

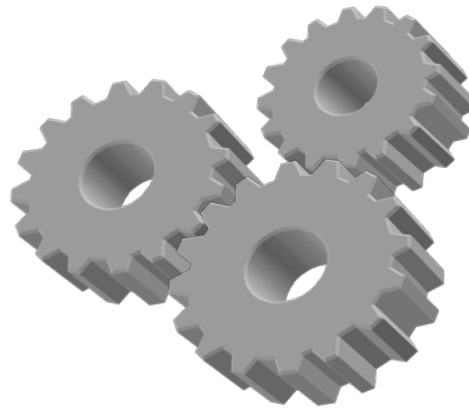
**OREGON  
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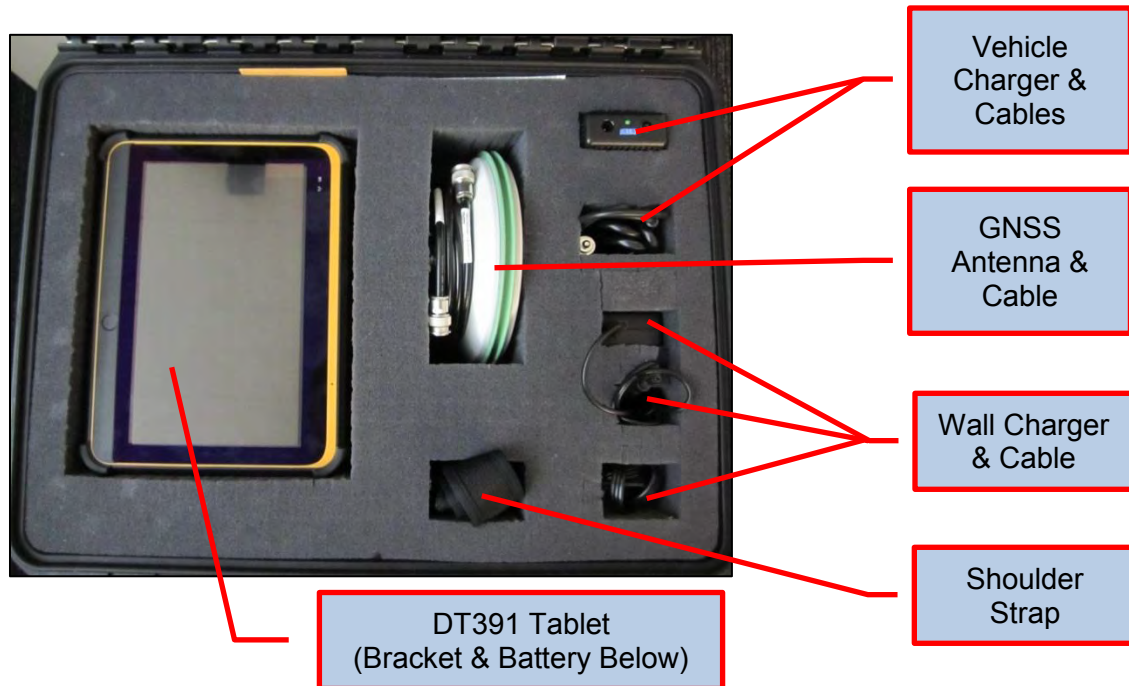
# **Inspector Tablet Technical Guides**

- 1) Equipment Intro
- 2) Creating a New Project
- 3) Connecting to the ORGN
- 4) Connecting to a GS14
- 5) FieldGenius Map View Overview
- 6) Data Collection
- 7) Staking
- 8) Working with DGN/DXF files
- 9) Exporting XML files

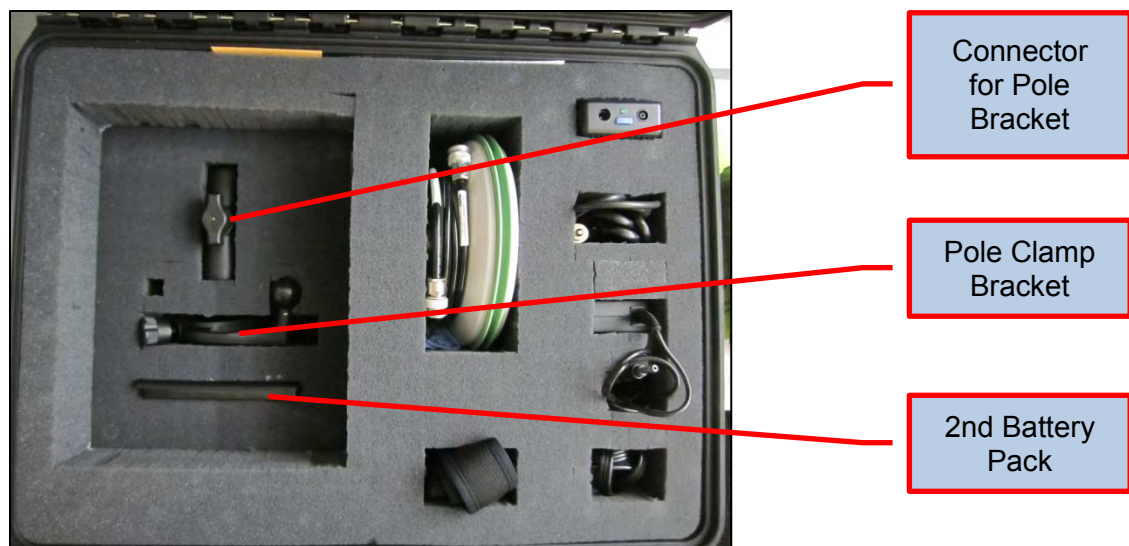
## Inspector Gadgets Tool Kit

This section will cover the general contents and description of the Inspector Positioning tools that are being assigned to your crew. It will cover all of the components in the case and a few components that do not fit in the case.

- Base Pelican Case and Basic Equipment Locations.



- Inside Case Below DT391.



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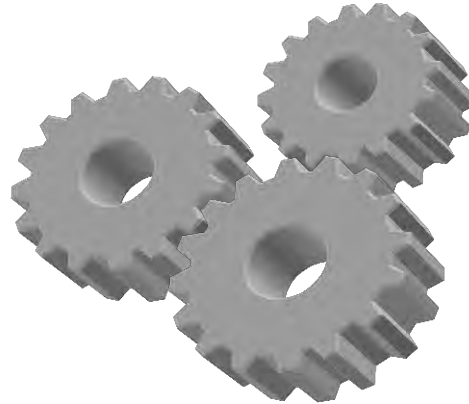
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# **FieldGenius Create a New Project**

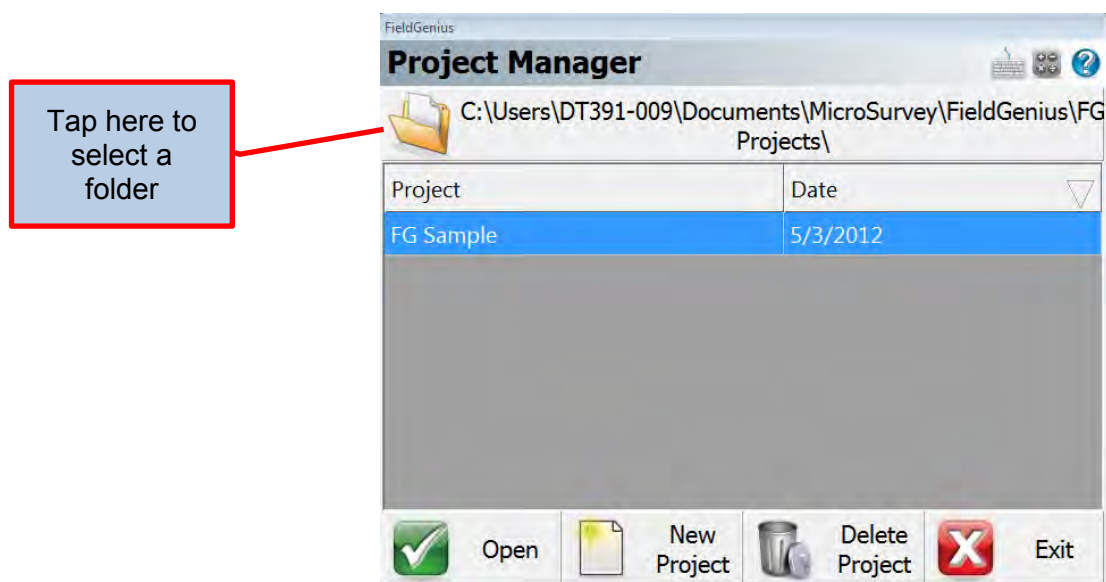
<b>Title</b>	Field Genius Create a New Project
<b>Version</b>	8.0
<b>Date</b>	September 1, 2015
<b>Author</b>	Chris Pucci
<b>Overview</b> This document will cover creating a new project and basic setup of FieldGenius 8.0.	

## Creating a New Project and Project Settings

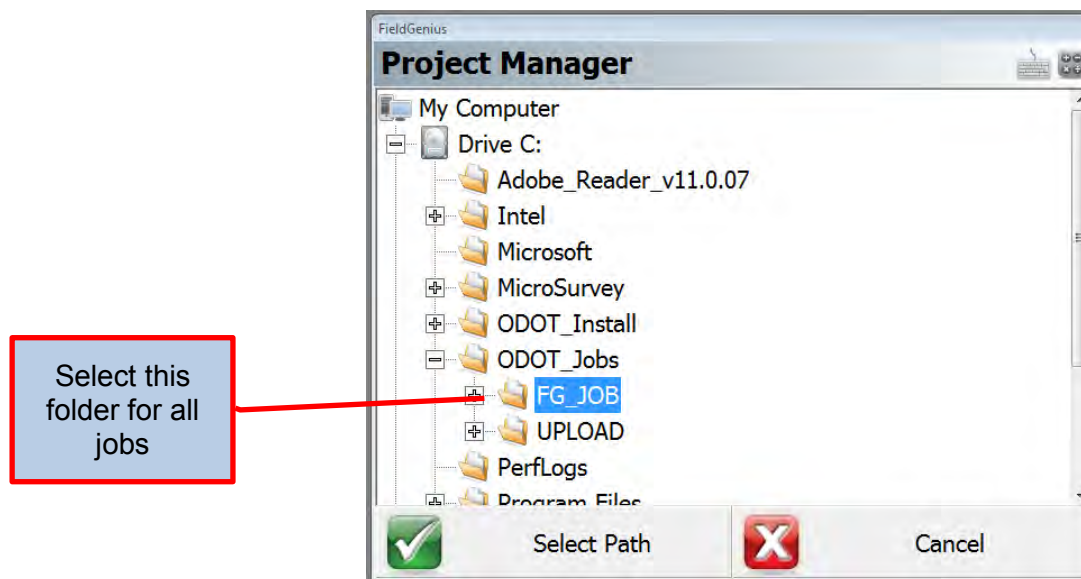
- From the Windows desktop, tap on the FieldGenius 8 icon. FieldGenius 8 will open and an option of Full Screen, Landscape or Portrait will be available.
- For the initial setup choose “Full Screen” and uncheck the “Use Windows File Explorer” as shown.



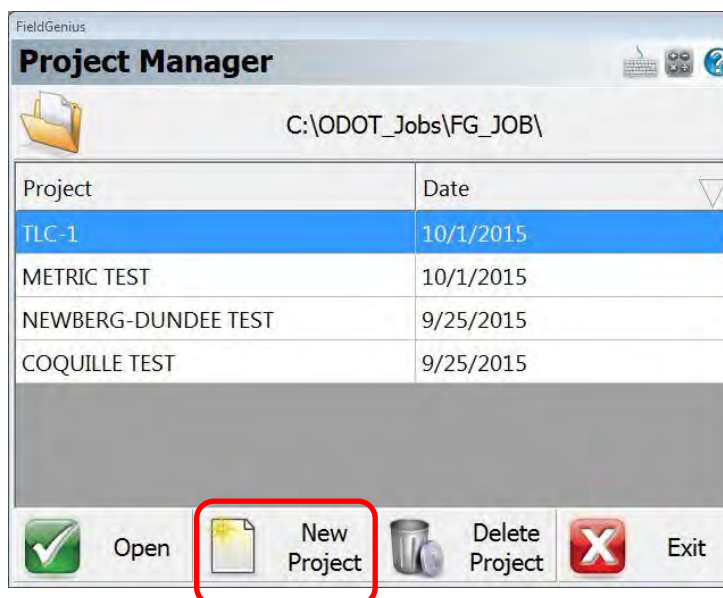
- The Project Manager dialog box will open. Choose where the new project will be saved by tapping on the file folder at the top and selecting a path. Opening a project is done by navigating back to this same path.



- Highlight the FG\_JOB folder from within the ODOT\_Jobs folder located on Drive C. Then tap Select Path.

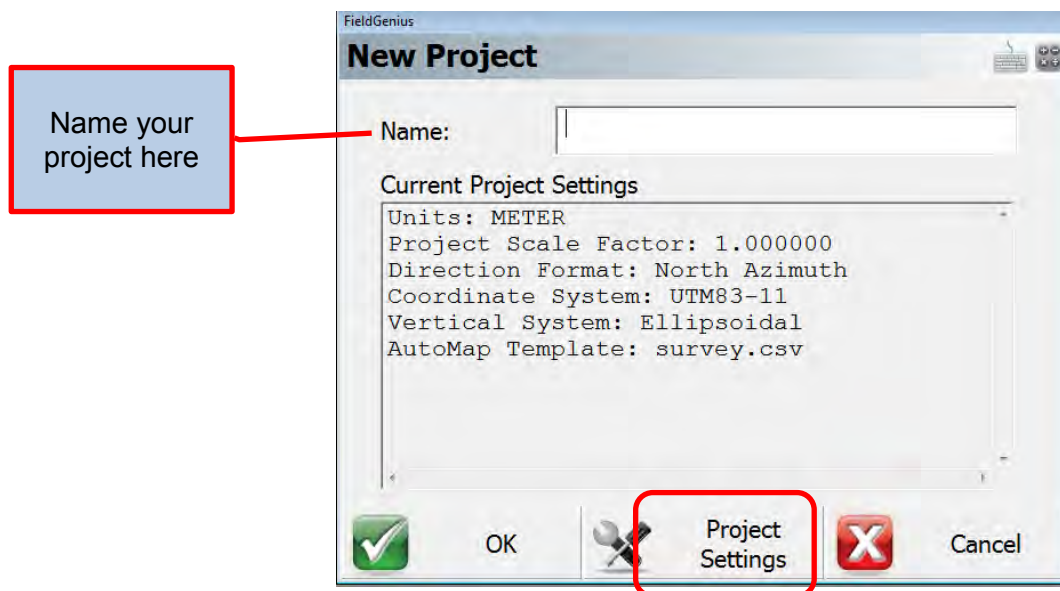


- With the correct path selected, tap the New Project icon to create a new job.

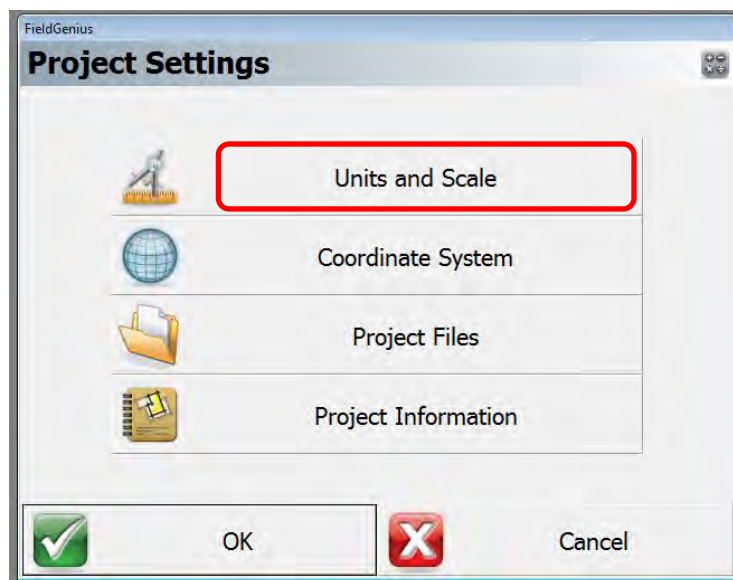




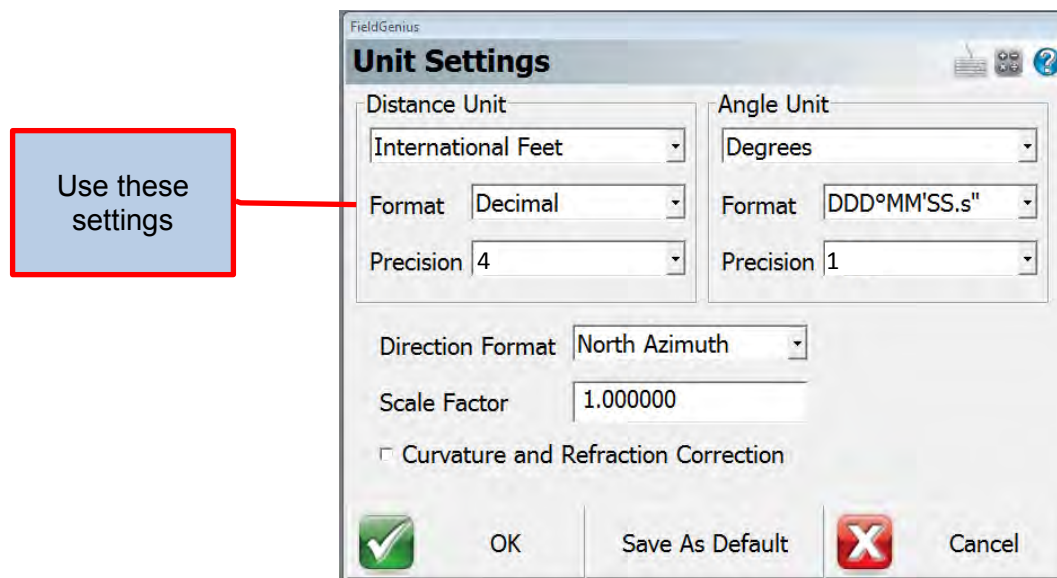
- The New Project dialog box will open. Name your project by double tapping in the white space next to Name. After you have typed in a name tap Project Settings.



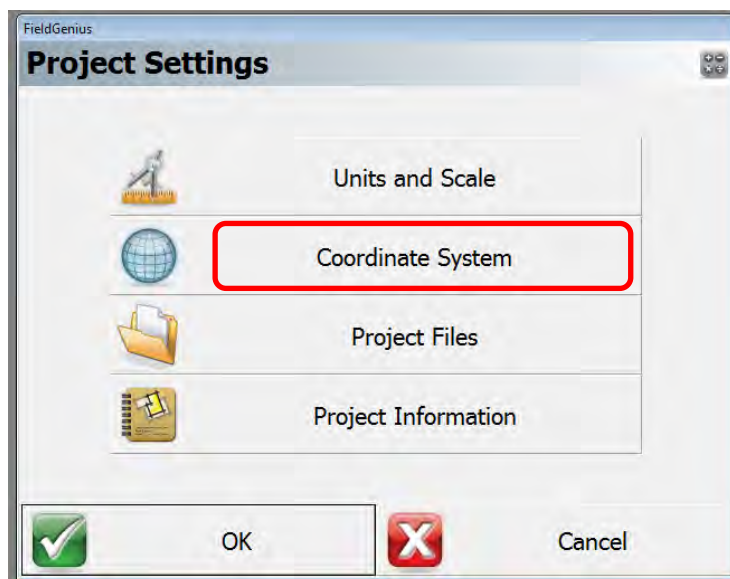
- The Project Settings menu will appear. Tap Units and Scale to continue.



- The Unit Settings menu will open. Use the pull down tabs and choose the settings as shown below. Then tap Save As Default. Then tap OK to continue.

