aplitop
Aplicaciones de
Topografía e Ingeniería Civil

Sumatra, 9 E - 29190 Malaga (Spain)
www.aplitop.com
Tel: + 34 95 2439771
Fax: + 34 95 2431371

Technical Note
(tcpmdt_es_v75_sec001_DefinitionOfReinforcements)

Definition of Reinforcements

Date of Update:

12/08/2015

Requirements

MDT Version: 6.5 or higher.
CAD: AutoCAD / BricsCAD / ZWCAD.
Operating System: Windows XP / 7 / 8 / 10.

Purpose

Definition of a road making use of the existing roadbed.

As a starting point we have a surface with an existing road where the purpose is the definition of a new road making use of the existing road in the intersecting areas of both roads.

This technical note will describe all the steps required to define a cross-section with reinforcements.

Details

The first step is to open the REINFORCEMENT drawing.
.
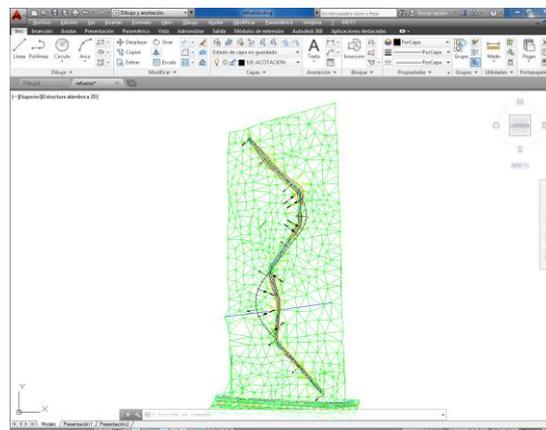
We then import the horizontal alignment of the new road by executing the **MDT7 > Horizontal Alignments > Import Horizontal Alignment** command and selecting the EJEPRINCIPAL.EJE. file.

The next step is to generate the cross-sections of the natural terrain by executing the **MDT7 > Cross-Sections > Obtain Profiles** command, placed every **5 metres** and with a width to the left and right which is sufficient to enable the development of the cross-section, in this case we will define a width of **15 metres** on both sides. We will call the cross-section file EJEPRINCIPAL.TRA.
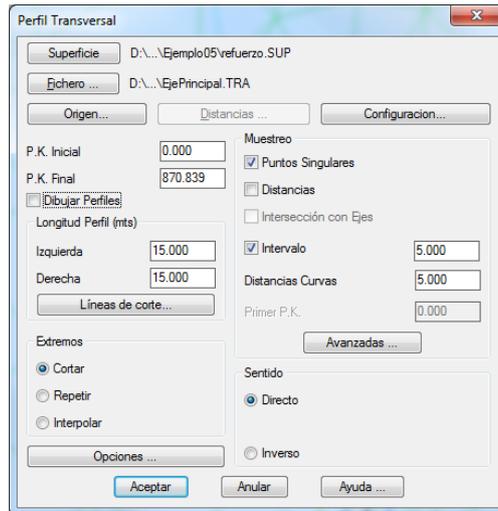
Definition of Segments

Once the cross-sections have been generated we need to create the segment, whereby this technical note already features the remaining elements of the road, or in other words, the longitudinal profile, the vertical alignment and the standard cross-section. We then execute the **MDT7 > Segments > Define / Edit** command, calling the new segment REFUERZO.SEG and then import the different components of the same from the project folder: EJEPRINCIPAL.EJE, REFUERZO.LON, EJEPRINCIPAL.TRA, REFUERZO.RAS AND REFUERZO.SCC.
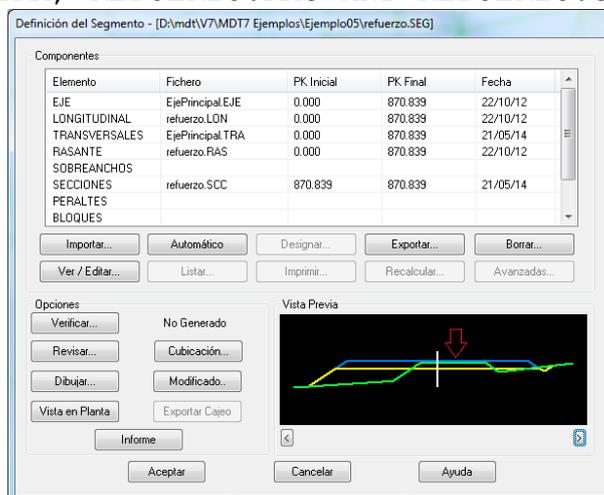
The preview of the segment illustrates the delimitation of the road on which we are going to make use of the roadbed.

