      9620.03242.486      20000.000      595.939      2.220      0.0297970
5      10320.037      59.795      20000.000      445.490      1.240      0.0222745
6      12104.958      143.689      -40000.000      1678.061      -8.800      -0.0419515
7      13740.012      151.946      25000.000      771.284      2.974      0.0308514
8      14583.100      182.214
    
```

## Formato InRoad:

### Planta:

\* BENTLEY HORIZONTAL ALIGNMENT TO ASCII

\*

\* Nombre de la alineación: ytu

\* Descripción de la alineación:

\* Estilo de alineación: default

\*

{TYPE STATION RADIUS X\_CRD Y\_CRD DIRECTION SPI LENGTH

LINE	STATION	RADIUS	X_CRD	Y_CRD	DIRECTION	SPI	LENGTH
LIN	0+000.000	0.000	1027846.961	116276.004	38.7272	0.000	
SPI	0+031.076	0.000	1027864.721	116301.505	38.7272	40.000	
CIR	0+071.076	100.000	1027889.671	116332.679	51.4596	0.000	
SPI	0+127.323	0.000	1027938.875	116358.372	87.2676	40.000	
LIN	0+167.323	0.000	1027978.716	116361.031	100.0000	0.000	
CIR	0+192.076	50.000	1028003.468	116361.031	100.0000	0.000	

### Alzado:

\* BENTLEY VERTICAL ALIGNMENT TO ASCII

\*

\* Nombre de la alineación: ytu

\* Descripción de la alineación:

\* Estilo de alineación: default

\*

{ TYPE STATION ELEVATION SLOPE VC\_LENGTH

LINE	STATION	ELEVATION	SLOPE	VC_LENGTH
LIN	0+000.332	292.901	0.039	0.000
PAR	0+068.374	295.536	0.039	100.000
LIN	0+168.374	296.728	-0.015	0.000
PAR	0+266.281	295.268	-0.015	50.000
LIN	0+316.281	293.709	-0.047	0.000
PAR	0+349.372	292.139	-0.047	80.000
LIN	0+429.372	289.975	-0.007	0.000

## Formato TRAZADO:

### Planta:

Fichero: C:\TRAZADO\CAMINOS\WIN\CAMINO1

Título: C:\trazado\ejemplo1\win\CAMINO1

Fecha: 22/02/04 20:31:26

ALIN	TIPO	P.K.	LONGITUD	X Tang. XC o I	Y Tang. YC o I	AZIMUT	RADIO PARAMETRO
1	RECTA	0,000	0,020	683396,793 0,000	4300226,714 0,000	26,6250	0,000
2	CIRC.	0,020	0,000	683396,801 683396,810	4300226,732 4300226,728	26,6250	0,010
3	RECTA	0,020	112,932	683396,801 0,000	4300226,732 0,000	26,9138	0,000
4	CIRC.	112,952	20,909	683443,135 683370,178	4300329,722 4300362,544	26,9138	-80,000
5	RECTA	133,861	42,325	683449,138 0,000	4300349,689 0,000	10,2746	0,000

### Alzado:

Nombre del fichero del alzado : C:\TRAZADO\CAMINOS\WIN\CAMINO1

Título: CAMINO1

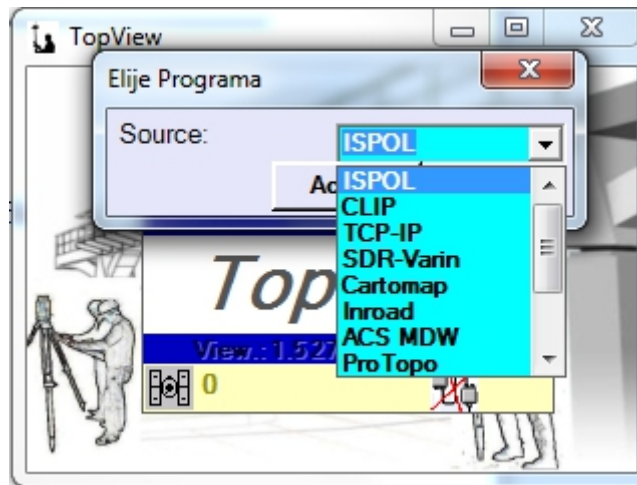
Fecha/hora última modificación: 24/02/04 14:35:48

NR	P.K. INICIO	P.K.	COTA	PENDIENTE%/PARAMETRO
	P.K. INICIO	0,0000	485,4800	1,5997
1	TANGENTE ENTRADA	4,9999	485,5600	1,5997
	VERTICE	4,9999	485,5600	0,0010
	TANGENTE SALIDA	5,0000	485,5600	9,1333
2	TANGENTE ENTRADA	11,2932	486,1348	9,1333
	VERTICE	19,9989	486,9299	-900,0000
	TANGENTE SALIDA	28,7046	487,5566	7,1987
3	TANGENTE ENTRADA	57,5172	489,6307	7,1987
	VERTICE	73,7597	490,8000	-1000,0000
	TANGENTE SALIDA	90,0022	491,4416	3,9502

## Section Fixed.

# USER MANUAL TOPVIEW

This option of Transversals mortising profiles or Natural terrain files are imported for its subsequent reconsideration in field. The formats supported are:



**ISPOL:** You can import any surface an Ispol profiles file. You only need to specify the number of axis and the line type to import.

**CLIP:**

- TER File: You can import in order to check if a mapping is similar to the real field, or simply to accompany the display of other layout (flush or subgrade) profiles

```
*TER
0, 10 , 0 , 0
-36.67, 577.09
-17.32, 577.00
-0.25, 576.91
16.77, 576.72
31.67, 576.67
34.44, 575.65
38.71, 575.63
43.65, 575.73
46.11, 576.22
50.66, 576.00
```

- The CLIP profiles listing: You can import with the purpose of the reconsideration of the same or as surface to visualize.

L VILLANUEVA DEL DUQUE-CRUCES DEL CUART. 24-04-2002 P g. 1

LISTADO DE PUNTOS DE SUBRASANTE

P.K. C. Eje	IZQUIERDA			Arista		DERECHA				
	Pie Tal.	Ext.Tal.	B.Ext.	B.Int.	B.Int.	Arista	B.Ext.	Ext.Tal.	Pie Tal.	
0	EN ESTRUCTURA									
20	-7.20	-6.78	-6.76			0.00	6.76	6.78	7.17	
575.070	576.059	574.799	574.799			575.070	574.799	574.799	575.961	
40	-7.09	-6.78	-6.76			0.00	6.76	6.78	7.15	
574.331	574.780	574.061	574.061			574.331	574.061	574.061	575.176	
60	-6.96	-6.78	-6.76			0.00	6.76	6.78	7.08	
573.712	573.976	573.441	573.441			573.712	573.441	573.441	574.349	
80	-6.96	-6.78	-6.76			0.00	6.76	6.78	7.03	
573.199	573.480	572.928	572.928			573.199	572.928	572.928	573.689	
100	-7.09	-6.78	-6.76			0.00	6.76	6.78	7.03	
572.704	573.110	572.433	572.433			572.704	572.433	572.433	573.192	

- Platform of the CLIP list: You can import with the purpose of the reconsideration of the same or as surface to visualize.

L VILLANUEVA DEL DUQUE-CRUCES DEL CUART. 28-12-2001 P g. 1

PUNTOS DE PLATAFORMA

# USER MANUAL TOPVIEW

P.K.	Lado	Pie I.	Arc,n I.	Mediana	Calzada	Arc,n	Berma	Pie T.F.
0	Izq.			0.00 576.908	-3.50 576.838	-4.00 576.828	-4.50 576.788	-6.76 575.658
	Der.			0.00 576.908	3.50 576.838	4.00 576.828	4.50 576.788	6.76 575.658
20	Izq.			0.00 576.050	-3.50 575.980	-4.00 575.970	-4.50 575.930	-6.76 574.799
	Der.			0.00 576.050	3.50 575.980	4.00 575.970	4.50 575.930	6.76 574.799
40	Izq.			0.00 575.311	-3.50 575.241	-4.00 575.231	-4.50 575.191	-6.76 574.061

- Cross section of the CLIP list: You can import with the purpose of the reconsideration of the same or as surface to visualize.

VILLANUEVA DEL DUQUE-CRUCÉ DEL CUART.                      30-04-2002                      P g. 1

LISTADO DE PUNTOS DE PERFILES TRANSVERSALES

P.K. 20  
COTA RASANTE C.D. 576.050  
COTA RASANTE C.I. 576.050

AAAAAAAAALUDESAAAAAAAA			AAAAAPLATAFORMAAAAA			AAASUBRASANTEAAA	
Dist.	Cota	Talud	Dist.	Cota	Pend.	Dist.	Cota
-7.20	576.059						
-6.78	574.799	0.333					
-6.77	574.799	H					
-6.76	574.799	H					
			-4.50	575.930	-8.0	-6.76	574.799
			-4.00	575.970	-2.0		
			-3.50	575.980	-2.0		
			0.00	576.050		0.00	575.070
			3.50	575.980	-2.0		
			4.00	575.970	-2.0		
			4.50	575.930	-8.0		
6.76	574.799					6.76	574.799
6.77	574.799	H					
6.78	574.799	H					
7.17	575.961	0.333					

**TCP-IP:**

- Fichero de Transversales \*.tra:
- Fichero de Replanteo múltiples de líneas \*.rep:

**CARTOMAP:**

- Fichero de Terreno \*.txt:

P.K.	Distancia	X	Y	Cota terreno	Código
0+000.000	-30.000	4640.610	9653.105	301.707	
	0.000	4622.835	9628.938	293.626	
	0.010	4622.829	9628.930	293.624	
	30.000	4605.060	9604.771	287.080	
0+020.000	-30.000	4656.721	9641.256	306.226	
	-21.600	4651.744	9634.489	303.838	
	-0.530	4639.261	9617.515	296.994	
	0.000	4638.947	9617.088	296.892	
	11.980	4631.849	9607.437	294.566	
	21.632	4626.130	9599.662	292.460 L. Eléctrica	
	30.000	4621.172	9592.921	290.634	

- Fichero de Niveles \*.txt:

P.K.	Nivel	X	Y	Distancia	Cota terreno	Cota sección	Dif. cotas
0+000.000							
	Nivel 1	Terreno	real				
		4629.439	9637.917	-11.146	296.629	296.129	-0.500
		4626.380	9633.758	-5.983	295.238	299.570	4.333
		4626.034	9633.288	-5.400	295.081	299.862	4.781
		4625.146	9632.080	-3.900	294.677	299.922	5.245
		4622.835	9628.938	0.000	293.626	300.000	6.374
		4620.524	9625.796	3.900	292.775	299.922	7.147
		4619.636	9624.588	5.400	292.448	299.862	7.414
		4619.290	9624.118	5.983	292.320	299.570	7.250
		4609.051	9610.196	23.265	288.549	288.049	-0.500
	Nivel 2	4626.380	9633.758	-5.983	295.238	299.570	4.333
		4622.835	9628.938	0.000	293.626	299.690	6.064
		4619.290	9624.118	5.983	292.320	299.570	7.250



# USER MANUAL TOPVIEW

## INROAD:

- Listado RoadWay\_Modeler\_XYZ \*.dat:

January 7. 2002	Roadway Modeler W/xyz	Page	1 of 52
12:17 PM	Report Template: ROADWAY_MODELER_XYZ		
Layer Name: w			
HA: 1			
VA: 1			

Station	TC	Offset	X coord	Y coord	Z coord
0+000.814	Left_Uncon	-7.8728	4738.2903	9347.1126	243.5355
				Orig. El.:	243.5355
				Cut-Fill Ht.:	0.0000
0+000.814	Left_Uncon	-7.0000	4739.1085	9346.8086	242.6611
				Orig. El.:	243.4627
				Cut-Fill Ht.:	-0.8016
0+000.814	Left_Uncon	-3.5000	4742.3893	9345.5895	242.6811
				Orig. El.:	242.3364
				Cut-Fill Ht.:	0.3447
0+000.814	Centerline	0.0000	4745.6701	9344.3704	242.7011
				Orig. El.:	241.4551
				Cut-Fill Ht.:	1.2461
0+000.814	Centerline	0.0000	4745.6701	9344.3704	242.7011
				Orig. El.:	241.4551
				Cut-Fill Ht.:	1.2461

## SDR-VARIN:

- Listado Pk,Desplazamiento,Cota del Sdr-Varin: Se puede importar con la finalidad del replanteo de la misma o como superficie a visualizar

```
0.000,-5.000,510.512
0.000,0.000,510.612
0.000,5.000,510.512
20.000,-5.000,510.725
20.000,0.000,510.825
20.000,5.000,510.725
```

## CARTOMAP:

### - Terreno

P.K.	Distancia	X	Y	Cota terreno	Código
0+000.000	-30.000	4640.610		9653.105	301.707
0.000	4622.835	9628.938		293.626	
0.010	4622.829	9628.930		293.624	
30.000	4605.060	9604.771		287.080	
0+020.000	-30.000	4656.721		9641.256	306.226
-21.600	4651.744	9634.489		303.838	
-0.530	4639.261	9617.515		296.994	
0.000	4638.947	9617.088		296.892	
11.980	4631.849	9607.437		294.566	
21.632	4626.130	9599.662		292.460	L. Eléctrica
30.000	4621.172	9592.921		290.634	

### - Sección

.K.	Nivel	X	Y	Distancia	Cota terreno	Cota sección	Dif.
cotas							
0+000.000	Terreno real						
Nivel 1	4629.439		9637.917	-11.146	296.629	296.129	-0.500
	4626.380		9633.758	-5.983	295.238	299.570	4.333
	4626.034		9633.288	-5.400	295.081	299.862	4.781
	4625.146		9632.080	-3.900	294.677	299.922	5.245
	4622.835		9628.938	0.000	293.626	300.000	6.374
	4620.524		9625.796	3.900	292.775	299.922	7.147
	4619.636		9624.588	5.400	292.448	299.862	7.414
	4619.290		9624.118	5.983	292.320	299.570	7.250
	4609.051		9610.196	23.265	288.549	288.049	-0.500
Nivel 2	4626.380		9633.758	-5.983	295.238	299.570	4.333
	4622.835		9628.938	0.000	293.626	299.690	6.064
	4619.290		9624.118	5.983	292.320	299.570	7.250
Nivel 3							
Nivel 4							
Nivel 5							
Nivel 6							
Nivel 7							

# USER MANUAL TOPVIEW

Nivel 8  
Nivel 9

## INROAD:

### - Formato 1:

May 23, 2002 Roadway Modeler W/xyz Page 1 of 109  
09:47 PM Report Template: ROADWAY\_MODELER\_XYZ  
Layer Name: bit  
HA: Haggarty Road  
VA: resurf

Station	TC	Offset	X coord	Y coord	Z coord
0+588.265	Izquierda_	-3.8008	1028222.0617	116402.8019	295.1566
				Orig. El.:	295.3567
				Cut-Fill Ht.:	-0.2001
0+588.265	LEOM	-3.7399	1028222.1226	116402.8048	295.3596
				Orig. El.:	295.3596
				Cut-Fill Ht.:	0.0000
0+588.265	Izquierda_	-3.6604	1028222.2020	116402.8086	295.3611
				Orig. El.:	295.3611
				Cut-Fill Ht.:	0.0000

### - formato 2:

Fecha: martes, 08 de marzo de 2005 13:14:58  
Nombre superficie: Ras5\_5'D  
Nombre alineación: CALLED

0+000.000	-13.519	601.665	IZDA_Desmonte1
0+000.000	-12.430	601.120	IZDA_Ta_Sal_cuneta1
0+000.000	-11.430	601.120	IZDA_Ta_entrda_cunel
0+000.000	-9.510	602.400	IZDA_Berma_Izq1
0+000.000	-8.760	602.400	IZDA_Ace_Izq1
0+000.000	-5.760	602.340	IZDA_Bor_Izq1
0+000.000	-5.750	602.200	IZDA_Apar_Izq1
0+000.000	-3.250	602.150	IZDA_Calzada_Izq11
0+000.000	0.000	602.215	Eje
0+000.000	3.250	602.150	DCHA_Calzada_Der11
0+000.000	5.750	602.200	DCHA_Apar_Der1
0+000.000	5.760	602.340	DCHA_Bor_Der1
0+000.000	8.760	602.400	DCHA_Ace_Der1
0+000.000	9.510	602.400	DCHA_Berma_Der1
0+000.000	11.430	601.120	DCHA_Ta_entrda_cunel
0+000.000	12.430	601.120	DCHA_Ta_Sal_cuneta1
0+000.000	13.774	601.792	DCHA_Desmonte1

## ACS-MDW:

9380.000			
-48.492			57.574
-46.762			57.427
-38.678		56.705	
-38.158		56.359	
-37.988		56.246	
-36.988		56.245	
-30.432			55.970
-29.228			55.890
-23.425		42.681	42.681
-19.825		42.393	
-18.625		42.193	
-18.156	41.635	41.635	
-18.025		42.293	
-17.425	42.393	42.393	
-16.425	42.473		
-13.925	42.673		
-12.157			54.783
-11.621			54.754
-5.500	43.347		
-4.500		42.727	
-4.500	43.427		
-3.500		42.807	
-3.500	43.347		
-0.187			54.133
-0.043			54.125
-0.040			54.125
0.000		43.087	
0.000	42.764		
3.500		43.447	
3.500	44.067		
4.500	44.147		
4.500		43.527	

# USER MANUAL TOPVIEW

```

5.500  44.227
12.500 44.787
15.000 44.987
16.000 44.907      44.907
16.600      44.807
16.661      44.500 44.500
17.200      44.707
18.400      44.907
18.912
19.000      44.955 44.955 53.413
19.683      53.391
26.991      52.946
27.505      52.946
27.942      53.238
42.077      52.977
43.314      52.955
70.000      52.809
    
```

**PROTOPO:**

```

"PK",0.000, "P.K. Origen"
-10.971,819.171, Talud1
-6.400,814.600, Talud2
-6.000,814.200, Cuneta1
-4.800,814.600, Berma1
-3.000,814.600, Calzada1
0.000,814.600, Eje
3.000,814.600, Calzada2
4.800,814.600, Berma2
6.000,814.200, Cuneta2
6.400,814.600, Talud3
8.542,816.742, Talud4
    
```

**EAGLE:**

```

User Name: jpla                               Date: 07-14-05
Project: Bellpuig-Preixana                    Time: 09:37:00
Subproject : Bellpuigpreixana , Sub Project No :6  Page: 1
    
```

R O A D C A L C    C R O S S - S E C T I O N S

```

=====
Surface Name :ExistPavement
STATION      OFFSET      ELEVATION
-----
0+060.000    -19.578      288.680
              -17.462      288.723
              -16.740      288.922
              -14.240      288.913
              -11.033      289.321
              -9.802       289.472
              -6.305       289.603
              -5.671       289.611
              -5.640       289.610
              -5.626       289.606
              -2.273       288.615
              -2.222       288.630
              -1.206       288.862
              -0.744       288.856
              0.000       288.857
              4.045       288.865
              4.678       288.715
              5.036       288.610
              5.501       288.359
              6.709       287.819
              21.945      287.834
              32.934      287.822
    
```

**LANDXML:**

```

<CrossSects name="CAMINO 1">
  <CrossSect sta="0.000000" areaCut="0.0000" centroidCut="0.000000"
  volumeCut="0.0000" areaFill="3.5280" centroidFill="0.235969" volumeFill="0.0000">
    <CrossSectSurf name="Existing Surface" desc="TERRENO NATURAL"
    state="existing">
      <PntList2D>-50.000000 235.068013 -45.173750 234.976433 -27.130210
      234.661202 0.000000 234.392971 24.169036 234.154017 40.530949 234.453577 50.000000
      234.234410</PntList2D>
    </CrossSectSurf>
    <CrossSectSurf name="Template Surface" desc="ASFALTO" state="proposed">
      <PntList2D>0.000000 235.000000 -3.500000 234.930000 -3.500000
      234.830000 0.000000 234.900000 3.500000 234.830000 3.500000 234.930000 0.000000
      235.000000</PntList2D>
    </CrossSectSurf>
  </CrossSect>
</CrossSects>
    
