TUTORIAL DESIGN 3D TOOLS





Design 3D



DESCRIPTION

• Use the Design 3D menu manage surfaces

GOAL

- How to use Polyline tools
- How to use Sideslope tools
- How to use Surface tools

DATA

Design3D. gfdoff

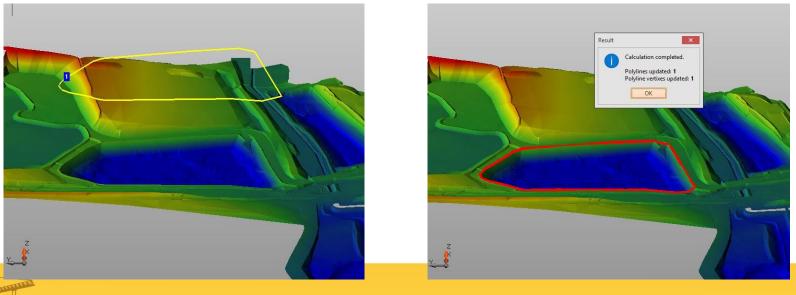




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			Z			
Lay to surface	2	Lay to plane	Elevatio	on	Surface perimete	r
		Pol	yline too	ols		

Poly	lines elevation from surface	
Ref.	surface:	
▦	Design surface	

 LAY TO SURFACE: this command allow to project a polyline to a selected surface







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		Z		
Lay to surface	Lay to plane	Elevation	Surface perimete	r
	Poly	ine tools		

 LAY TO PLANE: this command allow to project a polyline to a 2D plane defined by 3 points

Polyline elevations	from plane	
Point 1		
Point 1:	*	+
X: [422952.000m	+h
Y: [281900.000m	+h
Z: [0.000m	+h
Point 2		
Point 2:	*	+
Х:	422952.000m	-he
Y: [281900.000m	+
Z: [0.000m	+
Point 3		
Point 3:	4	+h
X: [422952.000m	+h
Y: [281900.000m	+h
Z:	0.000m	-the

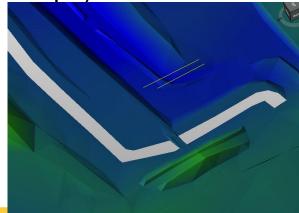


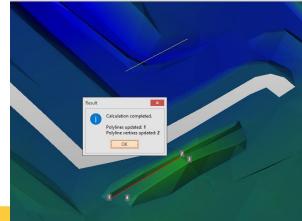


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\square		Z		
Lay to surfac	o Layto e plane	Elevatio	n Surfa perime	
	Po	l <mark>yiine tool</mark>	s	

Mode:	Start & I	End elevation	~
Start elevat	ion:	96.264m	-he
End elevation	on:	98.967m	-14

 ELEVATION: this command assigns the polyline vertex elevation depending on different rules (fixed elevation, Start&End elevation, Start/End elevation and slope)



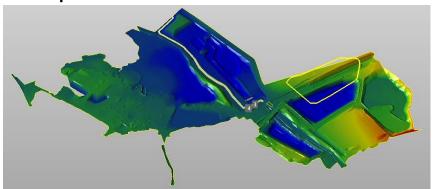






IEW	DRAW	EDIT	SU	RVEY	SU
		Z			
Lay to surface	Lay to plane	Elevati	on	Surface perimete	r
	Pol	yline to	ols		

 SURFACE PERIMETER: this command allow to defines the perimeter of an existing surface but also to create a surface on a defined perimeter



Surface pe	erimeter	
Reference	surface:	
₩ M96 M	MERIDEN QU 2014-04-08 C T (00
Create pe	rimeter polyline	_
Create po	yline on perimeter	On
Drawing:		
Main	drawing	
Layer:	Default	~
Color:	255; 255; 0	~
	rimeter surface face on perimeter	Off
Ⅲ		
Layer:	Default	~
	Part and a second se	





RFACES	DESIGN 3D	X-SECTION	IS CADASTR
<u></u>		ITTT	
To surfac	e To elevation	n By offset	Two polylines
	Side	eslopes	

 TO SURFACE: creates a cut/fill surface from a polyline to an existing surface

After selecting the relative parameters, select the defined polyline, than the direction

Calcula	ted surfa	ace		
Surface	result:			
⊞ D	esign sur	face		
Layer:		SURFACE-TRI	ANGLES	~
Color:	1	0; 100; 0		V
■ M	96 MERI	DEN QU 2014-0	4-08 C TO O	
Cut slo	pe:		-100.00%	+
where the second	2		100.00%	+
Fill slop	10 A		10010010	

