



# Trimble TGO™ and DTMLink™

## For Final Topographic Plan: Part A & B

*(Designed only for GGE2012 students in 2009)*

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# Overview



## Preparation:

- Traverse coordinates from Terramodel

COMPUTED COORDINATE RESULTS				
Point	North M	East M	Elev M	Description
61	2010.03791	1079.19395	92.349	2
500	2000.00000	1000.00000	100.000	
501	2031.04244	1000.00000	102.945	2
502	2020.39990	1013.65812	96.609	2
503	2020.21625	1008.05876	96.649	2
504	2023.98189	1026.36371	95.724	2
505	2020.37508	1016.33796	96.608	2
506	2012.66689	1029.84856	96.588	2
507	2005.00047	1029.73903	96.605	2
508	2004.94903	1016.26026	96.617	2
509	2014.39191	1016.21586	96.618	2
510	2013.25549	1016.22792	96.610	2
511	2011.93973	1016.23763	96.613	2
512	2010.80429	1016.24672	96.613	2
513	2012.59037	1014.40509	96.624	2
514	2012.60662	1015.58317	96.615	2
515	2012.59015	1016.89628	96.614	2
516	2012.60329	1018.03563	96.614	2
517	2017.01136	1011.41740	96.620	2
518	2012.44627	1011.44170	96.616	2
519	2007.38207	1011.40815	96.627	2
520	2012.59477	1010.66457	96.621	2
521	2000.00000	1000.00000	100.000	



# DTM link



## Preparation:

- \*.dc and \*.job files which you got from the data controller (TSCe) from TC400 and/or the Reflectorless EDM
- Upload them to your F:\ drive
- After imported these files, start with Terramodel and TGO (trimble geomatics office) to do your final plan.



# DTM link



- Import \*.dc and \*.job files which you got from the data controller (TC400) and the Reflectorless EDM