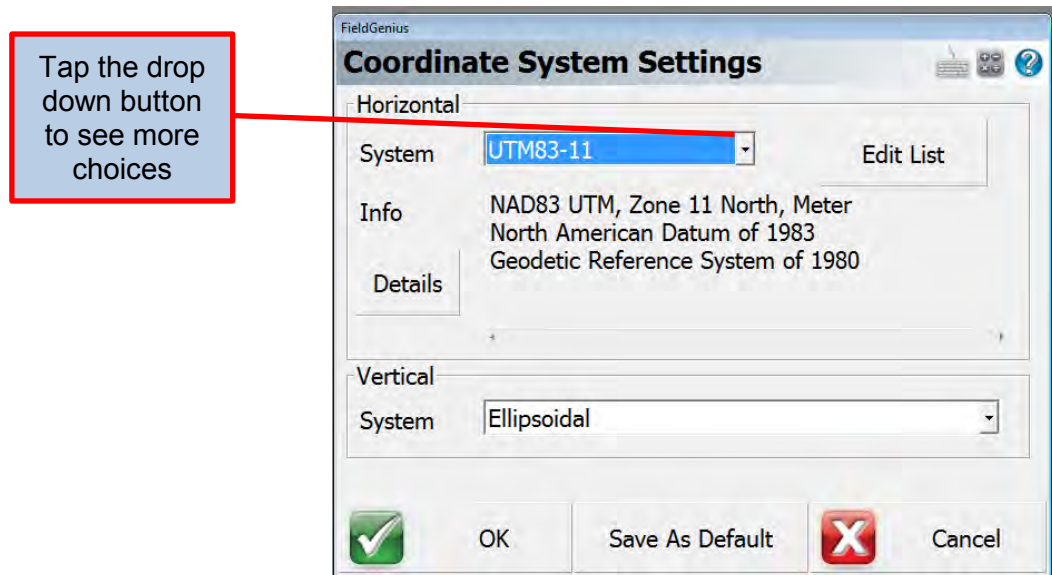


- The Project Settings will come up again. Now, tap on Coordinate System.

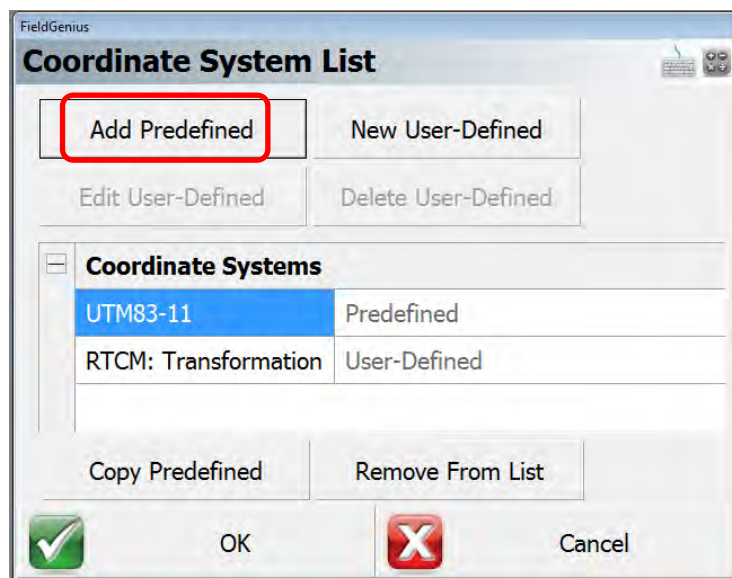


## Setting your Horizontal Coordinate System

- The Coordinate System Settings dialog box will open. If your Horizontal project system has already been added to the list you can select it from the drop down button and proceed to **Setting your Vertical System** as shown below. If your Horizontal system is not on the list tap Edit List to add your required system.

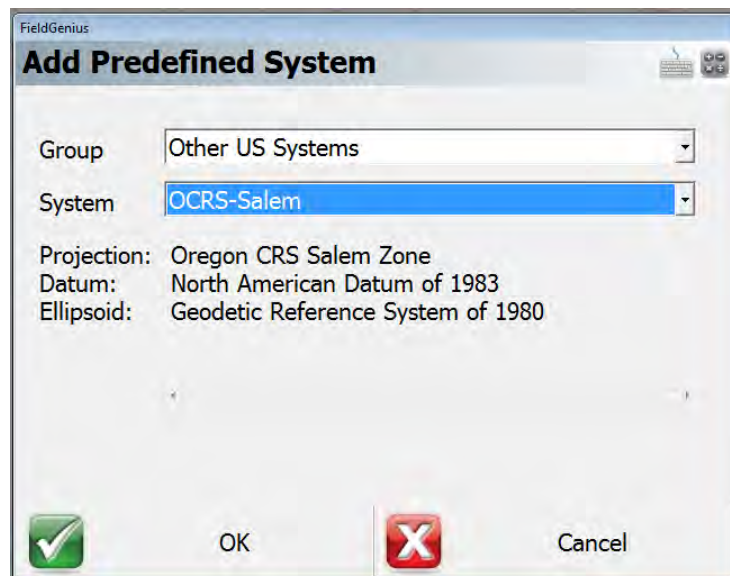


- If you selected Edit List the Coordinate System List dialog box will open. Tap the Add Predefined button to continue.

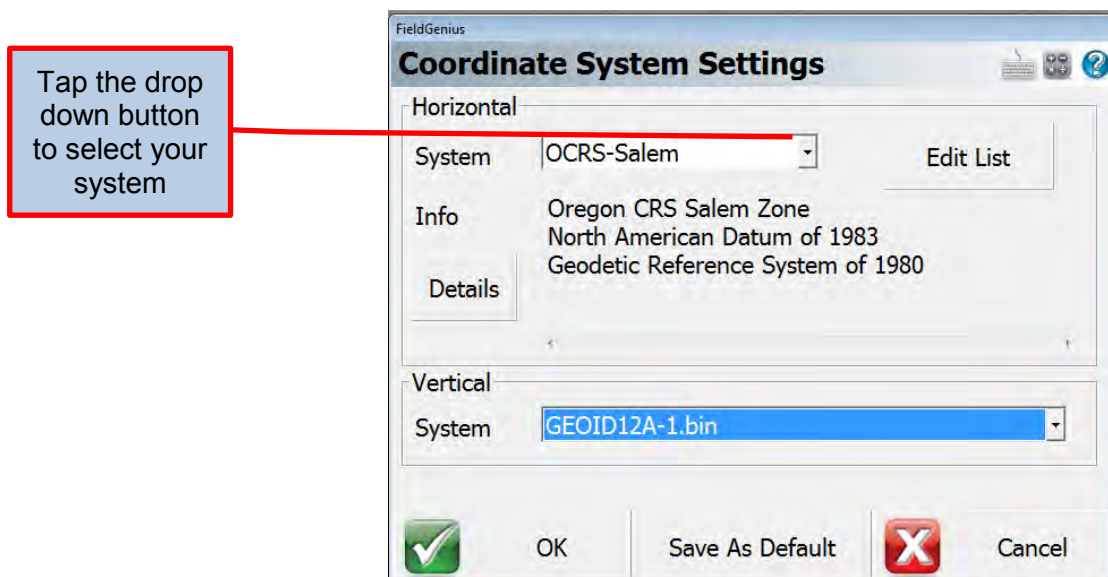




- The Add Predefined menu will open. By Group choose “Other US Systems” and by System choose the OCRS coordinate system for your project. Then tap OK. At the Coordinate System List dialog box the new coordinate system will be shown. Tap OK again.

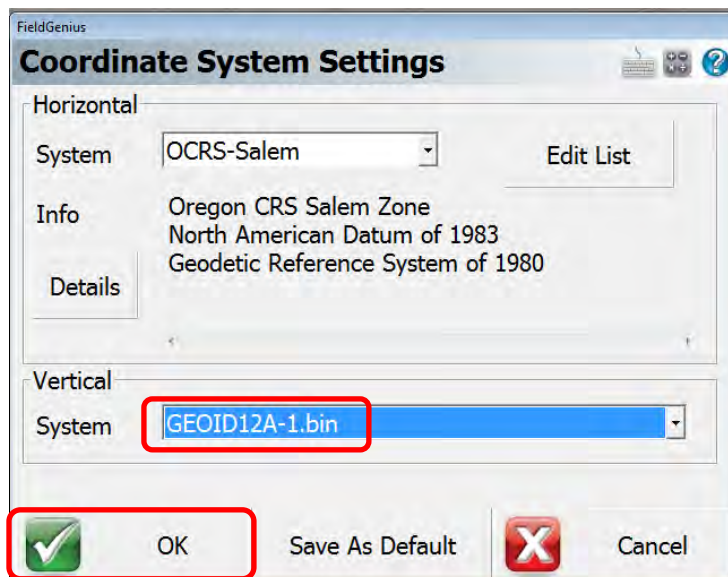


- Back at the Coordinate System Settings menu change the Horizontal System to the chosen OCRS system using the drop down button. With your Horizontal system select proceed to **Setting your Vertical System** below.

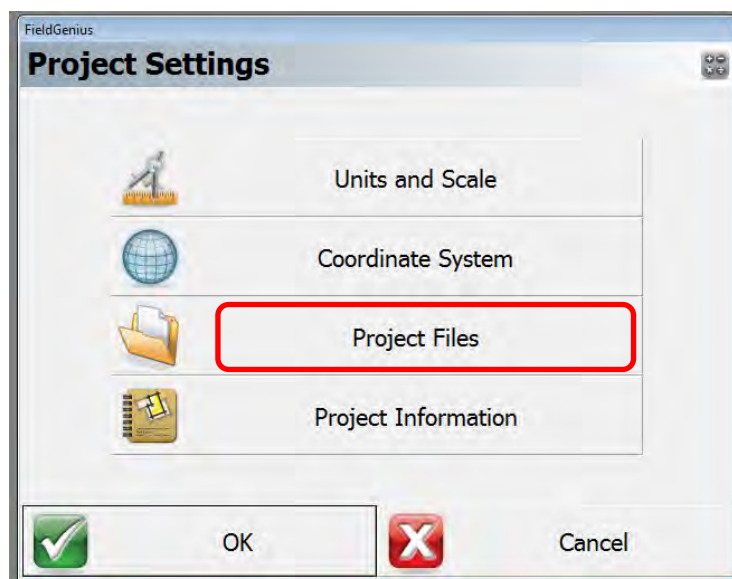


### Setting you Vertical System

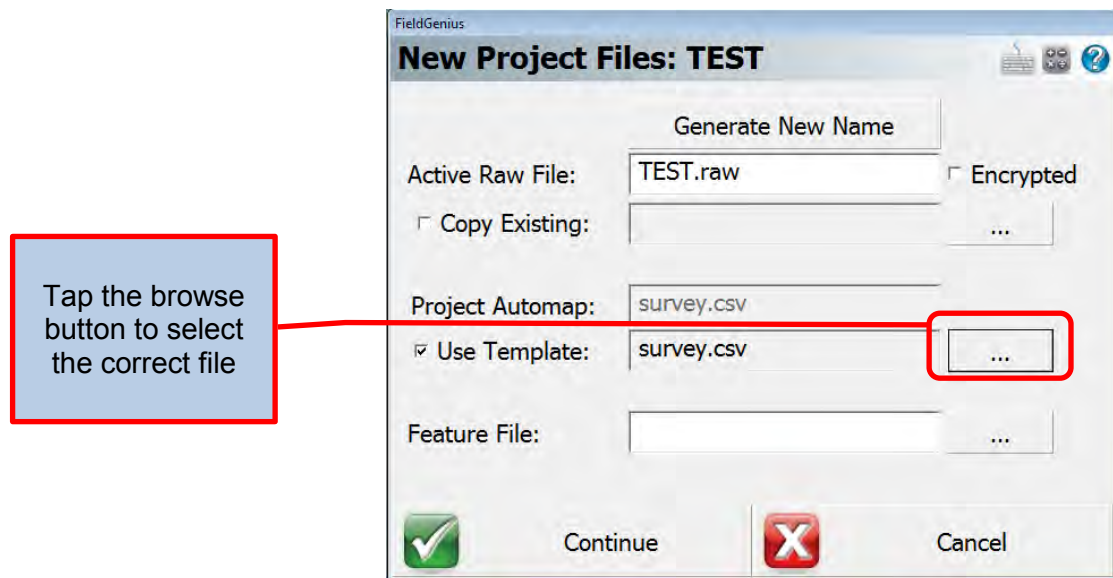
- On the Coordinate System Settings menu change the Vertical System to “GEOID12A-1.bin”. Tap OK to continue.



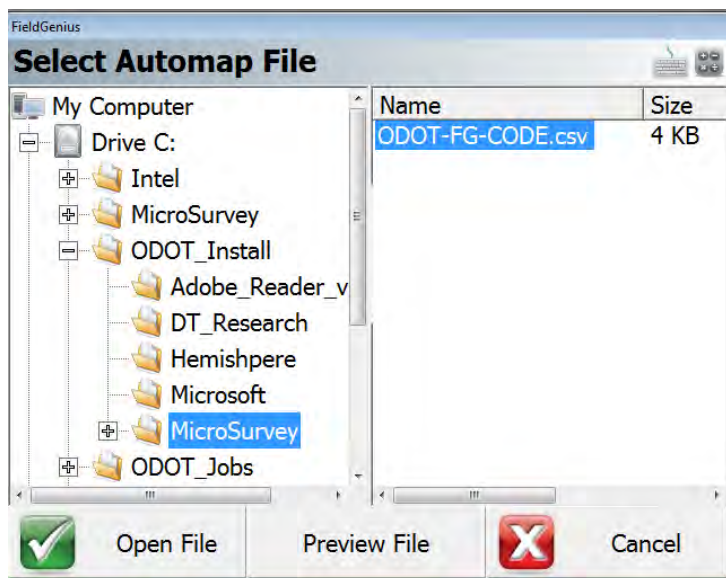
- The Project Settings dialog box will return. Now tap on the Project Files tab.



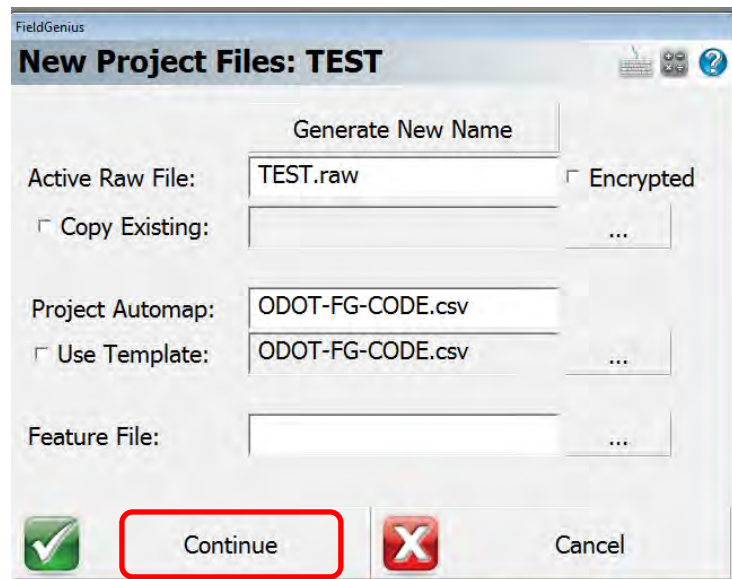
- On the New Project Files menu uncheck the box next to Use Template and import ODOT-FG-CODE.csv by tapping the browse button to the right of the field.



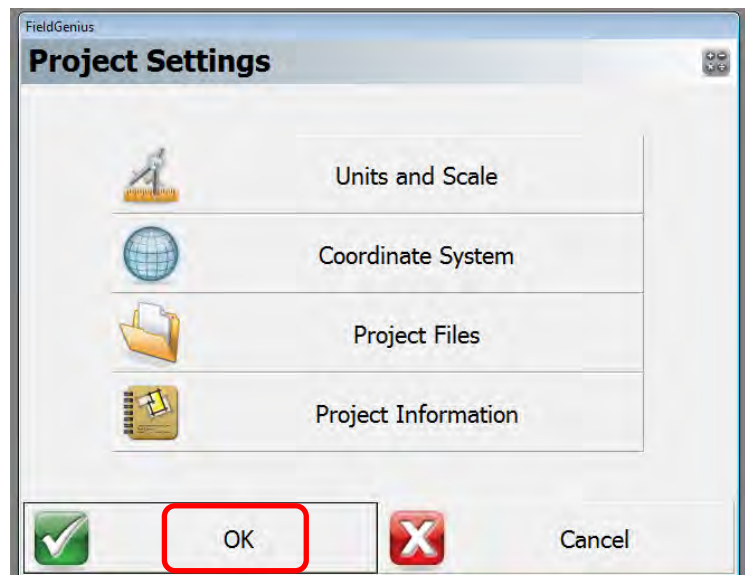
- From the browse menu navigate to "C:\ODOT\_Install\MicroSurvey\ODOT-FG-CODE.csv" Tap Open File.



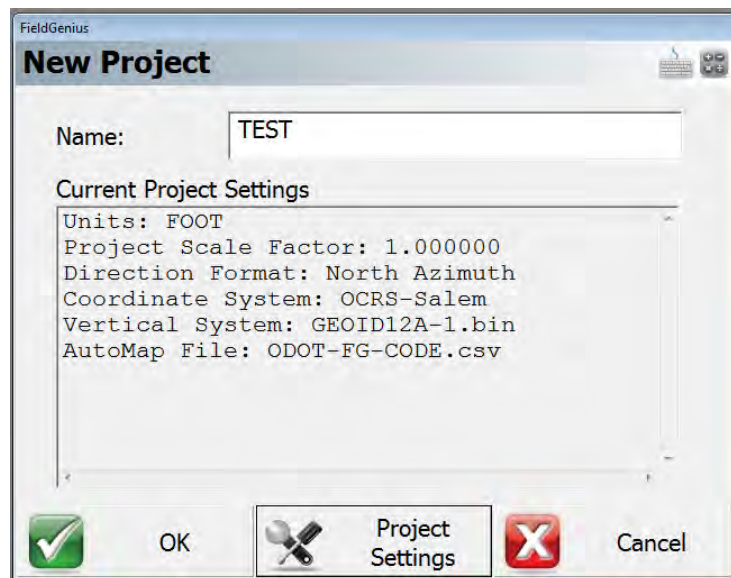
- With the correct ODOT file shown tap Continue.



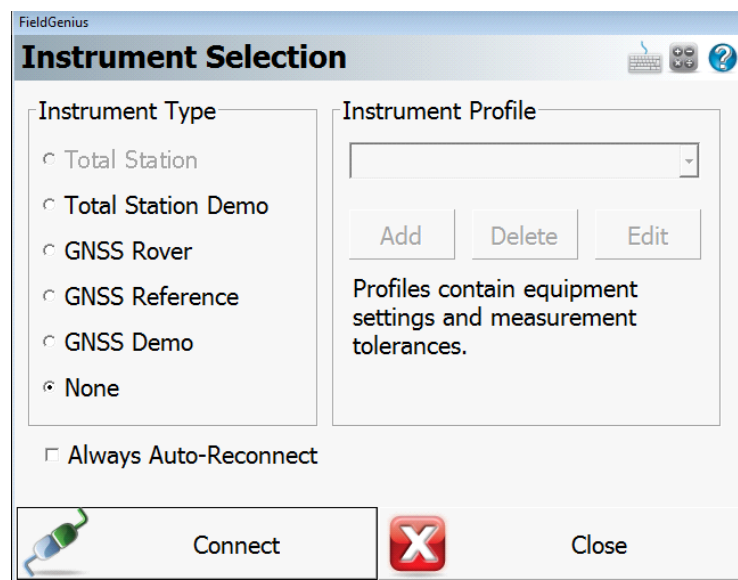
- Tap OK at the Project Settings menu to continue



- The New Project menu will be displayed showing all of the settings you have selected. If they are correct Tap OK, if not go back to Project Settings to correct them.



