

Stake Surface in Magnet Field – Paving Applications

This Procedure can be used for recording "dips" to a Surface that has recently been Paved. Several customizable reports can be exported together with the actual "asbuilt" surface itself for further analysis using desktop software such as Magnet Office.

This procedure requires a design surface(s) to reference to. This can be in a variety of formats both Topcon (*.TN3 / *.TP3) and dxf/dwg/xml.

In Magnet Field, import the surface ; Exchange/From File.



Once the surface is imported and the instrument is set up and co-ordinated, go "Stake";



Chose the surface name from the list, confirm the pole height and if necessary configure the "stake report" which customizes the format of the QA/Asbuilt report exported. Next press "stake" and you will see the position of the pole and the relevant cut/fill values showing the relationship of the base of the pole to the design surface.

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e: support@topconsokkia.co.uk



Stake

M

"floppy disc" icon saves the asbuilt position /height of the rod position. Note, the 4 display boxes near the bottom of the screen are customizable, by tapping them you can change the data they show. Any asbuilt points that have been recorded are

EDM

Cut 0.142

Elev 49.609

shown on the graphic with a "flag" and point number (with the suffix _stk) these are recorded in the Job database.

The asbuilt report recorded is shown below;

Store Point		\checkmark ×
Stake Design Code	Note Data Mark	
Name	Value	>
Design Reference	1st-layer	
Design Pt.	1002	2.2
Design Note		
Design Code		
Design N	216.362 m	
Design E	97.829 m	
Design Elev	49.468 m	
Stake Pt.	1002_stk	\sim

This can be exported from the home screen using Exchange/to file/stakeout reports - CSV format.

Since all the asbuilt points are listed with the suffix _stk we can export these as a "cut sheet".

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Exchange / to file and select data type; Points, Format; Cut Sheet User Defined.

To File		>
Data	Points	
Format	Cut Sheet User Defined (*.txt) ile units	•
Use filte	ers	
		<u>N</u> ext >>

This allows the user to determine what data is exported. Go "next", then "edit".

Delimiter	Available	~	Order
Space Ocomma Tabs Other	Design Elevation		Design Point
	Delta North		Staked Point
Header in first row	Delta East	0	Staked East
ile Shde	Delta Elevation		Staked North
lie Style	PTL Distance	22	Cut(Fill)
Design Point,Codes,Staked Point,Cut(Fill),Toleranc	Delta H		- Tolerance
	Codes	-	
Delete Edit Add	Cut	\sim	
		>	

The resulting report will be saved as a CSV (comma delimited file).



Stake Surface relative to an Alignment

If a Road Alignment is available, the stake surface option can show chainage offset and height. In the Stake Surface screen, tick "use Align" and select the alignment from the list.

Note; the Alignment can be imported as part of the TP3 file or as an *.RD3 format

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Stake Surface will now produce results showing the current chainage and offset (left or right) from the selected alignment;



If the user wants to change the numbering system for the Asbuilt points recorded, simply hit the "M" Magnet icon in the top left hand corner, and amend the "Initial Point Name". Note also, the option in this dialog to "offset" the design surface allowing the user to reference the current rod position to a "virtual" design surface.



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Creating a cut/fill surface

Stake Surface	
Surface	1st-layer
I.755 m Cut/Fill ▼	5 m
Create Surface Use Alnt Stake Report My Surface Report	<u>N</u> ext >>

By selecting the "Create Surface" option, the user can create an asbuilt surface "on the fly" as the dip checks are being recorded.

Select the option and hit "next".



The graphic shows the "live" dip information as before but now, in addition, creates a new surface "on the fly".

The display can be modified to aid interpretation . On the top right hand side of the display (below the home button), tap the triangle to see more menu options.



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Tap the icon with the green "tick". The "General" tab controls what is displayed on the "stakeout" screen.

Map	Propertie:	5			\checkmark	×
General	Surfaces	Drawings				
V Po	oints		🖌 Lines			
•	🖌 Names		Stati	ons		
	Icons		🖌 Roads			
	Codes		Cha	inages		
•	🖌 Notes		Ten	nplates		
	Heights					
[Auto To	po (🖌 Cut Fill E	Bar		
	Scanned	I [Bing™ N	Maps		

The "Surface" tab relates to the surface display;

Map Properties			\checkmark ×
General Surfaces	Drawings		
Name			
Design (1st-laye	r)		
Final (asbuilt-28	1015)		
🖌 Color Bar		Interval	0.100 m
Show Cut/Fill Co	ntours		

The user can decide which surface is displayed and how.