1. RUN Terramodel

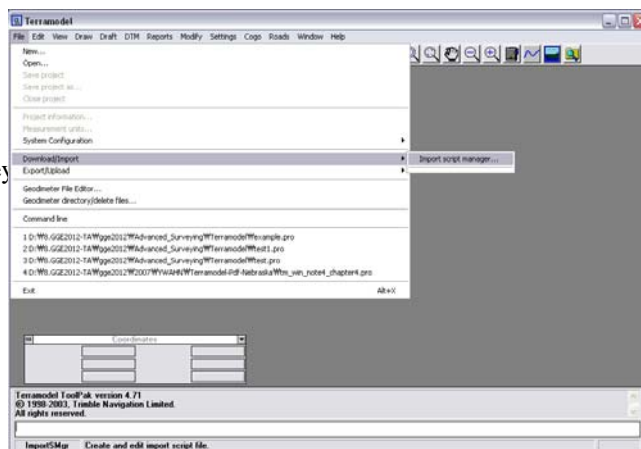
2. File → New

3. File → Import

→ Trimble raw survey

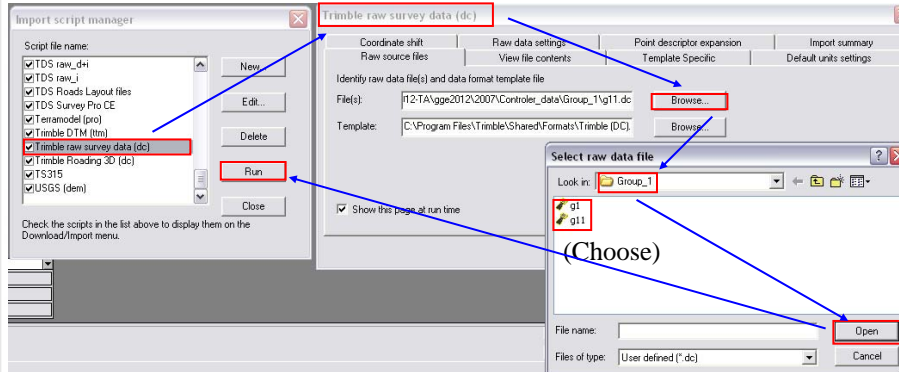
Data (dc) → browse

and find the file





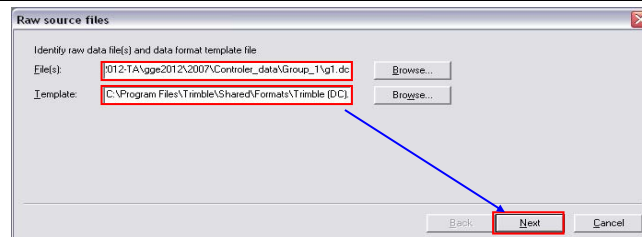
# DTM link



Import Script Manager → double-click “Trimble raw survey data (dc)” →  
 Browse → Find your files → Choose the right file (dc) → OK for “trimble raw  
 survey data” → RUN for “import script manager”



# DTM link



Cont' → RUN → Check “Files & Templates” if you selected the right file or not  
 (\*.dc files with Trimble (DC).lgr template, \*.raw files with Nikon Nik raw  
 data.lgr template) → 4 Next → Import → Finish → *RDE will pop-up*  
*(if not working, please choose \*.raw file with Trimble(DC).lgr template)*

*(We want to make it sure everything is correct before moving on to the TGO. In  
 RDE there should be only one occupied station and reference station for each. If  
 there's more than one station, then it's something wrong, so you should figure  
 out the right one and get rid of the rest.)*



# DTM link



Raw Data Editor (RDE)

Survey job: (R33 DC imported at 12:50 on Tue Mar 18 2008)

REMARK 01K11  
REMARK C73N  
STATIONINFO 3006 DESCRIPTION sta NORTHING 1000.0000 EASTING 1000.0000 ELEVATION 11.0000  
REMARK T22M 20.00000000000000 14200000  
OCCUPIEDSTATION 3006 INSTRUMENT 5.25 DESCRIPTION sta NORTHING 1000.0000 EASTING 1000.0000 ELEVATION 11.0000  
REFSTATION 3002 HA 04°37'20" VA 90°08'55" SLOPE 123.61 TARGET 4.92 PRISMCONSTANT 0.04  
TARGET 4.92 PRISMCONSTANT 0.04  
SIDESHOT 53 HA 250°15'45" VA 70°24'30" SLOPE 20.91 DESCRIPTION str  
SIDESHOT 54 HA 237°05'25" VA 67°56'30" SLOPE 25.02 DESCRIPTION str  
SIDESHOT 55 HA 238°17'45" VA 71°08'10" SLOPE 29.85 DESCRIPTION str  
SIDESHOT 56 HA 249°15'50" VA 67°55'35" SLOPE 25.08 DESCRIPTION str  
SIDESHOT 57 HA 248°27'15" VA 71°45'35" SLOPE 30.14 DESCRIPTION str  
SIDESHOT 58 HA 255°58'35" VA 63°31'50" SLOPE 26.25 DESCRIPTION str  
SIDESHOT 59 HA 254°52'10" VA 67°31'30" SLOPE 31.12 DESCRIPTION str  
SIDESHOT 60 HA 264°17'55" VA 60°55'00" SLOPE 28.24 DESCRIPTION str  
SIDESHOT 61 HA 260°39'05" VA 65°04'40" SLOPE 32.61 DESCRIPTION str  
SIDESHOT 62 HA 293°14'30" VA 72°36'45" SLOPE 45.81 DESCRIPTION bic  
SIDESHOT 63 HA 312°45'05" VA 80°08'10" SLOPE 79.84 DESCRIPTION bic  
SIDESHOT 64 HA 317°44'05" VA 82°20'15" SLOPE 102.77 DESCRIPTION bic  
SIDESHOT 65 HA 320°34'40" VA 82°13'50" SLOPE 101.45 DESCRIPTION str  
SIDESHOT 66 HA 309°44'40" VA 76°46'50" SLOPE 59.59 DESCRIPTION str  
SIDESHOT 67 HA 272°05'20" VA 67°27'05" SLOPE 20.00 DESCRIPTION str  
SIDESHOT 68 HA 316°04'25" VA 81°48'18" SLOPE 53.70 DESCRIPTION str  
SIDESHOT 69 HA 317°35'55" VA 82°28'10" SLOPE 58.50 DESCRIPTION str  
SIDESHOT 70 HA 324°25'45" VA 85°35'10" SLOPE 99.28 DESCRIPTION str  
SIDESHOT 71 HA 321°35'50" VA 83°19'40" SLOPE 100.63 DESCRIPTION str  
SIDESHOT 72 HA 312°03'35" VA 78°27'35" SLOPE 58.37 DESCRIPTION str  
SIDESHOT 73 HA 266°11'05" VA 63°10'10" SLOPE 25.86 DESCRIPTION str  
SIDESHOT 74 HA 208°31'00" VA 82°19'15" SLOPE 12.55 DESCRIPTION str  
SIDESHOT 75 HA 324°02'45" VA 88°08'30" SLOPE 51.30 DESCRIPTION str