```

# USER MANUAL TOPVIEW

```
<CrossSectSurf name="Template Surface" desc="BASE GRANULAR"
state="proposed">
  <PntList2D>0.000000 234.900000 -3.500000 234.830000 -3.500000
234.930000 -4.500000 234.910000 -4.500000 234.710000 -3.500000 234.730000 0.000000
234.800000 3.500000 234.730000 4.500000 234.710000 4.500000 234.910000 3.500000
234.930000 3.500000 234.830000 0.000000 234.900000</PntList2D>
</CrossSectSurf>
  <CrossSectSurf name="Match Slope" desc="Left" state="proposed">
    <PntList2D>-4.500000 234.910000 -4.967912 234.442088</PntList2D>
  </CrossSectSurf>
  <CrossSectSurf name="Match Slope" desc="Right" state="proposed">
    <PntList2D> 4.500000 234.910000 4.500000 234.910000 5.067126
234.342874</PntList2D>
  </CrossSectSurf>
  <CrossSectSurf name="Top Surface" desc="" state="proposed">
    <PntList2D>-4.967912 234.442088 -4.500000 234.910000 -3.500000
234.930000 0.000000 235.000000 3.500000 234.930000 4.500000 234.910000 5.067126
234.342874</PntList2D>
  </CrossSectSurf>
</CrossSect>
```

## Digital Terrain Models.

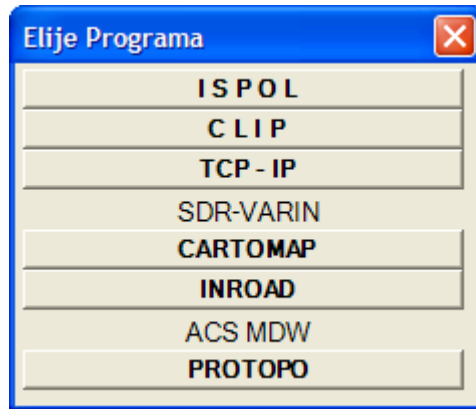
This option DTM files are imported for its subsequent reconsideration in field. The formats supported are:



**Nota:** The day of the publication of this Manual only available to ISPOL, TCP-IP, InRoad, and import DXF-3dface standard programs.

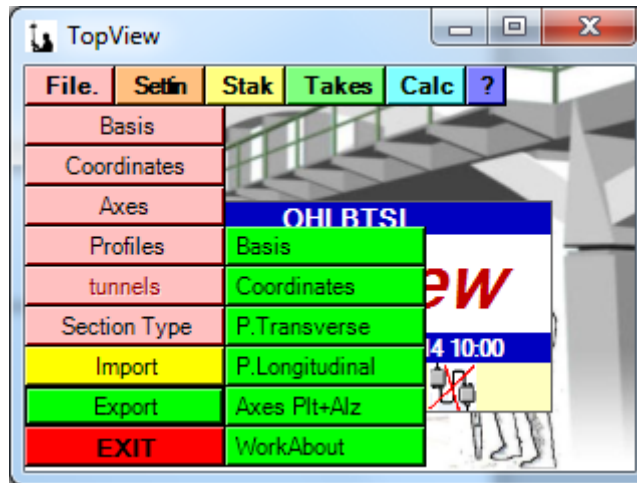
## CAMBER Table.

This option cant tables are imported for its subsequent reconsideration in field. The formats supported are:



**Nota:** The day of the publication of this Manual only available for programs of ISPOL, CLIP, TCP-IP, Cartomap and InRoad.

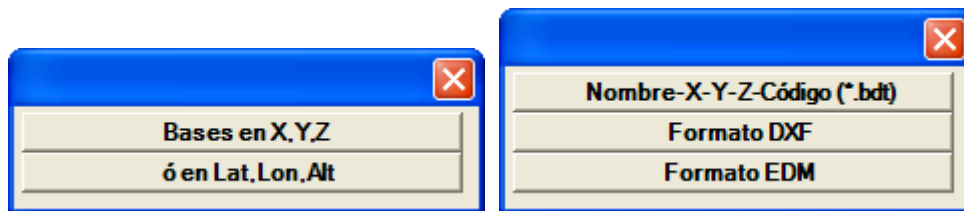
## EXPORT MENU:



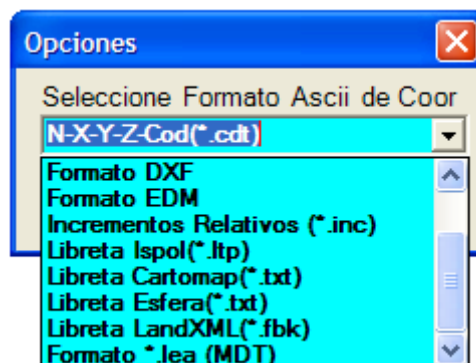
## Bases & Coordinates

This option being exported data BASES & Coordinates, in different formats of ASCII files:

**Bases:** If the active device is a GPS program we will offer between export bases in XYZ or Lat.Lon.Alt.



**Coordinates:** It allows to export the following formats:



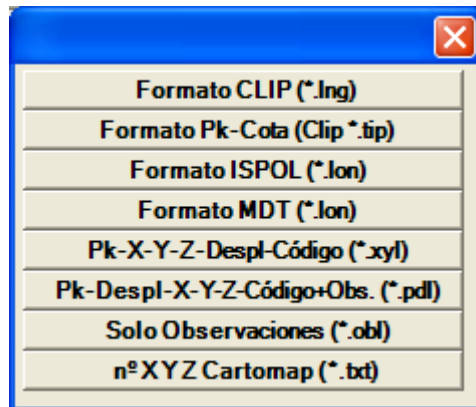
## Transverse Profiles

This option of transverse profiles data in different formats of Ascii files are exported:



## Longitudinal Profiles

This option being exported data from longitudinal profiles, in different formats of ASCII files:



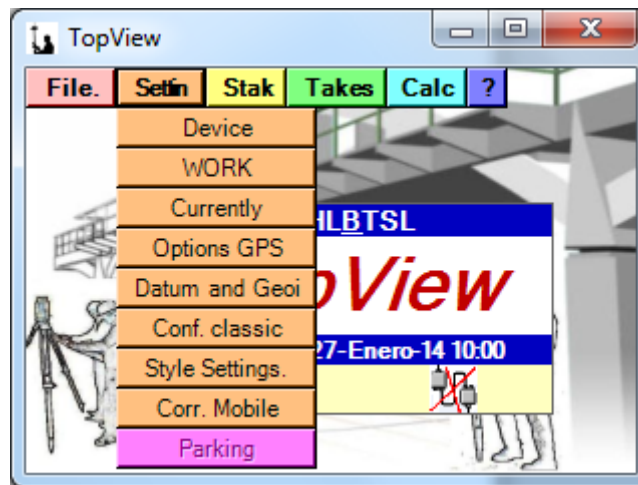
## AXIS

This option in plant layout, and axis elevation data in Ascii files are exported in the same file:

- Fichero formato TOPVIEW

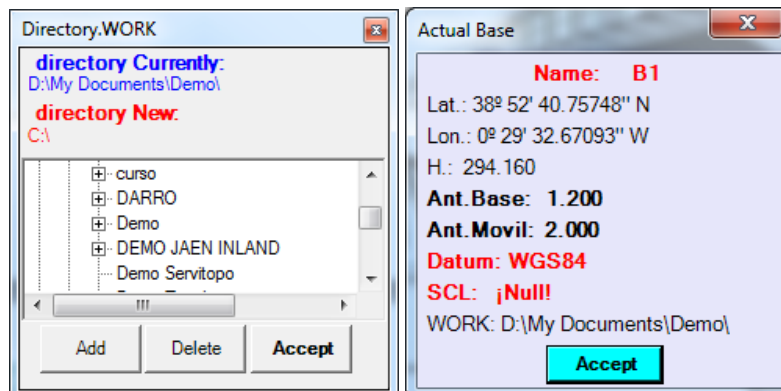
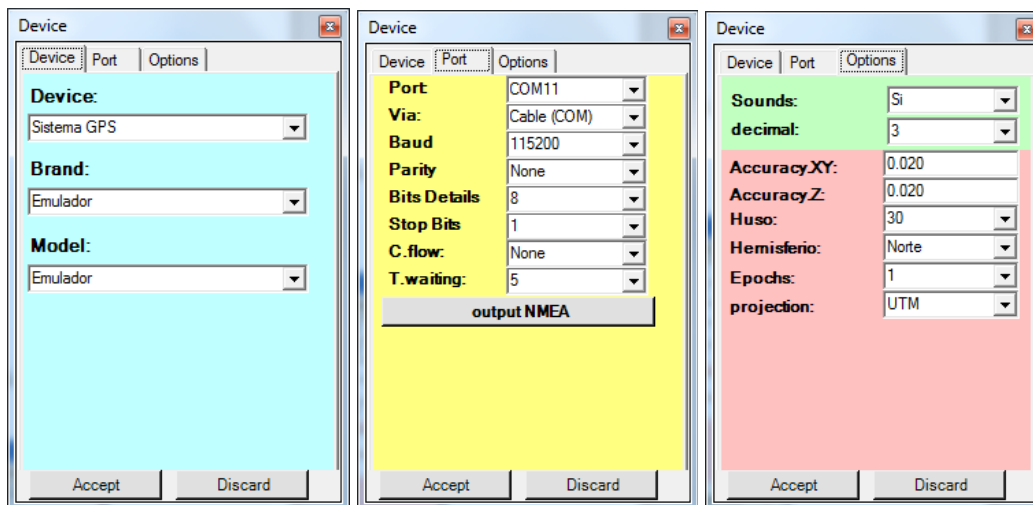
## SETTINGS MENU

This is the appearance of this menu in the new version:

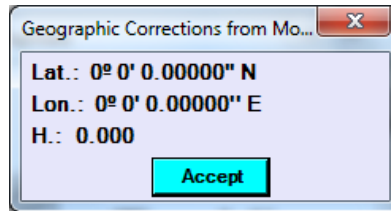


## DEVICE, WORK, CURRENTLY

These three options have been previously described at the beginning, in the section "Starting with Topview".

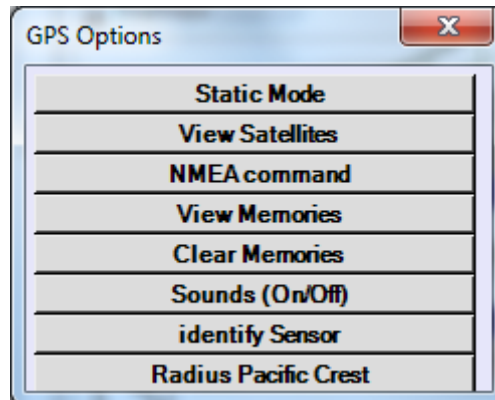






## GPS Options: (GPS Only)

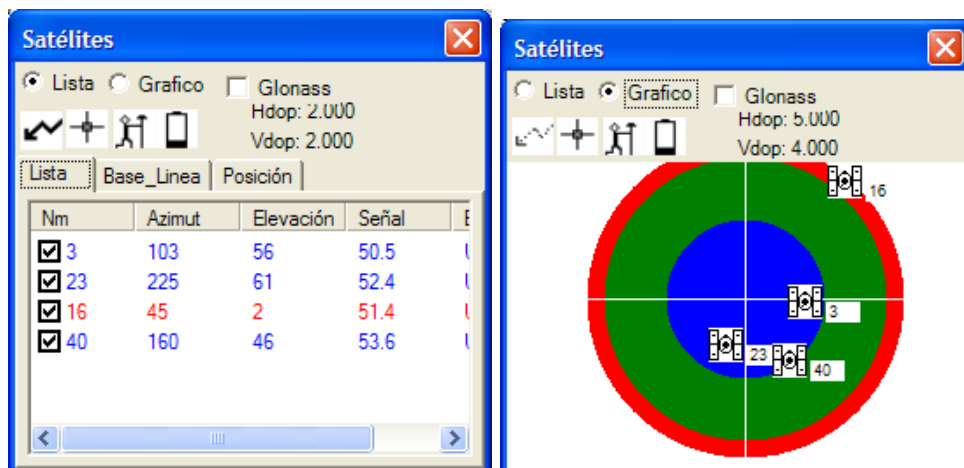
This menu allows us to act on the Sensor:



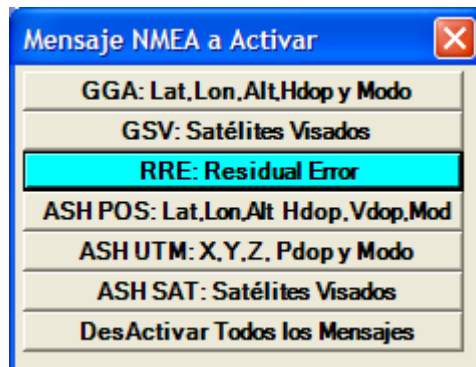
**1.-Static Mode:** In this section we can activate and stop the recording of observations in the internal memory of the receiver then to perform post-processing. This operation is possible both in the GPS-Mobile GPS-based, although GPS-based it is not necessary because configure it parallel observations recording is activated to solve ambiguities in real-time (RTK).

During the course of this operation the programme will be taking periodic readings of the State of the satellites and Pdp informing of the minimum, maximum, and read half read, offering for the average time.

**2.- Satel View:** through this screen we have access to information regarding the status of satellites, their elevation, quality of signal, etc.



### 3.- NMEA Command.



This option allows the activation/deactivation of the emission of different NMEA messages via the serial port of the sensor.-

### 4.- See memory

Displays the internal memory of the sensor.-

### 5.- Clear memory

Delete the data in the internal memory of the sensor

### 6.- Sound.-

We activate the emission of sounds in the program based on certain events.

### 7.- Identify sensor.-

We can determine the type and serial number of the sensor connected to our address book.

### 8.- Radio Channel

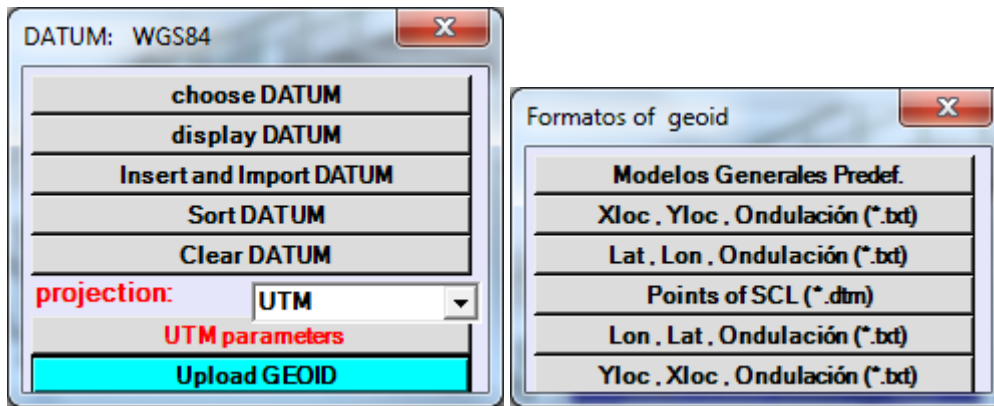
We have access to the change of our Gps (in some cases also to the frequency) channels, as well as certain changes in some parameters via radio transmission/reception. In some sensors as the topcon GR3 plate containing the Radio is the same that contains the GSM/GPRS and from here one or another can be activated.

## **Datums and Geoid: (GPS Only)**

This option allows us to choose, create, or delete a Datum. Depending on the Datum selected thus be obtained Cartesian coordinates that will be local conversions using the

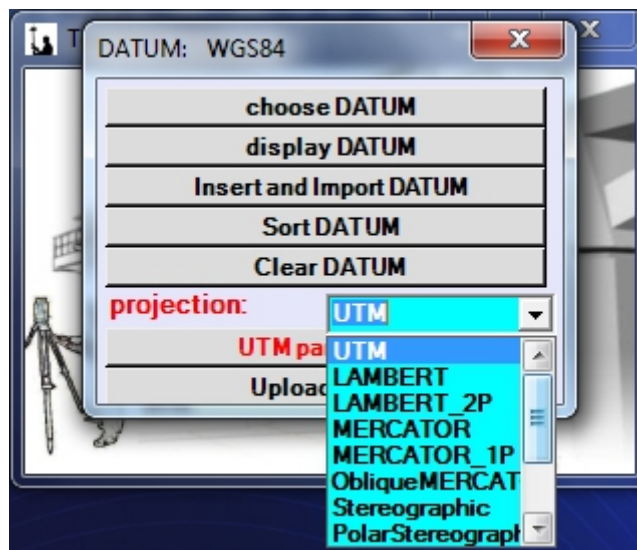
# USER MANUAL TOPVIEW

parameters of the SCL. Initially we could choose either one Datum, but it is important to not change Datum in a work, since it can induce substantial errors.



Added the option "Load geoid" through which we apply a model of increments relative to the ellipsoid heights obtained directly by GPS for approaching the dimension area geoid.

In UTM parameters, or parameters LAMBERT, or parameter ObliqueMERCATOR, etc..., you can specify multiple values influencing the conversion of geographical coordinates on her prior to the SCL Coordeandas XYZ.



# USER MANUAL TOPVIEW

UTM parameters

Tamaño Huso:	6
Huso=	30
Hemisferio=	Norte
X Center Huso:	500000.0000
and Sur Source:	1000000.0000
Coeficiente K:	0.999600
Lat. Source:	0.000000
Merid.Central:	0.000000

by Default  
Par. Argentina

Accept

Parameters LAMBERT

Lat. Source:	38.00000000
Merid. Central:	-100.00000000
Falso this:	2000000.000
Falso Norte:	3000000.000
Scale:	0.999200

Accept

Parameters LAMBERT 2P

Lat. Source:	38.00000000
Merid. Central:	-100.00000000
Paralelo 1:	39.00000000
Paralelo 2:	44.00000000
Falso this:	2000000.000
Falso Norte:	3000000.000
Scale:	0.999200

Parám. to Andorra

Accept

Parameters MERCATOR

Merid. Central:	-75.00000000
Falso this:	200000.000
Falso Norte:	300000.000
Factor Scale:	1.000000

Accept

Parameters MERCATOR 1P

Merid. Central:	-75.00000000
Paral. Estandar:	0.00000000
Falso this:	200000.000
Falso Norte:	300000.000
Factor Scale:	1.000000

Accept

Oblique MERCATOR

Lat Source:	40.00000000
Lat Pto1:	45.00000000
Lon Pto1:	-80.00000000
Lat Pto2:	40.00000000
Lon Pto2:	-78.00000000
Falso this:	100000.000
Falso Norte:	90000.000
Factor Scale:	0.999600

Accept

Stereographic

Merid. Central:	-95.00000000
Lat. Source:	30.00000000
Falso this:	100000.000
Falso Norte:	200000.000

Accept

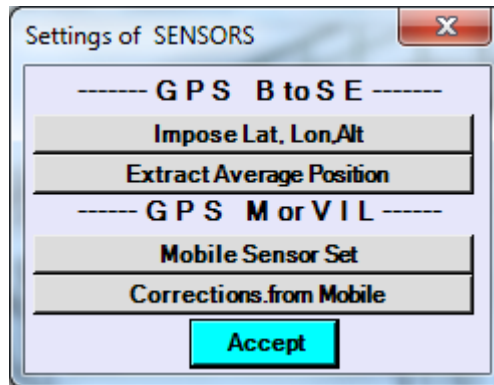
Polar Stereographic

Merid. Central:	-85.00000000
Lat. Source:	90.00000000
Falso this:	0.000
Falso Norte:	0.000
Scale:	1.000000

Accept

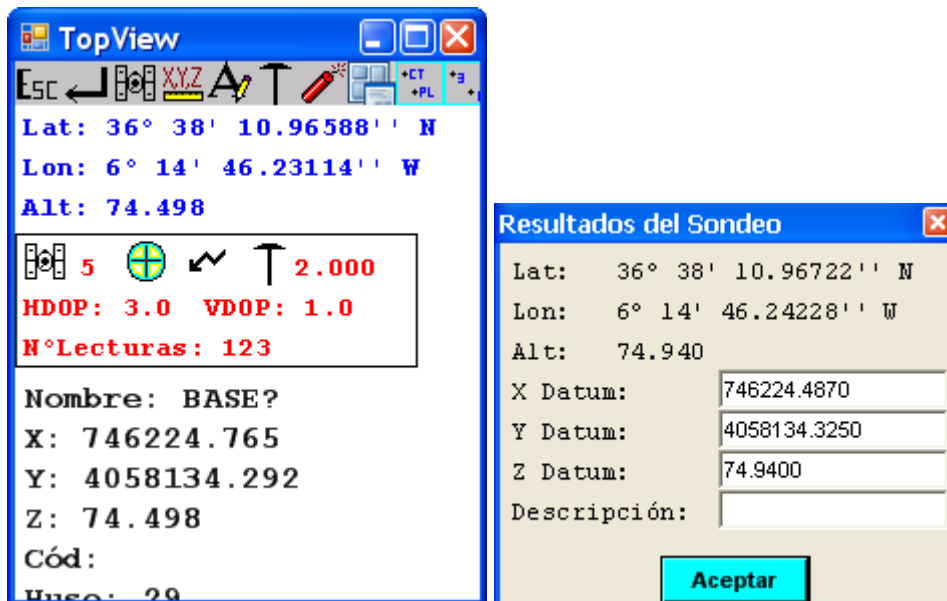
## Classical Settings: (GPS Only)

In this module we can configure the GPS equipment as equipment BASE or as a mobile team, indicating the geographical coordinates of the base where is situated the GPS-BASE as well as the antenna height, maximum angle of inclination of satellites in use, frequency of sending data to the GPS-mobile through the radio-modem and parameters series, etc..



### Extract Average Position:

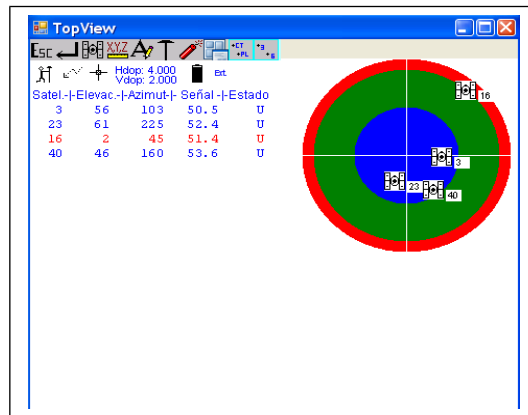
The WGS84 geographic coordinates on the base where we will place the GPS-Base is not available at the start of a new job and will have to remove a coordinate media for the work area. This program will begin taking readings showing the incoming coordinates, the number of readings taken, satellites and Hdop and Vdop read parameters until you press the ENTER or ESC key. Then it will display the result of the average read and imposed it to receiver offering also the possibility of recording the WGS84 geographic coordinate and the Datum used for Cartesian coordinate. Both in this module as others recorded geographic coordinates are always referred to the Datum WGS84. It is very important to know this last to not make mistakes in calculations or subsequent transformations (e.g., using another specialized program).














In any screen like this in which has established communication with the receiver and you are reading coordinates, we can press the key "s" or on the icon and a

# USER MANUAL TOPVIEW











screen that displays icons indicating: If the receiver is to either Base or mobile; If the radio-modem is receiving; If you are in navigation mode or in floating precision; the Hdop; Vdop; and finally a list of satellites visas with the parameters of the number of the satellite, elevation, Azimut, signal level, State of computing.








## ICONOS Informativos

-  GPS-Base
-  GPS-Móvil
-  Satellites
-  Radio ON
-  Radio OFF
-  Navigation Mode
-  Float Mode
-  Precision Mode
-  Battery Full
-  Battery Half
-  Battery Low

## ICONOS y Teclas Activas

-  Escape Key.
-  Enter Key.
-  Satellites.
-  Accuracy, Times, Elevation Mask.
-  Code of Point.
-  Change of height of mobile antenna for GPS.
-  The RTK GPS reset.
-  Switch between graphic display and display text in some modules.
-  Displays the number of point, codes, and the dimension in a graphical display.
-  Additional information of a point and association with an image.

-  Zoom +.
-  Zoom -.
-  Zoom All.
-  Zoom Window.
-  Displays or hides the lines in graphical display.

The program will be reporting with messages in the lower-right corner on the events of the configuration.

Special mention is the configuration of the wireless modem box. It specifies the parameters COM communication between sensor and the Radio. Each sensor is typically a wireless modem with different parameters and different with what will be necessary to go to the equipment specifications or check with the distributor of GPS to know what are.



Once it displays the following message:

### **Impose latitude longitude altitude**

Is equivalent to the same previous option, but with the difference of the coordinate rather than removed from the Sensor is extracted from a file. This coordinate should not distance more than 50 metres from the autonomous position sensor calculated for the area because otherwise the Base would not send corrections spreads to mobile or if the mobile sends them to discard them. Some sensors are even more stringent and the imposed coordinate should be next.

### **Mobile Sensor Set**

This option tells the sensor that should act as a receiver of differential corrections and to do this we must indicate the communication parameters series for the wireless modem in addition to the mask lifting height of antenna, satellite, etc..

### **Corrections from Mobile**

This option allows us to place GPS Base anywhere ("extract position Media") and continue using the geographical coordinates and the SCL we already have without having to re-read these bases and return to the SCL setting.