- The Instrument Selection menu will be displayed. Tap Close to continue with the project setup.





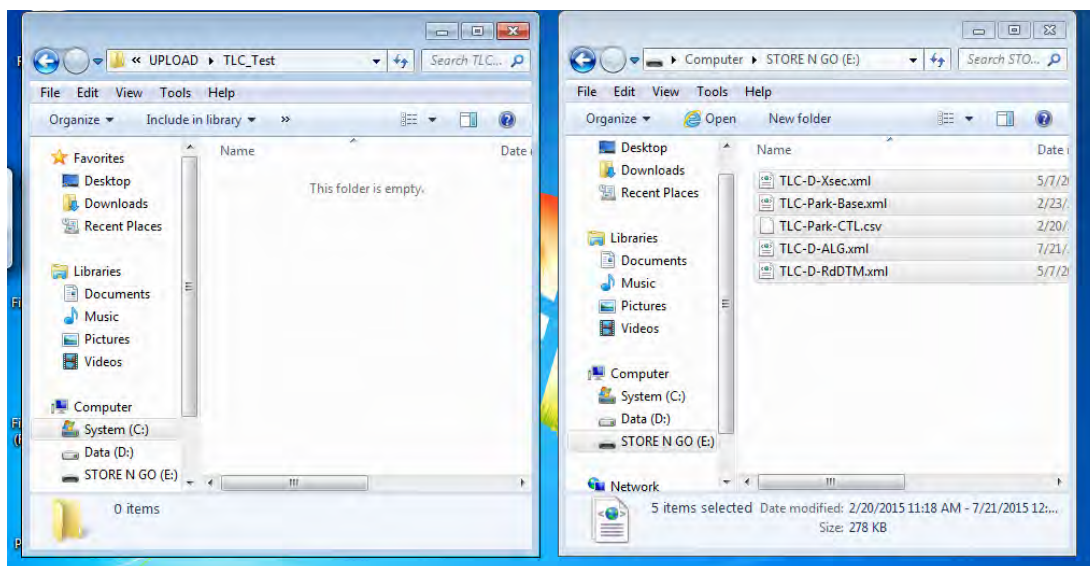
## Loading Construction Files

### .xml files

- Project files such as .csv and .txt need to be loaded onto the USB drive and uploaded to the tablet.
- Project files such as .dtm and .alg need to be converted to .xml and then loaded onto the USB drive to be uploaded to the tablet. Copy the files to **..\ODOT\_Jobs\UPLOAD**
- Insert the USB drive that contains the desired files to be loaded into the tablet.



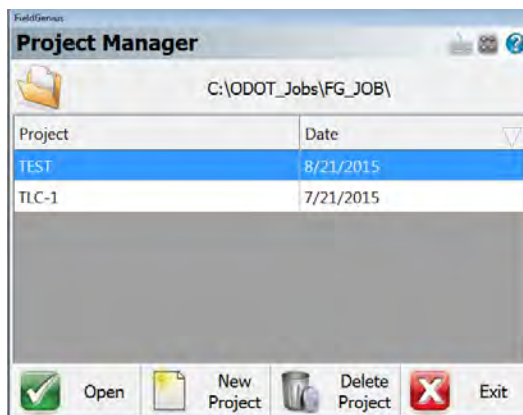
- Tap on the windows icon located on the bottom left of the tablet screen.
- Tap on Computer to open Windows Explorer and navigate to **C:\ODOT\_Jobs\UPLOAD**. At this location creating a new folder that is titled the same name as the project it is for is recommended.
- Open another Windows Explorer and navigate to the inserted USB located under Devices with Removable Storage.



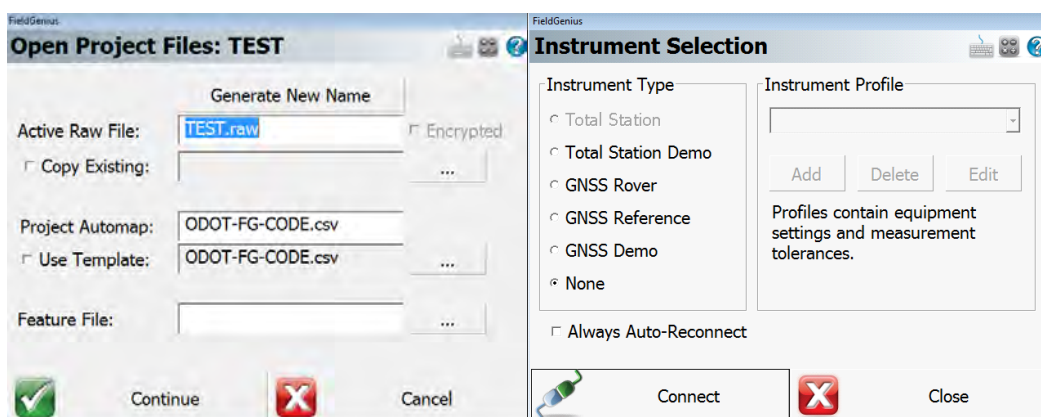
- Either drag and drop the desired files or copy and paste from the USB (pictured right) to the C drive on the tablet (pictured left).




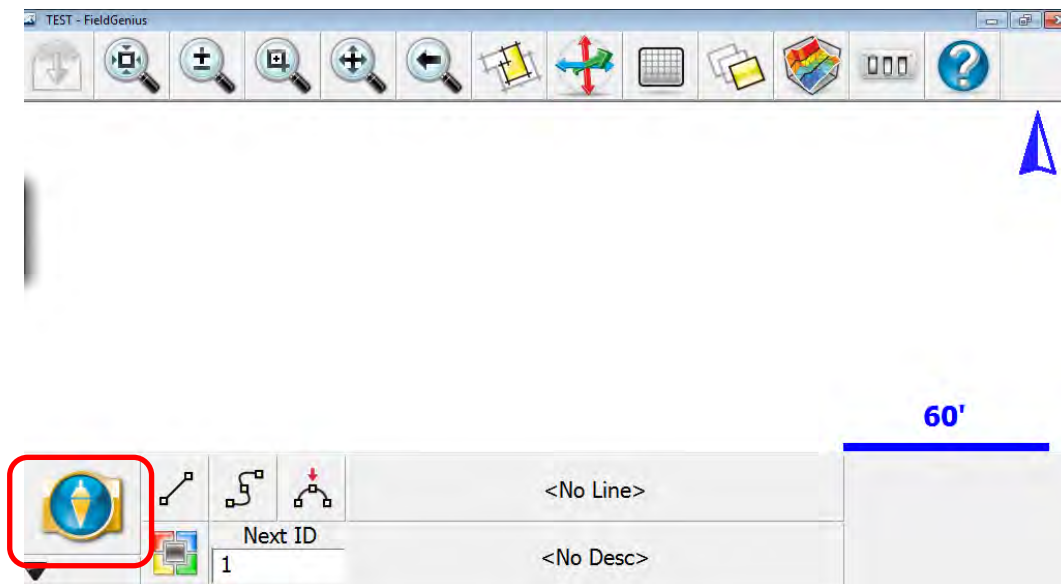
- Open FieldGenius 8 by tapping the icon on the tablet's desktop.
- After tapping on Full Screen, Project Manager will open. Highlight the desired project and tap Open. Note: If needed, navigating to the desired project can be done by tapping the folder at the top.



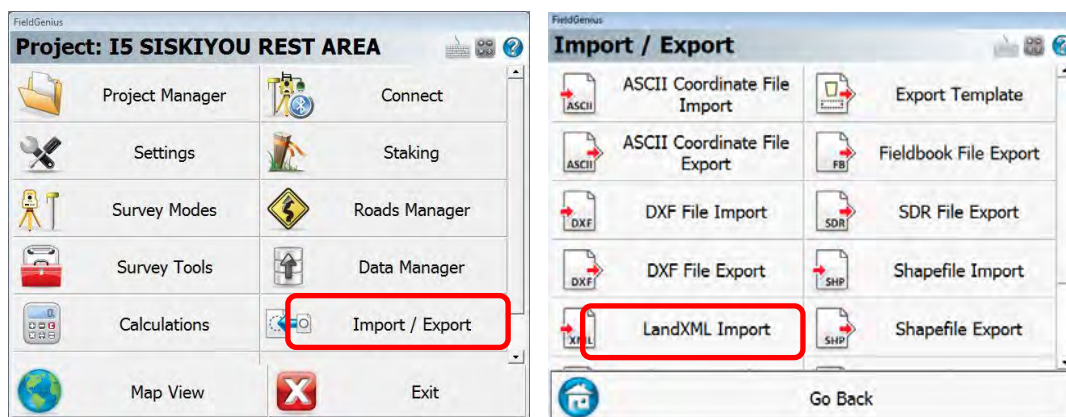
- Tap Continue when the Open Project Files dialog box opens.
- For this tutorial tap Close when the Instrument Selection dialog box opens. Connecting to a GPS receiver will be covered in another section.



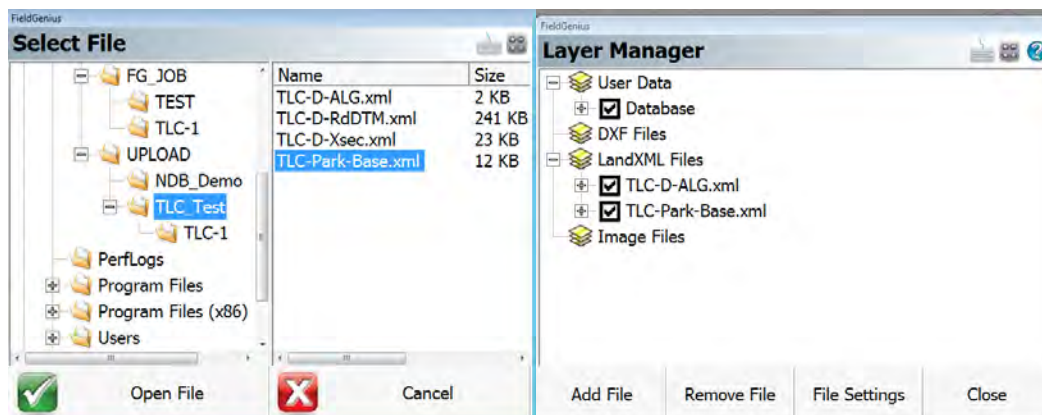
- The main screen of FieldGenius 8 will appear with the project opened in the top left corner. This screen and its icons are covered in depth in another section.
- To load the files from your C drive tap the main menu icon .



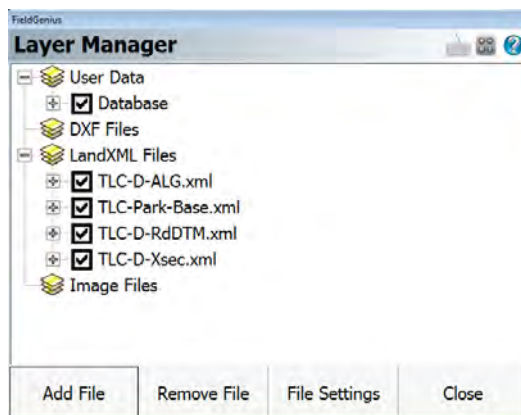
- This dialog box contains numerous applications that will be used often. Tap on Import / Export and then LandXML Import to import the project files.




- Navigate to the location on the C drive where the files were saved from the USB and highlight the file that will be imported.
- In the Layer Manager dialog box the file will be listed under the LandXML Files layer.




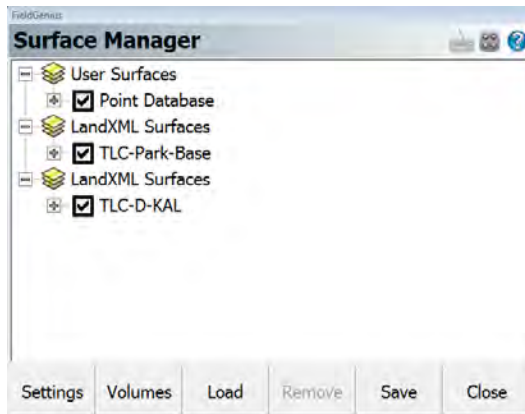
- Tap on Add File and then navigate to your next file and continue to add the files until all of the desired files are listed in the Layer Manager.



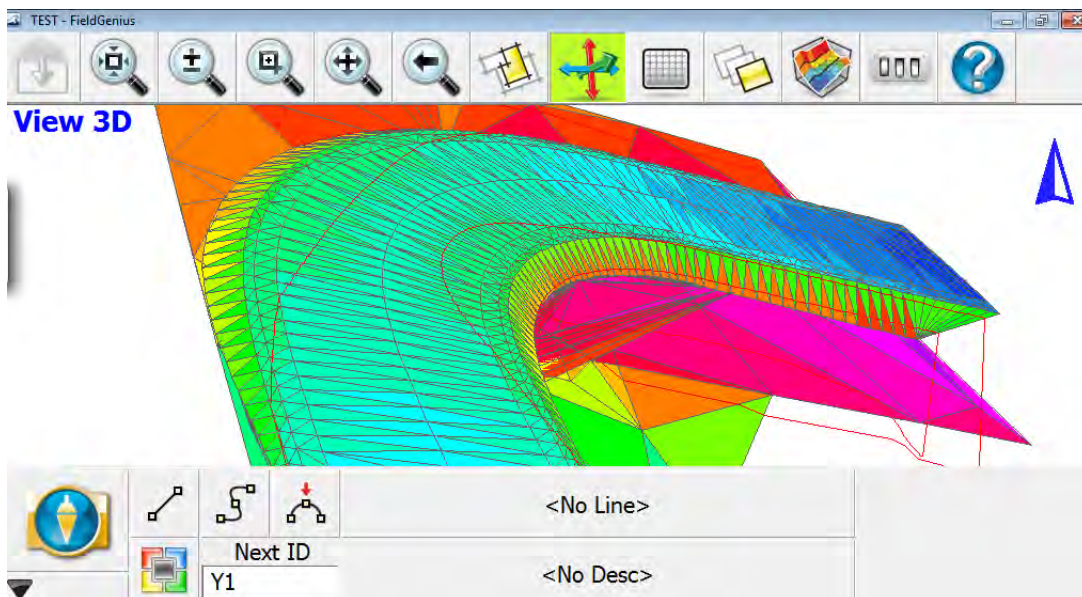
- The Layer Manager can also be opened by tapping on the  icon located on the main screen. Unchecking the boxes will turn that layer off.



- Imported surfaces can be viewed by tapping the  icon on the main screen.
- Check the surfaces that want to be viewed. Unchecking the boxes will turn that surface off.



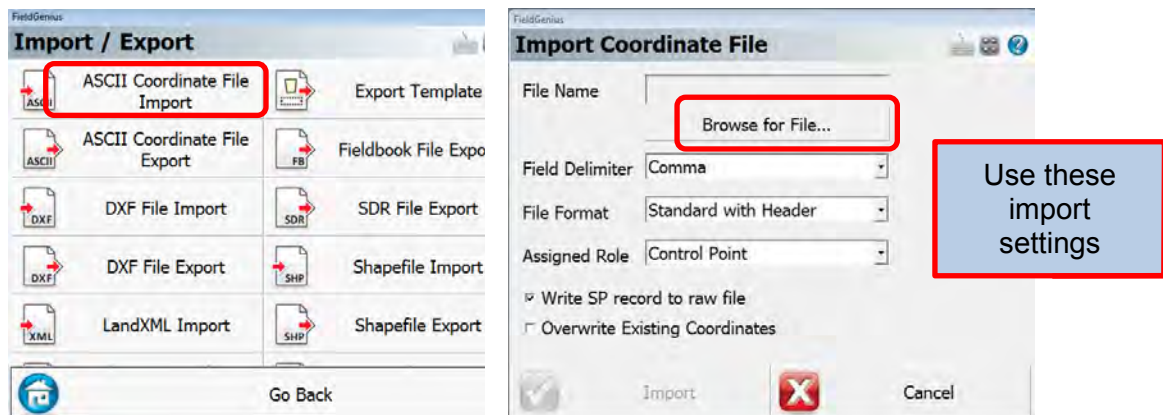
- The surface can now be viewed on the main screen's map.



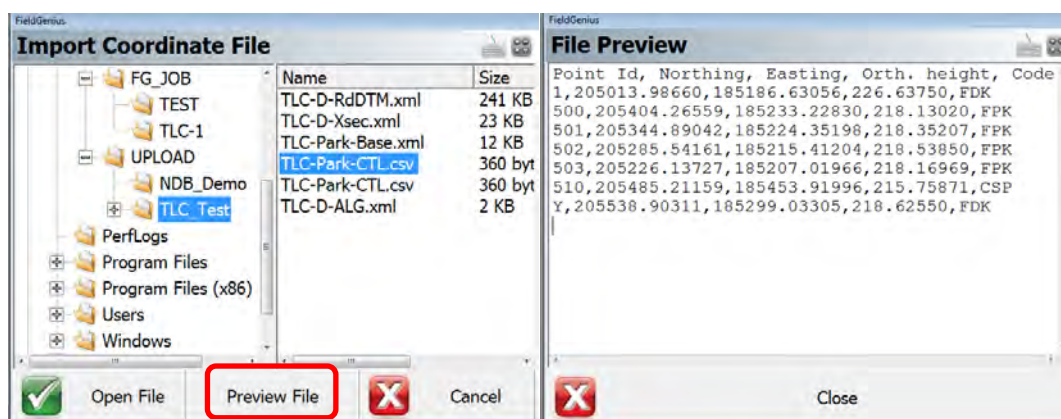


## ASCII files

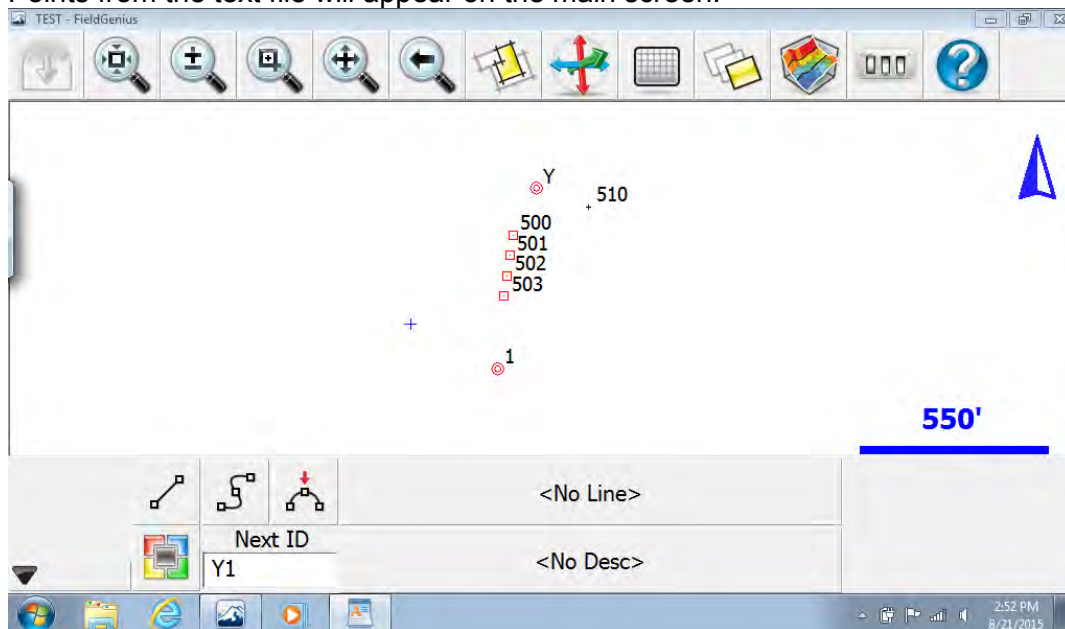
- Loading text files such as control points can be loaded using a similar method. Navigate back to the Import / Export dialog box and tap on ASCII Coordinate File Import.
- Tap on Browse for File in the Import Coordinate File dialog box.