Summary | Reductions | Warnings | Tolerance tables | Assumptions | Results | GCs | Corrections

Elevation (incl. angle) reductions complete at 1 station occupations, see "Reductions"; see "Warnings"; see "Assumptions"  
Target and/or instrument height values have been assumed for some observations, see "Warnings"; see "Assumptions"  
Splat(s) have been computed, see "Results"  
2D summary: 2 stations, 1 fixed, 0 assumed, 1 computed, 0 uncomputed & 0 assigned coordinates  
1D summary: 2 stations, 1 fixed, 0 assumed, 1 computed, 0 uncomputed & 0 assigned coordinates  
Sideshot summary: 56 observed, 56 computed in 3D

Properties of observation ID "54": Observed from occupied station 3006, using target height of 4.92  
Computed this side shot at 505.85, 581.58  
Computed elevation at 20.73

You must know these values from your traverse report. So, please type your corresponding values to here to correct the coordinates. The rest will be automatically adjusted based on that.



# DTM link



Important! *Please give the same name to the same points*, otherwise everything will be wrong and messy.

*Traversing calculations should be done 3D*. If it's 2D then you should go again and do it manually. You have to do it 3D to be able to give your sideshots their elevations.

If you *import the same file with different format many times*, then Terramodel is going to be *frozen*. Then close everything and create a new project and do it from the beginning.

Now we can combine traverse points and the other points coming from \*.job (Reflectorless EDM) and we should make it sure everything is fine.



# DTM link



In Terramodel,

File

→ Export

→ ASCII points (If you used AutoCAD dwg, dxf format, then you can not see the point names in TGO)

→ Export script manager...

→ Give a file name or pick the points (say OK at the bottom of the screen)

If you import the same file with different format many times, then Terramodel is going to be frozen (stopped). Then close everything and create a new project and do it from the beginning.

Now we can *combine traverse points and the other points coming from \*.job (Reflectorless EDM) and we should make it sure everything is fine.*

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# DTM link



*Pick the points:* Click Window

The screenshot shows the Terramodel software interface. The main window displays a dark background with a grid of points. A dialog box titled "ASCII points" is open, showing options for "Export to file", "Output format", and "Number of points selected". A red box highlights the "Pick points" button. A red arrow points from the text "Pick the points: Click Window" to the "Window" option in the software's menu bar. Below the dialog box, a table shows coordinates and bearings for selected points.

Coordinate	
North: 6.96	East: 20.24
Bearing:	Distance:
Layer: POINTS	Elevation:

76 items were selected.  
77 items were selected.  
19 items were selected.

Select Point(s) [Record] [OK] [Cancel]

Export Select points to be exported [Select]

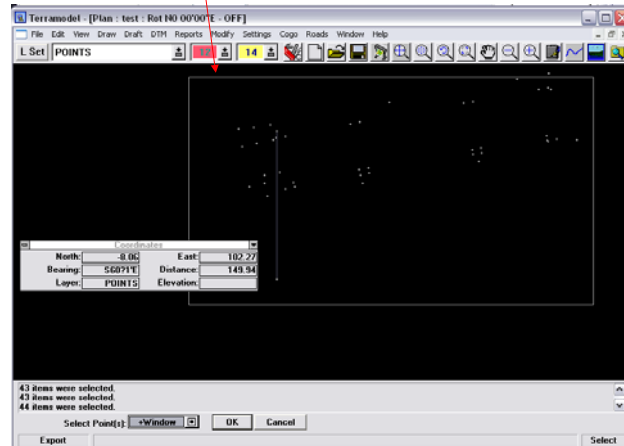
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# DTM link