The principle is based on a translation of WGS84 geographical coordinates from the mobile. So we need to read the coordinates of a base that we had previously read. The program will show us the differences that exist from the current position of the base that will be just a few seconds or tenths of seconds. These differences are stored in a few variables, and recorded in the configuration file. From that moment all the coordinates received from mobile sensor them will be subtracted those differences which is equivalent to position the GPS Base on known coordinates. If we have several mobile GPS we will have to make the transaction with each of them.

Each time that you configure the GPS Base these variables go to zero, so if Base sensor is not positioned in a known base should make the corrections again.

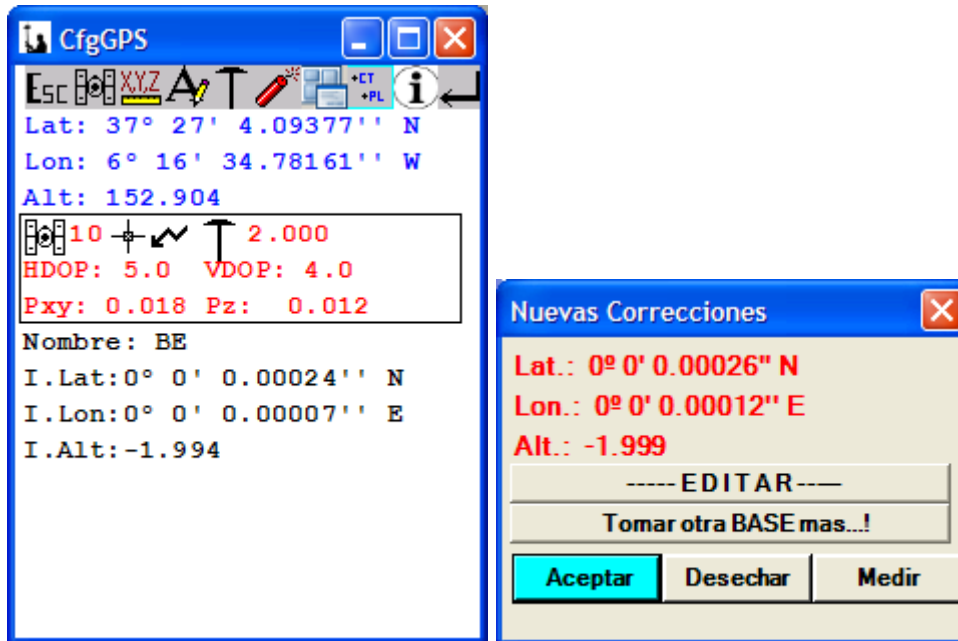
The advantages of this method are several:

- 1- The possibility to place GPS Base anywhere more in line with the needs of the moment.
- 2- Put the Base GPS antennas on the roof of our car and the sensor in the boot thus eliminating the need to monitor the equipment and reducing the emission of the Radio\_MODEM distance, because it is assumed that once read all the bases of the work the remaining days will work in localized areas. There is that having in mind that the car should not be moved during the work, and if necessary their mobility should repeat the process of calculation of differences to correct.
- 3- If a work already exists a GPS based emitting differential corrections, whose wireless modem is compatible with ours and it is information that also emits, we can use these Radio signals and those apply corrections from mobile phone even if its coordinates are different from our.

We will arrive at a picture like this:



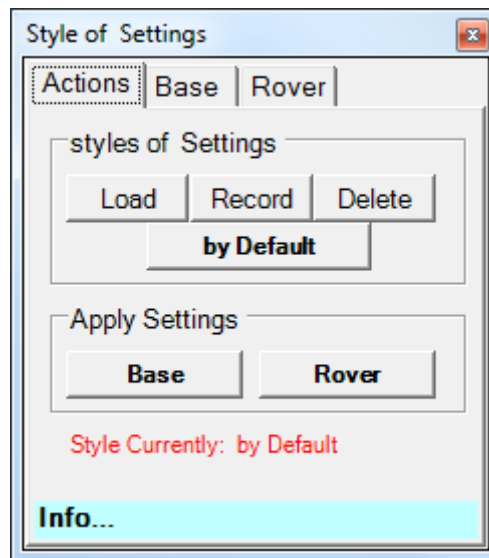
# USER MANUAL TOPVIEW



Also we can manually edit measured data (- Edit-), averaging with other base more (take another BASE more...!), accept and dispose of the measurement.

The option at the beginning of "Recover history" serves to retrieve previous measurements that may be valid, especially in case of work with networks of Bases NTRIP. Whenever we make a correction is recorded in a file called "CorrMovil.inf" in each directory of work values of measurement together with the name of the base on which it was made, the date and time.

## Setting Styles (GPS Only)



One of the multiple advantages offered by the use of TopView is the possibility of using it with practically the totalized of computers that are currently on the market. This fact necessitates that it offers the opportunity to modify all the configuration parameters, which sometimes can complicate or slow down the process of the equipment configuration of GPS, which due to their complexity makes the number of parameters to configure is greater and therefore the time required to complete the Setup and the required expertise are higher.

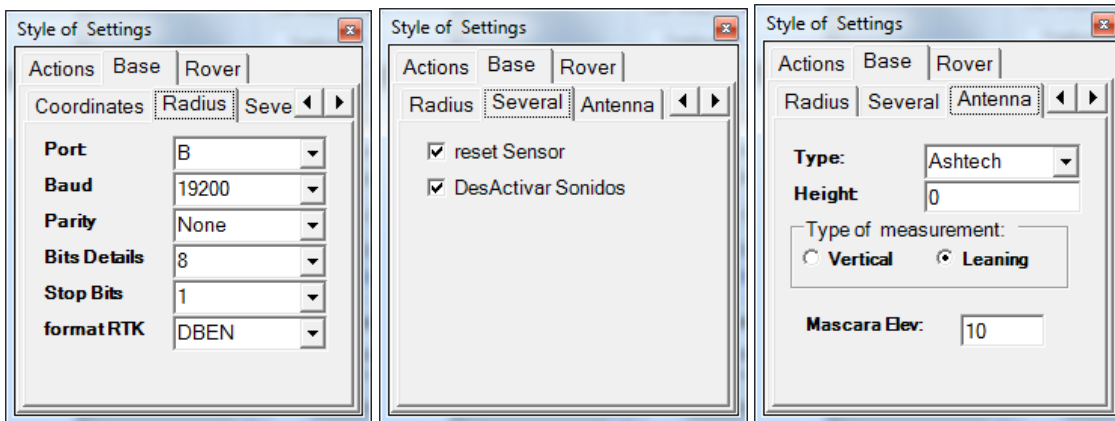
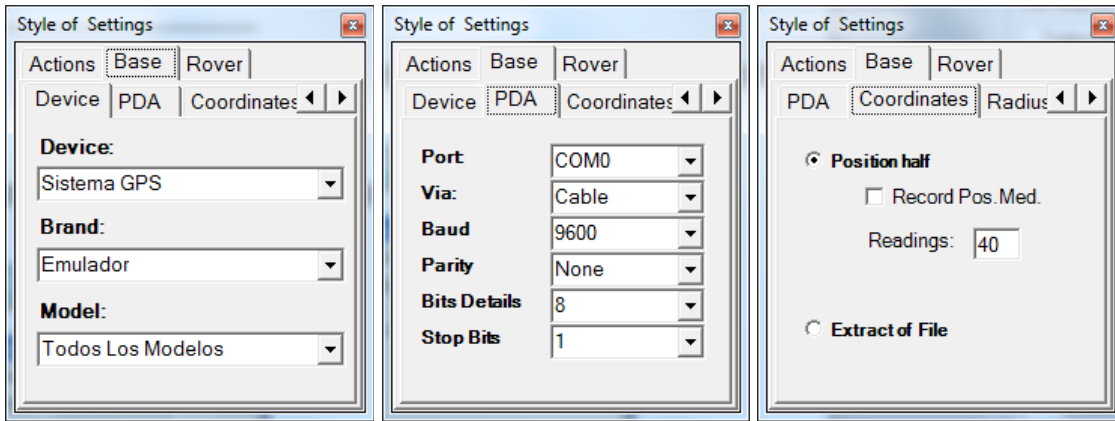
The first setting up our team, is a step that necessarily we must be, unless they have already configured us, we have to tell you all those parameters that will allow, for example, our electronic book to communicate with GPS, GPS send through the Radio-Modem information we need every time us.

To begin with we can split a configuration type that we can apply by default and then modify those parameters that vary in the configuration that you want to use particularly. Once this step has been made can save your settings to be used in subsequent works that will be used the same composition of team, even when for example you change your address book you can load a previous configuration and modify it, in order to then also keep it and use it at another time, i.e. from a configuration we can adapt it to other similar team composition.

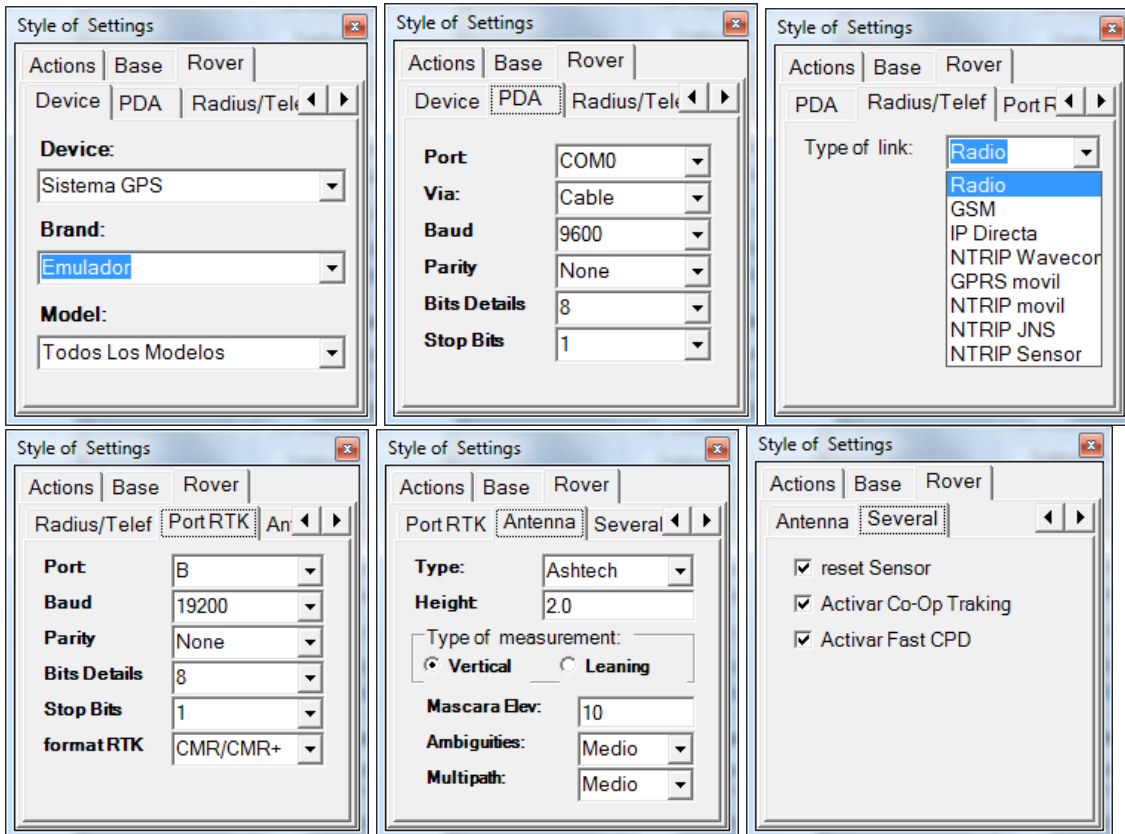
Then we will see how you would be the configuration of a team of GPS BASE JAVAD and an electronic book of Topcon's FC-100 connected by cable and GPS ROVER hyper + connected by BlueTooth, which has the following characteristics:

### **Base:**

# USER MANUAL TOPVIEW



## Móvil:



## DEFAULT PARAMETERS

We will start by selecting the device that we will work, with this once we go into styles of configuration we can apply a previous configuration for the team we have selected.

This configuration applies from the option by default, with which apply an initial configuration that will serve as basis to adapt to the team that we want to work.

## Parameters of GPS BASE

We will begin by configuring the GPS Base, starting as already mentioned parameters by default that we have imposed on it.

Select the Base tab to configure it:

**PDA:** This first option that shows us refers to the communication parameters that we will impose on the book so that you can communicate with the GPS, such as port, baud rate, etc. In this case that will be seen in the image above.-

**Radio:** with the following option is going has let you to GPS for example the port which is has issue differential corrections, the Radio-Modem and the type of format of the same, the baud rate, etc. For our example will be the following:

**Varios:** in this case we will has allow to enable different options depending on the type of sensor that we have selected as a device, for example going has allow enable / turn off sounds that emit some sensors during use, also is going has allow reset sensor, etc. in our case for the team that we will configure only offers us the option to reset the Sensor, as we see in the image below.

**Antenna:** Here we will indicate the information relating to the antenna, as it is the type of antenna that we are working in addition to the height that is located, the mask lifting, etc. In the next image we see the selection for our example:

**Coordinades:** here indicate you which will has be the source of the coordinates that will have have the GPS-based, offering two options.

- *Remove middle position:* with what team measured its position with the number of times that you indicate. Once applied configuration sensor offers the possibility of saving measures coordinates.

- *Extract file:* with that applying settings ask us the file of bases that is the basis on which we have parked our sensor.

**Post\_Proceso:** It finally offers us the possibility of recording in the sensor information in order to subsequently process it in office. You will have to fill in the name of the file of observations and the frequency of recording.

## Parameters of GPS MOBILE

# USER MANUAL TOPVIEW

Similar to the configuration of the Base, already start parameters that we have imposed by default, while the final configuration corresponds to what then we indicate:

**PDA:** the configuration of the PDA is usually the same for two sensors, except for cases in which such a sensor available cable and Blue Thoot while another only cable. On our case as we have already specified in the characteristics of the equipment shall be in the following way:

**Enlace-RTK:** Here you can select the differential corrections reception channel. They will usually be by Radio but they can also be for GSM/GPRS and in this case you must specify several parameters:



**Antena:** This option has the same options that the sensor base, as well as allowing you to indicate which will has be the level of ambiguity and multipath.

**Puerto RTK:** in this case select the COM\_ port that goes has receive differential corrections, baud rate, parity, etc.

**Varios:** similar to before collects configuration features such as reset Sensor, enable Fast CPD, or as in the case of our equipment enable co-op Traking, etc.

## SAVE SETTING

We can save the settings we just determine to avoid this repetitive work whenever we want to work with the same computer, PDA, etc.

To do this on the actions tab offers us the option to record the basic configuration and mobile in the same file, whereupon, in the successive times that you fence to be used only will need to load the saved configuration and apply it, without changing any parameter.

In our case we'll put it under the name of Hiper\_Plus\_FC100 being a hyper + team along with the FC-100 notebook configuration, both of topcon.

## APPLICATION SETTINGS

Once we have defined which will have the setting of each of the sensors and have kept it will spend to implement it, with the tab actions offers us the option to apply those settings to each of the sensors, this must be connected each to the PDA, which can be simultaneously, for this reason, we will begin by connecting the PDA to the sensor base to then apply your setting, when we apply the settings on any computer, will have set communication between the sensor and the PDA.

In the case we are discussing, using Bluetooth, there is an intermediate step that is going has allowed to communicate via Bluetooth, for this reason when you apply the configuration appears to us a window that offers us the possibility to select the name of the sensor with which we want to communicate, although there is also the possibility that does not appear any team, even that which appear are not who we are interested in, in this case we have to click the Scan option, so the book will make a sweep to detect Bluetooth to communicate new:

After finishing this operation already must appear the name of the sensor you want to communicate, from here only is situation about our sensor and press the Select button, and selected our sensor and then it will continue to apply the settings.

Established, then we disconnect the sensor base to connect the phone to the PDA and can apply in the same way the established configuration.

In this way we can begin to work, and that both sensors are already. We may realize that we get connected, or that do not emit or receive Radio Modem, in these cases we can change the settings we create incorrect, return to save the configuration file with the same name and apply it again.

## **COMMUNICATIONS PDA - SENSOR**

Communication can be set in three different ways: BlueT/Serial, Bluetooth and Cable. Communication cable does not present any problem, so we will discuss the other two options.

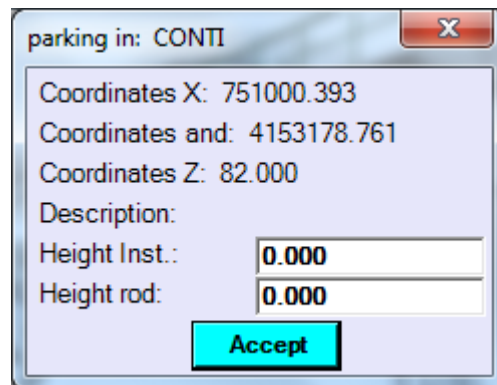
The classic ports are known by the name of "COM" while the BlueTooth port is known with the name of "BSP", to this must be added the number of the same ("COM1" or "BSP1"). Usually on a PDA port for cable is the COM1 port for Bluetooth can be BSP2 or BSP3. Well, most of the PDAs incorporates a Driver that makes blueTooth emulate port conventional "COM\_" series with a numeroelevado (6, 7, 8, or 9). In this case we will have to indicate in TopView that "Way" is "BlueT/Serial".

Some PDAs (example: FC-100, Unitech socket) when TopView attends BlueTooth Windows Ce operating system (WinCe) automatically opens Explorer devices to select a BlueTooth, while in others this does not occur (example: WorkAbout Pro, Unitech with Anycom) and if we want to change our connection will have to go to the Manager of the Bluetooth to perform this scan and selection.