Definition of the Reinforcement

Once the segment has been defined we then alter the standard cross-section taking into consideration the existing roadbed in order to make use of the same.

The first step is to execute the **MDT7 > Cross-Sections > Define / Edit**, command, select the REFUERZO.SEG segment and click on the "**Reinforcements – Others**" tab.
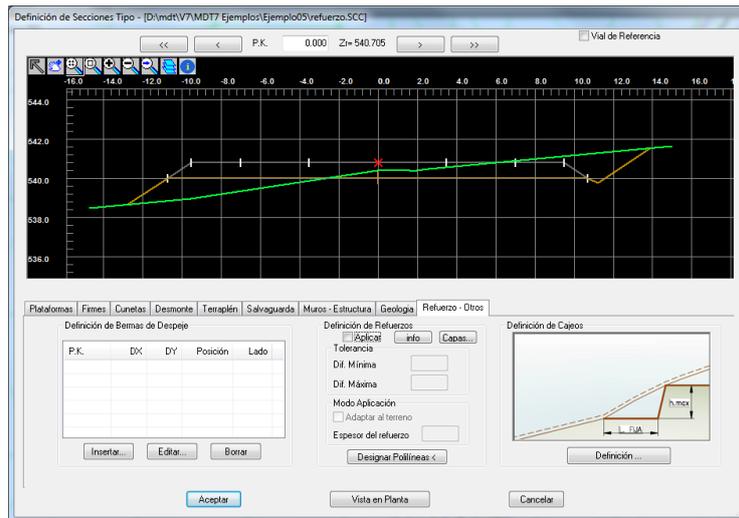
We then click on the "**Reinforcements**" box and set tolerance values of **-0.5** and **0.5** metres for **Minimum Difference** and **Maximum Difference** respectively. As the aim is to make full use of the existing roadbed we then select the "**Adapt to Terrain**" box.
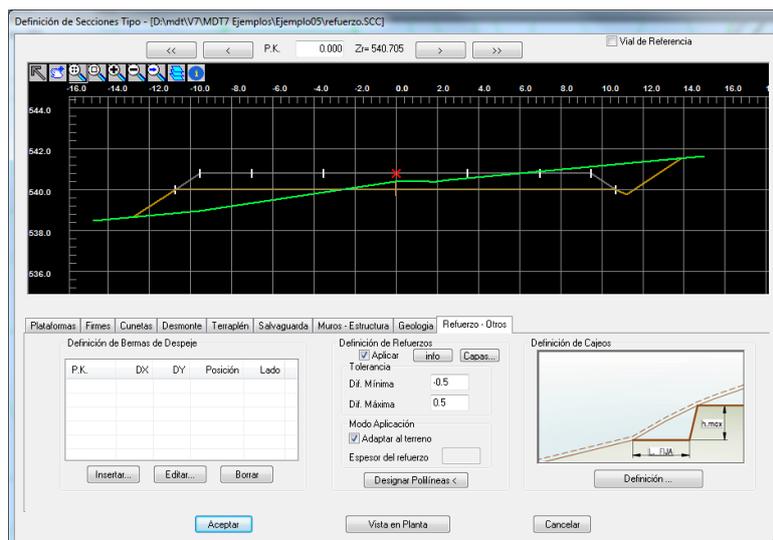
Finally, we need to indicate the new road where the existing road is located, by clicking on the "**Designate Polylines**" tab and in this case selecting the two polylines which define the boundary of the area of ground..
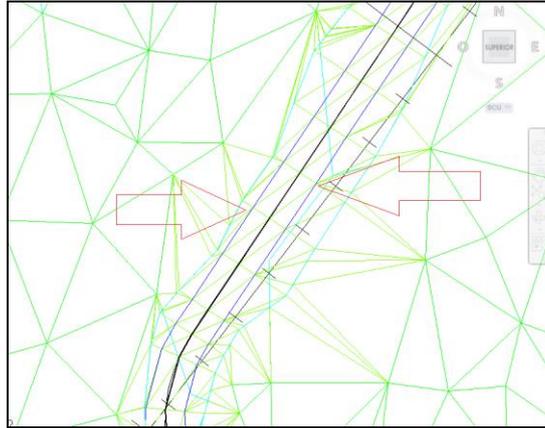
Automatically, if we go through the different existing stations we will see that certain stations feature two red marks indicating the point at which the road to be made use of passes through and how the standard cross-section adapts to the existing roadbed.