- Navigate to the desired file and tap on Preview File to view and check the delimitation.
- Tap Open File and set the Import Coordinate File fields (above) appropriately.



- Points from the text file will appear on the main screen.



- Coordinates can be checked by tapping the  icon.

Point Database						
Point ID		Northing	Easting	Elevation	Description	Role
1		205013.987'	185186.631'	226.637'	FDK	User Entered
Y		205538.903'	185299.033'	218.625'	FDK	User Entered
500		205404.266'	185233.228'	218.130'	FPK	User Entered
501		205344.890'	185224.352'	218.352'	FPK	User Entered
502		205285.542'	185215.412'	218.539'	FPK	User Entered
503		205226.137'	185207.020'	218.170'	FPK	User Entered
510		205485.212'	185453.920'	215.759'	CSP	User Entered

For more info and help see the FieldGenius Online help videos

- <http://helpdesk.microsurvey.com/index.php?/Knowledgebase/Article/View/149#GPS>

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# **Inspector Tablet GNSS/ORGN Setup**

<b>Title</b>	GNSS/ORGN Setup
	FieldGenius 8.1
<b>Model</b>	DT391-P303
<b>Date</b>	November 6, 2015
<b>Author</b>	Chris Pucci
<b>Overview</b> This document will give instructions for setting up the GNSS and connecting the tablet to the ORGN.	

## Initial setup

- Turn the unit on and flip up the internal antenna.

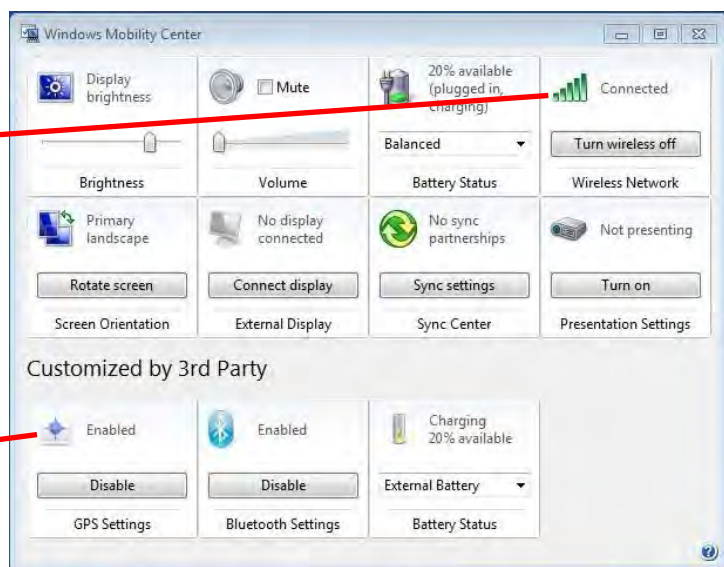
Power button  
is located on  
left side



- From the Windows desktop you need to make sure that the internal GNSS unit and internet access is enabled before continuing to FieldGenius. In the Windows Control Panel open the Windows Mobility Center to check their status.

Wireless Network  
needs to show  
'Connected' to allow  
internet access. NOTE:  
this shows cell network  
AND WiFi connections

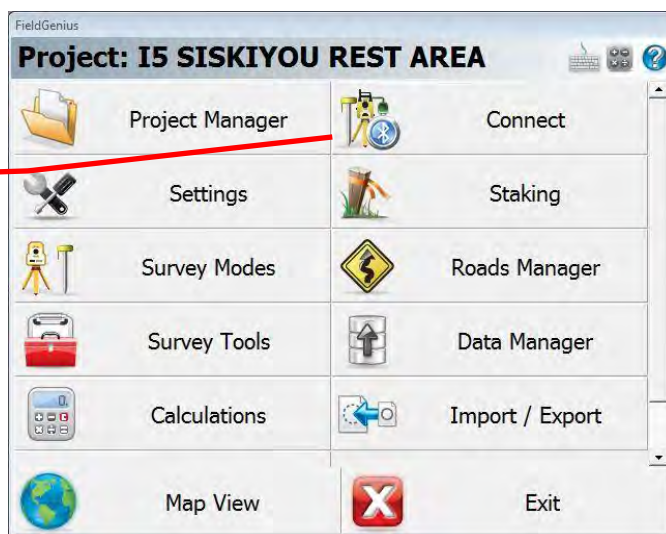
GPS needs to show  
'Enabled'



## FieldGenius GNSS setup

- From the Windows desktop tap on the FieldGenius 8 icon. FieldGenius will open.
- You can get to the Instrument Selection menu in many ways. Either as a step in setting up a job or if you did not connect to an instrument when setting up the job, Connect will be an option on the Main Menu screen. Tap Connect to select an instrument.

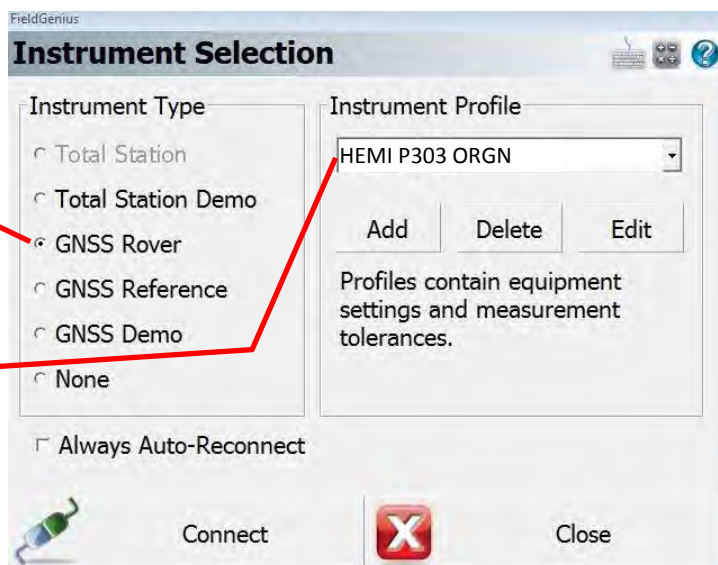
If you have not selected an instrument it will be an option on the Main Menu



- From the Instrument Selection screen, select “GNSS Rover” and select the HEMI P303 ORGN from the drop down in the Instrument Profile menu. Tap Connect to start the HEMI P303 ORGN Connection.

Select GNSS Rover

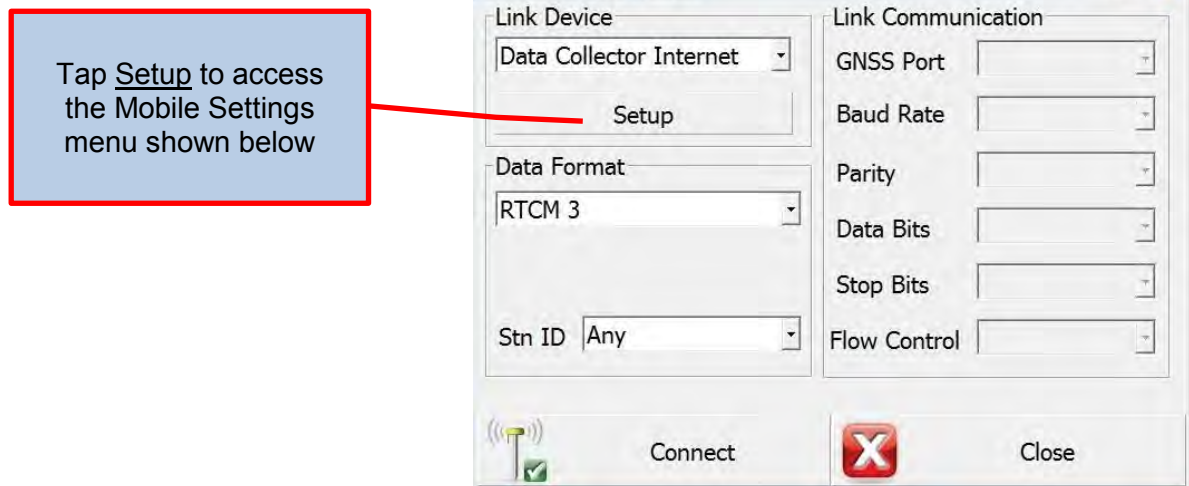
HEMI P303 is the internal GNSS unit.



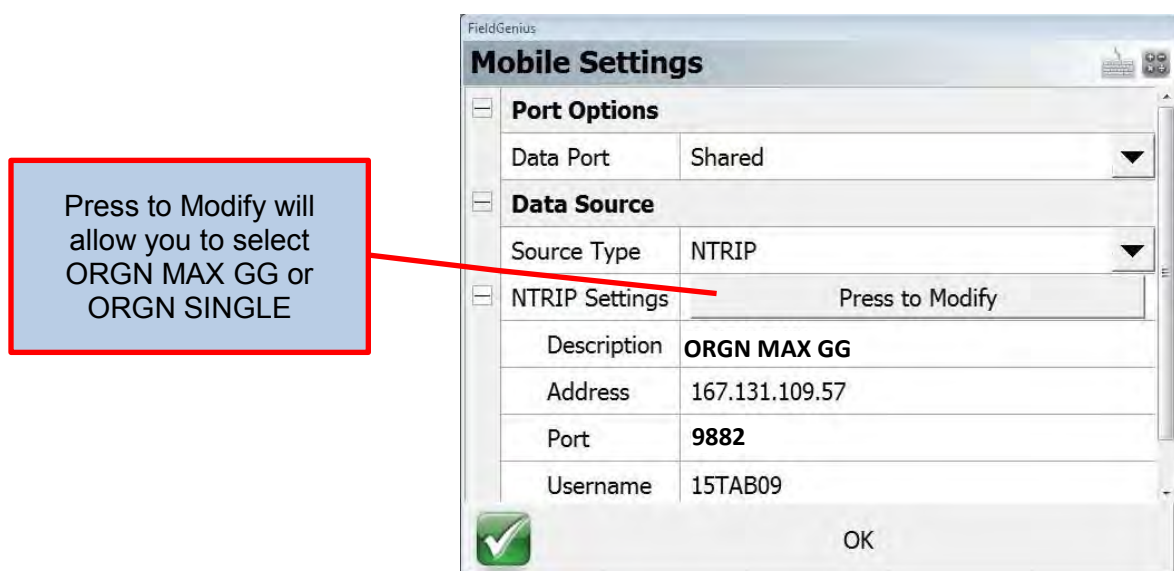


## FieldGenius ORGN setup

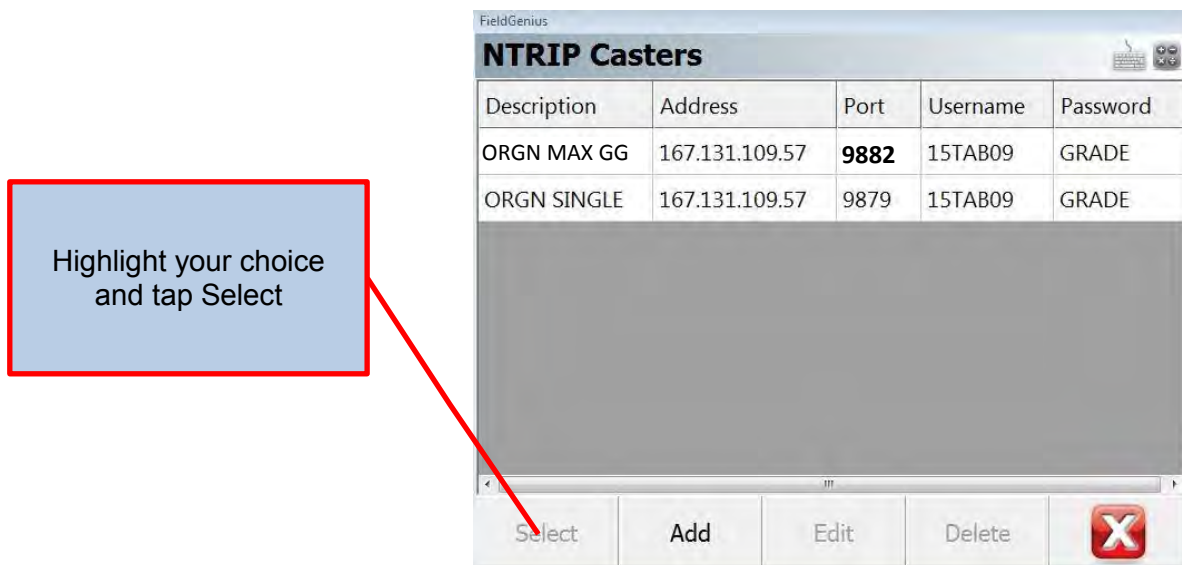
- The Link Configure screen will popup automatically after you have connected the GNSS unit. The Link Configure screen will allow you to connect to the ORGN via the internet to get a real time corrected GNSS position. You will use the Data Collector Internet with a Data Format of RTCM 3 to make the connection.



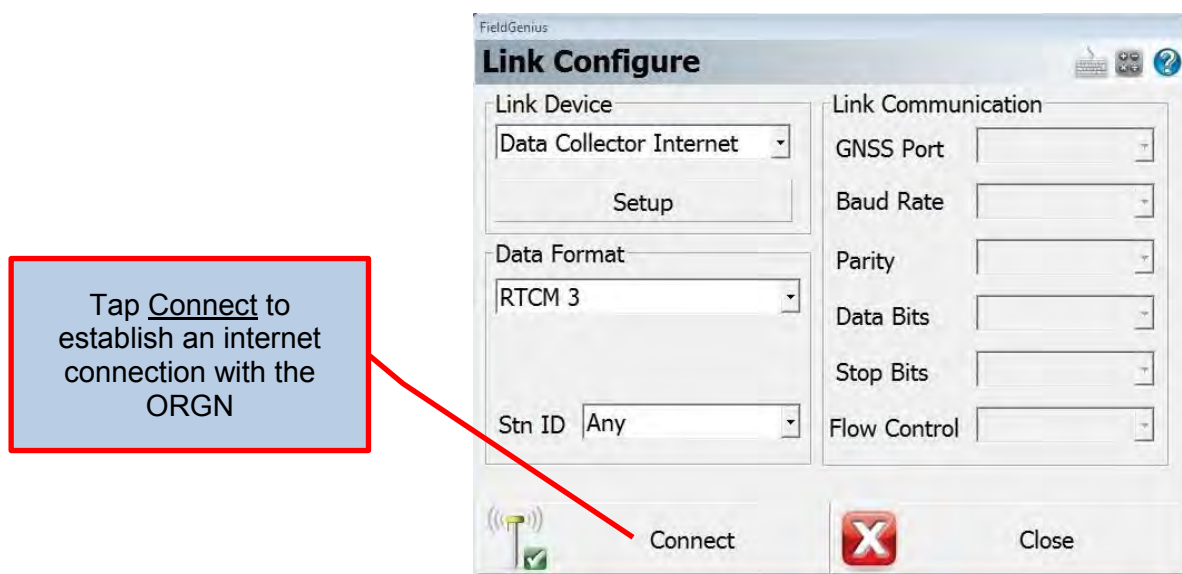
- If you select Setup from the Link Configure menu you can select how you use the ORGN. There are two main choices, a Network solution (ORGN MAX GG) or a Single Base solution (ORGN SINGLE). Depending on your location one may work better than the other.



- If you Press to Modify from the Mobile Settings menu the NTRIP Casters menu will popup. This is where you select the type of solution that will be used.



- The Mobile Settings menu will return and if your selection is listed correctly tap OK to continue. The Link Configure screen will then popup.

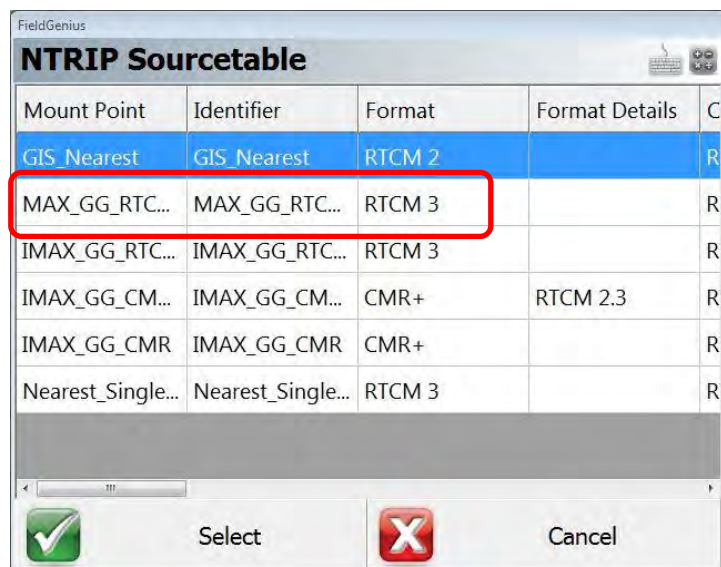


- The NTRIP Caster Options menu will then appear. Tap Request Sourcetable to continue.



- The NTRIP Sourcetable will then appear. For an ORGN MAX GG solution, highlight MAX\_GG\_RTCM3 and tap Select.

ORGAN MAX GG  
Sourcetable



Mount Point	Identifier	Format	Format Details	
GIS_Nearest	GIS_Nearest	RTCM 2		R
MAX_GG_RTCM3	MAX_GG_RTCM3	RTCM 3		R
IMAX_GG_RTCM3	IMAX_GG_RTCM3	RTCM 3		R
IMAX_GG_CM+	IMAX_GG_CM+	CMR+	RTCM 2.3	R
IMAX_GG_CMR	IMAX_GG_CMR	CMR+		R
Nearest_Single	Nearest_Single	RTCM 3		R

- You will then be prompted to confirm the settings for MAX\_GG\_RTCM3. They should appear as below. Tap Select to continue.

ORGAN MAX GG  
Mountpoint Settings



FieldGenius

### NTRIP Sourcetable

Please confirm the settings for the selected mountpoint (MAX\_GG\_RTCM3).

Correction Format

NMEA Required

 **Select**  **Cancel**


- If you had selected ORGAN SINGLE your NTRIP Sourcetable would show you all of the available ORGAN stations and you would need to select the one most appropriate for your location. Highlight your choice and tap Select.

ORGAN SINGLE  
Sourcetable

FieldGenius

### NTRIP Sourcetable

Mount Point	Identifier	Format	Format Details
P412_CMR	P412_CMR	CMR+	
JIME_Single	JIME_Single	RTCM 2	
VCWA_Single	VCWA_Single	RTCM 2	
ODOT_Single_...	ODOT_Single_...	RTCM 3	
WAMC_CMR	WAMC_CMR	CMR+	
TDLS_CMR	TDLS_CMR	CMR+	
GRAS_CMR	GRAS_CMR	CMR+	
...	...	...	...

 **Select**  **Cancel**

- The ORGN SINGLE settings are slightly different, NMEA is not required. Tap Select to continue.

ORGAN SINGLE  
Mountpoint Settings

FieldGenius

### NTRIP Sourcetable

Please confirm the settings for the selected mountpoint (ODOT\_Single\_GG\_3x).