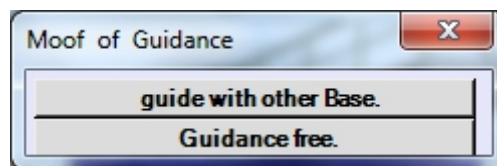
# USER MANUAL TOPVIEW

## PARKING: (E.T. Only)

In this section you park the instrument in UTM or PLANE, through an orientation with another base or a free orientation. Requested file Bases, name of the Base where you Park, the instrument height, and height of the marker.

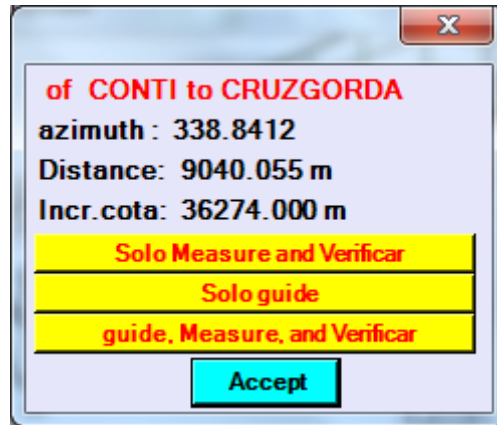


After this data is offered us Orient with another Base or freely orient the device.

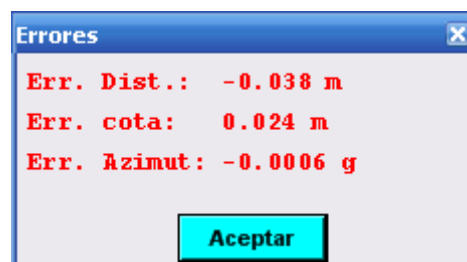


If any of the chosen basis did not exist in the basis file, we are presented a screen where you can enter the data of the database and decide whether to archive it to the basis file. Then it will show us the result of the calculation of orientation.

# USER MANUAL TOPVIEW



If we choose only to measure and verify we will have the option to read in direct and reverse circle and get results similar to these:



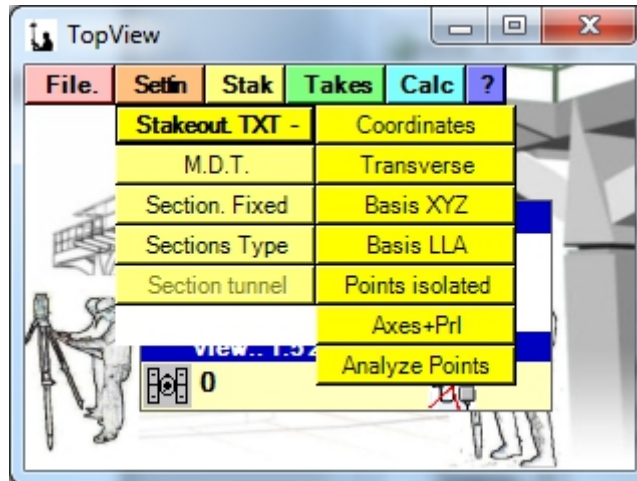
If you select only guide the program will impose an azimuth to the station, and with the third option included the previous two, i.e. focus on another base, will read it and obtain the relative errors in distance, elevation and azimuth.

To exit the application program reports data base from which will make all the calculations of reconsideration or take data, as well as the work subdirectory.



## STAKEOUT MENU

All layout options provides we archiving the coordinates of the point restated in field in a file called of receipt which is in reality a coordinates file same as other files used in Taquimetria or reconsideration of files of coordinates. Is often used to be aware of the points really reframed in field as well as the actual dimension of the field at that point, in these codes are automated to indicate the original point which was to rethink and retrieved residual error.



## COORDINATES

This option can rethink groups coordinates from different sources as well as recording the results of the reconsideration in a backup file.

### TOTAL ESTATION(E.T.):

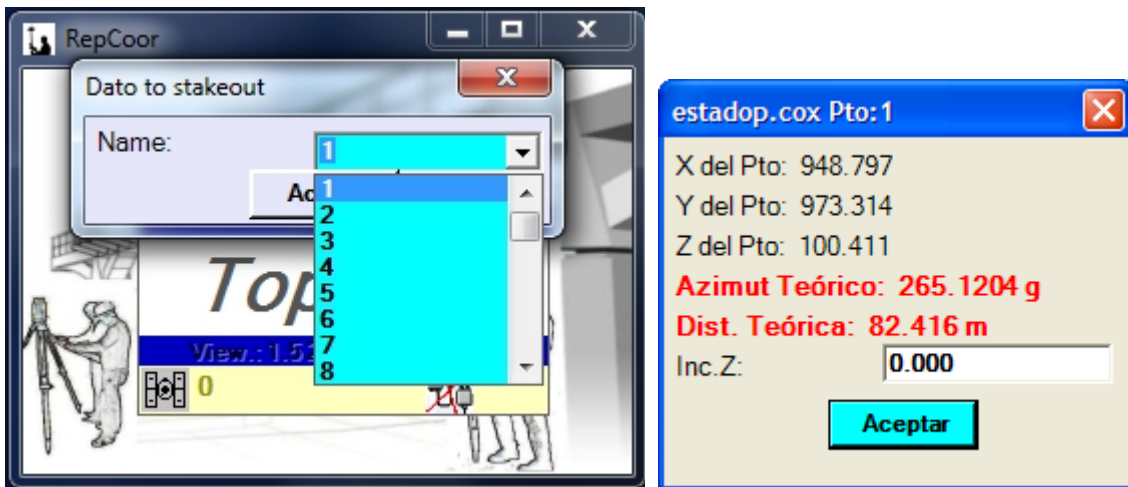
#### *FILE OF COORDINATES, CROSS, BASES*

The application starts by asking if we want to record the readings in a backup file. If we answer affirmatively are prompted us the name of a file of coordinates other than which we will use to rethink where all the stakeout real data will be stored.

# USER MANUAL TOPVIEW

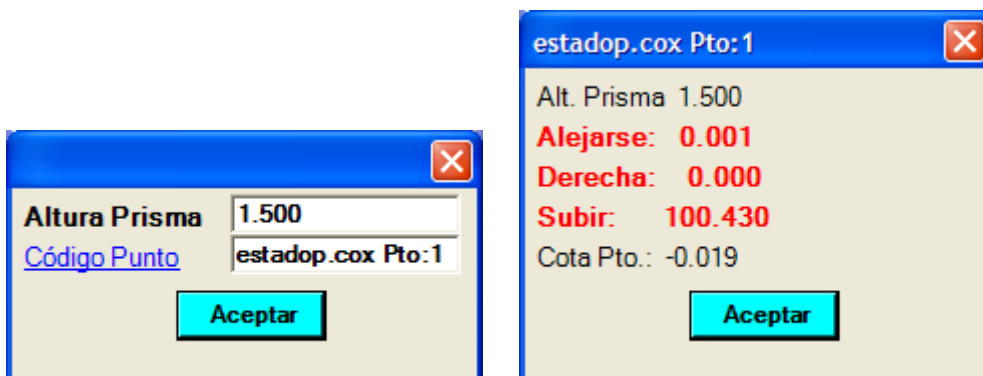


It begins by requesting the name of the file to rethink and then will be presented a screen where you can select specific point we want to rethink and azimuth that we put in the ET. You can change the dimension to rethink just change the value "Inc.Z:" which is the value that is added or subtracted to the dimension to rethink.



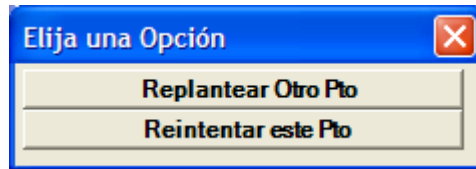
After placing the appliance shown azimuth and milestone online operator, we proceed to checkout by pressing Enter. After reading the program asks for the height of the marker and the code we want to give the point to file in the backup file.

After we reported the result of the reconsideration and action to perform:



The action "Move" can be changed to "Approach" if the difference in distance is negative. The 'Right' action can be changed to "Left" and reflects the lack of alignment of the layout. "Upload" action can be changed to "Get off" depending on the difference between the real dimension and the dimension to rethink.

Subsequently offered follow rethinking this point or return to the screen of choice of point to rethink another.



## ISOLATED POINT

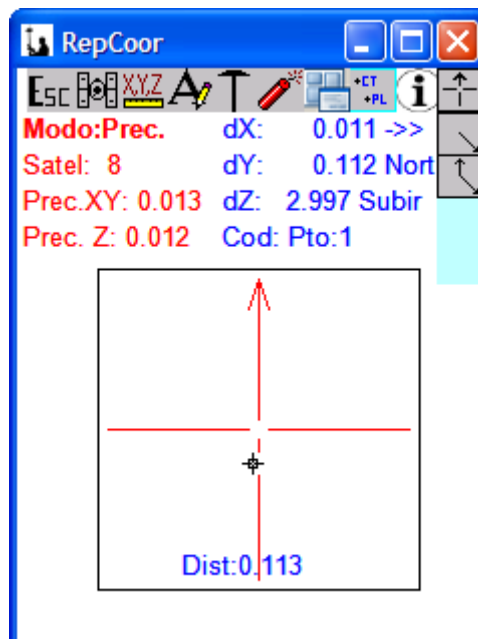
This option can rethink any isolated point by entering the coordinates manually to rethink as well as recording the results of the reconsideration in a backup file.

The screens in the application offers are similar to the one explained in the coordinate file layout section.

## GPS:

These three modules to the module "rethink axis" the screen are common and the difference between E.T. and GPS is situated from the option read to Prism. Failing that appears the following screen showing increases relative to the orientation chosen, as well as a graphical display that shows different graphic entities depending on the chosen orientation:

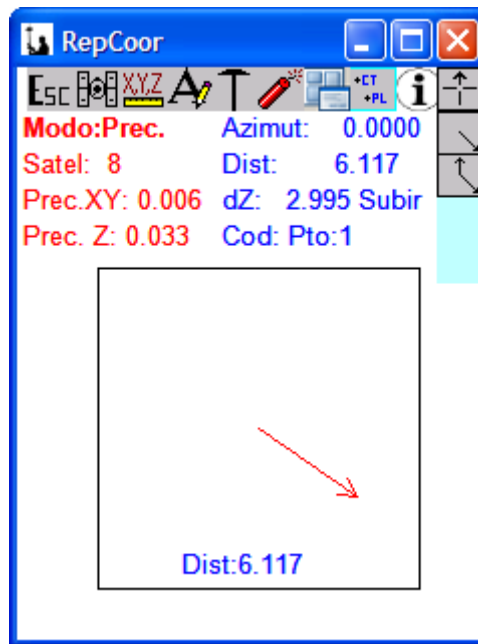
- **Moving to North:** Samples a Vertical line and other Horizontal (Cardinal axes), an arrow at the top of the vertical line that shows the North, and a blinking cursor that is our current position that will change as we move. To place the antenna (GPS-Mobile) in the position of the theoretical point to rethink we move toward the intersection of the cardinal axes by placing the WorkAbout North-oriented. When the distance is less than 0.5 meters book will emit a sound that will be more intense with more fashion we are approaching the point of rethinking. The size of the cursor will change between small when it is in high precision, medium when it is floating or precision medium, and big when is in navigation.



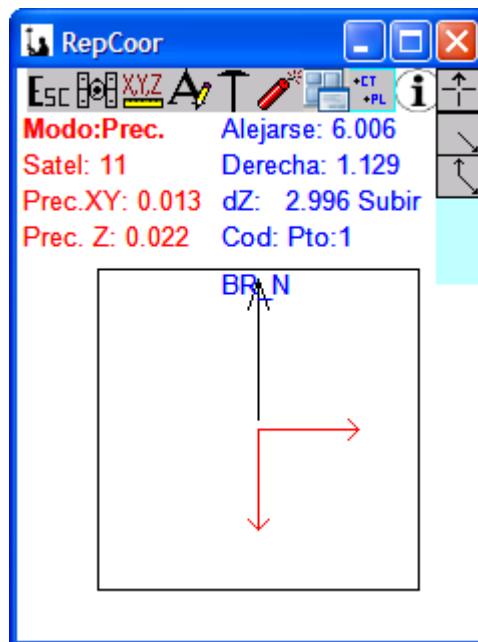
- **Relative Orientation Movement:** Displays a line from the center of the graphical display with an arrow indicating the direction to take and the distance to the point.

# USER MANUAL TOPVIEW




When the reached distance is less than 1 metre this mode changes to "Guidance to the North".







- **Orientation Relative to Base:** Displays a vertical line from the center of the graphic display and an arrow at the end indicating the orientation towards the Base, and a line that rotates and displays the address that is to rethink point as well as the distance to travel.



We can change from one mode to another by pressing the following keys simply:

- Key "N" or icon  changes to mode "Setting out guidance to North"
- Key "M" or icon  changes to mode "Setting out guidance to movement"
- Key "B" or icon  changes to mode "Setting out guidance to a Base"

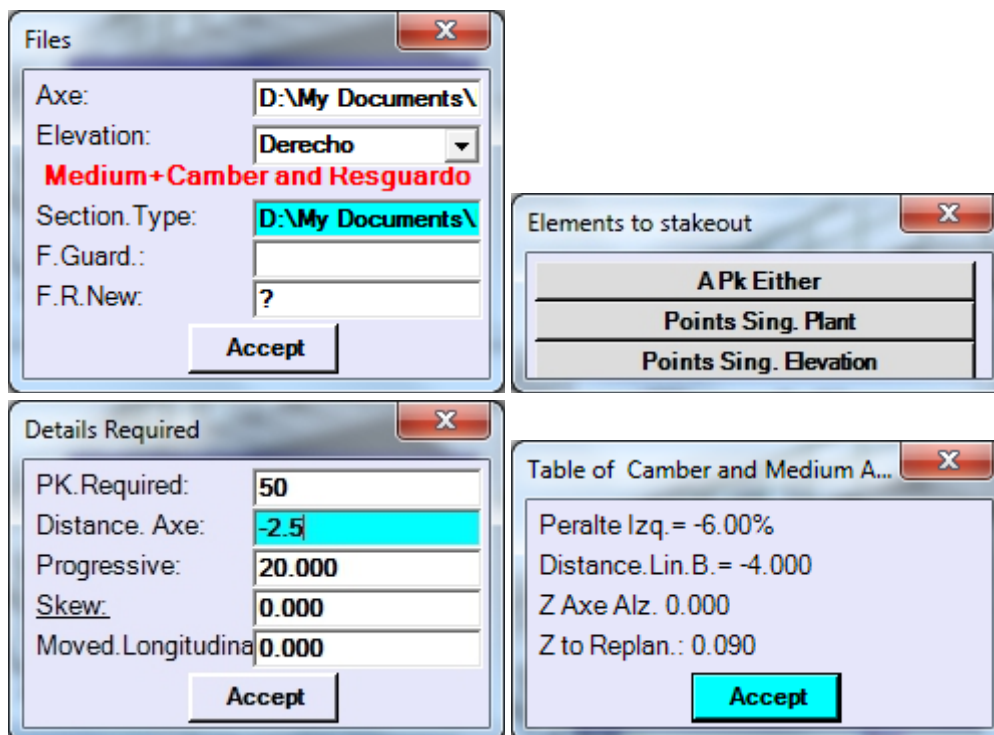
We can check the status of satellites and Pdot, batteries, etc. by pressing just the "S" button or icon . We can also change the GPS-mobile antenna height or point code simply pressing "C"  ó "H" , or change the precision tolerances or times that we want to read the point by pressing "P" . Keys and icons described in this paragraph are available in all socket data or layout modules.

## AXIS

This option you can rethink any point of an axis of "plant" + "elevation" + "camber" previously created through its Pk and displacement, as well as recording the results of the reconsideration in a backup file.

The application starts by asking if we want to record the readings in a backup file. If we answer that affirmatively will be asked us the name of a file of coordinates other than which we will use to rethink where all the stakeout real data will be stored.

Then ask us imaging used. Then if you want to apply table Cambers and medium. If we only want to apply table of Cambers and not the medium we need to create a type section even if it is completely empty so the program can follow the process:



It allows the introduction of one Pk either as well as explore the table of singular points of the shaft to extract the Pk of a particular element.

Progressive is the distance between Pk that we normally use to rethink, so after rethinking the Pk 1520 and return to this screen, automatically will offer us the Pk 1520 + 20 = 1540 to rethink. Skew is a twist that applies to rethink a profile not perpendicular to the main axis and from this new rotated alignment applies to shaft separation and the Longitudinal displacement in the sense the Pk. commonly used for rethink works of manufactures are not perpendicular to the axis of the trunk but that knowing the angle forming the shaft alignments

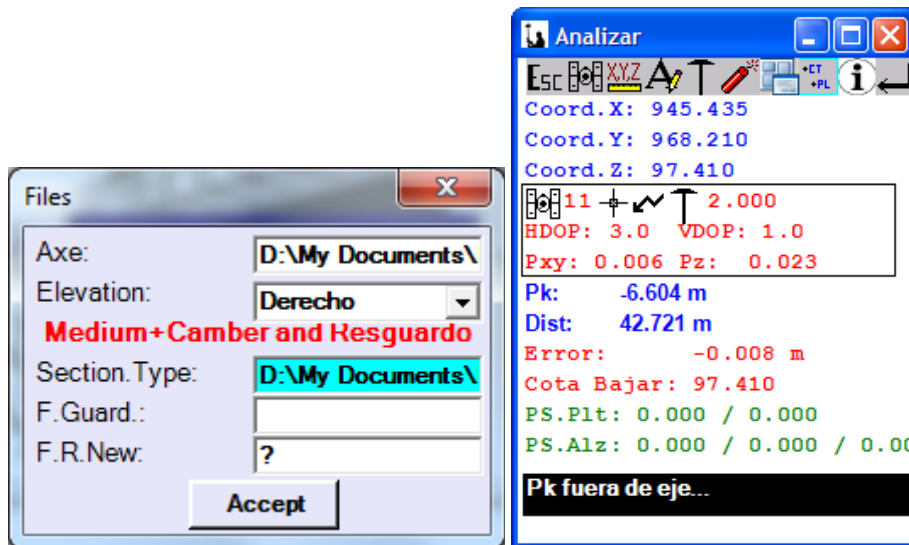
# USER MANUAL TOPVIEW

of the OF and the profile of the intersection with the axis of the trunk)Skew) can rethink it easily from the trunk.

The screens then the application offers are similar to the one explained in the coordinate file layout section.

## ANALYSE POINT

It allows to analyse our position with respect to an axis (both on ground and elevation), and can also load a section created by us. The results of this calculation can be stored, as always, in a backup file.



## DIGITAL TERRAIN MODELS (DTM).

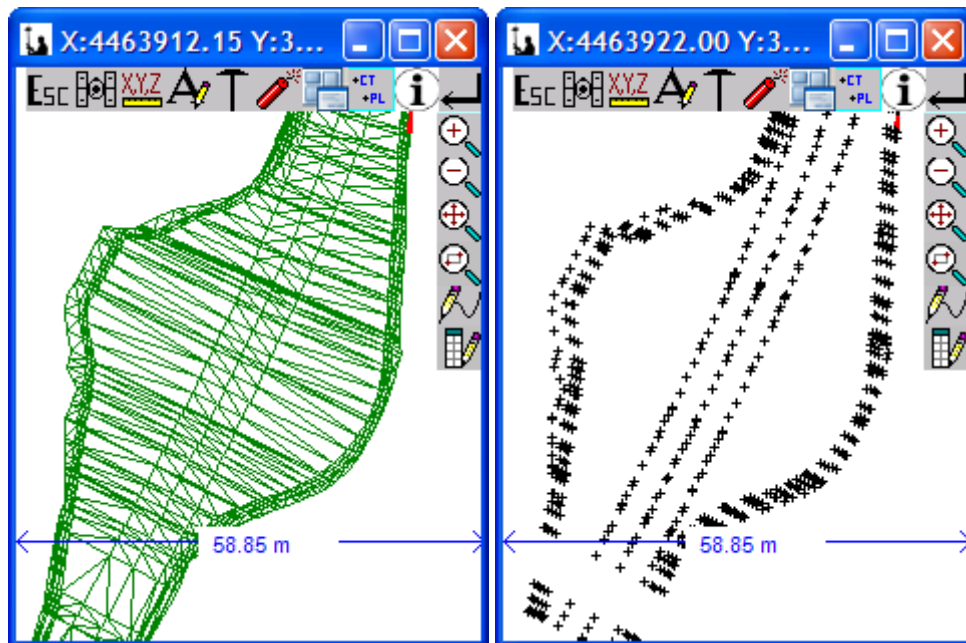
In the Menu "Imp" we have the necessary options for importing the DTM of the appropriate PC program. Once we have the DTM in our book we can visualize the DTM, zoom + and-, display the dimensions of the nodes, view the number of the node, etc..

We can take any point and program display its position, highlights the triangle on which sits and shows the increase of dimension needed to touch the plane forming the triangle.

We can also engrave read points, being drawn on the screen as well as Tachometric module. In this way we will make a quality control and we know also the area already taken and marked.

It also allows the reconsideration of an exact node with only indicate the number of the same.

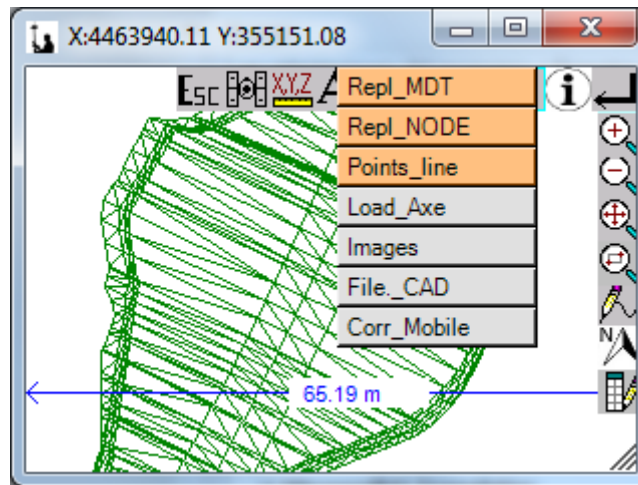
We are, in this case-rethinking the coordinates x, y and z of the node. A restatement of line, selected the points of a digital model is also incorporated. In this case our real position on the line is parsed, but the layout dimension is referred to the theoretical dimension of the digital model in the position in which we find ourselves at all times.





# USER MANUAL TOPVIEW

Include a number of new icons, whose functions we will explain:

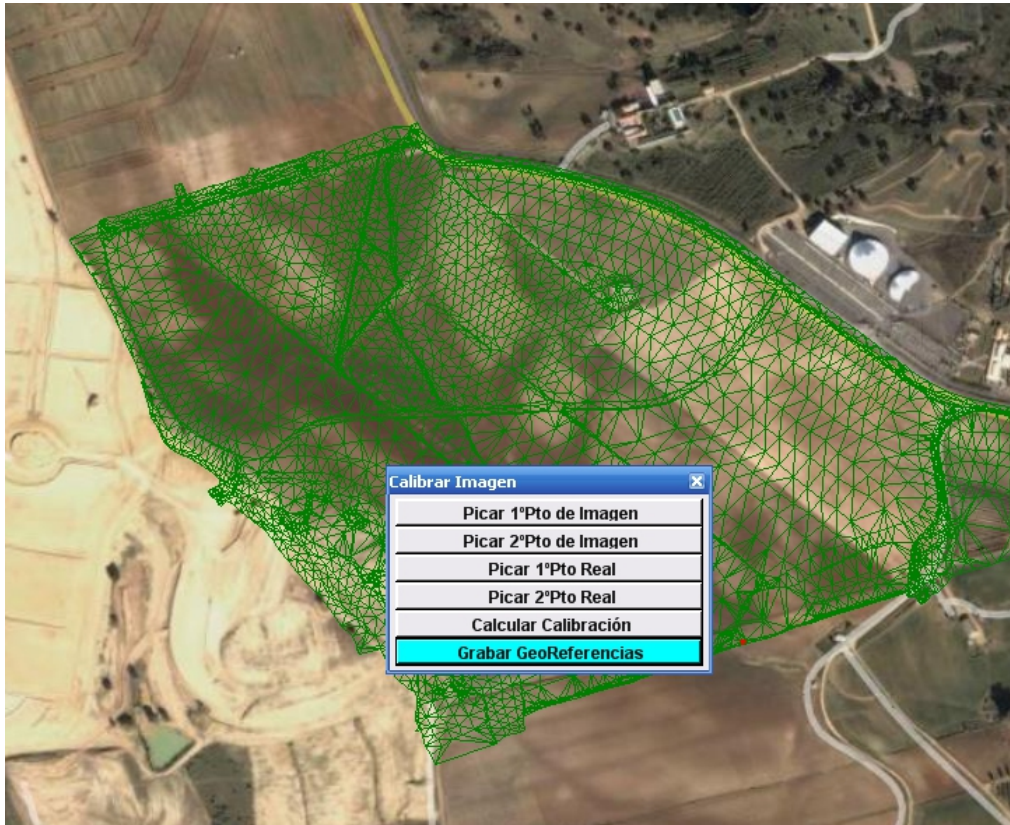


It displays a context menu where you can:

- **Stakeout DTM:** at any point in the digital model, we will have the increase in elevation relative to the same. The triangle where we are located is highlighted in red.
- **Stakeout node:** It would be the same to rethink any point but in this case it is a node of the DTM.
- **Stakeout point on line:** Allows you to mark two nodes of the DMT and analyze our position in plant on line to mark triangle of the DTM and the difference in dimension to the triangle.
- **Load Axis:** We can load an axis and draw it next to the DTM. Being loaded shaft to attend the "Rethink DTM" option automatically our situation with regard to the same analyses and to mark the triangle of the DTM where we are located and the difference in elevation to the DTM. The axis of elevation is not used for anything.
- **USE Images:** We can upload, download and calibrate images in various formats (tiff, bmp, and jpeg). To calibrate the image, we would have to choose two common points for the digital model and the image itself. The procedure is simple and will be explained in more detail in the section on "Catch" "Coordinates".



# USER MANUAL TOPVIEW



- Use DWG/DXF: This is an option that we can load / download in the format exposed autocad drawings, and can also activate / deactivate layers for display or not.-