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TOPCON quick guide

On quitting the option (back arrow or home), Magnet Field computes the volume of the materiel contained between the (new) asbuilt surface and the design surface.

Surface 1	1st-layer
Surface 2	MAT
Cut	1.306 Cu.m
Fill	0.000 Cu.m
Area	8.511 Sq.m

If the user wanted to export the "asbuilt" surface then ,from the Home Screen, Exchange / to File / and select "surface" as the data type.

To File	🤊 合
Data	Surfaces
Format	Topcon 3DMC Surface (*.tn3)
Select fi	le units
	Next >>

Select the relevant surface from the "next" screen.

м	Select Surface(s) to Export
S	urfaces
	1st-layer
	2nd-layer
-	asbuilt-281015
Г	MAT
—	
	Select All Check Uncheck
	<< <u>B</u> ack <u>N</u> ext >>

Browse to a location to store the file;

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Select directory	× > ====================================
VProgram Files\MAGNET F	ield\IEFiles
BASE-CONTOUR.txt	CogoResul
Note: State Local.gc3	🔊 dip-examp
bldg.XML	🔊 dip-examp
<pre>(# #)</pre>	>

Green tick, and the surface will be exported as a *.TN3 file.

Staking Points to determine the thickness of the materiel laid.

If a Base Layer /Surface has been surveyed prior to laying materiel, it's possible to stake out and measure to the exact same points on the new layer . This enables the user to determine the exact thickness of the layer at specific points.

From the Home screen, Stake/Points;



Select the desired point on the "design" surface via the Map or List buttons;

Stake Point		•
E 🞺 -7 🛄	127	
Code	SP	
👼 HR	1.755	m
Stake Report My Point Report		Stake

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TOPCON quick guide

Go to the "stake" screen.



With the user facing the Robotic, the graphic guides the "rod" (green cross) toward the design point (red cross).

Note the "cut/fill" value in one of the customizable display locations.

Once the user is happy that the setting out tolerance has been met he can record the asbuilt position /layer thickness by hitting the floppy disc icon.

Name	Value	
Design Reference	127	1
Design Pt.	127	
Design Note		
Design Code	SP	
Design N	236.586 m	
Design E	94.845 m	
Design Elev	49.371 m	
Store Point	Dur Mad	 Image: A state
Marile Marine Store Point Stake Code Note	Deta Mark	 Image: A start of the start of
Store Point Stake Code Note Name In Tolerance	Deta Mark Value None	Image: Second
Store Point Stake Code Note Name In Tolerance Occ. Pt.	Data Mark Value None 1000	
Store Point Stake Code Note Name In Tolerance Occ. Pt. Inst. Ht.	Data Mark Value None 1000 1.533 m	
Store Point Stake Code Note Name In Tolerance Occ. Pt. Inst. Ht. BS	Data Mark Value None 1000 1.533 m 100	
Store Point Stake Code Note Name In Tolerance Occ. Pt. Inst. Ht. BS HR	Detx Mark Value None 1000 1.533 m 100 1.755 m	
Store Point Stake Code Name In Tolerance Occ. Pt. Inst. Ht. BS HR Cut	Data Mark Value None 1000 1.533 m 100 1.755 m 0.030 m 0	

-Screen shots showing the variety of data recorded.

To provide a digital record of the work undertaken the asbuilt data can be exported as a "Stakeout report".

From the home screen, Exchange/ To File then select Stakeout reports (csv format).

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ta	Stakeout Reports	•
rmat	X-Section Sets Roads X-Section Templates Localization Scanning Data	^
	Roads Survey Job History Surfaces Layer States	
	Stakeout Reports	1.00

Select Point report;

л	Select Type to Export		>
S	Stakeout Report Types		
	Point		
	Line/Arc		
	Road		
	Surface		
	Slope		
-			
		<< Back	Next >>
		Dater	However

The individual report name;



This file will then be exported with the relevant design/asbuilt information.

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