We may then draw the segment using the **MDT 7 > Cross-Sections > Draw Cross-Sections** option, selecting the REFUERZO.SEG file. The drawing clearly illustrates the use of the raodbed conducted in certain stations.
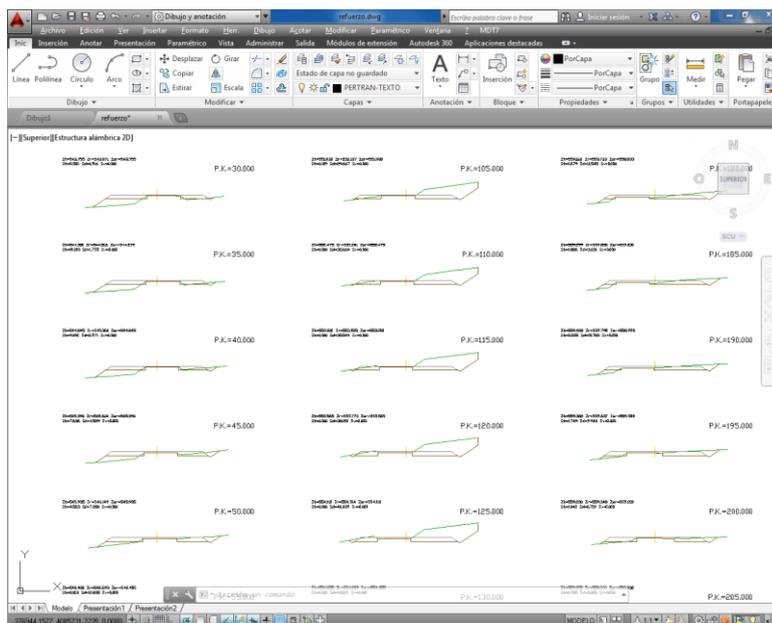
To end, we can obtain a list containing the surface and volume of reinforcement by executing the **MDT7 > Volumes > Measurement of Roadbeds** command, select the `REFUERZO.SEG` segment and click on the window with the data on the initial station and final station which appears by default.

After conducting the calculation process the following list will appear featuring the different items, including the reinforcement surfaces and volumes.

Listado de Mediciones de Firmes

PK	L.B.I.I.	L.B.I.D.	L.B.E.I.	L.B.E.D.	S.CALZADA	S.ARCÉN I.	S.ARCÉN D.	VOL.FIRME	S.REFUERZO	VOL.REFUERZO	Sup.Ref.Rod.
0.000	0.000	0.000	5.000	5.000	70.000	12.500	12.500	80.800	0.000	0.000	0.000
	0.000	0.000	5.000	5.000	70.000	12.500	12.500	80.800	0.000	0.000	0.000
5.000	0.000	0.000	5.000	5.000	70.000	12.500	12.500	80.800	0.000	4.021	0.000
	0.000	0.000	10.000	10.000	140.000	25.000	25.000	161.600	0.000	4.021	0.000
10.000	0.000	0.000	5.000	5.000	70.000	12.500	12.500	60.818	1.608	8.010	35.030
	0.000	0.000	15.000	15.000	210.000	37.500	37.500	222.418	8.042	12.031	35.030
15.000	0.000	0.000	5.000	5.000	70.000	12.500	12.500	60.754	1.596	7.952	35.030
	0.000	0.000	20.000	20.000	280.000	50.000	50.000	283.172	16.020	19.983	70.060
20.000	0.000	0.000	5.000	5.000	70.000	12.500	12.500	60.703	1.585	7.896	35.030
	0.000	0.000	25.000	25.000	350.000	62.500	62.500	343.875	23.947	27.879	105.090
25.000	0.000	0.000	5.000	5.000	70.000	12.500	12.500	60.636	1.573	7.838	35.035
	0.000	0.000	30.000	30.000	420.000	75.000	75.000	404.511	31.811	35.717	140.125
30.000	0.000	0.000	5.000	5.000	70.000	12.500	12.500	60.588	1.562	7.784	35.030
	0.000	0.000	35.000	35.000	490.000	87.500	87.500	465.099	39.623	43.502	175.155

TOTALES	
Longitud Banda Interior Izquierda	0.000
Longitud Banda Interior Derecha	0.000
Longitud Banda Exterior Izquierda	875.494
Longitud Banda Exterior Derecha	880.485
Superficie de Calzada	12191.746
Superficie Arcén Izquierdo	2188.734
Superficie Arcén Derecho	2201.213
Volumen de Firme	13274.543
Superficie de Refuerzo	5601.750
Volumen de Refuerzo	5606.782
Superficie de Rodadura de Refuerzo	8189.803

Aceptar   Imprimir...   Ayuda

References

1. Example data files

2. Help:
   - Definition of sections
   - Generation of cross-sections
   - Definition of segments

3. Video