*Pick the points:* Choose all points



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# DTM link



*In TGO (Trimble Geomatics Office):*

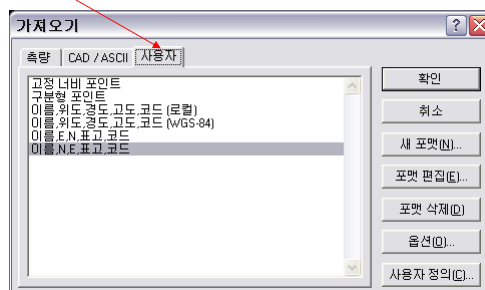
File → New (test – save somewhere: be sure that it's metric system)

→ Go to plan view  (upper left corner)

*(be sure that you put the ASCII files to "Checkin" directory)*

→ Import Custom (Name, N, E, Elev, Code)

It will be changed to English! ;) Sorry.



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# DTM link

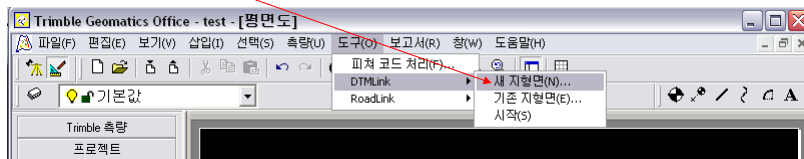


In TGO:

You have to import Survey data such as Survey controller's file (\*.dc) to the TGO and combined all the data to work for the final topographic plan.

DTMLink In TGO:

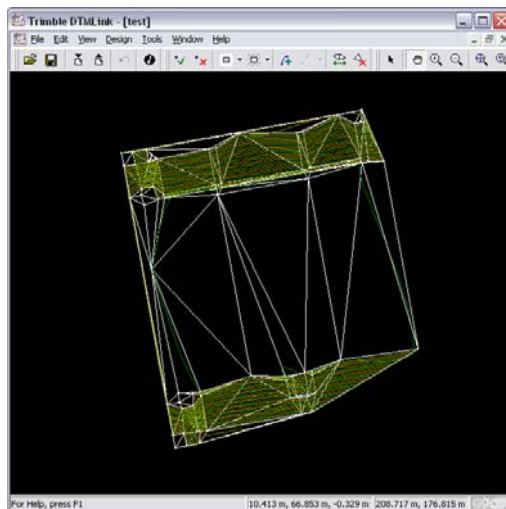
→ Click new contour



# DTM link



DTMLink In TGO : example



→ lines with various features such as the basketball court lines, the railing, stairs, walls, etc.



## Part A: Summary



[Summary]

Terramodel → Traverse points from report → import your survey data →  
Correct the coordinates → export to [P,N,E,Z,D] → save “test1.pts”

TGO → metric project with importing **Custom** with [point, north, east, elev,  
description] → DTM link

[Note]

Nikon instrument → nikon nik rawdata template file (or geodimeter raw.lgr) →  
export to ASCII points from Terramodel

TC400 + controllers: \*.dc files

TC5600 Reflectorless EDM → \*.job format, data import → export to  
“Checkin” directory (geodimeter format)

→ import \*.job file

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## Part B: Final Topo. Plan



### *Preparation:*

- You should combine all of your surveyed files in TGO (Traverse points + Reflectorless EDM + TC400 + TC5610 etc.) without any issues, such as scale and positioning shift.
- For example, the calculated Traverse points are the fixed points of your scenario. Based on one of the reference traverse points, you could make an observation by using EDM or TC400. **You should match the reference point with that of EDM or TC400.**
- The differences between the two (the reference point and EDM’s reference point) must be matched each other. **If it doesn’t match, please go back to your calculated points and find if there are any scale errors or any rotations of your coordinates.**