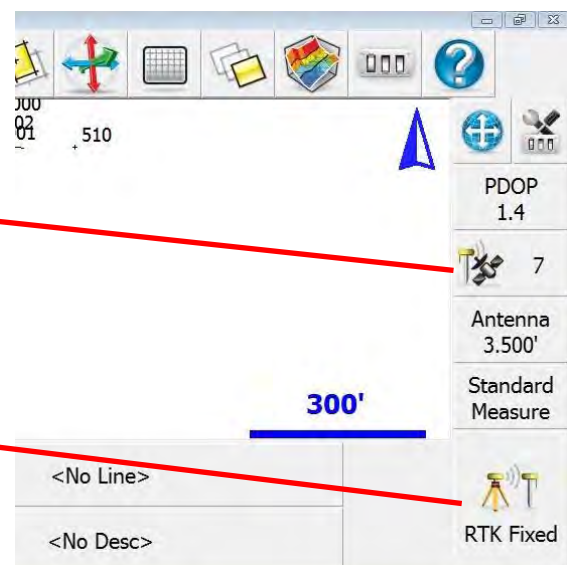
Correction Format

NMEA Required

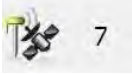
- You should now be connected. If you are outside and receiving enough GNSS signals you should have an RTK FIXED solution.

Satellite icon

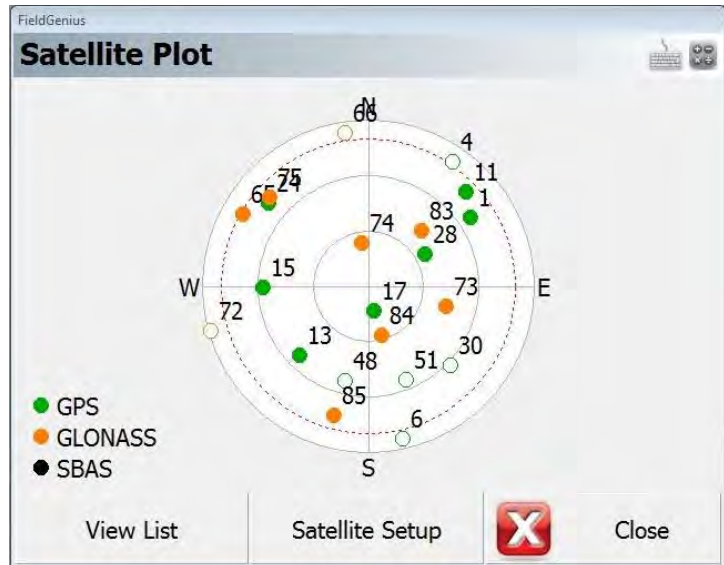
Icon showing you have  
an RTK Fixed solution

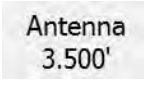




- Tapping the Satellite icon  will bring up the Satellite Plot menu showing how many satellites are being tracked. Only GPS satellites are counted on the small icon, but all satellites are shown on the Plot screen.

Filled circles are satellites locked and used. Empty circles are tracked but not used in the solution.

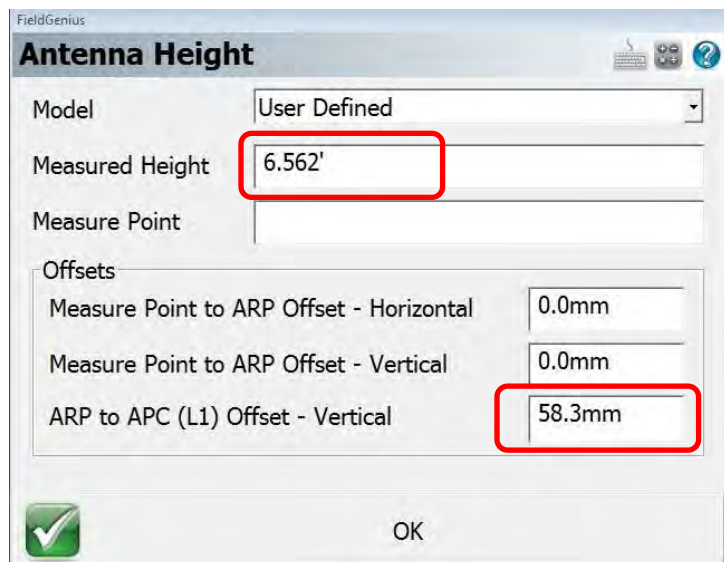


- Tapping the Antenna Height icon  will bring up the Antenna Height menu allowing you to change your antenna height which is the height the GNSS antenna is above the point you want to measure. It is critical to enter the correct antenna height if you wish to get an accurate vertical reading.

If you are using the P303 internal antenna, the Measured Height is how far above the ground you are holding the tablet

- If you have attached the external Leica AS10 antenna and mounted it to the fixed length rod you need to change the antenna model and height to get correct readings. You do not need to make any other changes in the unit. It automatically switches to the external antenna when the cable is connected.

Select User Defined for the Model, 6.562' for the Measured Height and set the ARP to APC offset to 58.3mm



- Once you have everything setup and you are working in a job you will not need to go through all of the steps each time you turn on the unit. After starting FieldGenius and selecting a job you will be prompted with the Reconnect menu. You can tap Reconnect and it will connect the GNSS unit and jump you to the Link Configure menu where you can tap Connect to use the ORGN settings from the previous session.

Reconnect using the previous settings



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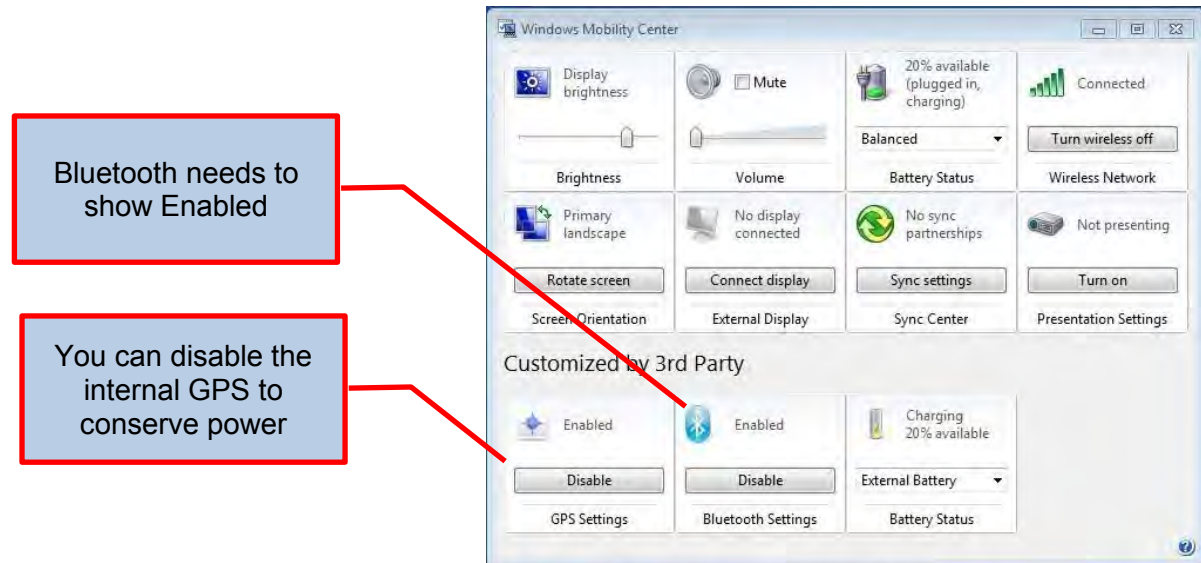


# **Inspector Tablet GNSS GS14 Radio Setup**

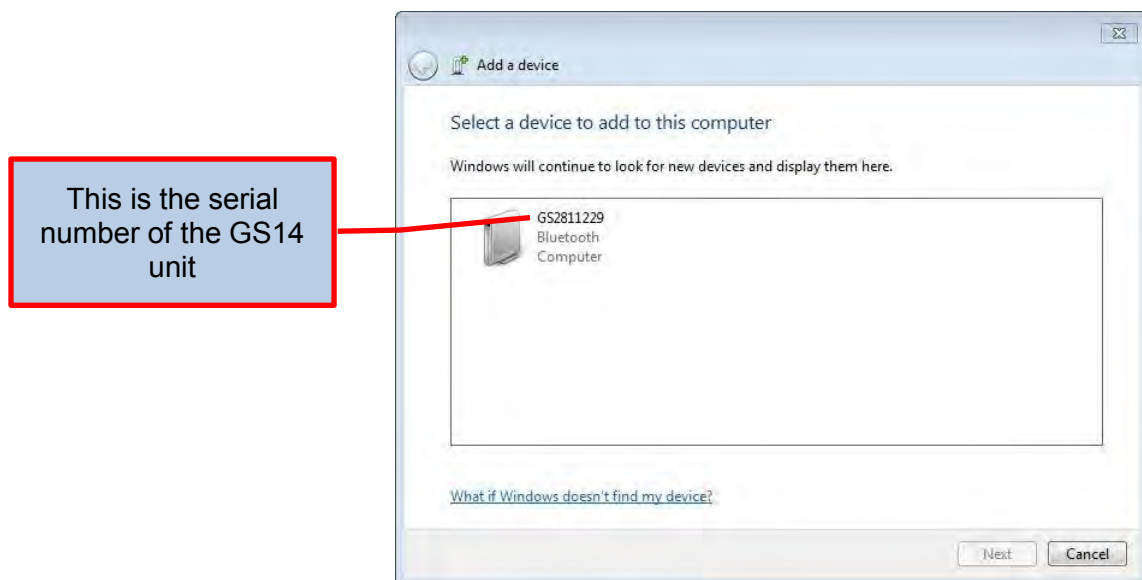
<b>Title</b>	Inspector tablet GNSS GS14 Radio Setup
<b>Version</b>	8.0
<b>Model</b>	DT391 w/GS14
<b>Date</b>	October 5, 2015
<b>Author</b>	Chris Pucci
<b>Overview</b> This document will give instructions for setting up the Leica GS14 as an RTK rover and using a local radio base station.	

## Initial setup

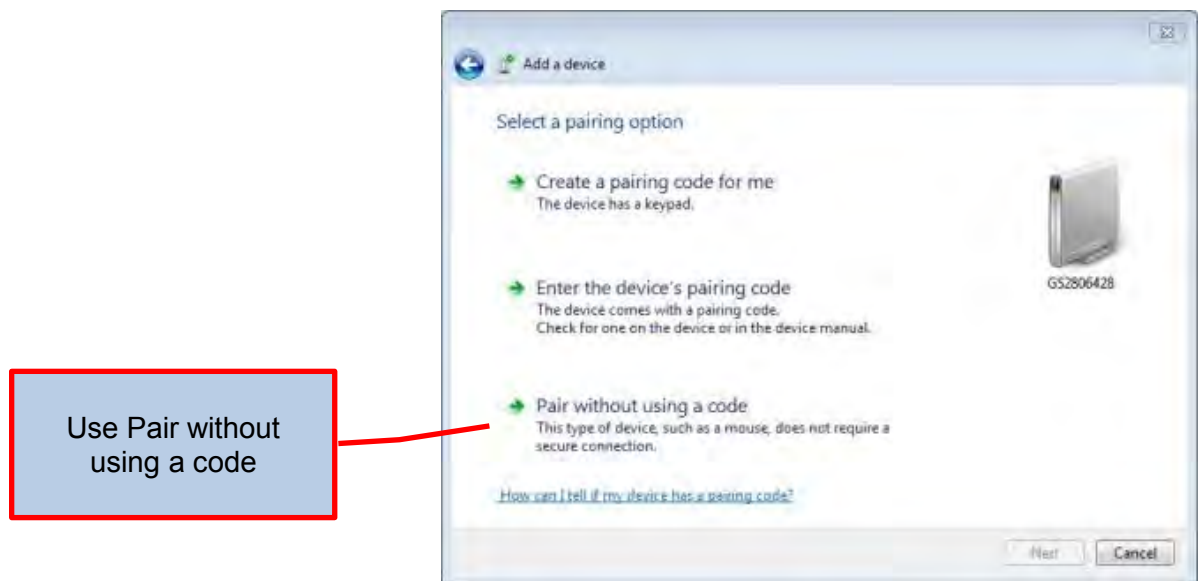
- From the Windows desktop you need to make sure that Bluetooth is enabled and before continuing to FieldGenius. In the Windows Control Panel open the Windows Mobility Center to check on the Bluetooth status.



- If you tap the Bluetooth Icon in the lower right hand portion of the Windows Main screen it will allow you to “Add a Device”. If you have the GS14 unit turned on Windows should show it in the list of devices. Highlight the device and tap Next. Note: Make sure other Bluetooth devices are deactivated or move to an area without other Bluetooth sources.



- Windows will ask you to select a pairing option. Select “Pair without using a code”.



- When the GS14 has been added it will show the following screen. Select Close.





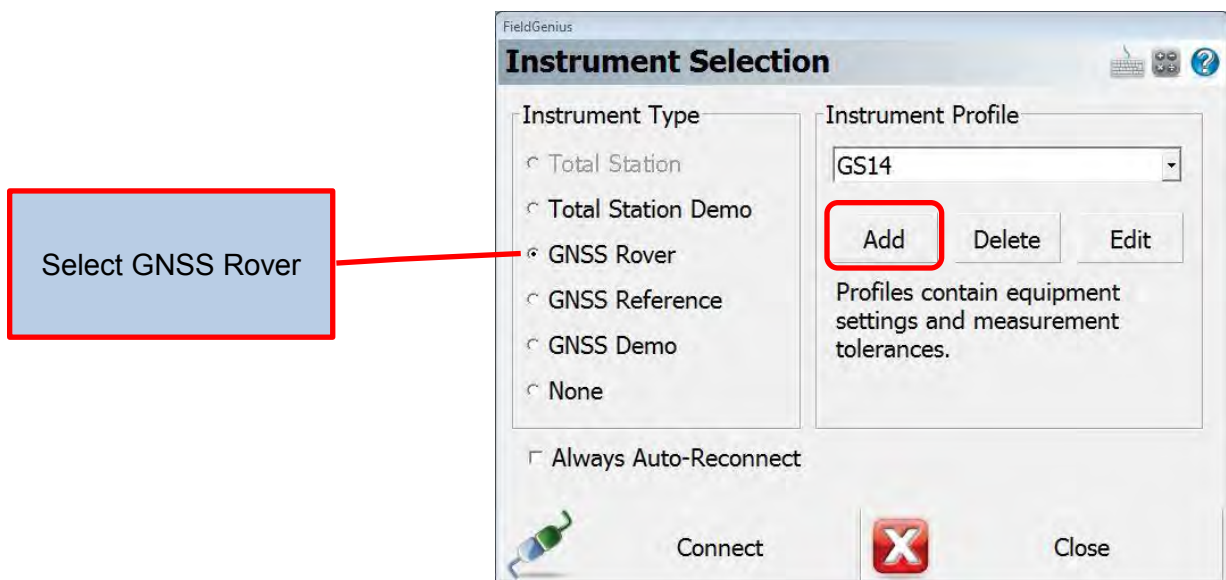
## FieldGenius GNSS setup

- From the Windows desktop tap on the FieldGenius 8 icon. FieldGenius 8 will open. Open your job as normal and when prompted to Reconnect, tap Select Instrument



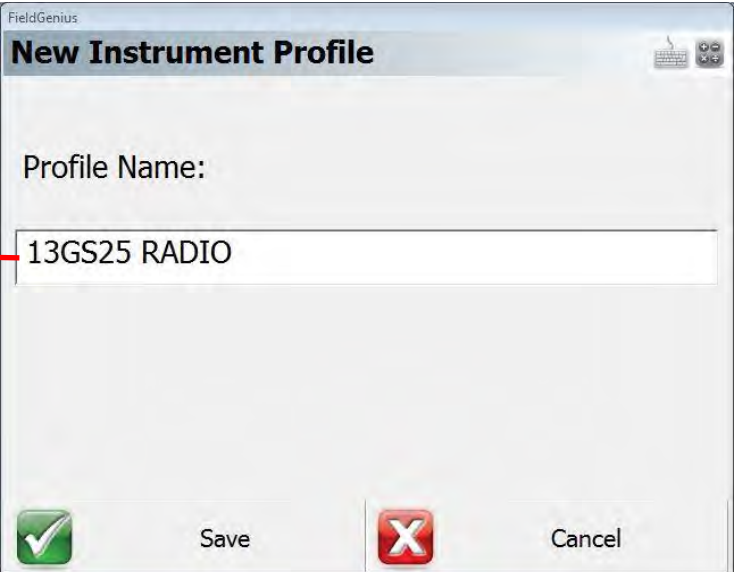
## GNSS Rover setup

- The first time you setup a GS14 unit as a Rover you will need to follow these steps. From the Select Instrument screen pick “GNSS Rover” as your instrument type and tap Add to create a profile for your unit.



- Type a Profile Name in the box. You should name the instrument profile the Unit ID number that is on the ODOT stickers for the unit. Tap Save to continue.

For the name type the Unit ID plus Radio



FieldGenius

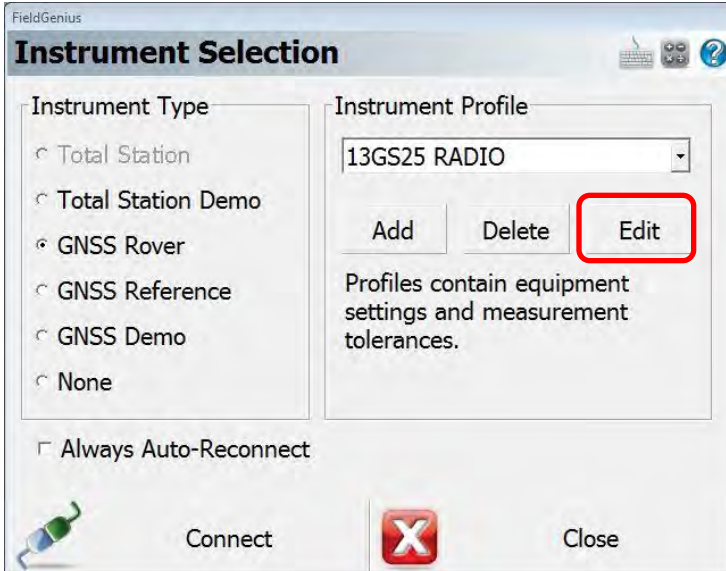
### New Instrument Profile

Profile Name:

13GS25 RADIO

Save Cancel

- You will be returned to the Instrument Selection menu. If the profile name is correct tap Edit to continue setting up the GS14.



FieldGenius

### Instrument Selection

Instrument Type

- Total Station
- Total Station Demo
- GNSS Rover
- GNSS Reference
- GNSS Demo
- None

Instrument Profile

13GS25 RADIO

Add Delete Edit

Profiles contain equipment settings and measurement tolerances.

Always Auto-Reconnect

Connect Close

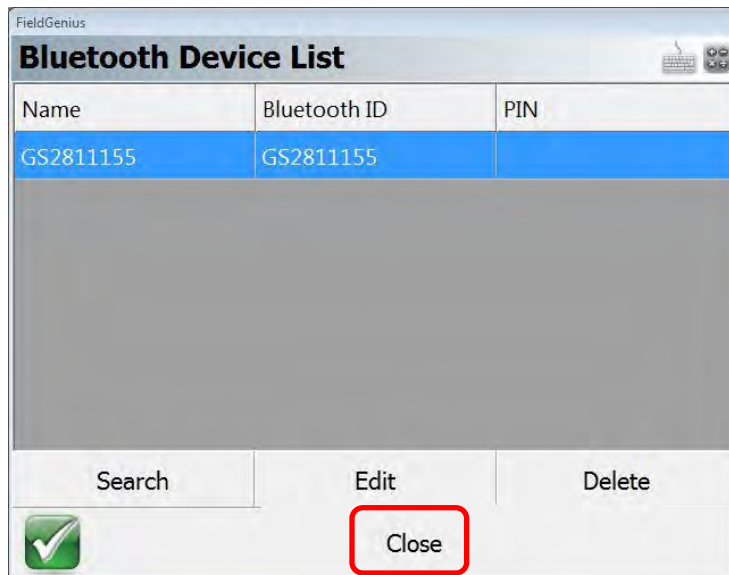
- With the GNSS Profile menu displayed tap the Model and Communication button to set the GS14 rover.