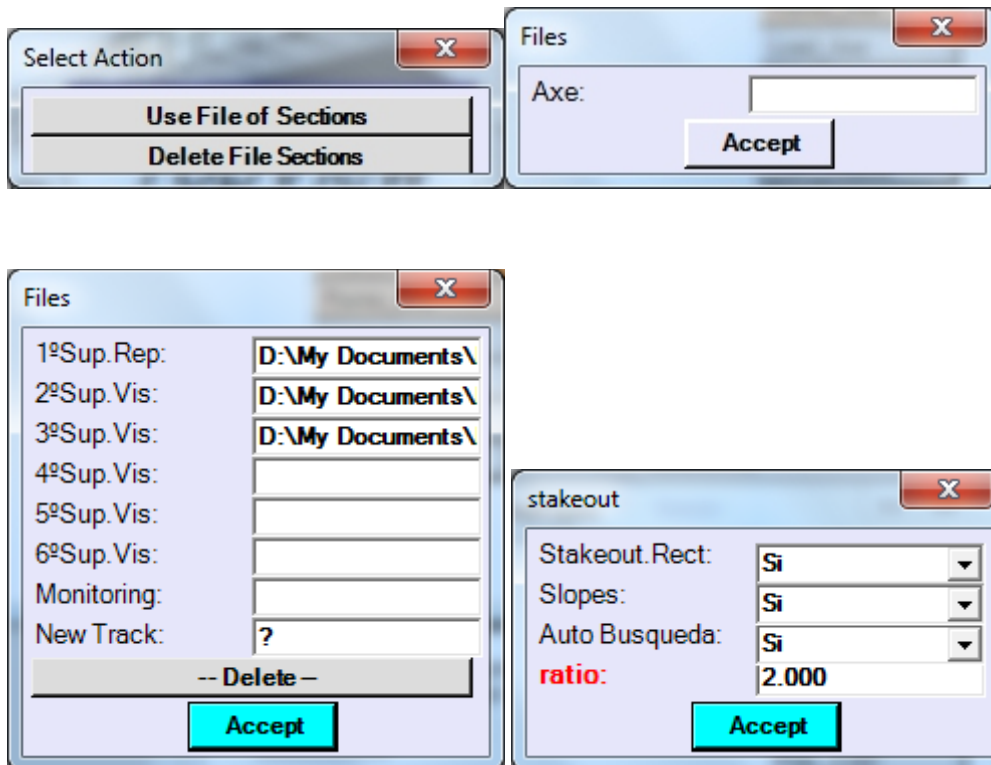
## SECTIONS FIXED

with E.T.:

In this module we can rethink any point of a cross section calculated in a programme such as Clip, Ispol, Sdr-Varin, etc., and imported into the corresponding option in the import menu. Likewise it allows storage of points read in a trail file for later export them to your Pc and calculate the monthly cubicaciones of the work. Taken anywhere allows the calculation of the action to perform for the rectification of the Royal slope to reach the theoretical slope.

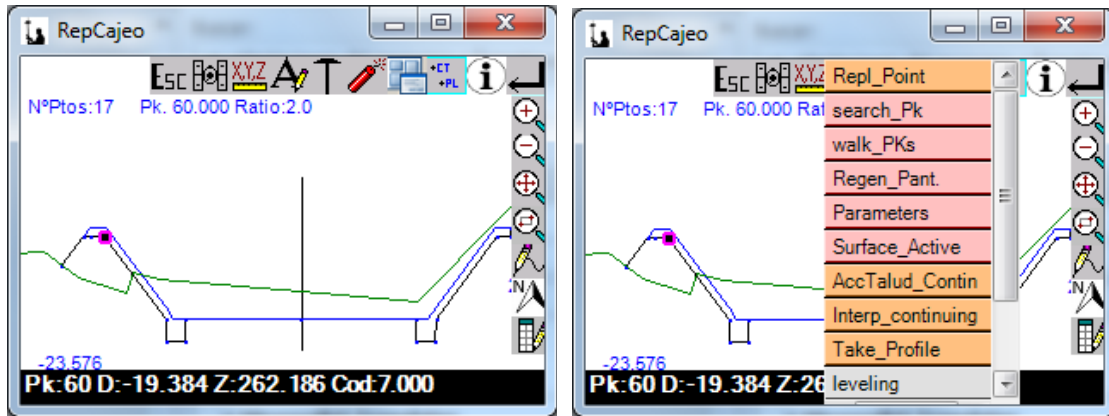
It begins by offering between deleting an existing file or use it to rethink. The files are only created in the importation of the same from Pc.

Then he offers a picture where we can indicate the names of different files to load.



Subsequently he displayed the first Pk which is in the file that we are chosen to rethink.

# USER MANUAL TOPVIEW

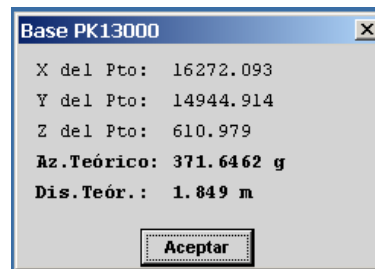
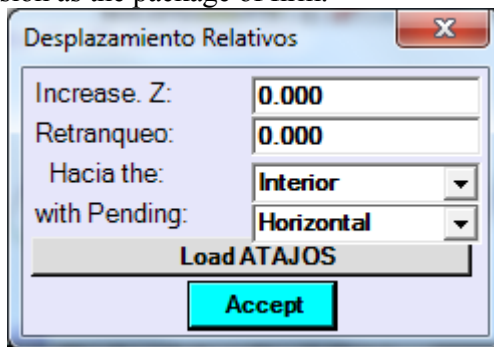


With cursors, we can move through all the points of the layout surface and when we have overcome the last point automatically move on to the next profile. We can do Zoom +-, settings with the pointer, etc..



We will have access to a menu of options:

- **Stake Point:** We can rethink the selected point with the cursor from the current base. It allows us to mark a setback on the profile of a distance towards the inside of the shaft or to the outside of it, that distance to follow a horizontal or one of the slopes of the vectors that are supported at the apex, and on this new situation increased dimension. It will show us the coordinate of the point to rethink and azimuth and distance from the current database to the selected point. In "dimension to rethink" offers you default dimension that has the point in the file, but can directly place a distinct or develop a mathematical expression as " $67.580 + 0.5$ " which would give the dimension "68.08" to rethink. It is quite useful to rethink parallel layers in dimension as the package of firm.



After taking the appliance reading program informs us of the location of the point taken with respect to the alignment point to rethink with the base and the actions to perform.

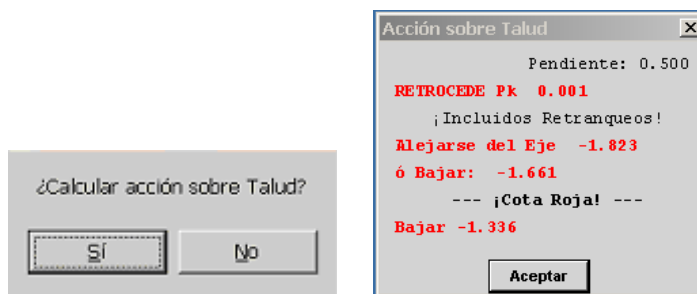
# USER MANUAL TOPVIEW



It then shows with a cross in the position of the point projected on the profile. By pressing a key displayed on screen where reports of the actual position of the point and the actions to perform for its correct position.

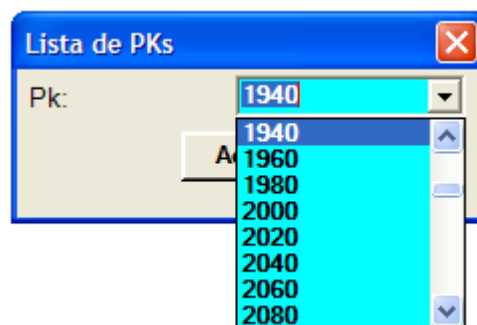
Si hubiéramos abierto un fichero de perfiles de seguimiento el programa nos preguntaría si deseamos grabar el punto leído.

Then asks you if you want to calculate the action to be performed on the slope. If we answer Yes the program will tell us which movement will have to do to put the point on the slope. This we will see in the bottom right of the screen. When those relating increments are zero we will be on the theoretical line of the slope.-



The process ends with the question of whether want to rethink another point or follow rethinking it.

- **Search PK:** We can move directly from a profile to another by pressing the up or down arrows, or we can search by particular PK by clicking on the "Search" option and select one from the list of all included in the file of Cajeo PKs to rethink.



- **Stroll through the file:** We can explore profiles displaying them on screen until the end of the file is reached or press ESC.

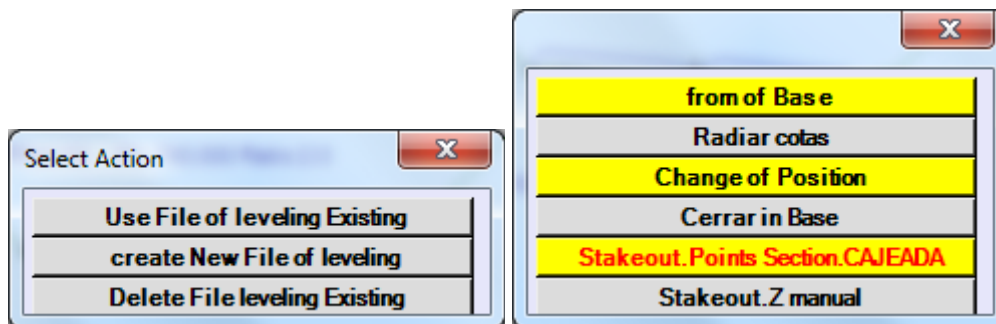
- **Regenerate Display:** You can clean the screen of points not recorded and displayed in the option of rethinking.

- **Change Parameter:** as the ratio (ratio height/width) and others

- **Change Active Surface:** We chose here the surface we are going to choose for your reconsideration, if we want to change it.

- **Take Profile:** It allows us to take the cross and burn it as one surface more. If you know the location of the profile field (for example because we have reference stakes at the ends) can directly take the points of the profile and save them without having to choose for each reading the theoretical point of rethinking, and even calculate the action on slope unless we find chosen previously theoretician point of the foot or head of the talusthen the search taken point vertically which vector should use for the calculation of the action (although we are chosen to rethink the taken side point). It is undoubtedly a way to quickly and easily take tracking for cubicaciones of the month profile and at the same time indicate the corrections on the shoulders of the slopes.

- **Geometric Leveling:** This option is designed to use a conventional geometric level with your eye and based on the data we have in Software to rethink any point of the section without papers to the field.

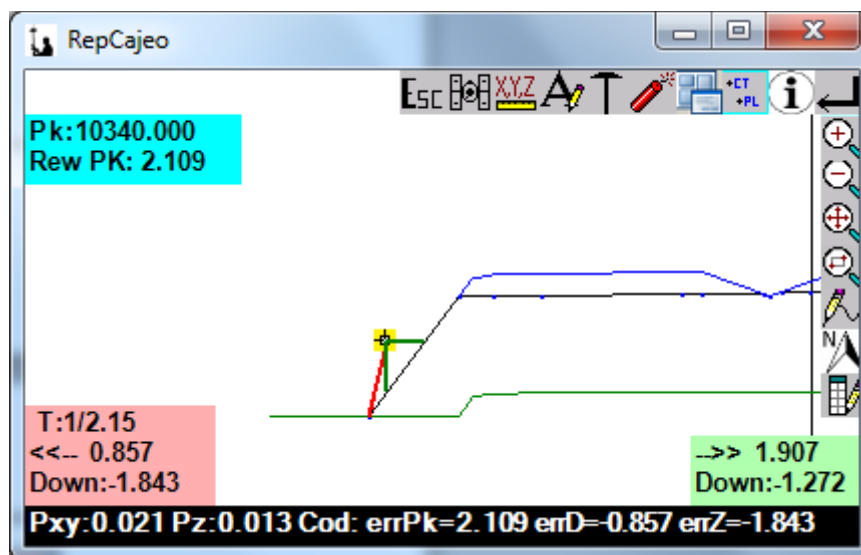
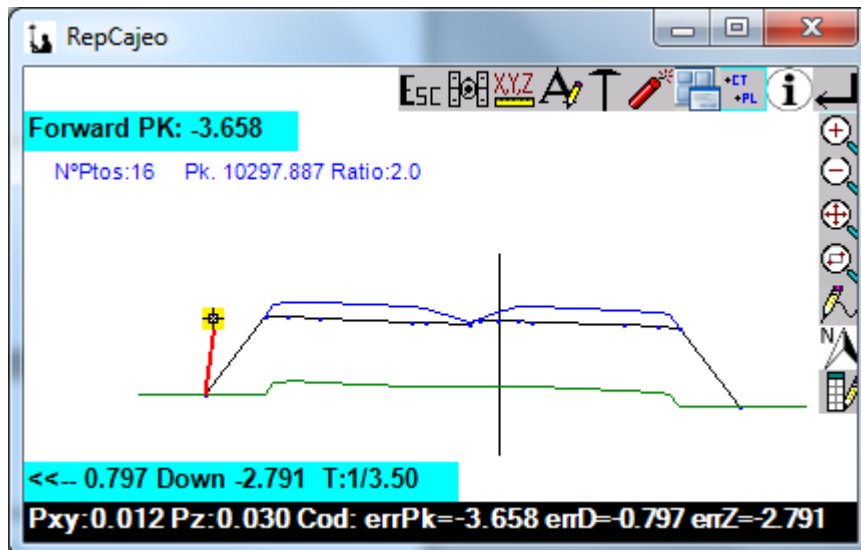


## with GPS:

The difference between E.T. and GPS in this module, as in all the of data collection, is the omission of the readings of angles and distance geometry by incoming coordinates from the GPS receiver along with their parameters of Hdop, Vdop, XY accuracy, accuracy in Z, etc.

Next to this difference also highlight that the input of coordinates occurs every 0.2 seconds which continuously updates the cursor that represents the location of the GPS-phone, with which we can see our position with regard to the section's work and move towards the point desired in a graphical way.

# USER MANUAL TOPVIEW



The image on the left shows the reconsideration of a recessed 1 meter towards the outside point following the slope of the previous item, and without any increase in additional dimension. The red line shows the way to continue between our position and the position of the point we want to rethink.

The image on the right shows both the joint stakeout of a theoretical point without setbacks and the "action on slope". This "action on slope" processing movements Horizontal and Vertical that we would have to do so that our position pose above in vector that is below our vertical. Therefore these components may change dramatically depending on the vector that this under our focusing on different vectors calculation as we move.

The size of the cursor will change between small when it is in High Precision, medium when it is floating or precision medium, and big when is in navigation. Also the display shows the differences between the theoretical profile Pk and Pk which is the antenna of the GPS-mobile, and the differences between the distance to the axis of the theoretical point and the point where the GPS-mobile, as well as the movement to move to the correct position. Movements to be carried out are therefore "move forward or backward in PK" and "zoom in or out of the shaft".

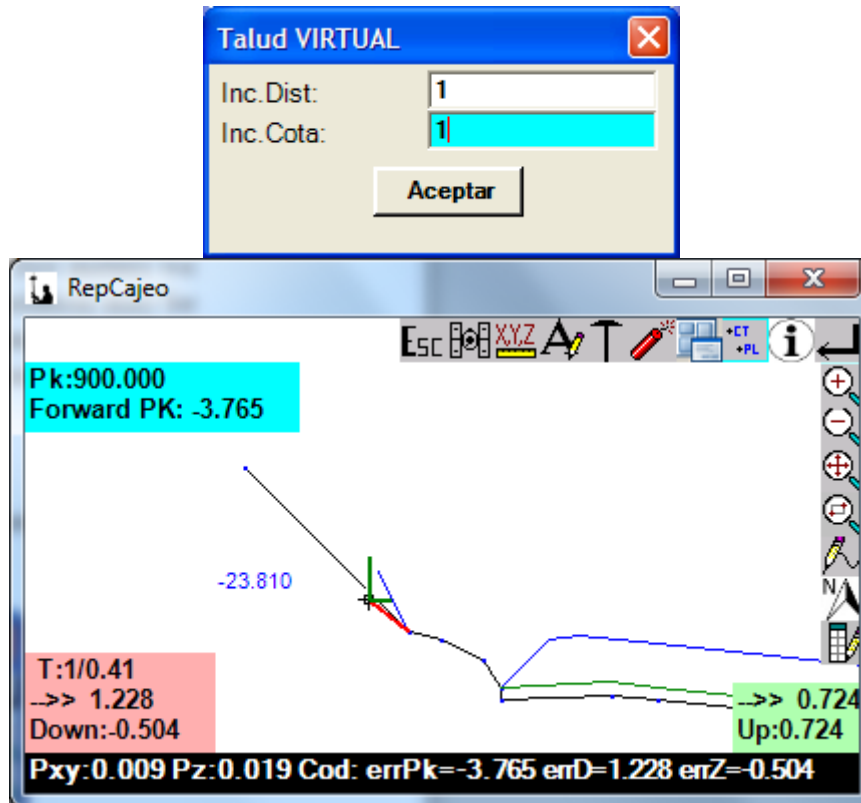
You can check the status of satellites and P<sub>dop</sub>, batteries, etc... by clicking on the corresponding icon. We can also change the height of the antenna GPS-mobile or code point, or change precision tolerances or times that we want to read the point.



# USER MANUAL TOPVIEW

Includes a new option of "Continuous interpolation" to be able to rethink any profile that is not collected in the list that appears in "Search Pk". Being asked every few meters we want to interpolate. It should take into account that the outcome of this interpolation may be ambiguity in transitional zones of complex sections, in which we move from a number of segments per section to another. I.e. that it is a good choice, knowing the precautions to take, not only in TopView, but in any PC.

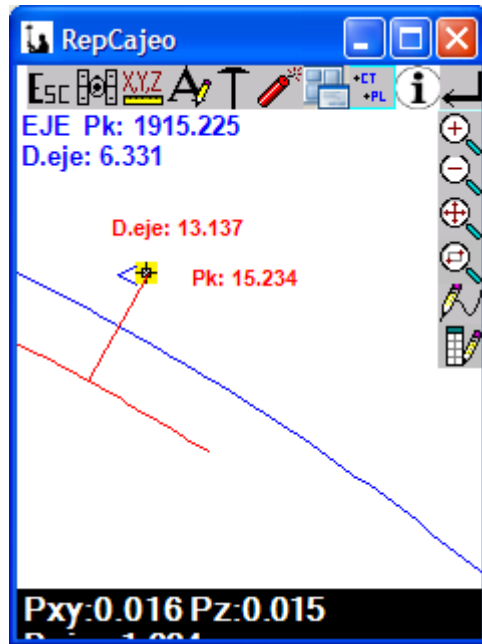
- **Virtual slope:** It allows us to define a vector that part of active point of the section and that it can be remove or fill inwards or outwards.



In this example, we have defined a vector 1/1 that part of the gutter and is more inclined than the original (1/0.5), if we move until the bottom right data to zero will be at the intersection of the Virtual slope with the terrain.

# USER MANUAL TOPVIEW

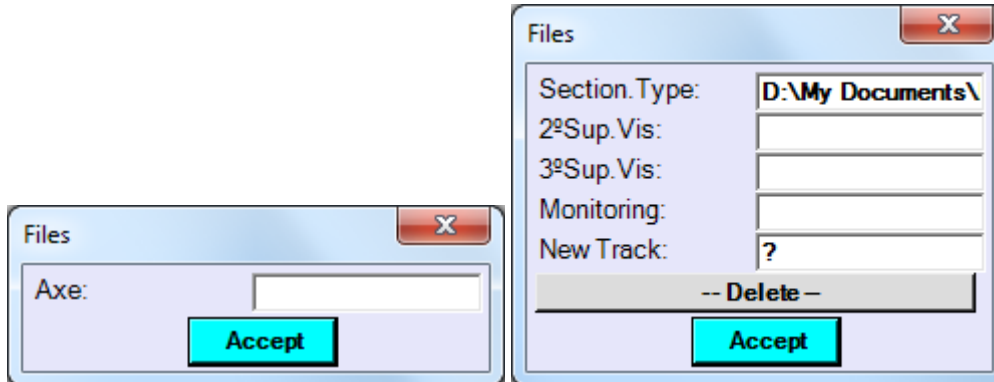
- **Stakeout Points Online:** On the basis of two points of drawing that can be the same PK or other PK shows a drawing in plant with drawn axis and the line formed by these points. On these two lines performs an analysis of our position on the axis and the line from two points.



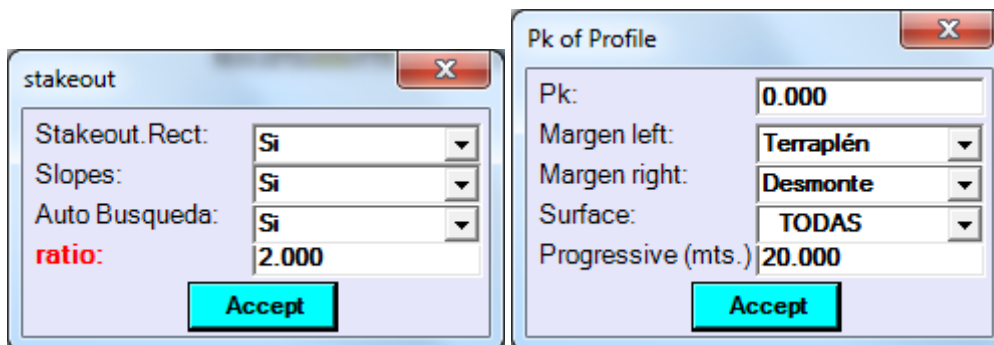


## TYPE SECTIONS

In this module, in its operation, is identical to of rethinking sections banded with the only difference from that instead of choosing the 1st surface to rethink chose the type section to rethink.



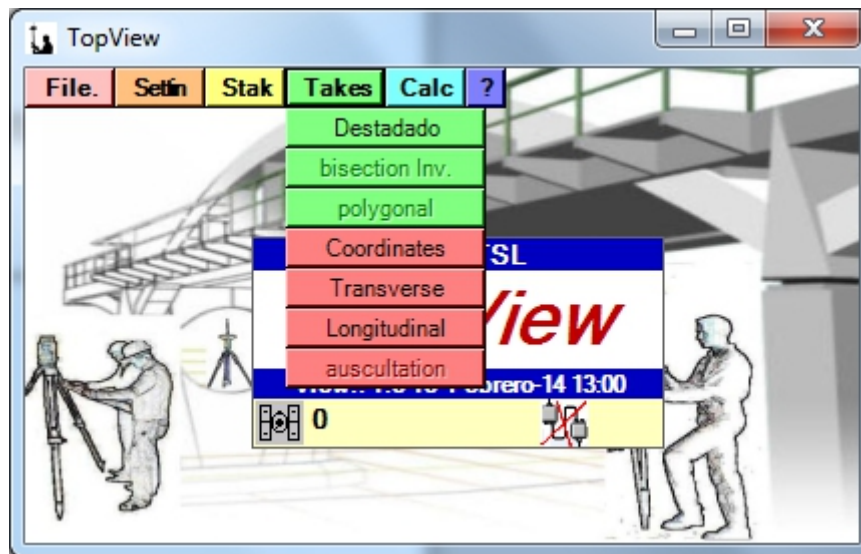
In contrast to the module of sections banded here there is a file containing all the PKs already calculated, but that the program will generate a file with the Pk and the slopes (remove or fill) that we specify. Cutting with the actual ground them will have to find with the option of "Action on slope" and the decision if it is remove or fill in each of the banks runs from our account, although it is quite clear that if the point taken in field is drawn on the screen below the subgrade is that we must apply fill and remove if not.



Otherwise it behaves exactly like the previous module.

Note that to be able to load sections banded imported corresponding programme (Clip, Cartomap, MDT, Ispol, etc...) we can verify if they overlap the lines defining the type section with the lines of the Cajeda section is that we have well defined the geometry of the work, and if not we can verify where the differences are and evaluate them. Once we decide that it is completely defined we can delete files sections banded and free up memory for other purposes.

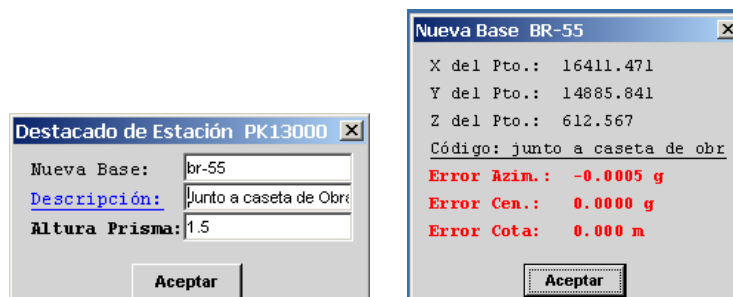
## MENU TOMA



The options that are present in this Menu cover most of operations involving a field or a subsequent analysis of the same data socket.

### ***Featured Base(Destacado):***

This section may highlight or put a new base from the base where this parked the instrument, adding the registration in a designated base file.



It should be noted, that for a greater precision of data from the new base are asked to take two readings (**direct and reverse**)

Compensated readings can be recorded in a backup file together with their coordinates as if it were a file of Taquimetria.

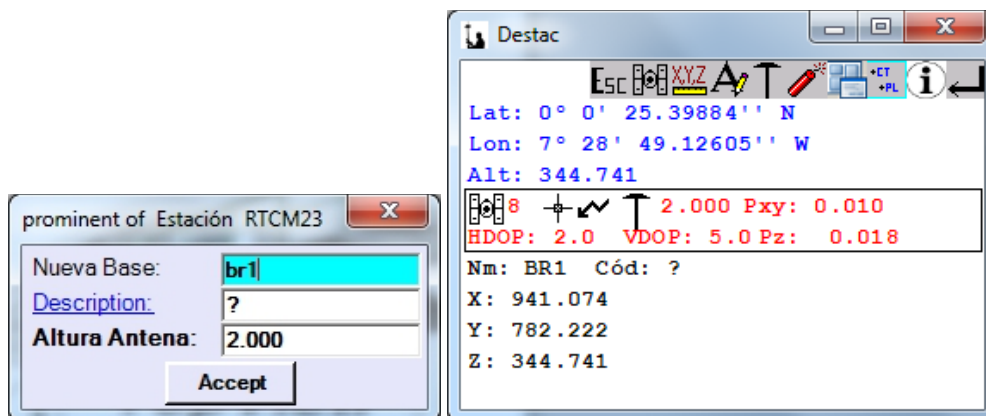
# USER MANUAL TOPVIEW

## With GPS:

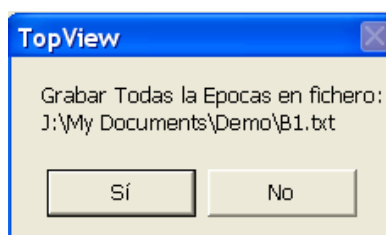
It begins by asking us if we want to take the bases in XYZ or Lat.Lon.Alt. Later she asked if we wish the Cartesian of the selected Datum or local Cartesian coordinates as elected in SCL.