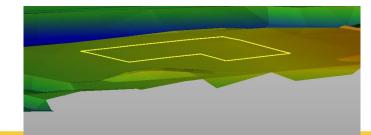


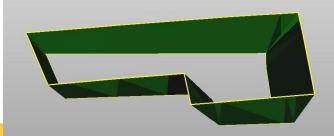


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To surfac	ce	To elevation	By offset	Two polylines
		Sides	lopes	

• TO ELEVATION: creates a cut/fill surface from a polyline to a reference elevation

Surface re	sult:	
I Desi	gn surface	••
Layer:	SURFACE-	TRIANGLES
Color:	0; 10	0; 0
Reference	elevation:	100.000m -h
Reference	elevation:	100.000m -h
Reference Cut slope:		100.000m -h





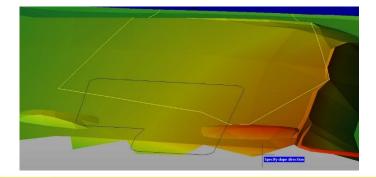




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To surfac	e To elevation	By offset	Two polylines
-	Side	lopes	
	orac.	nopes	

• BY OFFSET: creates a cut/fill surface from a polyline specifying the values of horizontal offset, vertical offset and slope

Calculate	l surface		
Surface:	Junice		
m	MERIDEN QU 2014-04-08 C	C TO O	
Layer:			4
Color:		0; 128; 0	X
Offset se	ttings		
	ttings Horizontal & Vertical	l offset	~
Mode:	Horizontal & Vertical	l offset 5.000m	10 ^m
Offset se Mode: Horizonta Vertical of	- Horizontal & Vertica I offset:		+
Mode: Horizonta	- Horizontal & Vertica I offset:	5.000m	++



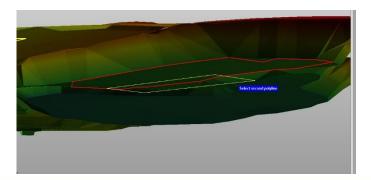




RFACES	DESIGN 3D	DESIGN 3D X-SECTION	
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To surfac	e To elevation	By offset	Two polylines
	Side	slopes	

ideslope to polyline		1
Calculated surface		
Surface result:		
M96 MERIDEN	QU 2014-04-08 C TO O	
Layer:	Default	~
Color:	0; 128; 0	V.

TWO POLYLINES: creates the cut/fill surface between two 3D polylines





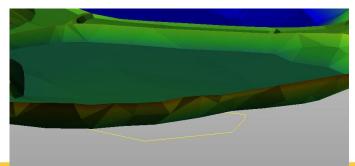


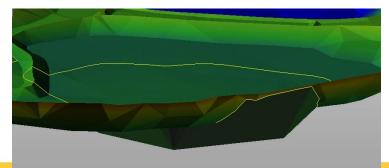
Surface tools

L CLOUD X+LIVE OUTPUT						
3	5		F o		F	
Excavation	Ramp	Triangulate polyline	Merge	Delete area	Divide	Cut
Surface tools						

 EXCAVATION: this command allow to calculate the full excavation surface, starting from a closed 2D polyline, just entering offset and slopes

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SURFACE-TRIANGLES	~
0; 128; 0	~
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5.	000m 🕂
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10	0000/ 1.
10	0.00%
	0; 128; 0 014-04-08 C TO O 5. -100









Surface tools

L CLOUD X-LIVE OUTPUT						
4	5		Fo	-	Fo	
Excavation	Ramp	Triangulate polyline	Merge	Delete area	Divide	Cut
Surface tools						

 RAMP: this command allow to creates a 3D surface representing the ramp to enter in the excavation, starting from a polyline which defines the edge of the ramp

Add ramp		
Calculated surface		
Surface result:		
mamp ramp		
Layer:	SURFACE-TRIANGLES	~
Color:	0; 128; 0	V
Excavation surface: Design surface		-
and a second		••••
Ramp width:	5.000m	
Ramp width: Cut slope:	5.000m -100.00%	
		-he -he





Other Surface tools

L CLOUE) X•L	LIVE OUTP	UT			
4	5		F		Fo	
Excavation	Ramp	Triangulate polyline	_	Delete area	Divide	Cut
		Surface	e tools			

- TRAIANGULATE POLYLINE: this command triangulates the surface included in a defined polyline
- MERGE: this command merges together two different surfaces
- DELETE AREA: deletes the part of surface within or outside a defined polyline
- DIVIDE: this command moves the triangles included within a polyline in a new surface

CUT: this command cuts the triangles of a surface, using a defined cut polyline