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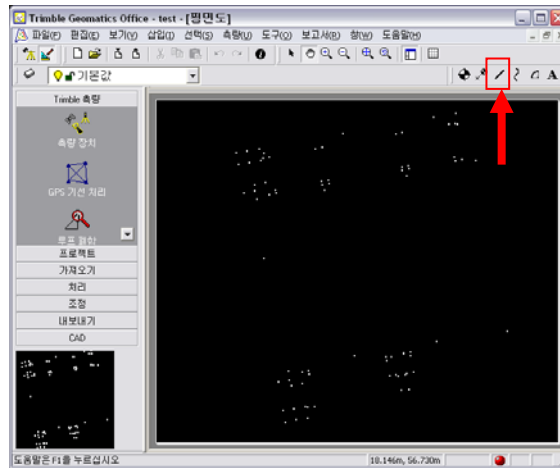
# Final Topo. Plan



## For Lines:


→ Insert lines using  
this icon 

Please proceed this  
after you fixed all of  
errors of your  
coordinates if any!



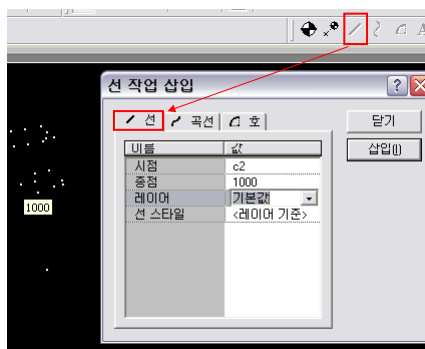
# Final Topo. Plan



→ click , and it will bring  
the left pop-up menu.

→ input the start point number  
(ex. c2) and end point number  
(ex. 1000), leave the layer as  
the default

→ Now, you can create lines  
as you like.

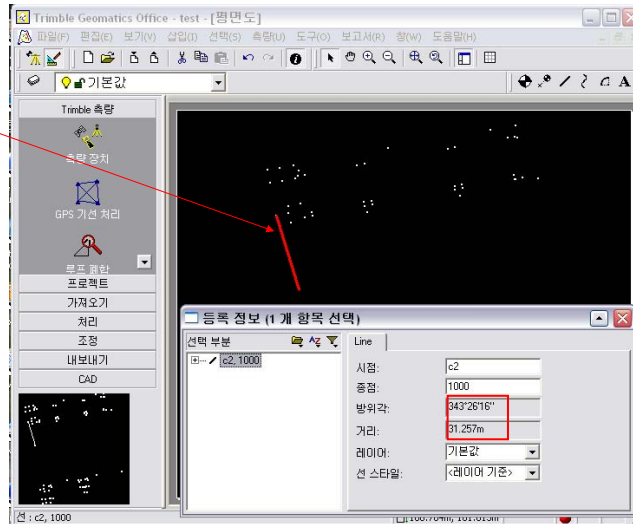




# Final Topo. Plan



→ Now, it will bring up the details of the line by double-clicking, e.g. baseline length, azimuth, etc.



# Final Topo. Plan

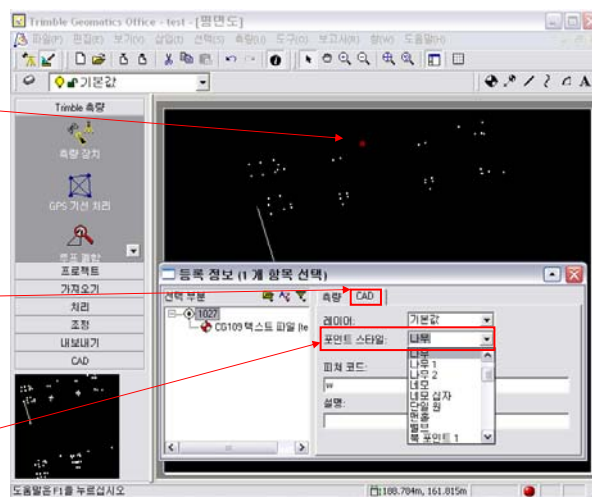


## For Symbols:

→ Double-click the point which you are going to put the symbol. it will pop-up a window.

→ In the window, choose CAD

→ Choose Point Style, and select one which represents the point, e.g. Tree.