If the base exists and reading it will use to process the SCL we choose "Basis at all". The difference between E.T. and GPS in this module, as in all the of data collection, is the omission of the readings of angles and distance geometry of the coordinate geographic and Cartesian inbound from the GPS receiver along with their parameters of Hdop, Vdop, XY accuracy, accuracy in Z, etc. Next to this difference also highlight that the input of coordinates occurs every 0.2 seconds which will have to press ENTER or ESC to stop data input and capture the latest data to record it as a result of the interest.

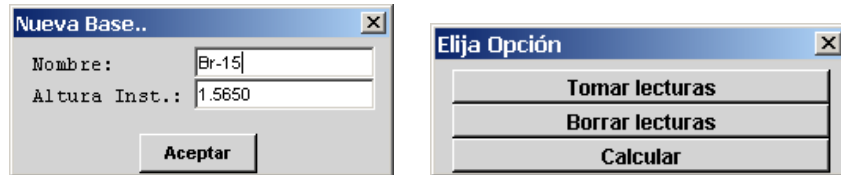


Then, if we have set up the program to obtain more than one time, will give us the option to burn them on file, as shown:



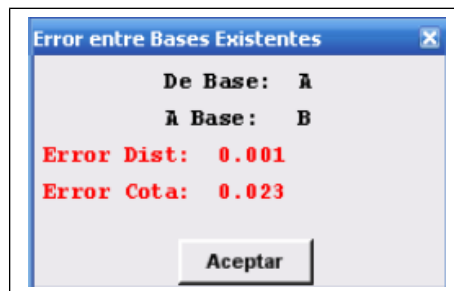
## Reverse Bisection: (E.T. Only)

This section is allowed to determine a basis, using two or more known Bases, whose coordinates are in an existing file and whose result is recorded in the same file.

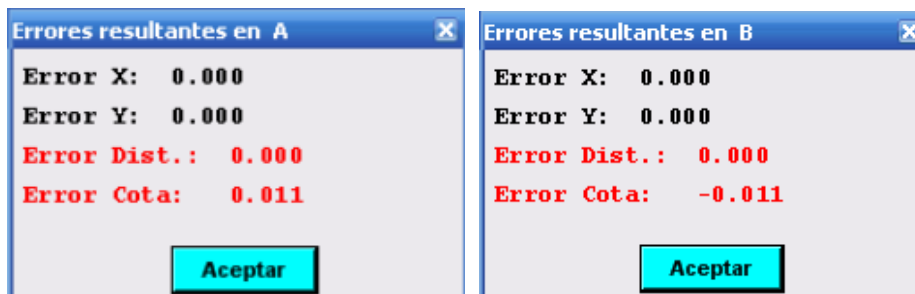


For a greater precision of data from the new base are asked to take two readings (direct and reverse). The order of readings is free choice, being commissioned to locate exactly the new calculated Base program.

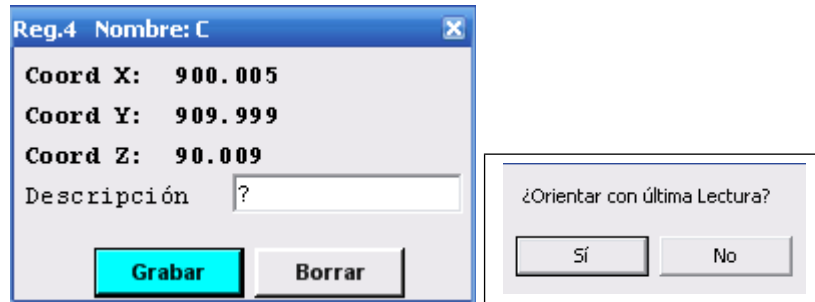
The program first calculates the errors between the coordinates read from existing databases and the coordinates stored in the file.



Later shows resulting from the calculation with the bases taken errors.



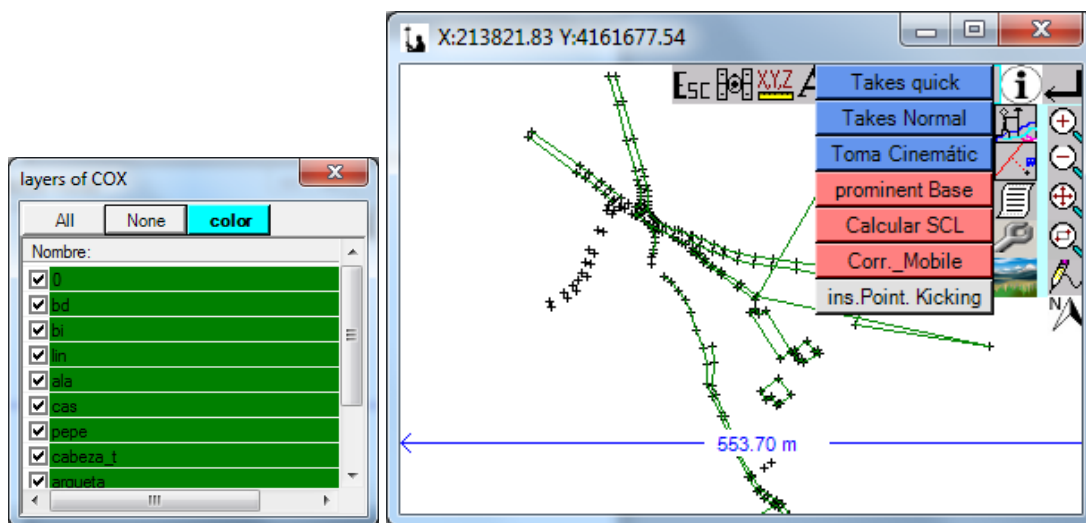
It then shows us the result to decide whether to save it or not. Then he tells us if we want to target the last reading and if we want to archive the data in a file of observations.



## Coordenadas:

This module enables both data collection by way of Tachometric as the reconsideration of previously taken points, imported points, DXF/DWG, banded sections, sections type, surface cuts, and others. ***This is the most complete and powerful program.***

The first thing that we need to load when you enter is a library of codes, which you can edit and develop according to the preferences of the user; You can even create several libraries of codes. When you open a file with coordinates program does not display the layers containing the file to enable or disable that want and thus accelerate the redibujados.



Clicking this icon opens a pop-up menu with the following options of "Taking Points":

The "Quick takes" option allows us to perform a cursory reading of a point.

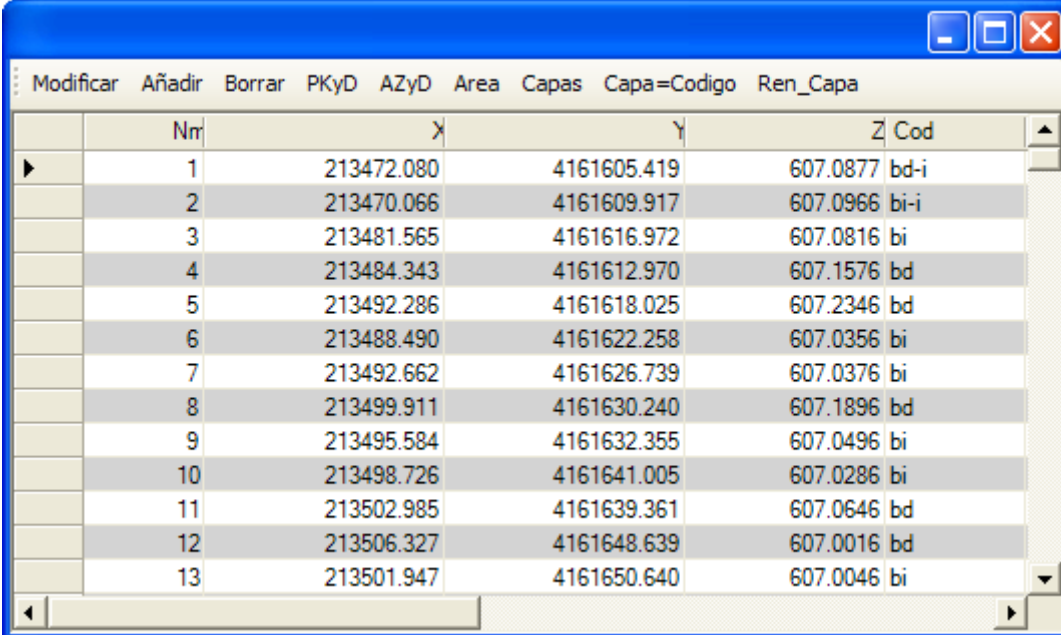
"Normal Shot" option is the same as the previous, but taken up once the point always appears a screen where we can change the code, height of milestone, etc..

"Takes cinematic" option allowed by time, distance, or pulse, so walking program you will be archiving points automatically with fashion will go fulfilling defined parameters.

# USER MANUAL TOPVIEW

Below is an example of how it should be codes field so in export in DXF format, we obtain a fully elaborated plan.

A line to begin to generate the line code must precede the code sequence: "-i". I.e., each view to take a point in the field in which begins a line this must be composed of the code line and its sequence code, if the line is head of talus and the start of line code is "-i", should be noted as "ct-i". When the line ends and then we want to use again this code simply begin the line with the code of the line more sequence "ct-i" startup code. In one spot can begin up to two lines (example: "ct-i pt-i") and may contain infinite lines codes (example: "ct-i pt-i well you" point where starts batter head and foot of slope, which is also a well and a laying electric pole))



	Nmr	X	Y	Z	Cod
▶	1	213472.080	4161605.419	607.0877	bd-i
	2	213470.066	4161609.917	607.0966	bi-i
	3	213481.565	4161616.972	607.0816	bi
	4	213484.343	4161612.970	607.1576	bd
	5	213492.286	4161618.025	607.2346	bd
	6	213488.490	4161622.258	607.0356	bi
	7	213492.662	4161626.739	607.0376	bi
	8	213499.911	4161630.240	607.1896	bd
	9	213495.584	4161632.355	607.0496	bi
	10	213498.726	4161641.005	607.0286	bi
	11	213502.985	4161639.361	607.0646	bd
	12	213506.327	4161648.639	607.0016	bd
	13	213501.947	4161650.640	607.0046	bi

The "**Featured Base**" option lets take a new base from this module, identically to the "Takes" - "Featured Base" option but also allows to record the Base as a point most of the taquimetrico where code is "Featured Br1" if it the new name "Br1".

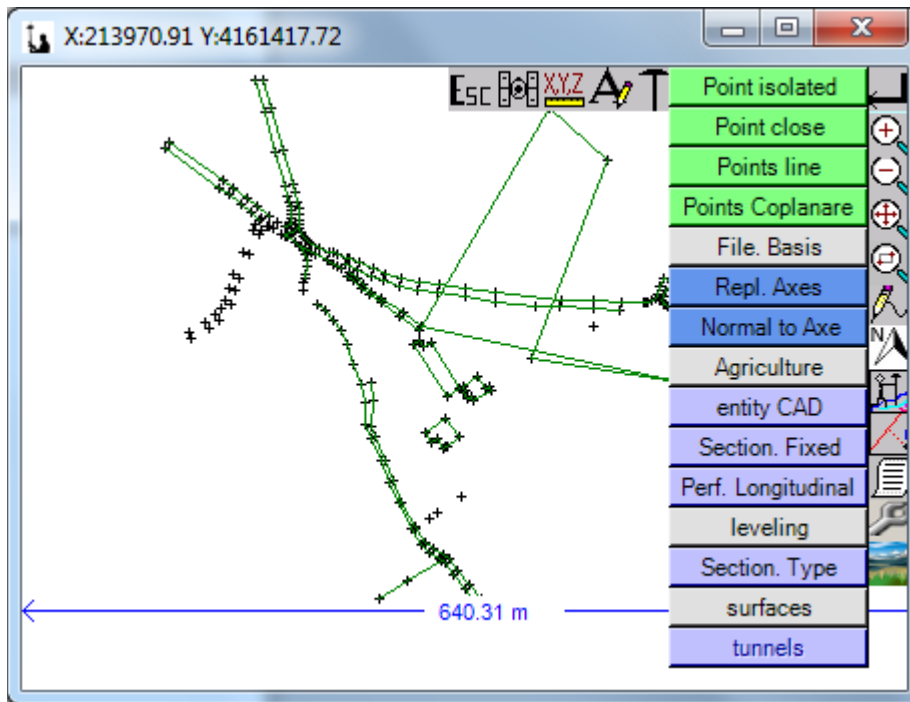
The option "**Calculate SCL**" gives us the option in this module to perform a transformation or coordinate adjustment. The details of this process are explained in "Calc" - "Coordinates Local Sistem (SCL)". The particularity of do from here is that it allows you to use points Cox or DXF/DWG as points of calibration.

"**Corrections mobile**" option allows the already explained function with the COX points or even DWG/DXF to charged again dotted.

The option "**Point Place kicking**" allows you to insert points freehand with only itching on the screen.



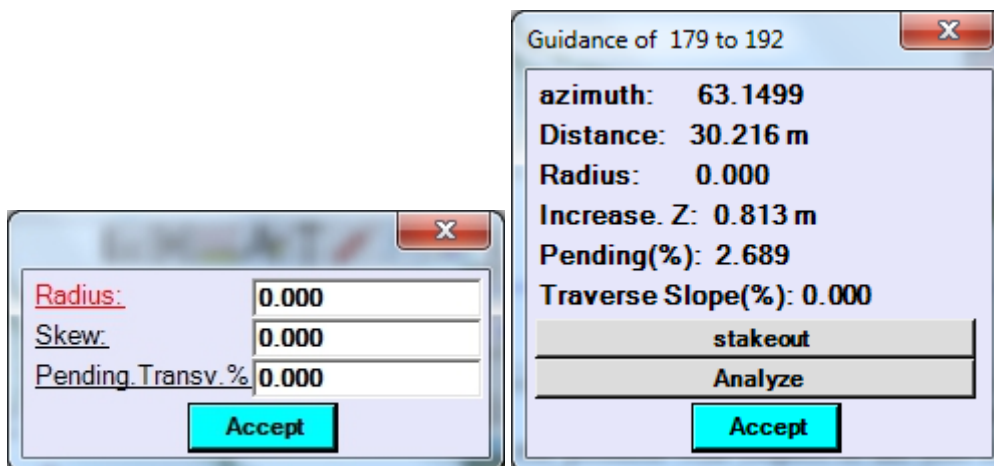
Clicking this icon opens a menu with the following layout options (**Stakeout**):



"**isolated point**" option allows to rethink any point. The point we can chop on-screen or insert from the list of coordinates. We have the possibility to choose, by pressing the icon, between a restatement to the North, point or base. We can also introduce an increase in dimension the point to rethink.

With the "**Near points**" option, the program calculates the nearest point to our position and may rethink as well a set of them in a very comfortable way because it automatically changes of setting out point as we approach another.

In "**Line Points**" allows both the reconsideration of a Pk and offset any or you analyze our position with respect to the axis formed by two points. On the items selected, you can define a straight line or an arc between them, also a twist on point 1, and also a slope transverse mode of pumping or slope.



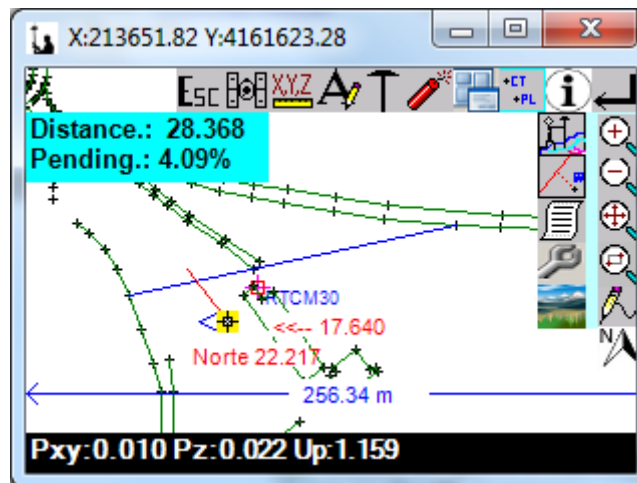


# USER MANUAL TOPVIEW

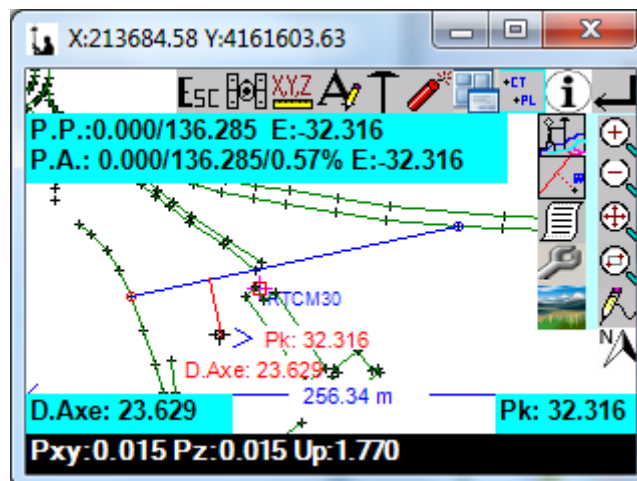
**A.- Stake:** Request a Pk, distance to the axis, Z, transverse, and progressive slope on the Pk increase.

Pk. al Pto 1º:	25
Progressive(mts.):	20.000
Separation:	-5
Z Increment:	0.000
Pending Transv. %:	2

Accept



**B.- Analyze:** Do not request anything and directly analyzes our position with respect to the line showing the following information:

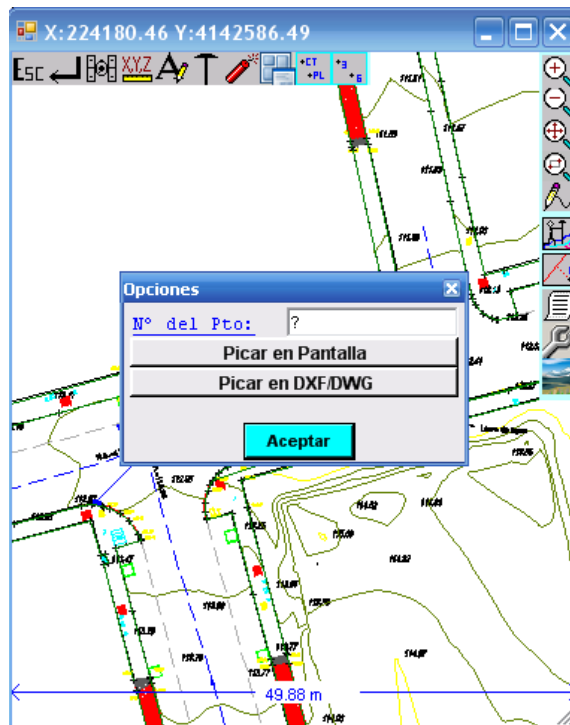


In "Coplanar points" after mark three points that define the plane program draws the triangle making up the three points and sample our position at the same time that calculated the increase to touch the plane because we are inside or outside the same.

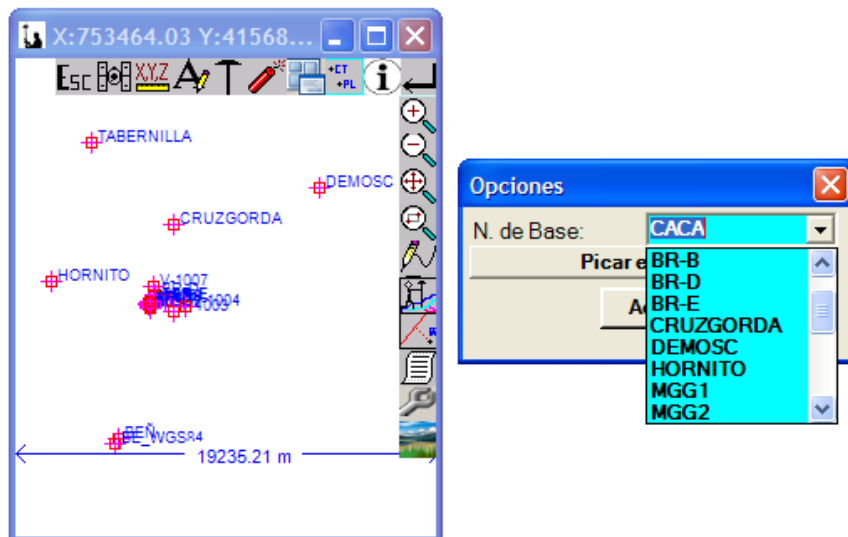


# USER MANUAL TOPVIEW

In these last three modules, if we have a drawing of loaded autocad (dxf/dwg), we would have also the option of chopping the draft entities, as shown in the image:

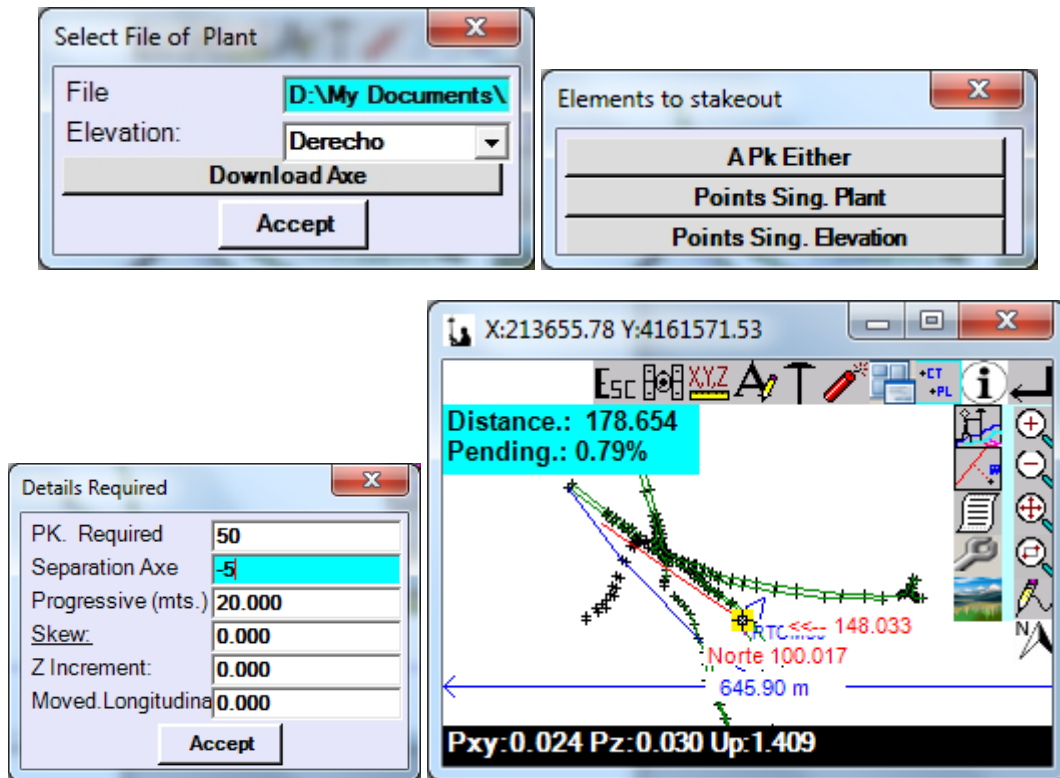


in **"File Bases"** the program requests the load a file of Bases and runs a Zoom Extension to display all on-screen. After request we slice bases we want to rethink and now behaves identically to the "isolated point layout". The drawing of the bases is different from the working points in which are crosses of larger size with a box in the Center.

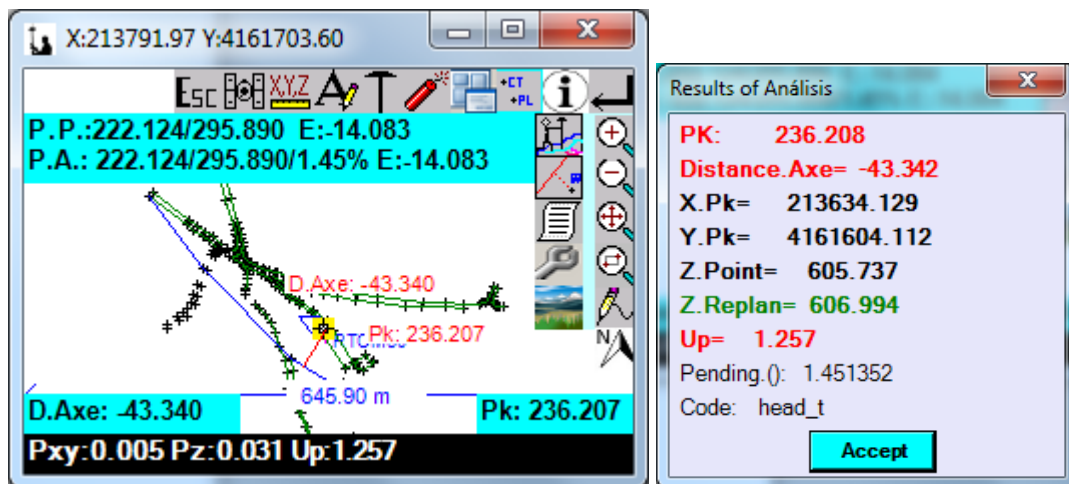


**"Axis Stake Out"** allows you to load and drawn of a shaft together with all other entities requesting after selection the Pk and displacement you want to mark. The behavior is similar to "Isolated point layout". The arrow indicates the direction of our movement.

# USER MANUAL TOPVIEW



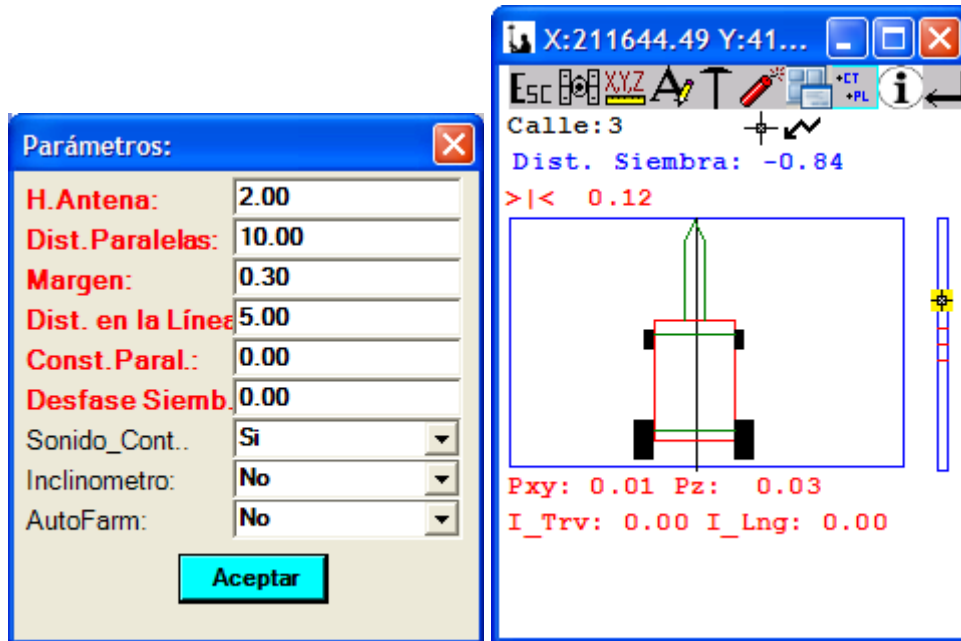
in **"Perp to Axis"** after a shaft loading program draws from our position to the axis indicating the Pk and calculated shifts normal. The arrow indicates the direction of our movement.



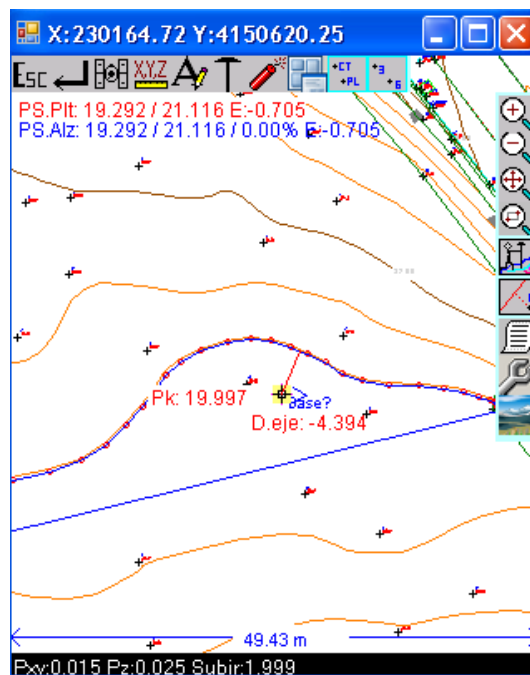
You can record this point in the current file at the end of the process, and it will stop the layer "Pto. Control".

in **"agriculture"** it is oriented to the layout/planting lines of culture with the proper equipment. The first thing that prompts us program is the choice of two points that serve as reference for the sowing. Then come a series of parameters whose values should be inserted by the user according to his design of plantation, which he previously established.

# USER MANUAL TOPVIEW



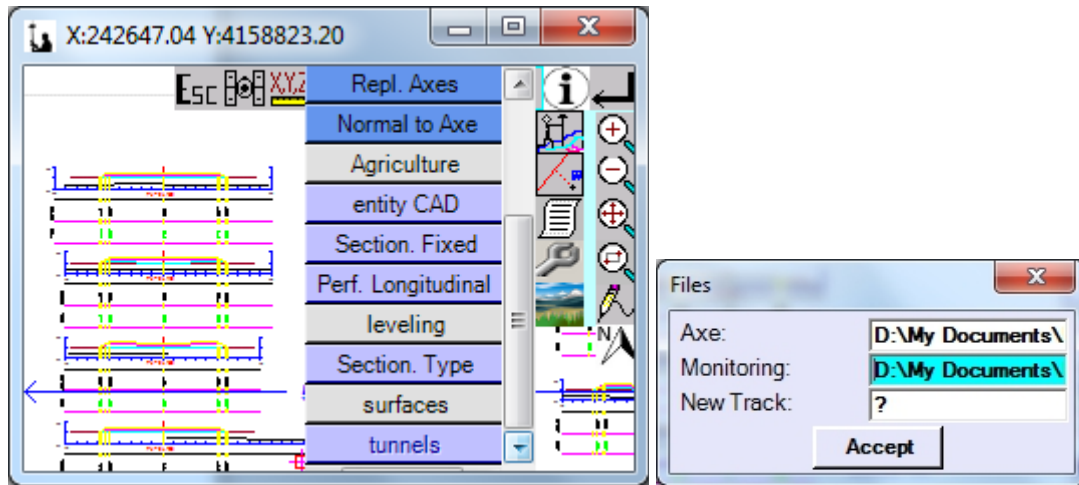
in "DWG entity" we can click any cad entity, and program automatically converts it to an axis temporary, and can analyze our situation with respect to it. In the case of the image that is displayed below the chosen entity is a poly line, specifically a level curve.



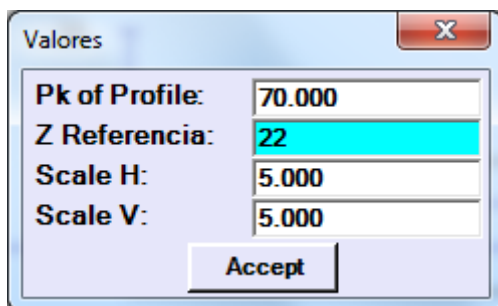
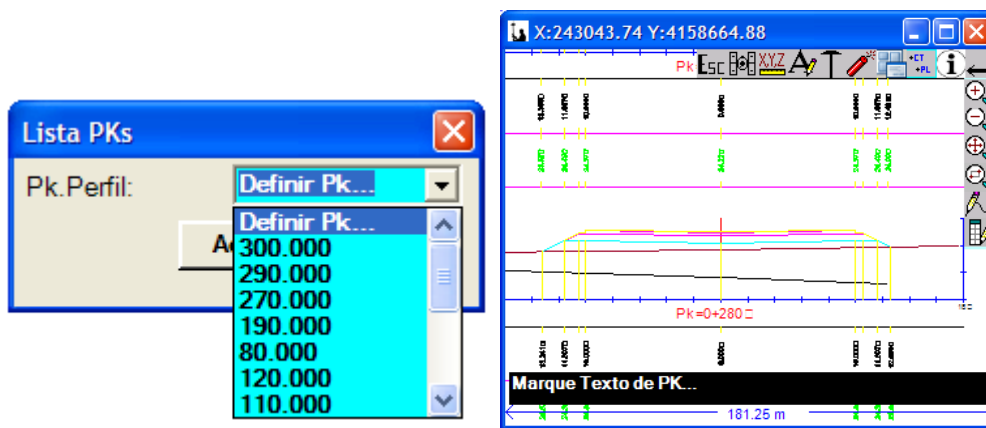
It is a very useful option in certain jobs (reconsideration of boundaries, expropriations...)-

# USER MANUAL TOPVIEW

"Sections Fixed" we need first to load a CAD file with the typical set of profiles cross of the trace of a road that usually come every 20 meters as shown in the image.

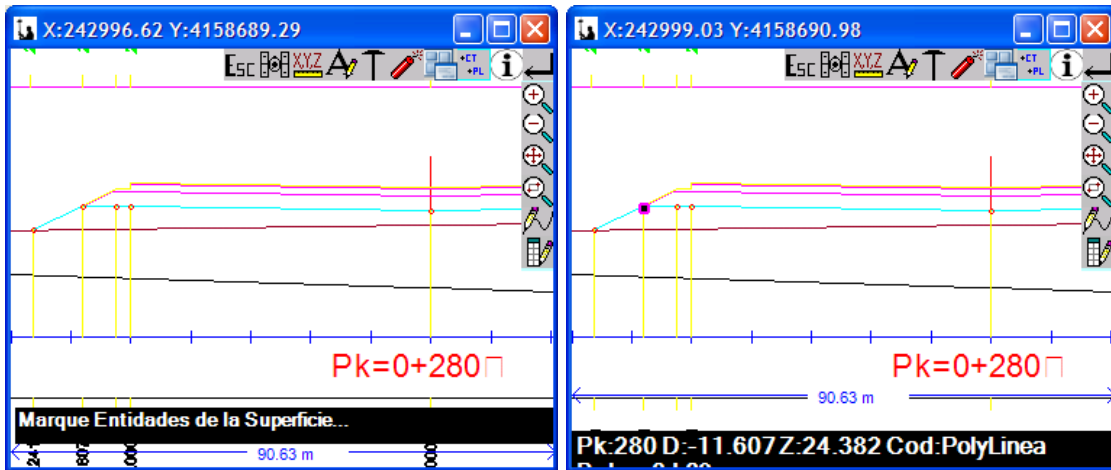



Then request a shaft of Planta+alzado file, and then goes on to the selection of an already defined Pk or its definition. As we can see in the first picture loaded file does not have a valid coordinate to work and for this purpose it is necessary to define the entities that allow us to locate the drawing in this environment and resize it to work in a setting of visualization in elevation as it works in "Sections Cajedas" from the "replanteo" main Menu. To do this, the program prompts to check the CAD-text entity indicating the Pk profile, the vertical line which defines the location of the axis, the horizontal line that dimension, the text of the dimension reference, ....

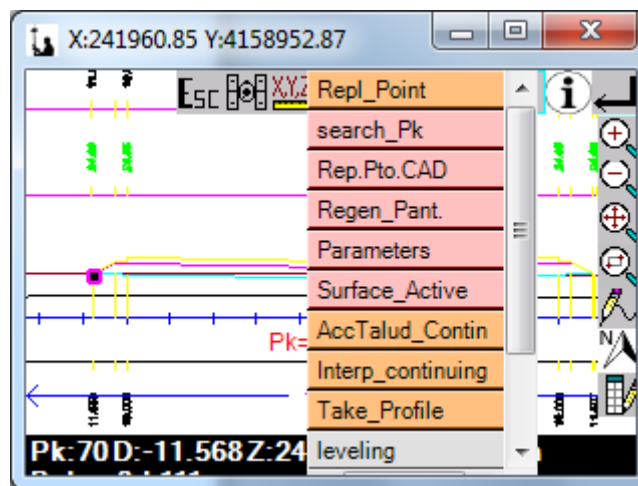


... and then shows this window where you can edit these values and also define the Horizontal and Vertical scale of the drawing in the CAD units... and finally requested to check the lines defining the work surface...

# USER MANUAL TOPVIEW



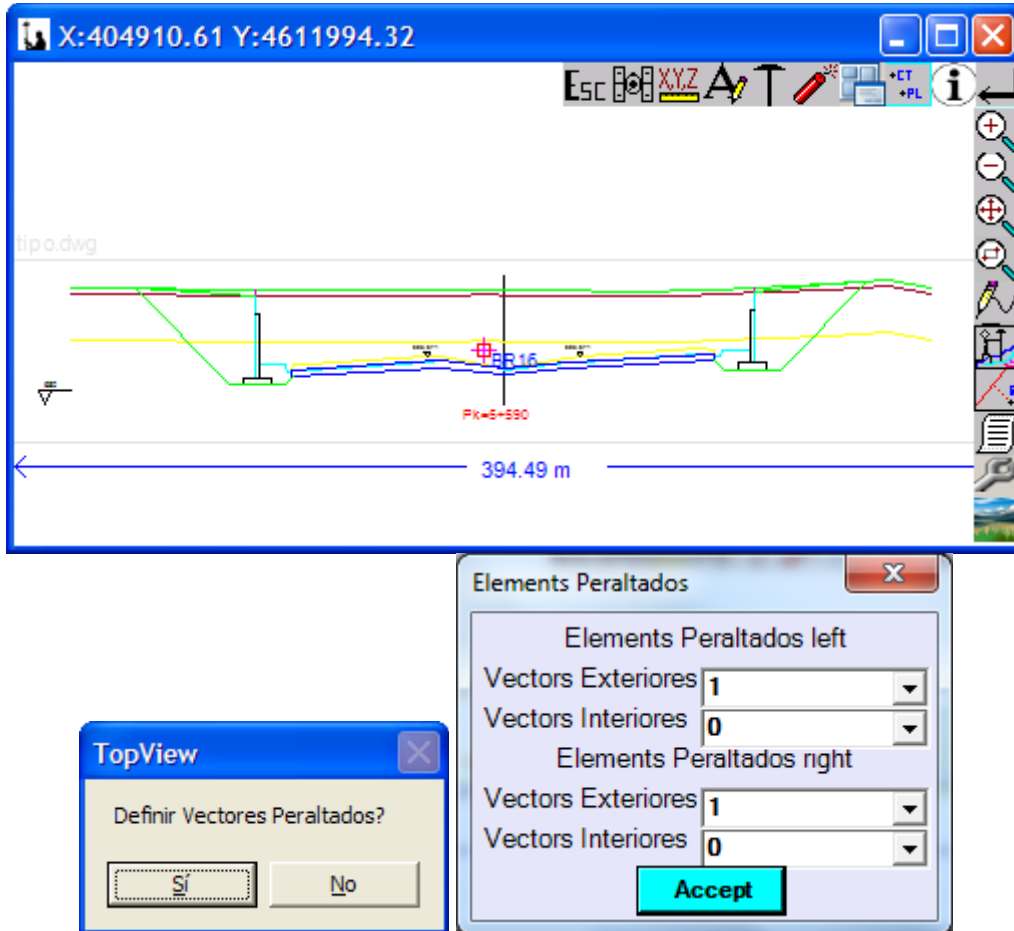
Starting from here already we can move through the section and rethink any point of it. If you press on the icon  access the same menu that we have already explained in the section "Menu Repl" - "Sections Fixed".



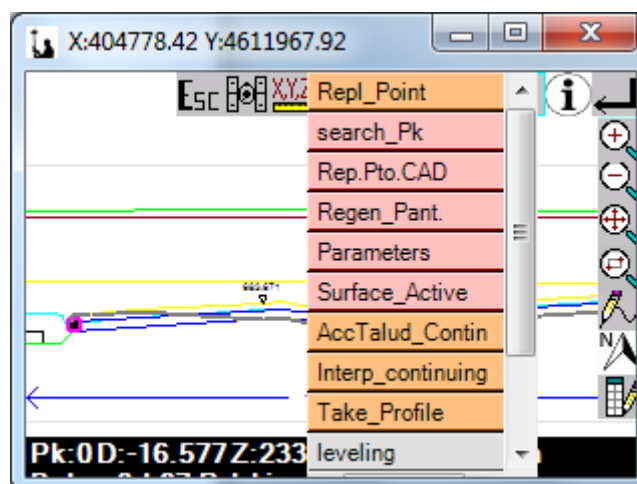
... with the only difference that the second option is "Rethinking point CAD" that allows you to mark any CAD entity and rethink it within this environment. Is useful in the case of disoner in the drawing of elements such as walls of containment, pads, pipes, drains, etc...

# USER MANUAL TOPVIEW

in "Sections Type" operation is same as the paragraph that we just explain, but in this case with the loaded only AutoCAD drawing we use a section type template to rethink any PK.




After requesting that we define the axis entity and the entity that defines the position of the dimension's reference, asks mark lines that define the surface section and if we want to define vectors Cantered within these entities clicking screen on each side the first section banked. In this last window you will have to specify many vector lengths will be conditioned by the table of cambers.