The screenshot shows the 'GNSS Profile' window in the FieldGenius application. It features a grid of settings: 'Model and Communication', 'Active Tolerance: [Autonomous]', 'Tolerance Setting: [Autonomous]', 'Antenna Height', 'Tolerance Setting: [RTK Float]', 'Auto Recording', and 'Tolerance Setting: [RTK Fixed]'. At the bottom left is a red 'X' icon, and at the bottom right is a 'Close' button.

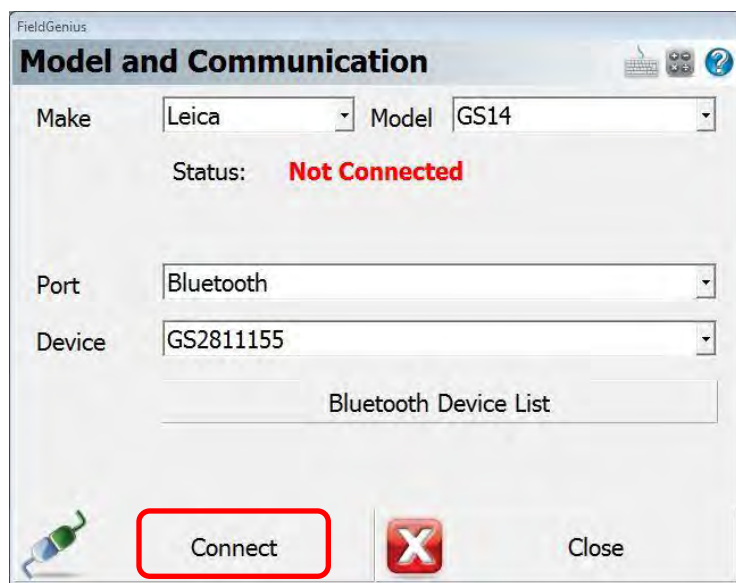
- From the Model and Communication menu, set Make to Leica, Model to GS14, Port to Bluetooth. Tap Bluetooth Device List to see a list of available units.

The screenshot shows the 'Model and Communication' window. It includes dropdown menus for 'Make' (set to Leica), 'Model' (set to GS14), 'Port' (set to Bluetooth), and 'Device'. The status is 'Not Connected'. A 'Bluetooth Device List' button is at the bottom. Two blue callout boxes with red borders provide instructions: 'Use these settings for a GS14' points to the Make, Model, and Port settings, and 'Tap here to see the Bluetooth units that you can choose from' points to the Bluetooth Device List button. At the bottom are a 'Connect' button with a green antenna icon, a red 'X' icon, and a 'Close' button.

- From the Bluetooth Device List highlight the correct unit and tap Close to continue.

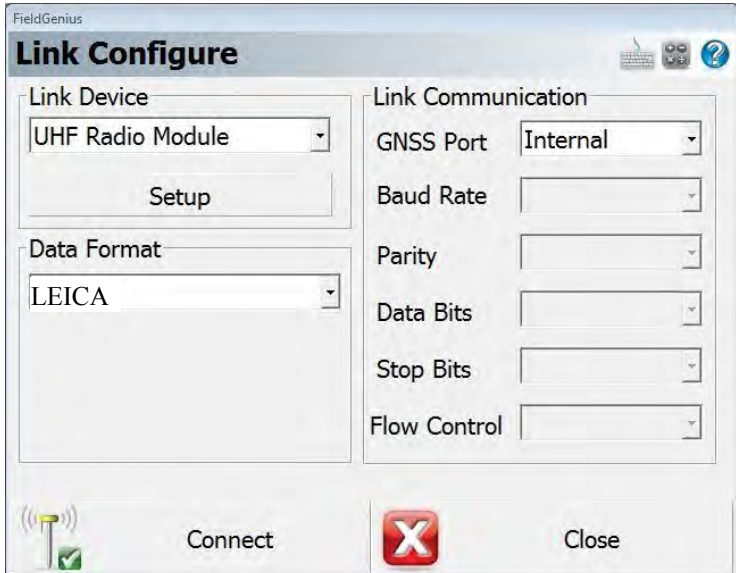


- If all the settings are displayed correctly, tap Connect. You should now be connected to the GS14 unit.



- The Link Configure menu will popup. Set the settings to match those shown below and tap Setup to check the Rover radio settings.

Use these settings



Link Device

UHF Radio Module

Setup

Link Communication

GNSS Port Internal

Baud Rate

Parity

Data Bits

Stop Bits

Flow Control

Data Format

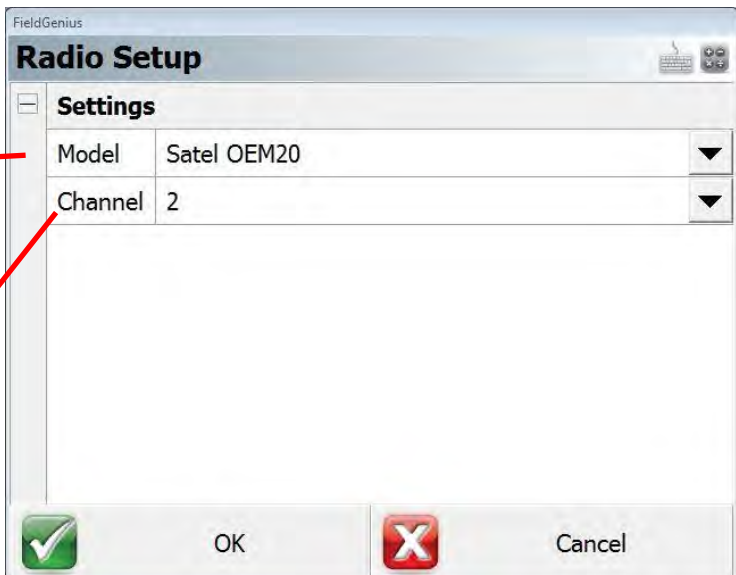
LEICA

Connect Close

- From the Radio setup menu set 2015 Model year GS14's to OEM22 and prior year models to OEM20. In this example we are using a 2013 model year GS14 with an OEM20 radio. Tap OK when you have the correct settings and the radio will connect and you will return to the Map View menu.

15-GSXX Units: OEM22  
13-GSXX Units: OEM20

Make sure the channel matches the base radio



Radio Setup

Settings

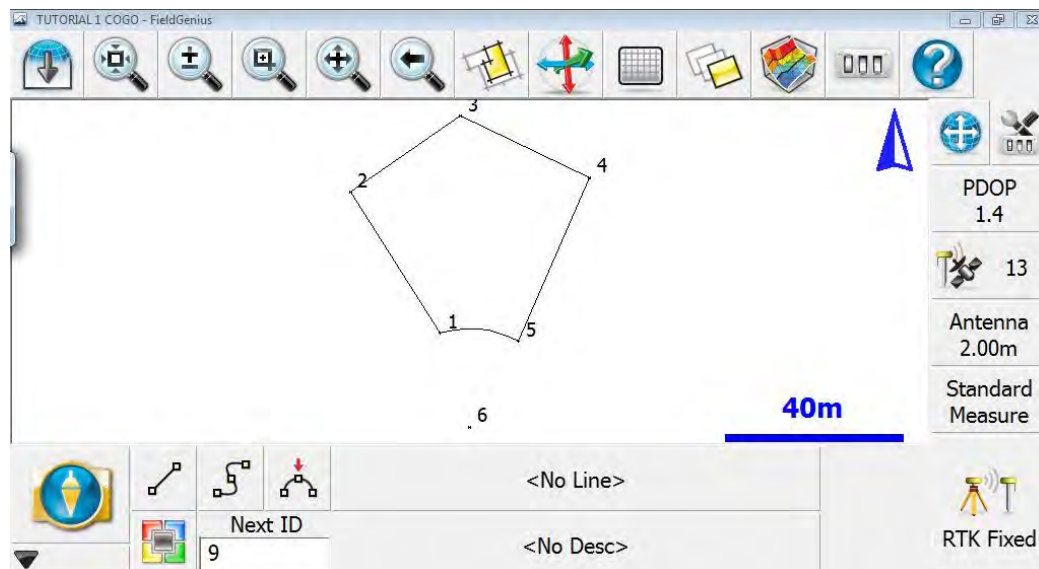
Model Satel OEM20

Channel 2

OK Cancel



- If all has gone correctly, you will be connected to the base radio, receiving correction information and have an RTK Fixed solution and ready to measure points.



- After completing the initial setup you will not have to go through all of the above steps each time you need to use a GS14. To use the GS14 in the future you will be able to select it from the Instrument Selection menu by using the Instrument Profile drop down button and tapping Connect and then Connect again on the Link Configure screen.

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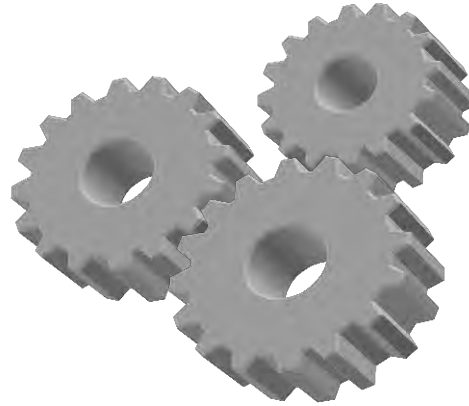
*Ron Singh, PLS  
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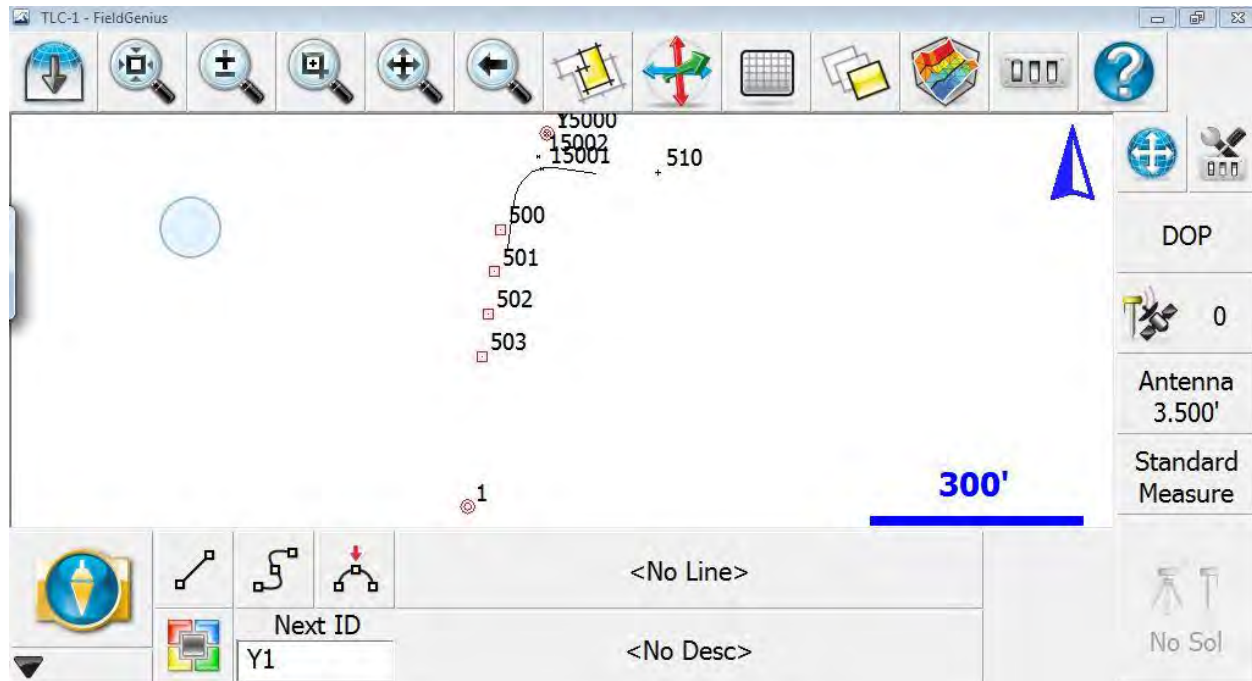


# **FieldGenius Overview Map View**

<b>Title</b>	FieldGenius Overview Map View
<b>Version</b>	8.0
<b>Date</b>	September 3, 2015
<b>Author</b>	Chris Pucci
<b>Overview</b> This document will cover the Map View screen in FieldGenius 8.0.	

## Map View Screen Overview

- For FieldGenius the map view is the main screen for positioning tasks.



### Major Button



Main Menu, Will open the Main Menu which contains all the settings, tasks and information

### Display Toolbar Buttons (Top Bar)



Opens or closes the Observation Toolbar (Lots of tasks use this window)



Zoom Extents (Will show the full map)



Dynamic Zoom



Zoom Window



Dynamic Pan



Zoom Previous (Will go back up to 10 views)



World Button (Hides unrelated points/layers when staking)



3D View



Grid View (Allows you to place a grid over your view)



Layer Manager (Allows you to turn layers/data on and off)



Surface Manager (Allows you to import and display DTM surfaces)



Point label Options (Controls the label settings for points)



Help Button (Provides help on visible toolbars)

### Instrument Toolbar Buttons (Right Bar)

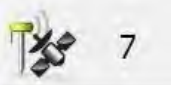


Auto-Center (Moves the map to center on your location)




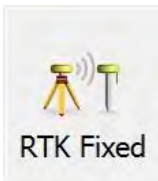
Instrument Settings Menu

DOP	OR	PDOP 1.4	DOP Values or SD/Point Quality Value
0.09' 0.19'			Cycles through PDOP, HDOP, VDOP and SD Only shows a number when you have a sensor connected

 0	OR	 7	Satellite Plot/List
---	----	---	---------------------


Antenna 3.500'	Antenna menu (Allows you to select which antenna and set the height values)
-------------------	---


Standard Measure	Measurement Modes menu (Allows you to select the type of measurement)
---------------------	---

 No Sol	OR	 RTK Fixed	Measure Button / Solution Type, this button will take a shot/position and shows the current solution.
--	----	---	---

### Topo Toolbar Buttons (Bottom Bar)

	Draw line	<No Line>	Active line type description
---	-----------	-----------	------------------------------

	Draw best fit curved line
---	---------------------------

	Draw three point arc
---	----------------------

	Point Database	<No Desc>	Active point description
---	----------------	-----------	--------------------------

Next ID Y1	Next available point ID
---------------	-------------------------



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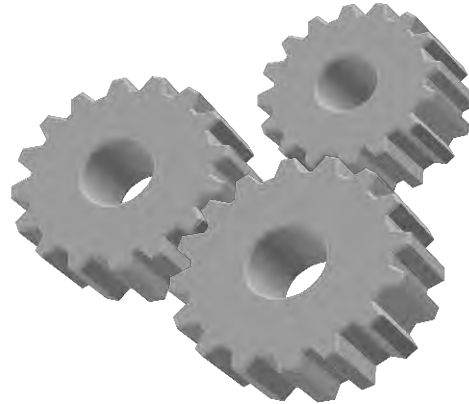
*Ron Singh, PLS  
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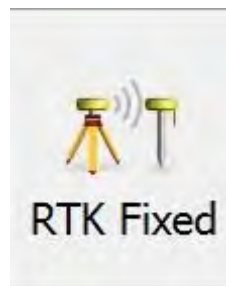


# **FieldGenius Data Collection**

<b>Title</b>	FieldGenius Data Collection
<b>Info</b>	Inspector Tablet
<b>Version</b>	8.1
<b>Date</b>	November 6, 2015
<b>Author</b>	Chris Pucci
<b>Overview</b> This document will cover basic data collection using FieldGenius 8.0.	

## Data Collection

- FieldGenius 8.0 has virtually unlimited features for collecting field data. This guide will cover some of the features that may be the most useful.
- Most survey data begins with points. You need points to make lines, curves, arcs, etc.
- To collect a point in FieldGenius you should have an RTK Fixed solution, tap the RTK Fixed icon and hold the sensor still until the shot is complete. The GNSS Measurement screen will show you a count down and prompt you to Store Position when a solution has been computed.



Tap Store Position to collect the point

The image shows a screenshot of the FieldGenius application's "GNSS Measurement" screen. The screen has a light blue header with the title "GNSS Measurement" and a question mark icon. Below the header, the following data is displayed: "Solution: RTK Fixed" (with "RTK Fixed" in green), "Satellites: 5" (with "5" in green), and "PDOP: 3.40" (with "3.40" in green). There are two expandable sections: "Real Time" and "Post Process". The "Real Time" section is expanded, showing "Status: Accepted" (with "Accepted" in green), "Horizontal StdDev: 2.136'", and "Vertical StdDev: 3.644'". The "Post Process" section is collapsed, showing "Status:" and "Total Time:". At the bottom of the screen, there are two buttons: "Store Position" with a green checkmark icon and "Cancel" with a red X icon. A red arrow points from the text box on the left to the "Store Position" button.

- After you have collected the position the Store Point menu will popup. You will have the ability to set the point ID, point description, make it part of a line, change/set your antenna height and make special notes about the point.

**Store Point**

Point ID: 20003

Description: BDW List

Northing: 2023942.074'

Easting: 981413.665'

Elevation: 1314.465'

Antenna Hgt: 0.000'

Store As: GNSS Point

Review Measurement

GIS Attributes

Advanced

Enter Note

Store Pnt Cancel

- If you tap List next to the point Description it will pop up the ODOT code list of predefined codes. You can pick a descriptor or add your own code as needed.