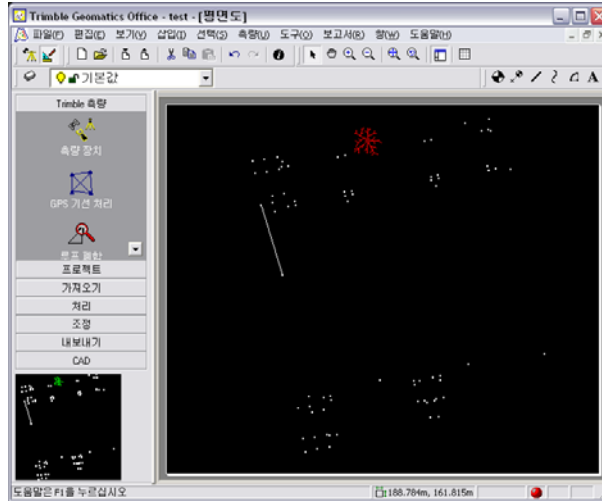


# Final Topo. Plan



→ Now, it changed the feature from point to tree, and you can see this on the left figure.

→ To make it to green tree, simply click the red tree and click somewhere. And it will change the color.  (wrong?)




# Final Topo. Plan



## For Texts:

→ Insert lines using

this icon 

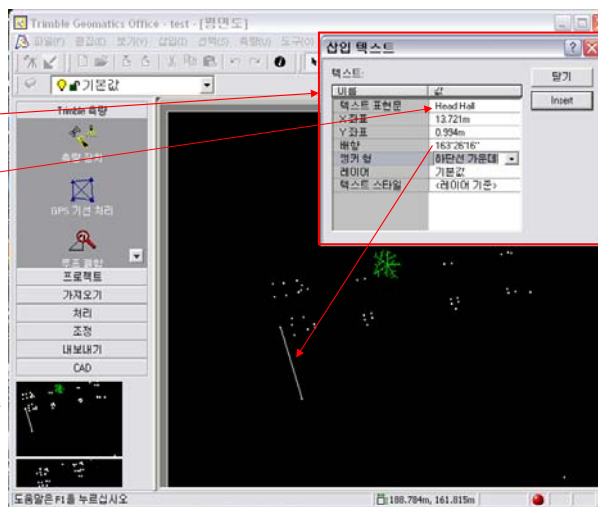
→ Text style: e.g. Head Hall

→ Northing and Easting (or X or Y): click a point where you'd like to have the text

→ Orientation: click a line

→ Anchor type: e.g. Bottom center etc.

→ Layer: keep the default





# Final Topo. Plan

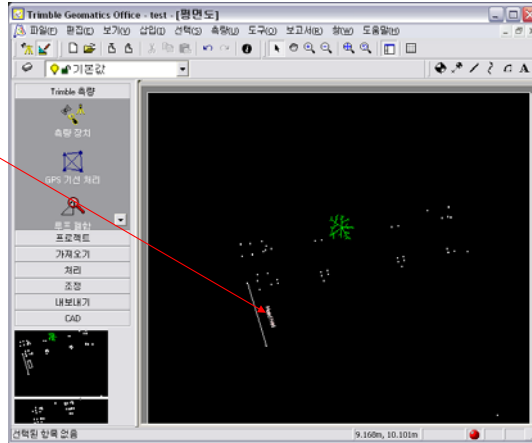


→ Now, you can see the text input.

→ Please play with it to see how you can rotate it or move it.

→ At this stage, you have to understand how to make a feature, line, symbol and see the properties of a point and decide if everything is correctly reflected or not