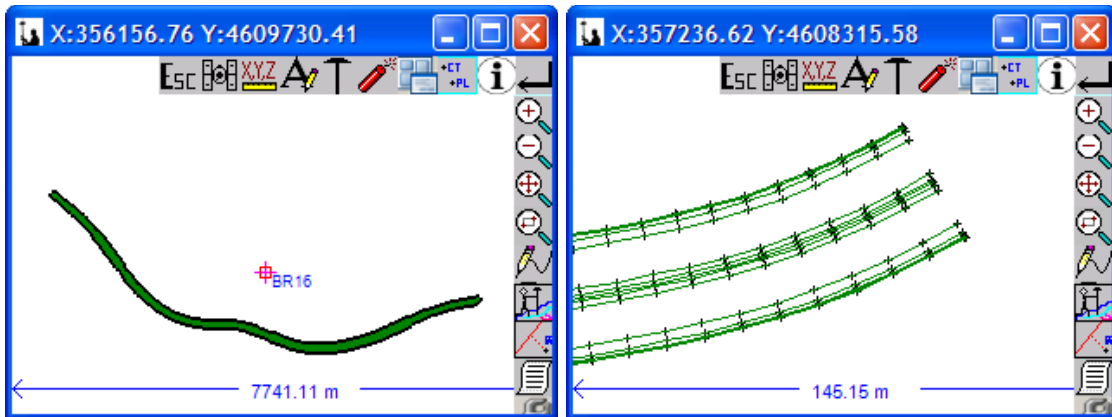


From this definition, the program marks a thick grey line which is the new definition of the surface according to the criterios defined by the cambers and shaft. If you press on the

# USER MANUAL TOPVIEW

icon  access the same menu that we have already explained in the section "Stakeout Menu" - "Sections Fixed".

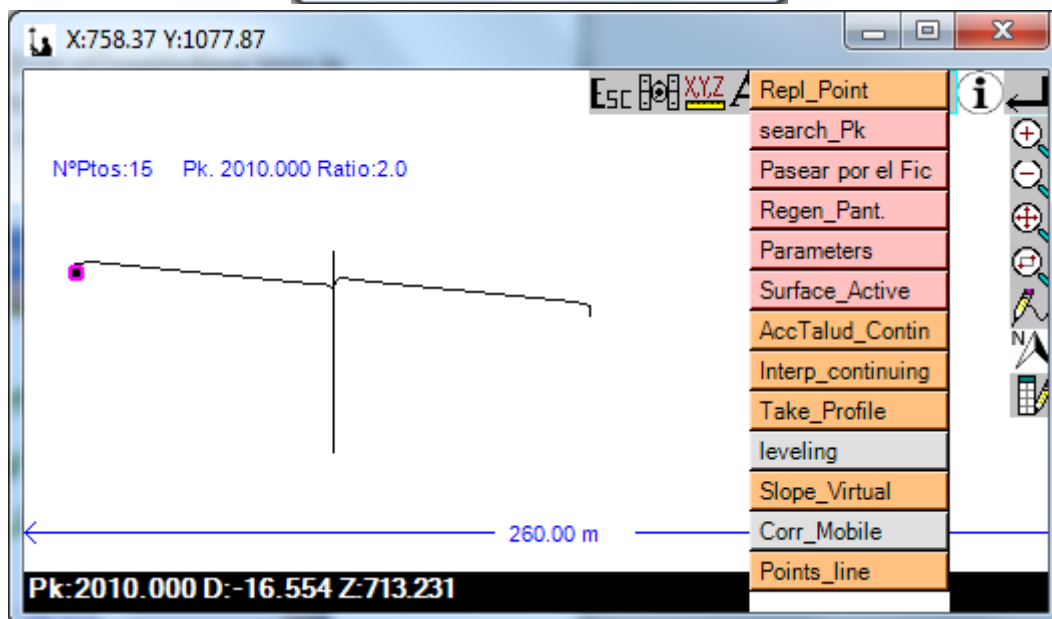
in "Surface" based on a COX file containing drawing on floor of longitudinal lines in 3D that defines a road or any similar geometry we can, after loading the corresponding axis, generating cuts with all of them and reconsider it in the same way as in sections Fixed.



Details Required


Pk.stakeout:	2000.000
Ancho Corte:	100.000
Calculate.Pk each:	10.000

Accept

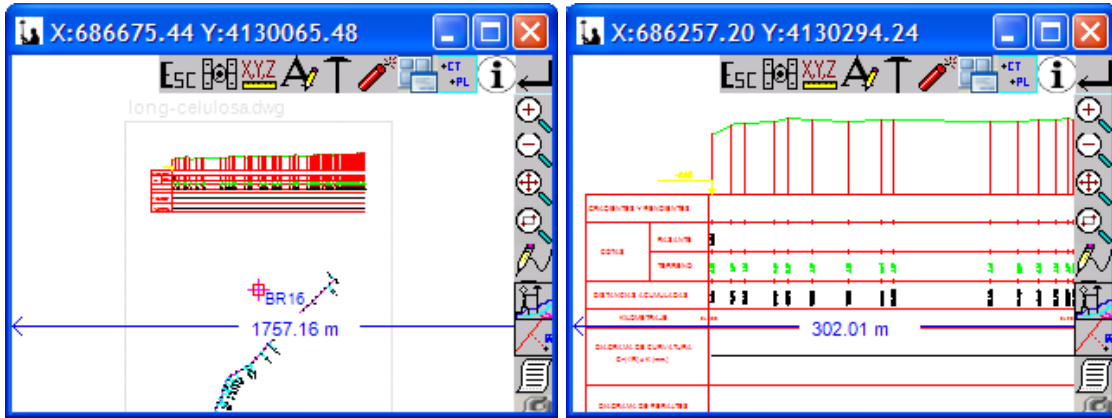




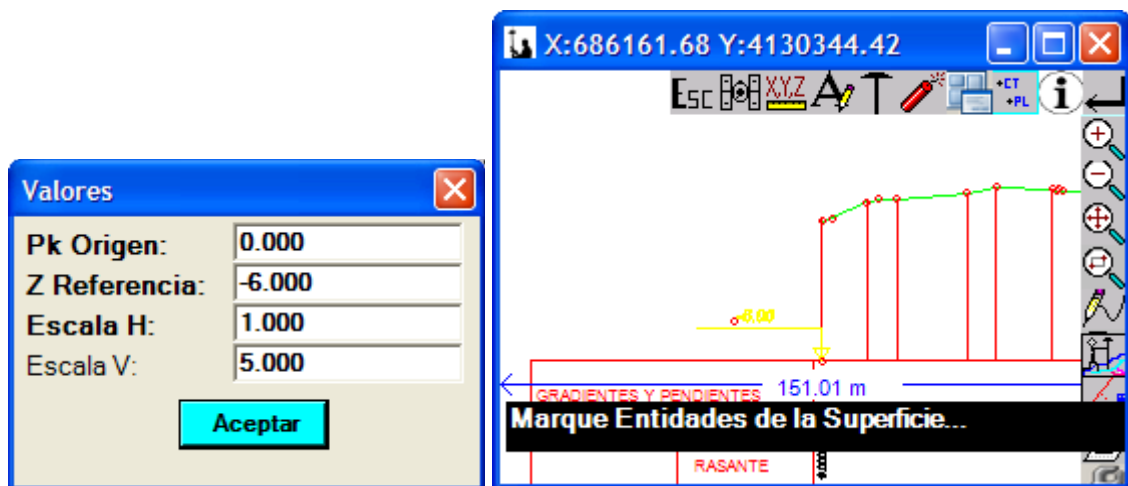
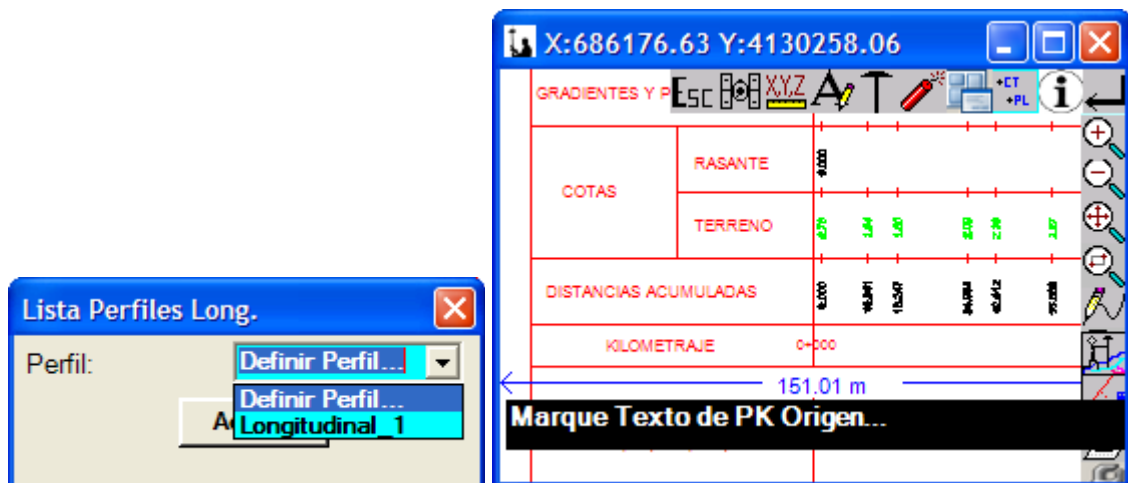
# USER MANUAL TOPVIEW

If you press on the icon  access the same menu that we have already explained in the section "Stakeout Menu" - "Sections Fixed".

in "Longitudinal Profiled" a loaded CAD file containing drawing based on a Longitudinal profile we can use this to rethink any point of the profile or drawing.




To do this we make the entities representing the axis, and the work surface ...

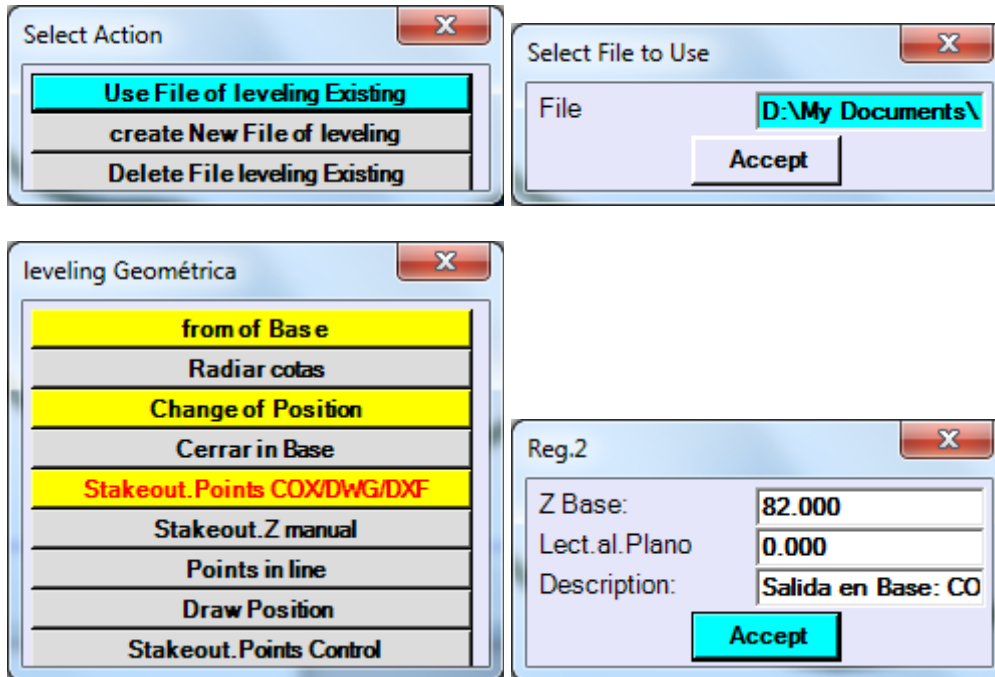




... together with the drawing scales.

If you press on the icon  We access the same menu that we have already explained in the section "Stakeout Menu" - "Sections Fixed". These options are similar to those described in the section "Menu Repl" - "Sections Fixed" but adapted to the reconsideration of a Longitudinal.

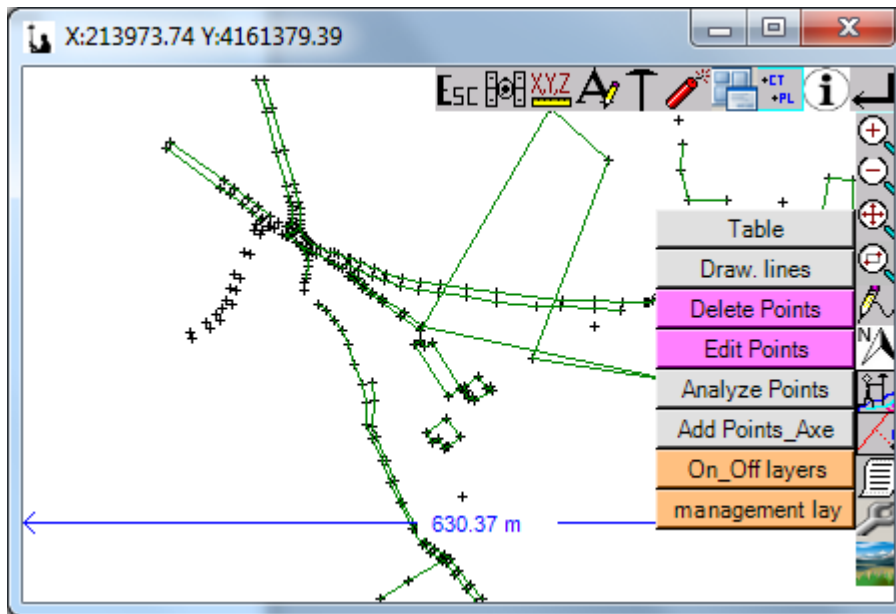
in "**Geometric leveling**" allows you to use a conventional geometric level to mark the elevation of any point of COX or CAD drawing.



With this module, we avoid to use leveling book because all the readings (read ahead, read back) are recorded in a file. Also details of the dimensions of the bases that are part are read from the same files that we use with the ET or GPS, as well as the points to rethink their dimensions are extracted from the COX/CAD file.

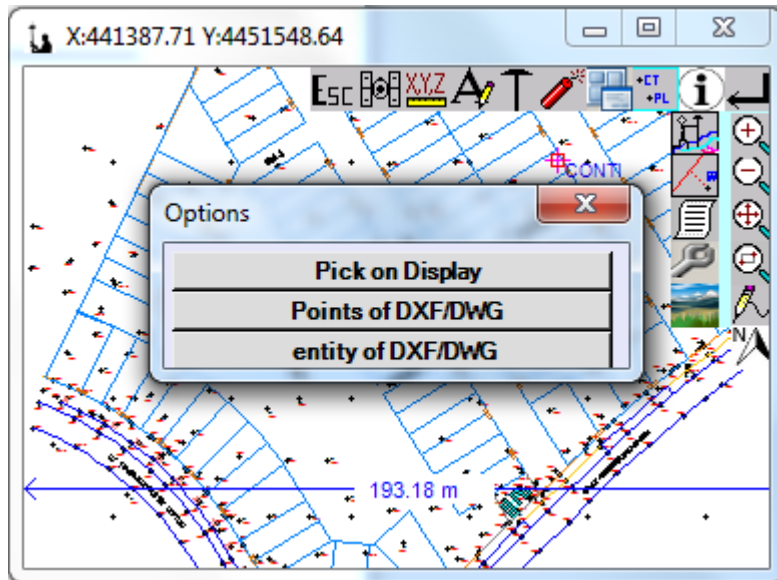


This icon provides access to the following editing options:

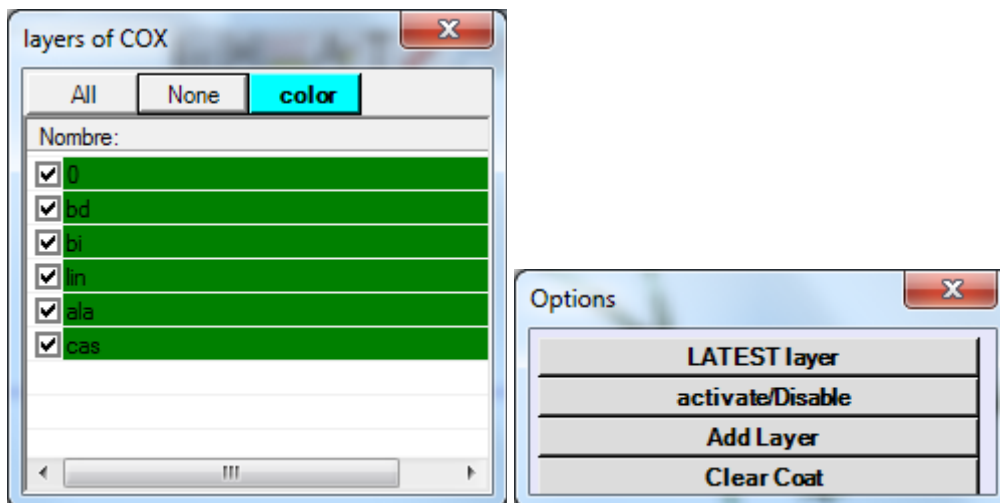


- **Data Table:** by clicking this section unfolds a table where we can edit the points taken so far, having the possibility to modify any of its attributes (code, milestone height...), delete points taken, add points to the file and perform a series of calculations, such as azimuth and distance between points, analysis with respect to an axis, or calculation of surfaces by choosing the file points.
- **Draw Lines:** to take points in field it can happen that, for any reason, we want to draw a line that a certain points with a code that interests us. Using this utility you can do it and choose freely that code. The screen will refresh automatically and the points will appear United and established code, with the consequent saving of time when tip data and having to draw lines on cad, making an unnecessary mental exercise.-
- **Delete Points:** the first thing that we are asked is if we chop the point on the screen. If our answer is Yes the program will capture the point closest to the area of the pointer where we have played. If not it automatically captures the last point taken, asking for confirmation of your removal. We can, however, choose other navigating to the file with the "previous" and "next" options. In both cases the file is then redrawn with appropriate updates.
- **Modify Point:** It only allows us to modify code and height of Prism. The behavior of the program is the same in the previous module.
- **Analyze Pto/Axis:** performs an analysis of any point taken by us or the cad file loaded to the axis which asks us to select and the result presents it to us this way:
- **Add Ptos/Axis:** We have the possibility here to create a new axis by clicking taken points, points of current cad drawing or cad entities (and combinations of these options). You can also choose an existing shaft and add to the same new elements this way.

# USER MANUAL TOPVIEW



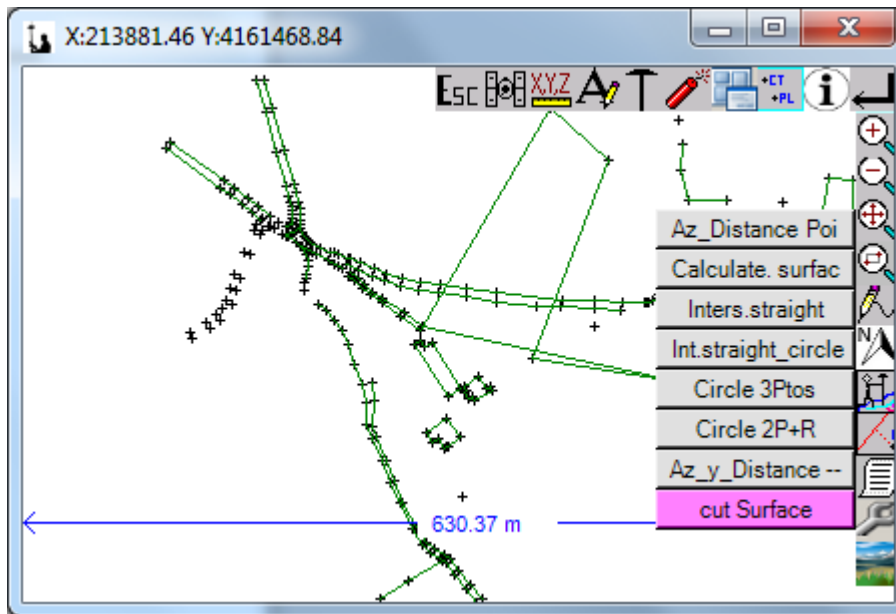
- **On/Off Layers:** It shows us in a form existing in our rising layers to be able to activate or deactivate them in terms of viewing.
- **Layer Management:** It displays these options, whose meaning is clear:



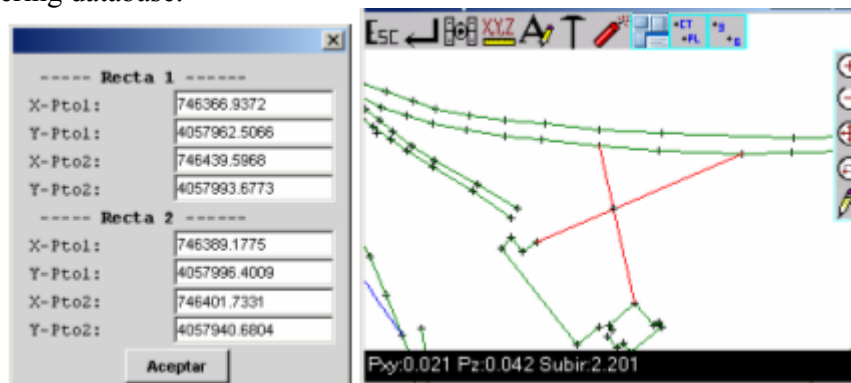
# USER MANUAL TOPVIEW



This icon displays a menu of tools for common calculations:

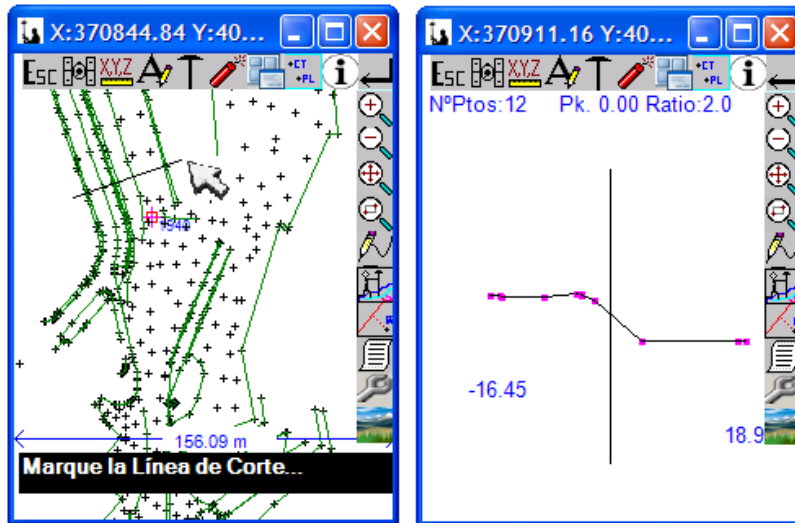


It enables multiple common gallsstones in which coordinates are extracted from the chopped points on screen and the results can be recorded in the current file. The coordinates of the chopped points can be edited and changed before the final calculation without altering database.



It is worth making special mention to 'Cut surface' that allows carry out a transversal cut all the visible lines on screen (active layers) and draw the cut.

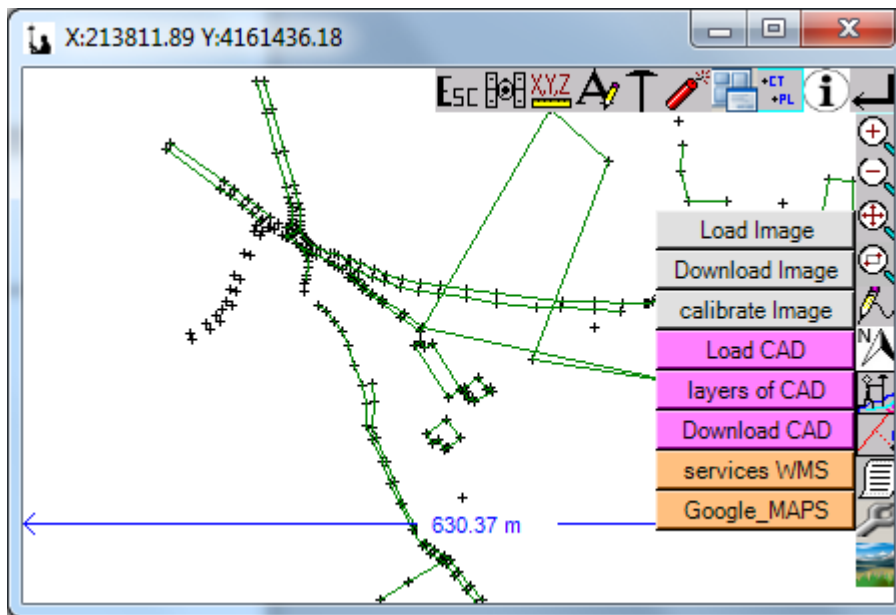
# USER MANUAL TOPVIEW



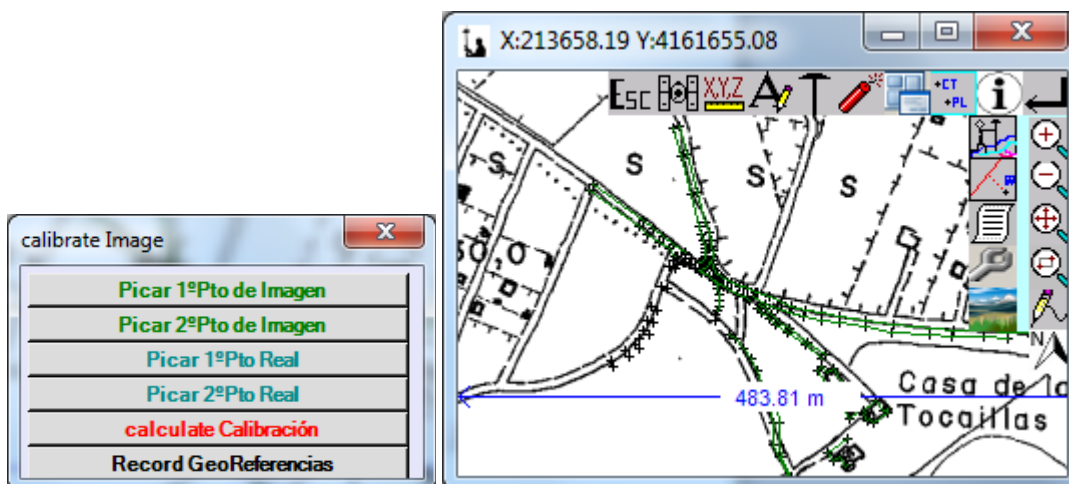
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Access the following menu which allows the loading of images:



- **UpLoad Image:** It allows you to load an image in the formats TIF, JPG, BMP, ECW, JP2.
- **Download Image:** You can download the image.
- **Calibrate Image:** It allows to calibrate images from the TIF, JPG, and BMP type just to chop two common image and terrain points.



- **Upload DWG/DXF:** not only makes available the autocad drawing on screen, but that we can rethink any graphical entity contained in it (lines, polylines, splines, points, blocks...). In module layout we had already mentioned the existence of the "Entity Cad layout" option and we did mention the versatility and power of this tool.

- **Layers DWG/DXF:** It presents a dialog box that manages the activation and deactivation of layers respecting that existed in the loaded Autocad file.

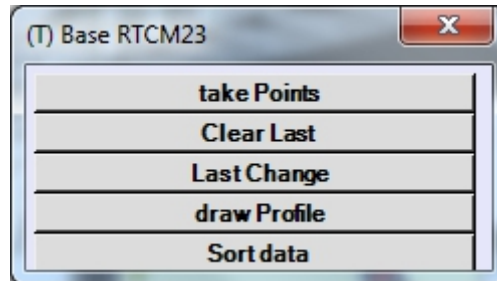
- **Download DWG/DXF:** We discharged the cad file and we be on display with our file format TopView (coo, cox).-



## Transverse Profiles:

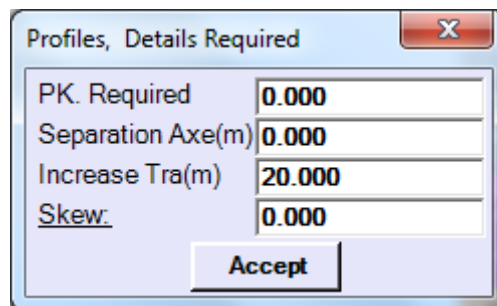
This option ask us first that select file profiles which will record the data that will be taken, and then file plant to analyze data.

Then will appear the following menu:



Options Delete last and modify last operate as in Takes.

The following screen is displayed after the option to take points:



Here we specify the Pk to which belong the points then we will take, if we take profile with a generic shift, and the increase between profiles that will be added to the current Kyoto Protocol when you come back to this screen, easing the process of data collection. Skew is a twist that is applied to take a profile not perpendicular to the main axis. Often used to take profiles works of manufactures are not perpendicular to the axis of the trunk but that knowing the angle forming the shaft alignments of the OF and the profile of the intersection with the axis of the trunk (skew) can take it easily from the trunk.

After reading a screen, showing us the data of the normal to the axis and lateral displacement of the point.

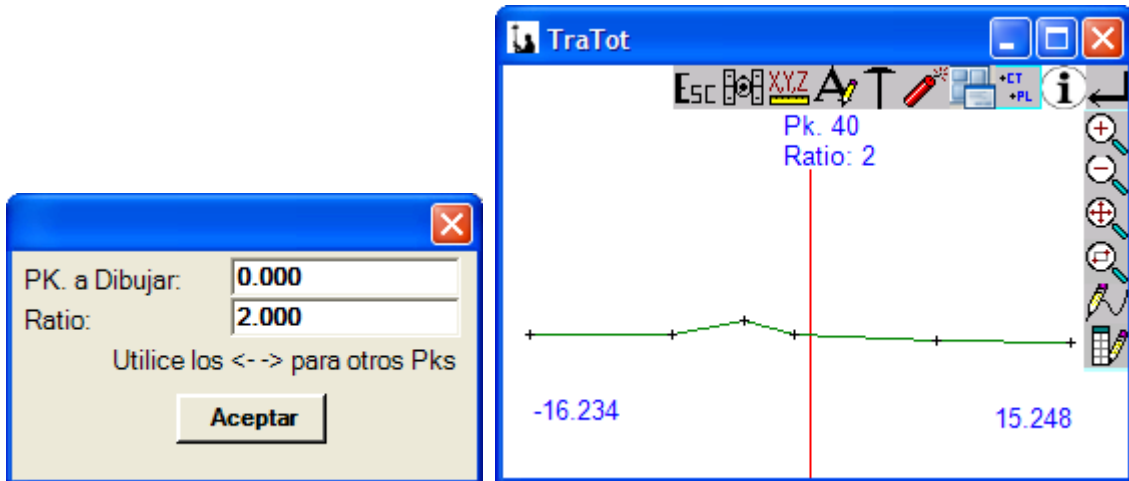
When the point is not next to the theoretical PK and we do not want to record the result, by pressing the <ESC>will not record the point, and if not <Enter>Save the data</Enter> </ESC>.

Then the program asks if we want to keep taking points belonging to this profile or on the contrary want to take points belonging to another profile.

Points can be taken in the order that you want, but always to be recorded a point in the profile theoretical, otherwise will be recording a point of a profile in the next or previous profile. The program automatically sorts the points without the user's request.

Once decision points will return to the main menu of this module and will delete or modify a point any beginning your selection from the last taken, we can draw a profile on the screen in the same way as the module file--> profiles--> draw profile.





## With GPS:

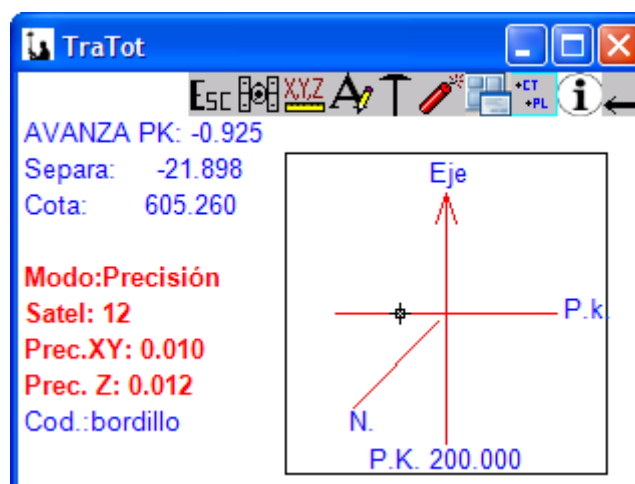
The difference between E.T. and GPS in this module, as in all the of data collection, is the omission of the readings of angles and distance geometric of the inbound Cartesian coordinates from the GPS receiver along with their parameters of Hdop, Vdop, XY accuracy, accuracy in Z, etc..

Presented us a screen similar to the setting out of points in which orientation is not towards the North but towards the direction of the axis of plant feed and the horizontal line is the profile to take. Will also show us the cursor over the drawing and we will have to move until it is on the line that represents the profile.

Also will appear on text movements to be "forward / reverse" at PK as well as the distance to which we are axis.

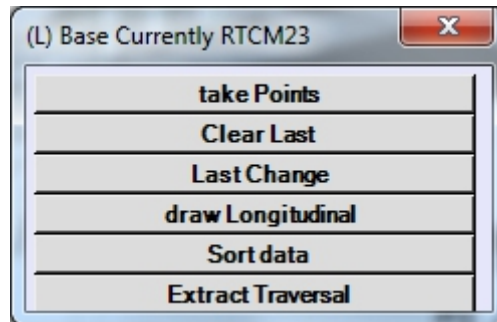
Note that the input of coordinates occurs every 0.2 seconds which continuously updates the cursor that represents the location of the GPS-phone until you press the ESC or ENTER key with what will stop receiving new data to show the coordinates of the moment of real Pk pulsation of the taken point and the distance to the axis.

The size of the cursor will change between small when it is in High Precision, medium when it is floating or precision medium, and big when is in navigation.



## Longitudinal Profile:

There are two ways to determine the dimensions of a longitudinal, one is by extracting data from a file of cross and the other taking data directly from field.

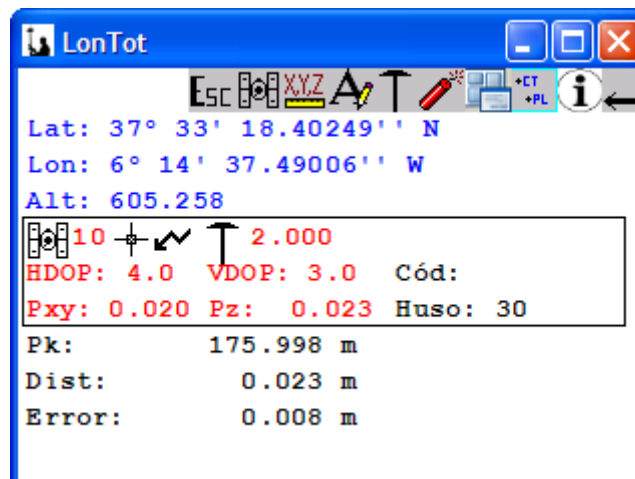


All options operate similarly to transverse profiles.

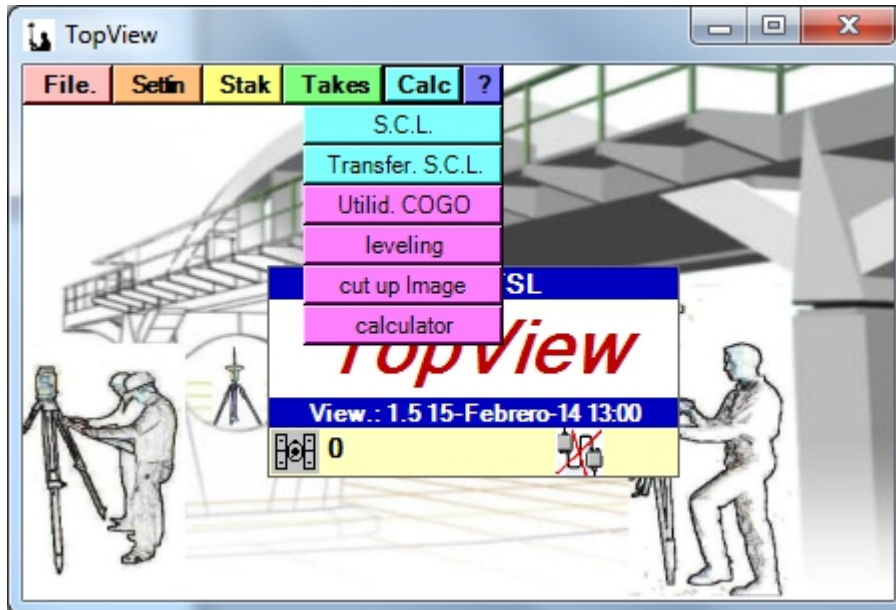
## With GPS:

The difference between E.T. and GPS in this module, as in all the of data collection, is the omission of the readings of angles and distance geometric of the inbound Cartesian coordinates from the GPS receiver along with their parameters of Hdop, Vdop, XY accuracy, accuracy in Z, etc..

Be presented us a screen similar to the gathering of the data in taquimetrico in non-graphical mode where the coordinates are the parameters characteristic of the GPS. Note that the input of coordinates occurs every 0.2 seconds until you press the ESC or ENTER key with what will stop receiving new data to show the coordinates of the moment of pressing. The PK and displacement calculation is iterative and as we are going at the same time moving there is a residual error that will be reduced to zero if we stop or if you press ENTER or ESC to stop measuring and recording the data.

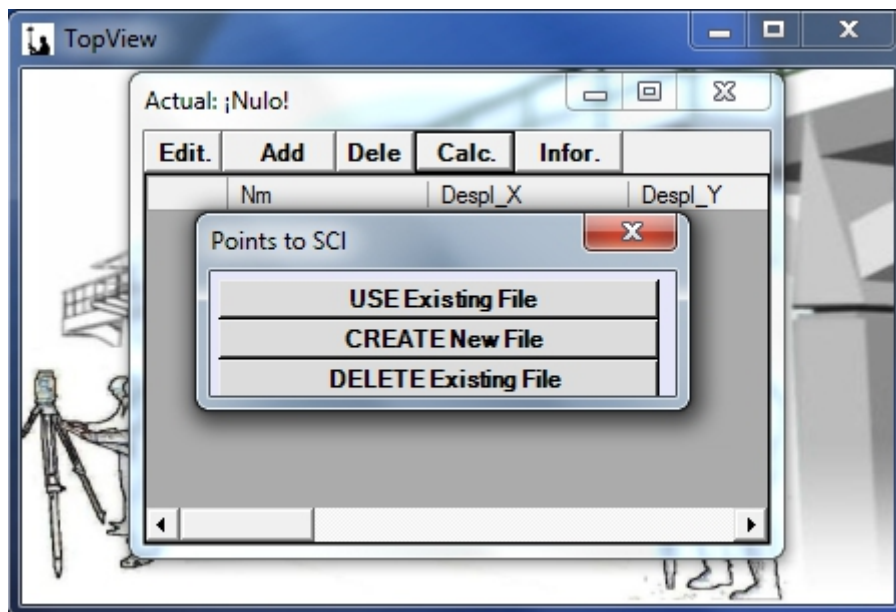