**Automap Library: ODOT-FG-CODE.csv**

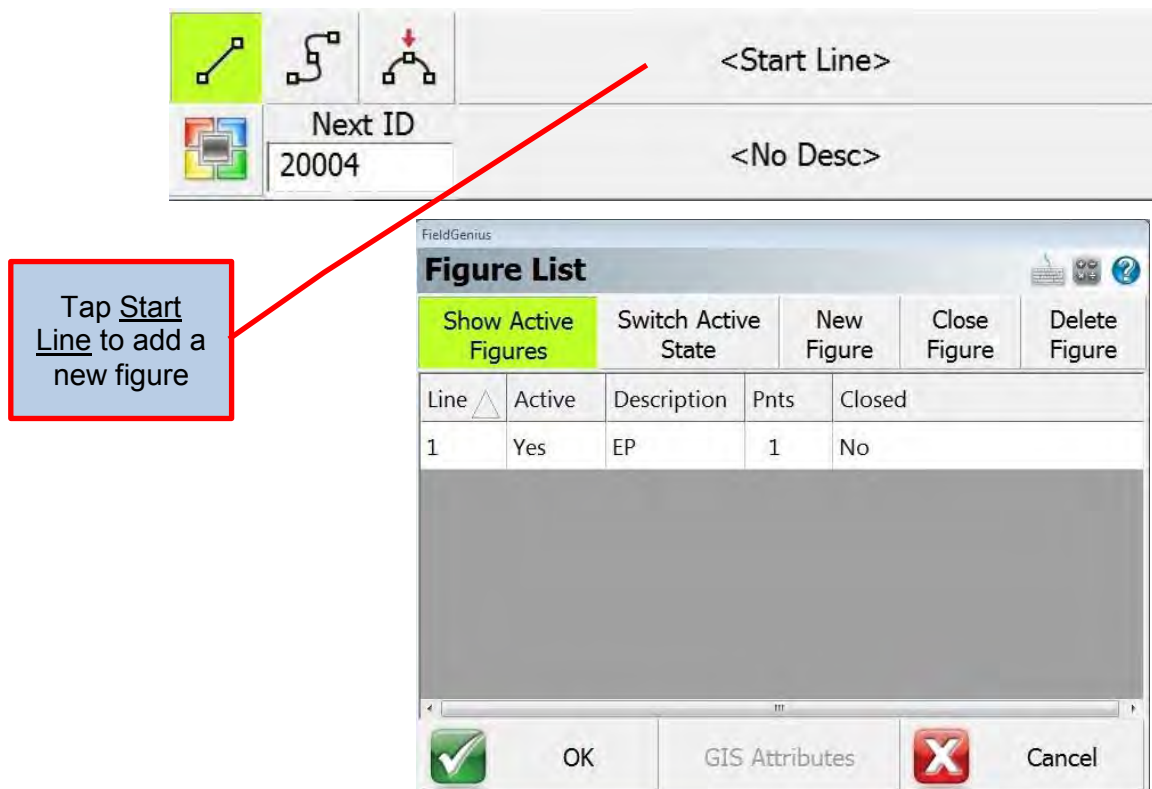
Enter Description:

Description	Summary	Layer
✕ ARC	ARCH PIPE	E_HYD_PIPE
✕ BAR	CONC BAR FACE	E_ROAD_BAR
✕ BC	BRIDGE COLUMN	E_BRIDGE
✕ BDW	BUILDING WALL	E_ROAD_BLDG
✕ BH	TEST BORE HOLE	E_GEO_BH
✕ BL	TERRAIN BREAKLINE	E_TERR_BL
✕ BLN	BRUSH LINE	E_VEG_BRUSH
⊗ BM	BENCHMARK	E_SURV_CTL

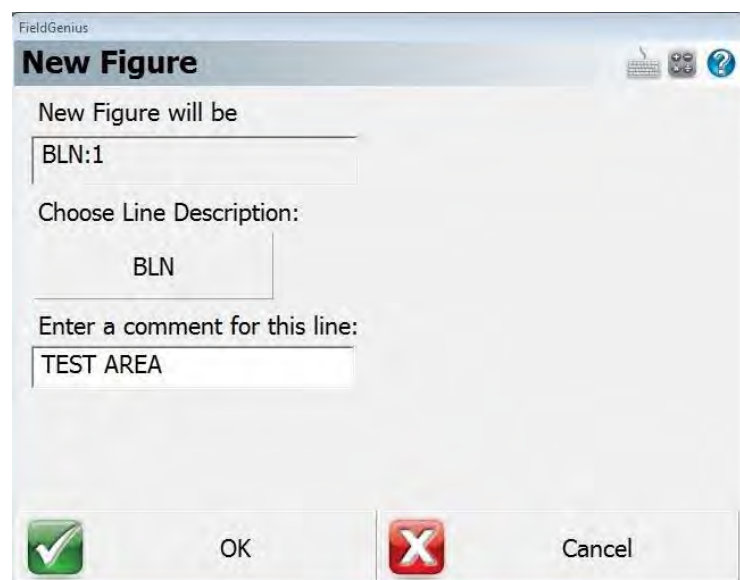
☐ Show descriptions in use only

Add Edit Delete

- To make a line select one of the line types Straight, Curvy or Arc. Then tap Start Line which will pop up the Figure List menu.




- To start a new line tap New Figure. You will be able to add a description to the line and enter a comment. The line descriptions will be from the same code list you used for points.





- Once you have created a new line tap **OK** and your line will be active in the drawing and ready to for adding points.

FieldGenius

### Figure List


Show Active Figures		Switch Active State	New Figure	Close Figure	Delete Figure
Line 	Active	Description	Pnts	Closed	
1	Yes	BLN TEST AREA	0	No	
1	Yes	EP	1	No	



 OK    GIS Attributes     Cancel

- If you want to switch to and add additional points to a different line, highlight the line you want and tap OK. It will make the highlighted line the active line.

FieldGenius

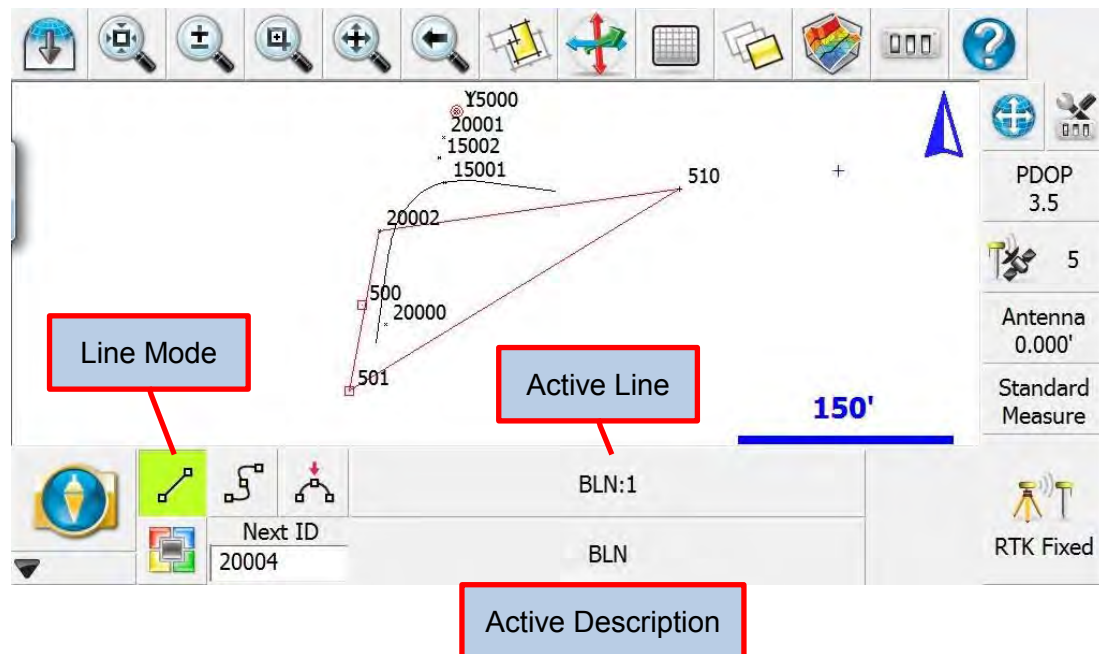
### Figure List

Show Active Figures		Switch Active State	New Figure	Close Figure	Delete Figure
Line 	Active	Description	Pnts	Closed	
1	Yes	BLN TEST AREA	0	No	
1	Yes	EP	1	No	

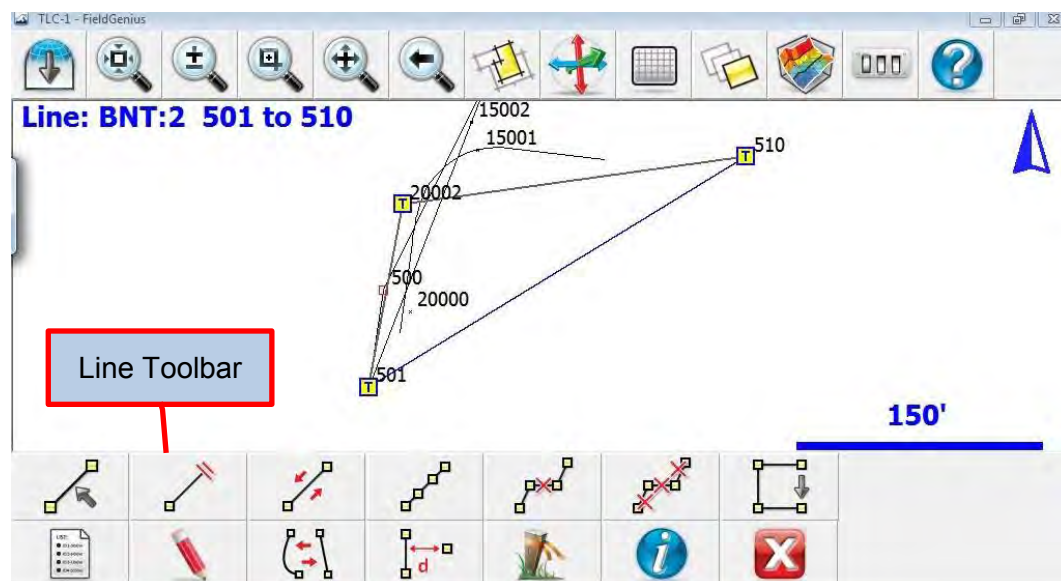
 OK    GIS Attributes     Cancel



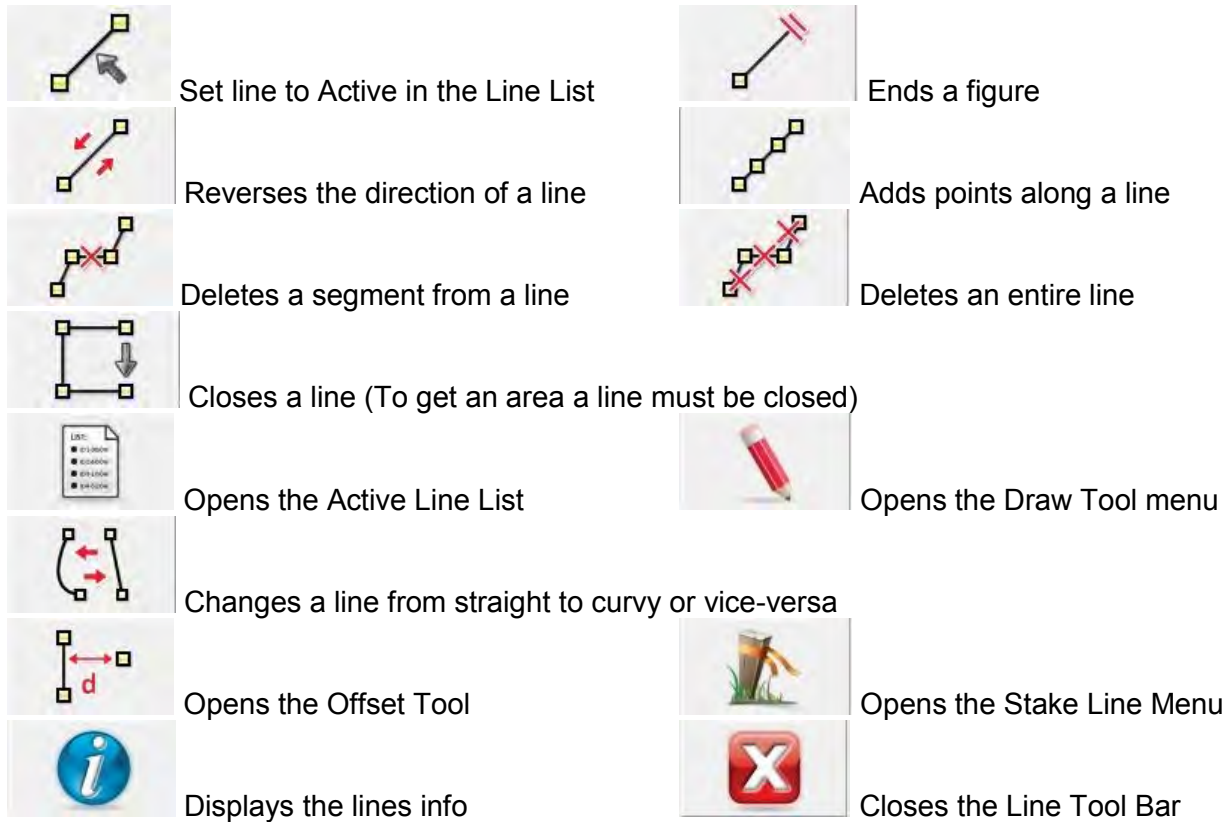
- As you start collecting points by tapping the RTK Fixed icon, the points you collect will automatically make a line.



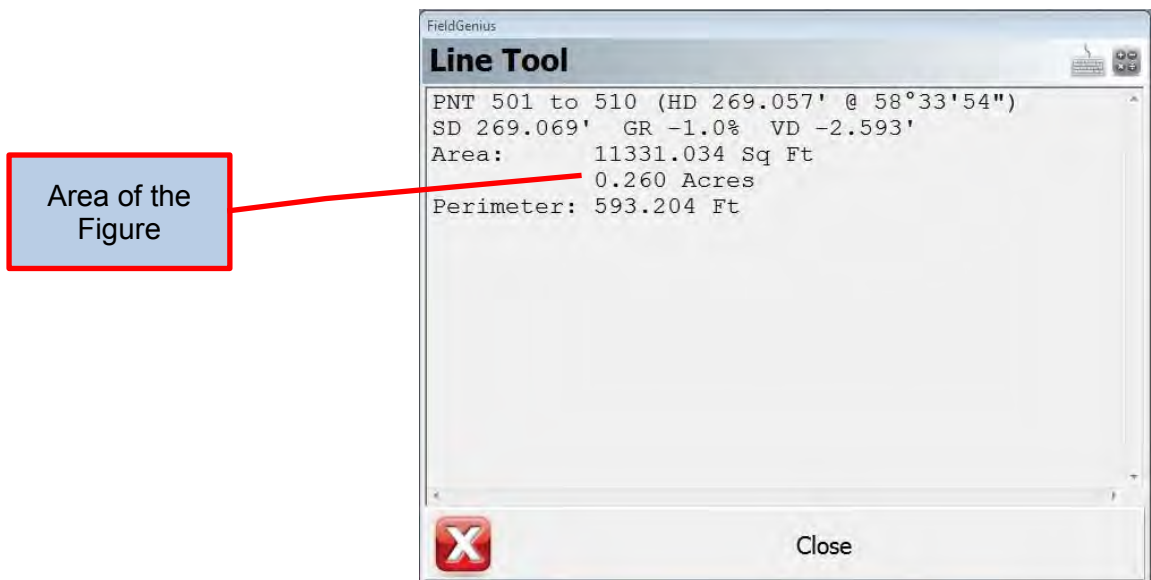
- Once you have made a line you can work with it. If you pick a line by tapping one of the segments, the Line Toolbar will open.



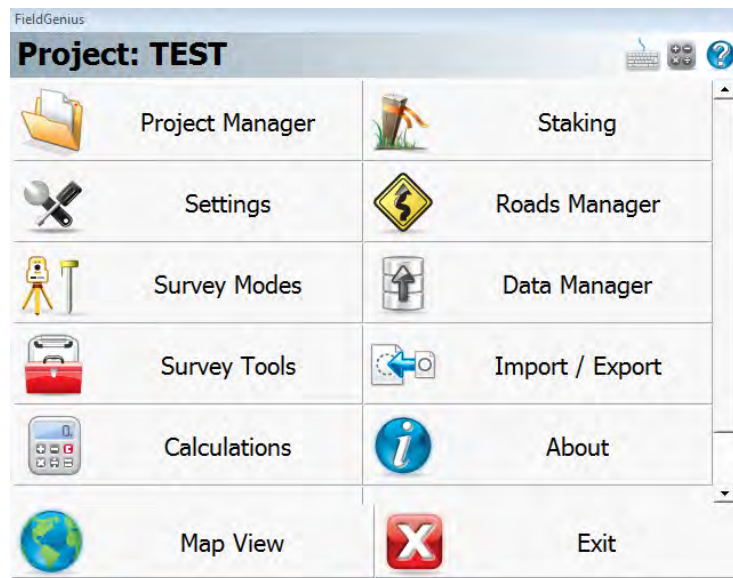
- Line Tools buttons.



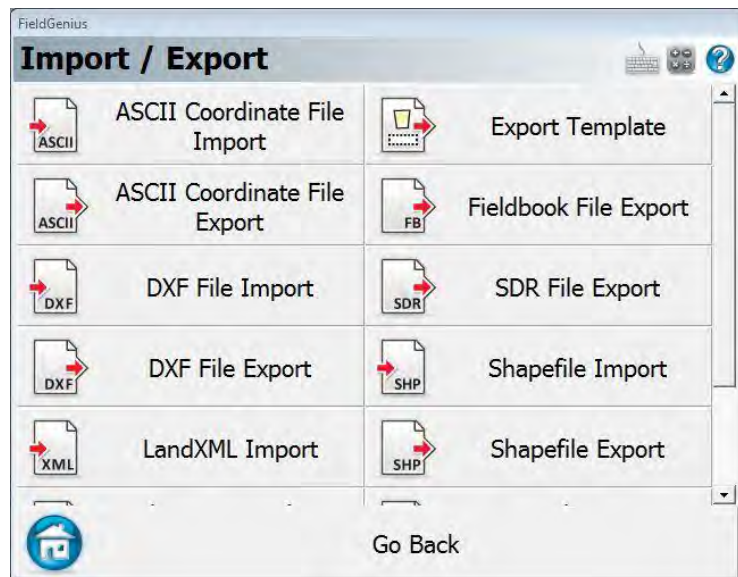
- To calculate the area created by a line. Store all of the exterior points as one line. When you are finished select the line by tapping any segment, then tap the Close Line button. It will prompt you to make a selection. Choose Yes. Close the Line Tools bar by tapping the red "X". Reselect the line and tap the Info "i" and your area will be displayed.



- To export data out of FieldGenius tap the Main Menu Icon  
And tap the Import/Export button



- From the Import/Export menu you can select ASCII, XML or DXF as your export method. Select the desired format and store the files to the provided USB drive.



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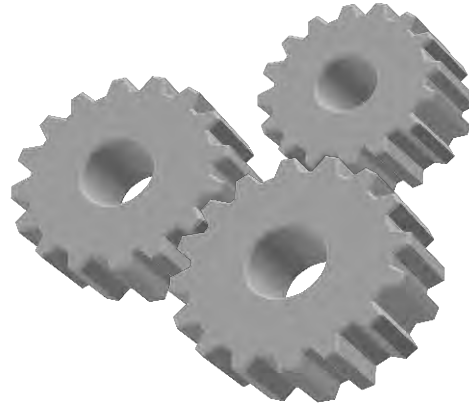
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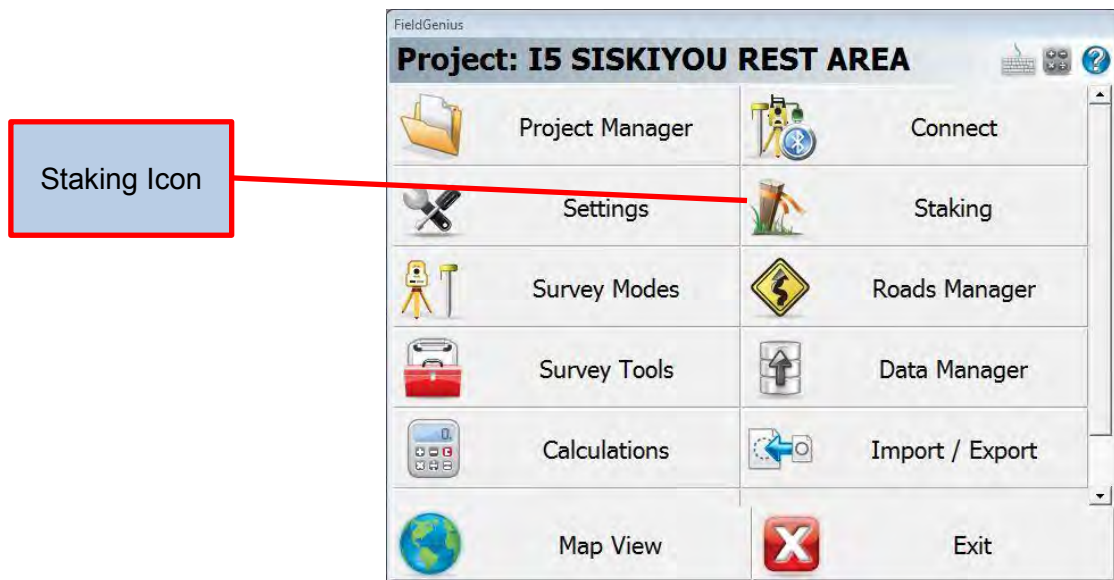


# FieldGenius Staking

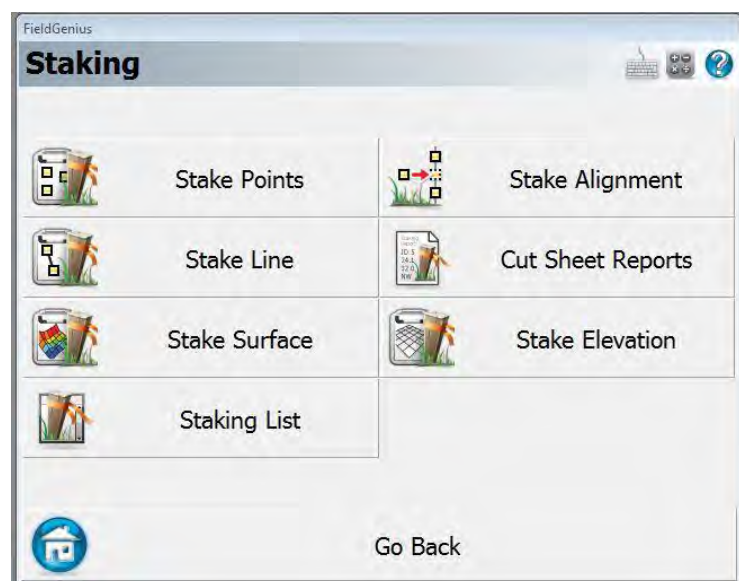
<b>Title</b>	FieldGenius Staking
<b>Info</b>	Inspector Tablet
<b>Version</b>	8.1
<b>Date</b>	September 8, 2015
<b>Author</b>	Chris Pucci
<b>Overview</b> This document will cover basic stake out using FieldGenius 8.0.	