→ Please work with your data



# Final Topo. Plan

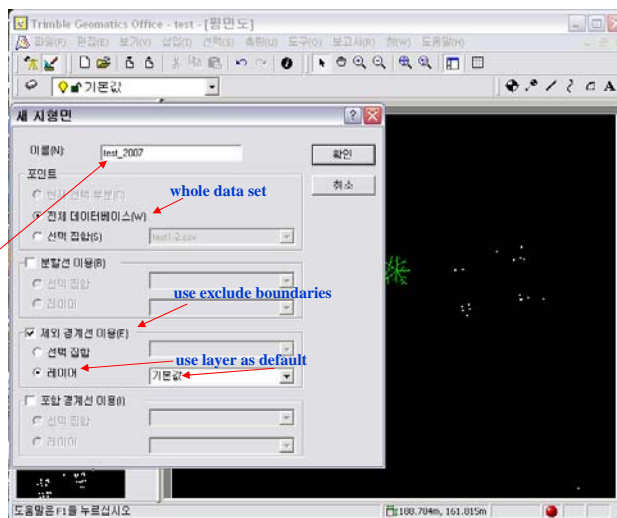


## For Contours:

→ To make contours,

→ Tools → DTMLink → New Surface

→ give a name: e.g. test\_2008

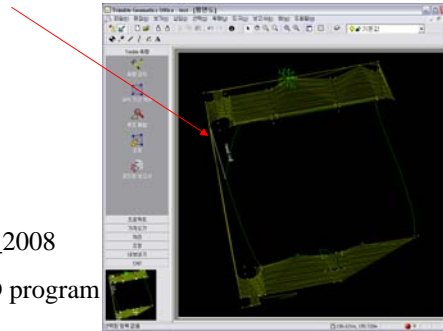




# Final Topo. Plan



- You are able to use different features to different layers.
- After finished, go to TGO. Import the saved AutoCAD format and bring in.
- File
  - Export
    - CAD/ASCII
      - AutoCAD files (\*.dxf, \*.dwg)
        - Input the file name: e.g. test\_2008



(Now, go to Terramodel or any other CAD program for making your final plan.)

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# Final Topo. Plan



→ In TGO (note):

When you downloaded the points into TGO, go to select and selection sets. When you click your file, you will see the points which are going to be highlighted.

Since we have all our points in TGO right now, we could create the contours. But first we *should define our breaklines*. So select the points by holding the control key and go to selection sets and save them as a file as a breakline set. By doing/selecting and saving them, it can create the files which are going to be used for DTMLink. *(This is the only case when you have to define breaklines. e.g. on top of a hill or valley)*

Please make sure that *your breaklines do not cross each other*, otherwise you can not use DTMLink. It won't work then.

When the contours are created, go to design and add line and add some lines and see the changes! Be sure that contours are not crossing each other and they is no hills or holes!

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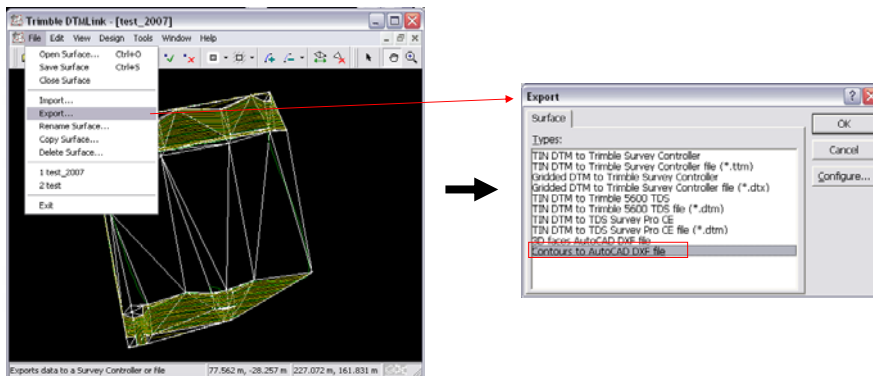


# Final Topo. Plan



AutoCAD user

- Export DTMLink contours as *AutoCAD dxf format* (in the DTMLink, go to File
- Export → Contours to AutoCAD dxf file → OK to give a name for this)



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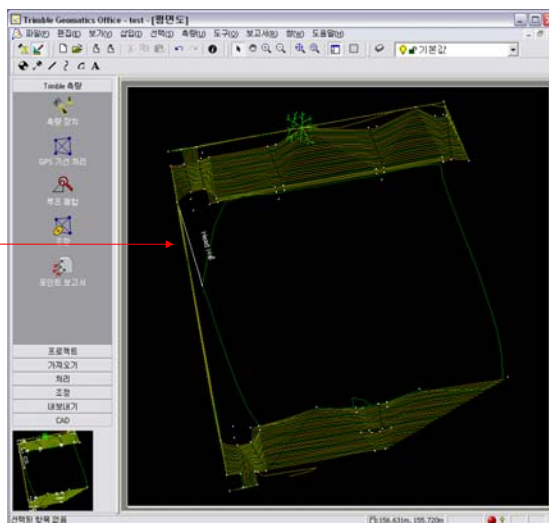
# Final Topo. Plan



In TGO:

- File
- Import (AutoCAD file (\*.dwg, \*.dxf))
- Select the saved file and OK to bring in

Note: We will see the similar figure to the right figure. And everything is automatically saved.