## CALCULATIONS MENU



### Local System Coordenas (S.C.L.): (GPS Only)

In this section you select an already generated SCL or proceed to the insertion, modification, deletion, or calculate a new one. Paragraphs of choice, insertion, modification, and deletion act as in the rest of the modules such as BASES or coordinates.



The calculation button creates a file with "Points for SCL" which consists of a register for each Base used for the SCL that is available the database name, coordinates Cartesian in premises and Cartesian coordinates provided by the GPS according to Datum, spindle, and the geoid used for the calculation. This file has the extension \*.dtm and within Gooddays has this presentation:

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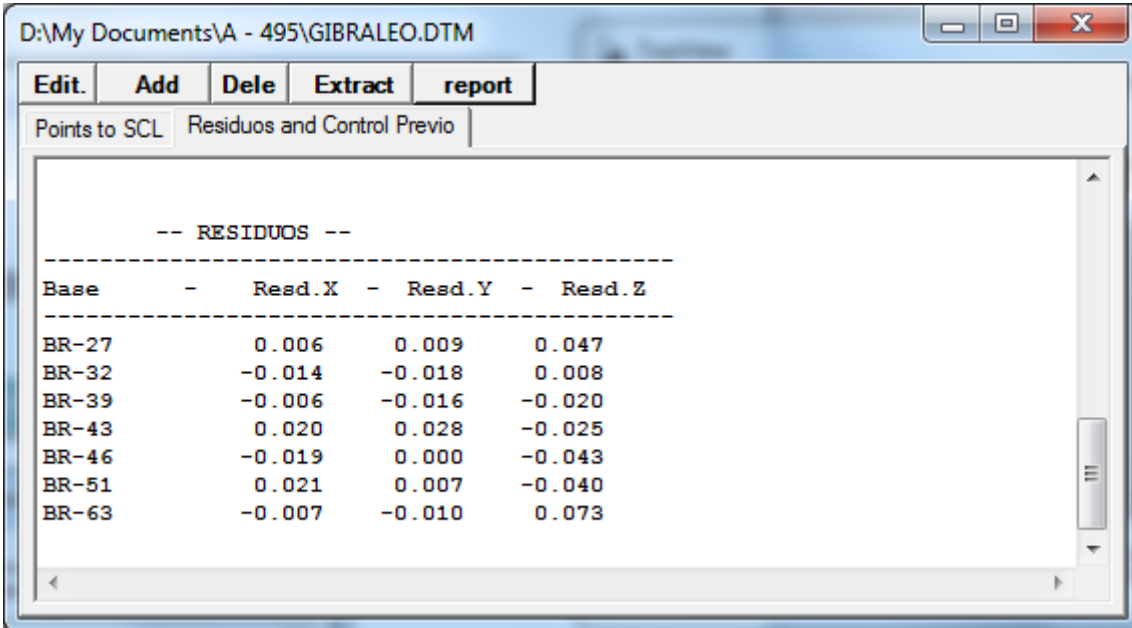
Nombre	X_Local	Y_Local	Z_Local	X_Datum	Y_Datum	Z_Datum	Co...
<input checked="" type="checkbox"/> BR-27	673183.028	4144043.107	98.341	673058.326	4143834.277	148.932	3D
<input checked="" type="checkbox"/> BR-32	674482.324	4143125.565	84.821	674357.643	4142916.758	135.344	3D
<input checked="" type="checkbox"/> BR-39	675616.169	4142146.671	69.489	675491.480	4141937.860	119.941	3D
<input checked="" type="checkbox"/> BR-43	676031.974	4141440.684	62.859	675907.258	4141231.827	113.269	3D
<input checked="" type="checkbox"/> BR-46	676446.898	4141036.905	59.405	676322.221	4140828.074	109.795	3D
<input checked="" type="checkbox"/> BR-51	676982.390	4140274.404	56.710	676857.673	4140065.565	107.041	3D
<input checked="" type="checkbox"/> BR-63	678695.599	4138893.321	22.550	678570.911	4138684.495	72.621	3D

When entering a new "Points for SCL" file with the table is empty and to fill it out we can go to the button "Remove" requesting a Bases XYZ (\*.bas) file and a file of Bases in geographic (\*.lla)... are you searching the records of databases with the same name and placed them on the table. Clicking the cell in the "Control" you can switch between "3D", "2D", and "Z".

We will have to have at least one point. In this case only will calculate an offset in X, Y, Z, and results of zero for the used point error will be displayed. If there are two points are can calculate a displacement, a spin, and a factor of scale (Helmert transformation) in X, Y, Z, showing error zero for two chosen points. If you have three points, will proceed to make an adjustment by least squares to X, and showing a zero error in elevation (Z) used three points (three points define a plane) and non-zero for X, errors and. From four or more points will adjust by least squares to X, Y, Z showing error non-zero for X, Y, Z.

--CONTROL PREVIO--			
-----			
de Base - a Base		Dif. Dist	Dif. Cota
-----			
BR-27	BR-32	0.004	0.069
BR-27	BR-39	0.002	0.140
BR-27	BR-43	0.009	0.183
BR-27	BR-46	0.020	0.202
BR-27	BR-51	0.005	0.262
BR-27	BR-63	0.009	0.521
BR-32	BR-39	0.004	0.072
BR-32	BR-43	0.015	0.115
BR-32	BR-46	0.022	0.135
BR-32	BR-51	0.002	0.194

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The screenshot shows a software window titled "D:\My Documents\A - 495\GIBRALEO.DTM". It has a menu bar with "Edit.", "Add", "Dele", "Extract", and "report". Below the menu bar, there are two tabs: "Points to SCL" and "Residuos and Control Previo". The main area displays a table of residuals for several points. The table is titled "-- RESIDUOS --" and has columns for "Base", "Resd. X", "Resd. Y", and "Resd. Z". The data is as follows:

Base	Resd. X	Resd. Y	Resd. Z
BR-27	0.006	0.009	0.047
BR-32	-0.014	-0.018	0.008
BR-39	-0.006	-0.016	-0.020
BR-43	0.020	0.028	-0.025
BR-46	-0.019	0.000	-0.043
BR-51	0.021	0.007	-0.040
BR-63	-0.007	-0.010	0.073

In the tab "Results and prior Control" shows us a prior control of the data in the analysis does not intervene in the calculation but can be used to detect if we made a mistake in typing the local coordinates or the geographical GPS if they got them wrong. The process is based on comparing the disputes that exist in distance and increase in dimension between the local coordinates and the GSP. At the end it shows "Waste" results calculation.

The section "Report" generates a document in format \*.html, where all the information relating to the calibration calculated once you register.

## Transform points to current SCL: (GPS Only)

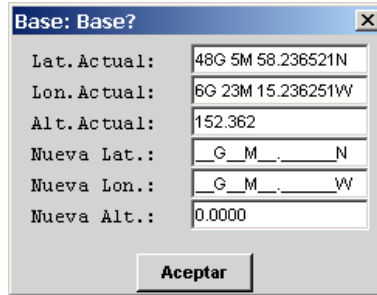
This option allows you to transform one or all of the points contained in a file to local Cartesian coordinate using the parameters of the current SCL. All the transformations that want to since the original data is not lost can be leaving these safe in other fields of the file



In the correct geographical option is a check of the basis on which the Sensor-Base (extracted file Bases in Lat, Lon, Alt) was positioned and prompted the new coordinates. The differences between the two coordinates are applied to all the geographical readings of the

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points contained in the file. It is equivalent to a few fixes from phone afterwards. This operation is highly sensitive because the process alters all the data and is not reversible except by entering the geographical coordinates with the differences in reverse.



The image shows a software dialog box titled "Base: Base?". It contains several input fields for geographical data:

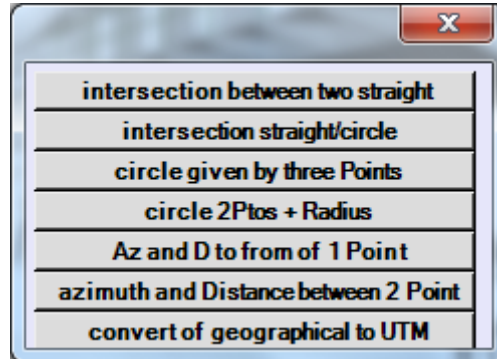
Lat. Actual:	48G 5M 58.236521N
Lon. Actual:	6G 23M 15.236251W
Alt. Actual:	152.362
Nueva Lat.:	_G _M _ _N
Nueva Lon.:	_G _M _ _W
Nueva Alt.:	0.0000

At the bottom of the dialog box is a button labeled "Aceptar".

It can also be used in the case of having more than one mobile phone and have forgotten to make corrections since moving in each of them, to apply this correction. So we will put the current geographical to zero and new values will be the corrections that were read on the sensor that Yes was this correction.

## Cogo Utilities:

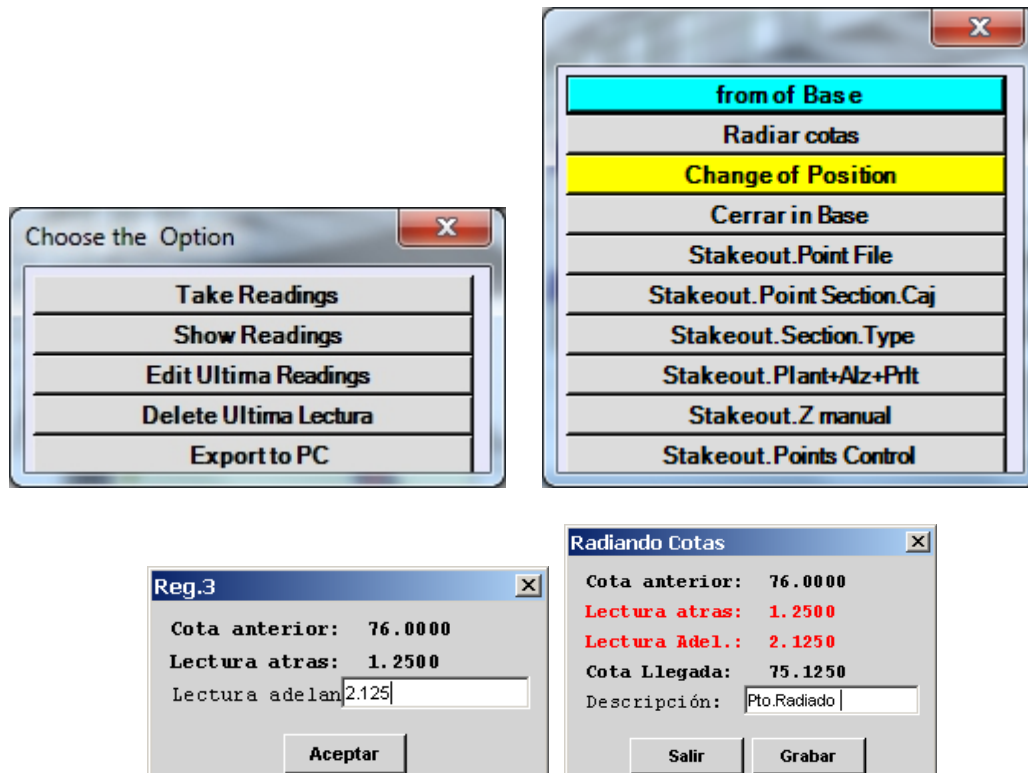
This section is accessed to a series of relatively frequent calculations. The introduction of the data is very simple and doesn't need explanation of them. The data can be extracted from different files and the results recorded in these u other.



## Book Leveling

This section allows the management of files (use, create, delete), leveling and the introduction and modification of data containing.

It allows taking readings radiated from a same position, or make continuous changes (route). In each point taken, you can enter a code that will be useful later to identify it, modify it, or delete it.



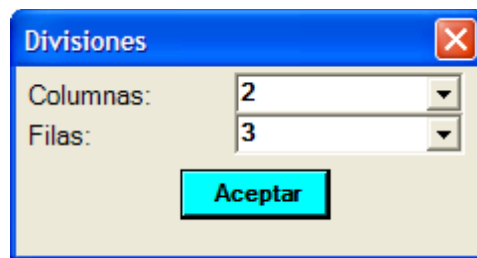
Links to databases, coordinates, banded sections, and sections type files to extract the dimensions of them to rethink. The description automatically enters information point to which belongs the elevation to rethink and obtained differences.



You can also export data to your Pc from this module. The resulting list is equivalent to listing of "cute" supplied assistants to mark points to the correct dimension, and can also be a valid list for quality control.

## **Chop Images.-**

This utility is only available in the TopView PC version. With it we can, from oversized disk image, and whenever we have the corresponding calibration of the same file in the same directory, divide the image so that the resulting can be processed more efficiently.



Cut once the image will see the  $M * N$  image files, being introduced number of columns M and N the number of rows. At the same time will create a file's extension "ils" which is an index of the previous ones. In the module "takes coordinates" we have the option of loading one or the other. The advantage of using the file "ils" is that the programme is responsible for, knowing our position, display the corresponding cut file, so if we go to another zone contained in another file automatically download the previous memory and new loads. This is very useful in given field which will bear will normally be a Pda.



## CONTACT U.S.

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- [www.Topview.es](http://www.Topview.es)

PHONES:

- 954789329 (Telf/Fax)
- 629331791
- 630241313

## IN THE PDA INSTALLATION PROCEDURE

1. Download the installation package for PDA (TopView\_V1\_ARM.CAB) which is valid for any Windows operating system for PDAs and micro ARM. Depending on the PDA you can also request to install the add-on called ".Net Compact Framework", in this case we will have to download the appropriate for the version of the operating system that contains the PDA (Pocket Pc, Windows Ce, Windows Mobile).
2. After copying the file "\*.CAB" to the PDA in the directory of the memory card where it is generated the key disk, we have to run it through the "My Computer" icon. Follow the steps by default and change the installation directory by default ("Program Files\TopViewCe") to the directory that gives access to the memory card, this will release memory to the system to be able to load data files more large.
3. Once the installation is finished you will have a shortcut icon in "Start-> Programs-> TopViewCe". This icon is a file named "TopViewCe.Ink" located in the directory "\\Windows\Programs" that when we start the application is automatically copied to the directory "\\Windows\Desktop" to have a shortcut to the program from the desktop of the system.
4. The program by default used as directory Base that working directories are created on the memory card with the intention of not losing data in case of power failure ("Storage Card" or similar...).
5. Run the access icon. If it is the first time that the application is running it will display all possible key CDs and their serial numbers. The program calls for the introduction of the corresponding key to one of the serial number shown. If the key is correct it will proceed to load the configuration and displays the main screen where you can see the date and the number of the version that we have installed.

## CONCLUSIONS

This program is designed to work with any Total station and any GPS RTK or static mode to pos-proceso, so that just by changing the cable that connects the PDA with the used device we can continue using the same data files. So we can start work with a GPS and then take the points that could not be taken with this, by being close to a building or other reason, with a Total station just by changing cable and device selection.

It is also worth mentioning that it is intended to complement programs commonly used in Spain for PC such as Autocad, Clip, Mdt, Istram e Ispol, Cartomap, Protopo, and others, being able to import of these shafts plant and elevation, list of Bases, list of coordinates of layout, list of sections banded, and export Base, coordinates, transverse profiles, profiles, etc..

To be a program developed in Spain, the entire program, manuals and supplementary programmes for Pc, etc... is written in Spanish and adapted to the usual Hartware and Software environments in Spain.

Adaptations of the program to import or export files formats will be answered in the shortest possible time.