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# Final Topo. Plan



- Please download a template named “GGE2012\_Mod4\_byAhn.frm”.
- At this point, you may two options to make a final plan using: TGO or AutoCAD or others?.

In TGO:

- File
  - Sheet Setup (browse “GGE2012\_Mod4\_byAhn.frm”
    - choose “Best Fit”
    - print

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# Final Topo. Plan



- Open “GGE2012\_Mod4\_byAhn.frm” in MS-Word™ or NotePad. You have to go through the template yourself to manage the things in title block nicely.

Tips:

- For grids, select     to make it clear.

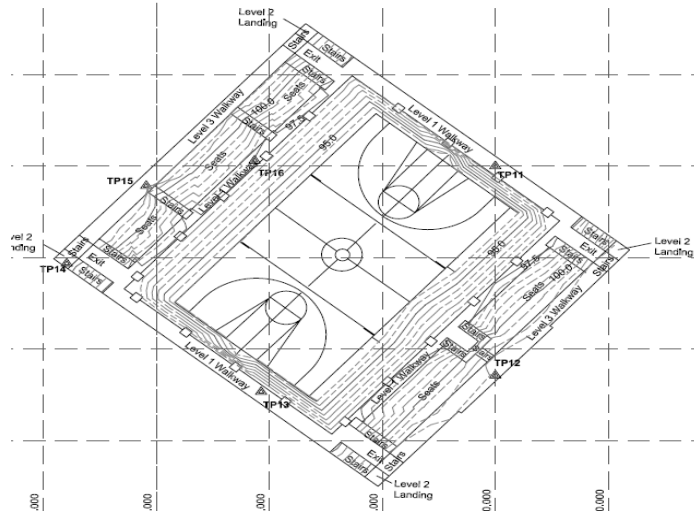
- For symbols, go to CAD on the left block 

and give a name for a feature code  
and choose the symbol and save it.

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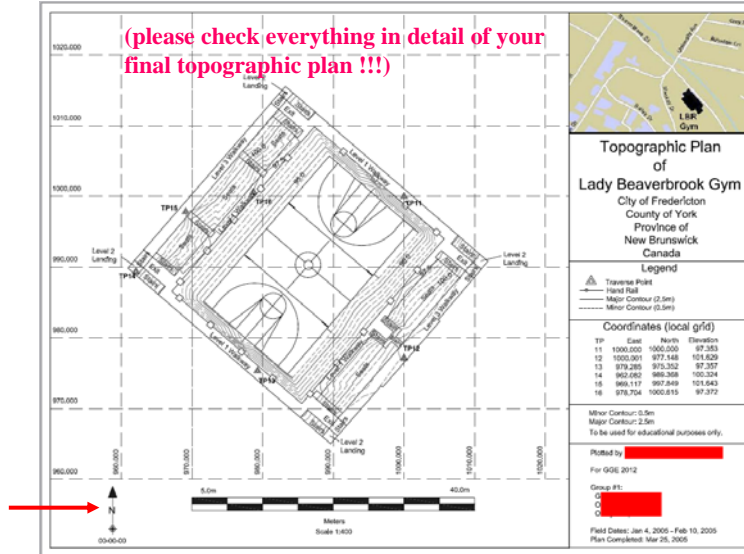
# Example



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# Example: A Final Plan



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## Part B



In Terramodel:

→ File (new)

→ Download/Import

→ AutoCAD (dxf or dwg)

→ dwg/dxf files: Browse

(C:\your current working directory\Export\test\_2007.dxf)

→ Import

Note: We did this way because Terramodel was not working with its all modules. Otherwise, we would have imported \*.dc files to TGO and then exported them to Terramodel and combine all the files (Traverse points + EDM + TC400 + Controllers) in Terramodel. If you're using a new version of Terramodel, you can use Msc. Export → Points export → save as \*.csv and import it to TGO