## Point Staking

- FieldGenius 8.0 can be used to stake out locations and features from alignments, surface models and coordinate files once the correct files have been loaded for your job.
- Open or Create your project in FieldGenius and connect to the sensor.
- To start staking tap the Main Menu icon and tap the Staking icon.



- From the staking menu you can select how and what you want to stake.

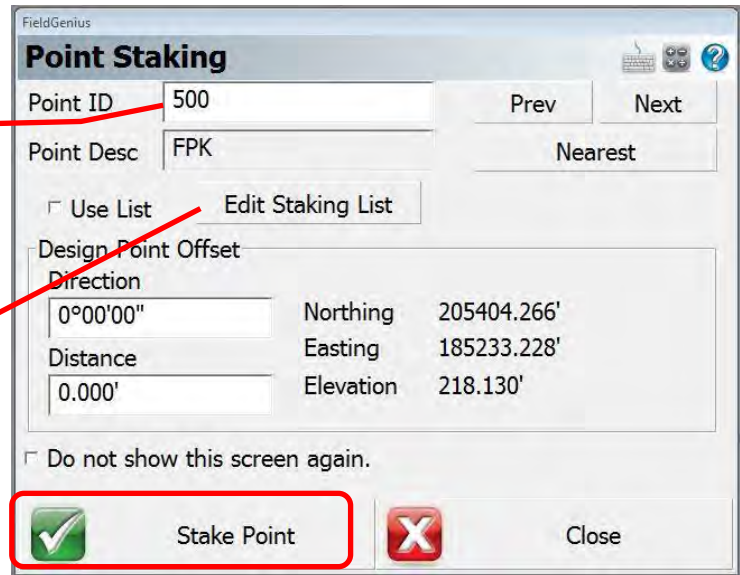




- The Stake Point menu will allow you to stake out any point in the job database, when you have the point ID entered tap Stake Point to proceed.

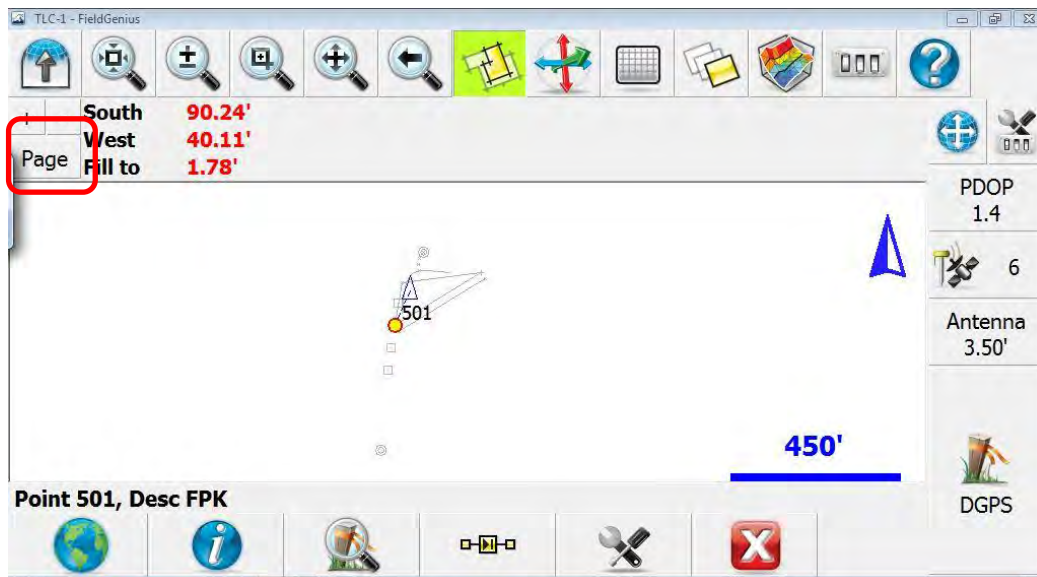
Enter the point you wish to stake here. Double tapping in the box will bring up a selection for different methods to select the point to stake

You can make a list of points to stake here and it will step through them



The screenshot shows the 'Point Staking' screen in FieldGenius. It features input fields for 'Point ID' (500) and 'Point Desc' (FPK). There are 'Prev' and 'Next' buttons, and a 'Nearest' button. A checkbox 'Use List' is present, with an 'Edit Staking List' button next to it. Below this is a 'Design Point Offset' section with fields for 'Direction' (0°00'00"), 'Distance' (0.000'), and a table for coordinates: Northing (205404.266'), Easting (185233.228'), and Elevation (218.130'). At the bottom, there is a checkbox 'Do not show this screen again.' and two large buttons: 'Stake Point' (with a green checkmark icon) and 'Close' (with a red X icon).

- Once you are staking the point you will see the highlighted point you are staking and your position will be the triangle. By tapping the Page button you can change the way the directions to the point are displayed.



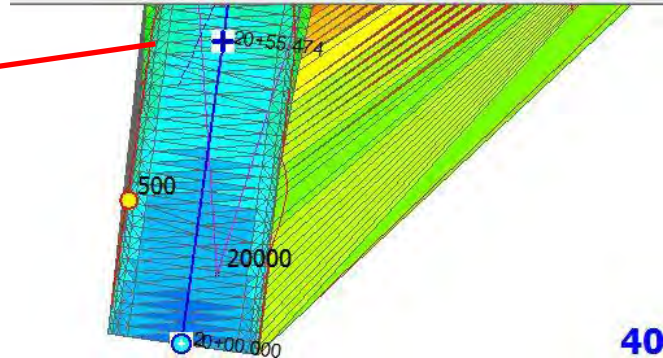
- If you have a surface turned on while staking a point it can be hard to see what is going on. If you click the World button it will gray out the surface and any other lines that are not being staked.



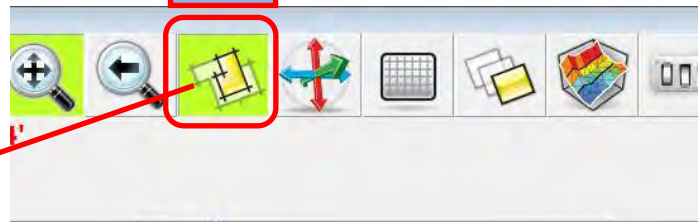
ON



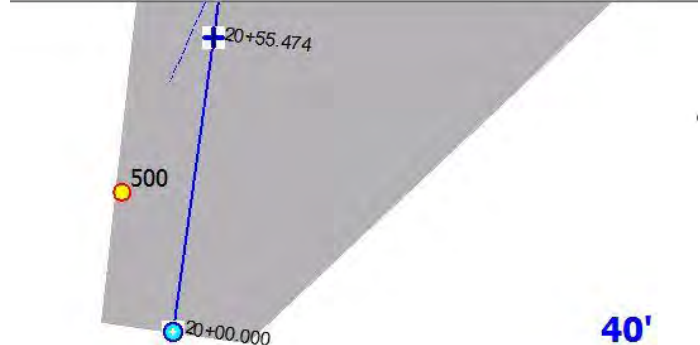
With everything  
turned on



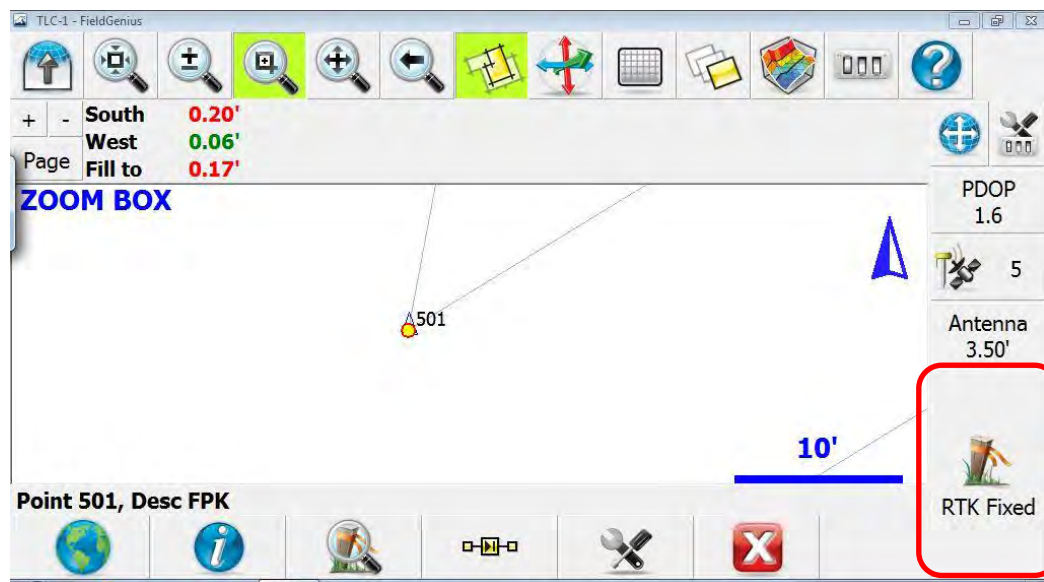
OFF



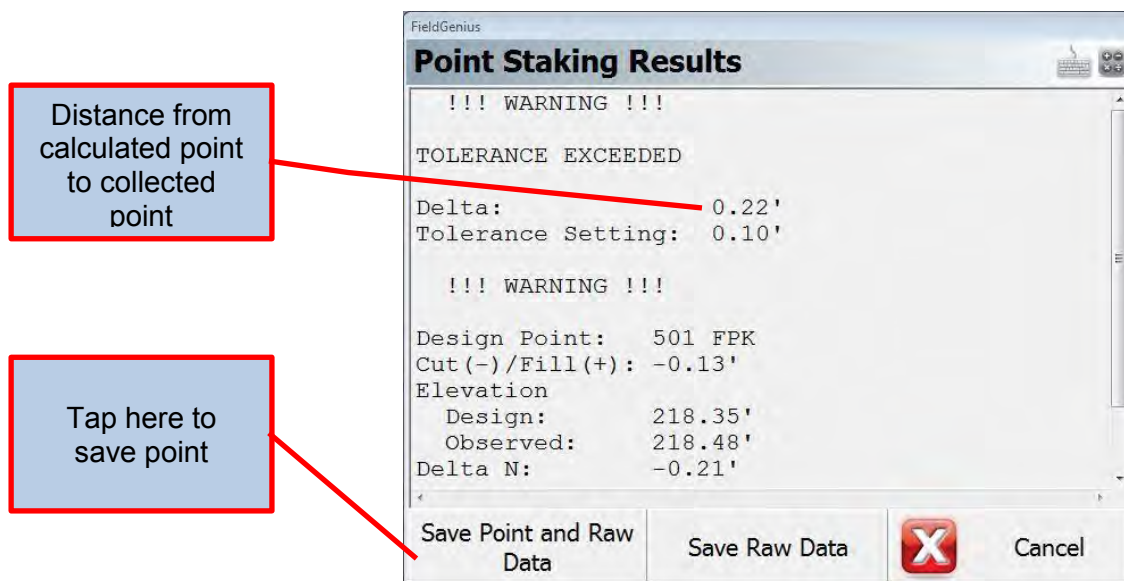
Tap the World button to  
quickly focus on the  
point you are staking



- After navigating to the point, you will be able to see how close you are. If you want to re-measure the point and store the information tap the RTK Fixed icon just like you are collecting data.





- If you aren't using the external antenna, the constructed point is not exactly per plan or the point has been disturbed (moved) you will get a tolerance exceeded error. You can still tap Save Point and Raw Data to collect the point.



- The Store Point menu will appear and you will be able to change the point number and give the point a Description.

FieldGenius

### Store Point

Point ID    

Description

Northing

Easting

Elevation

Antenna Hgt

Store As

Tap here to store the point

- After storing the point the Point Staking menu will appear with the next numeric point prefilled. Or you can type in your next point.

FieldGenius

### Point Staking

Point ID

Point Desc

☒ Use List

Design Point Offset

Direction  Northing

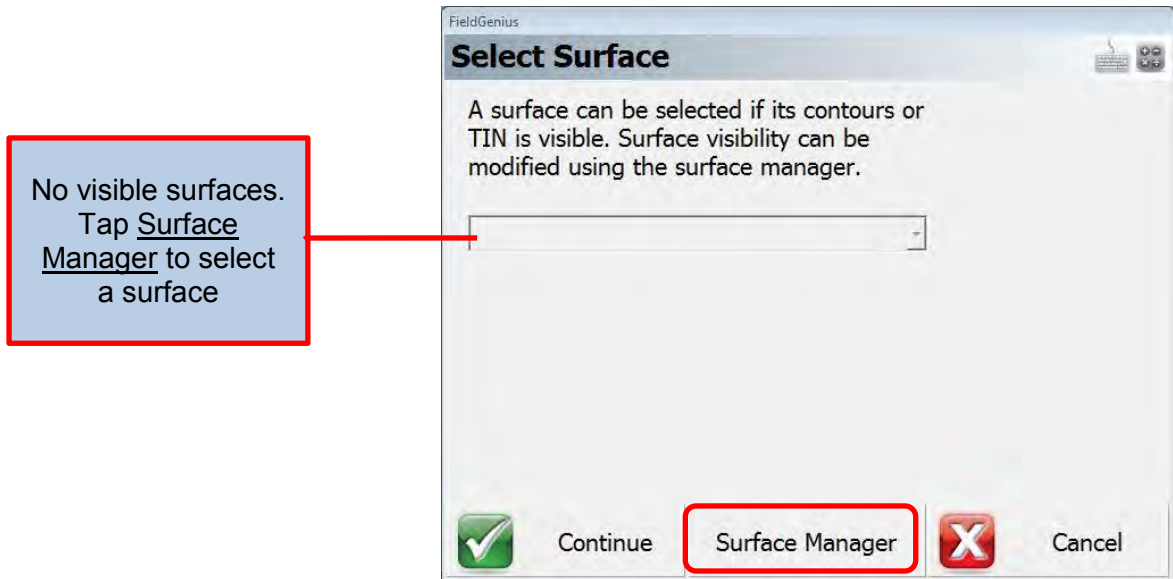
Distance  Easting

Elevation

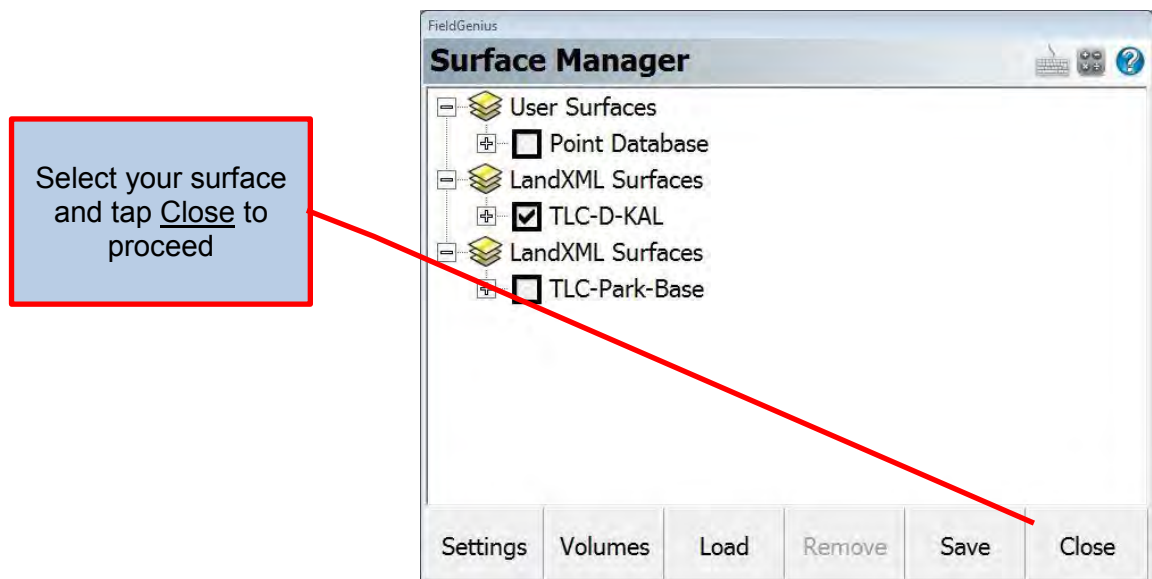
☐ Do not show this screen again.

## Surface Staking

- If you select Stake Surface from the Staking menu you will be prompted to select a surface to stake to. The surface must be visible/active before you can select it for staking.



- The Surface Manager menu will allow you to turn surface on and off. Select the surface you want to stake.

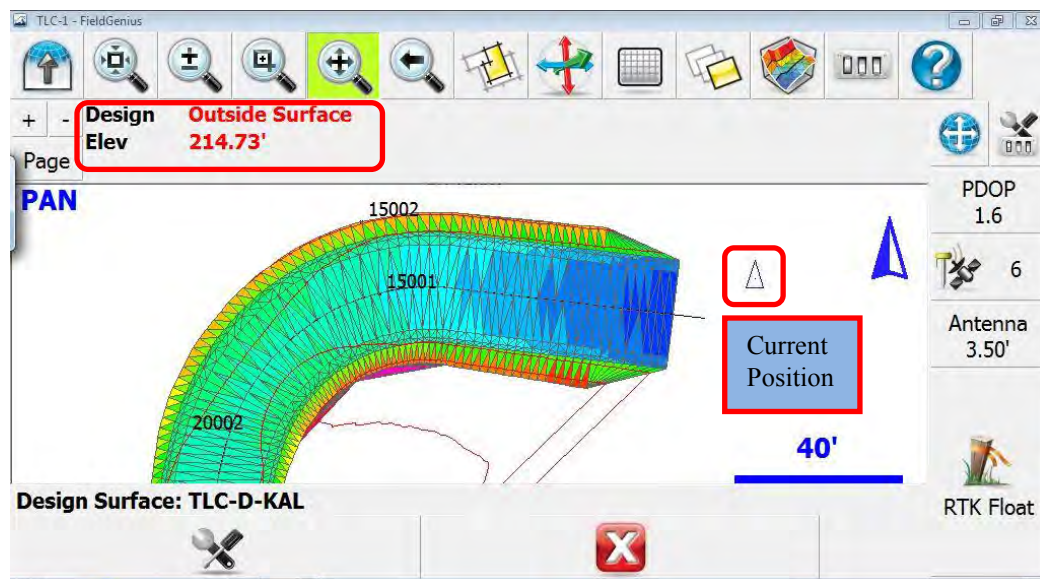




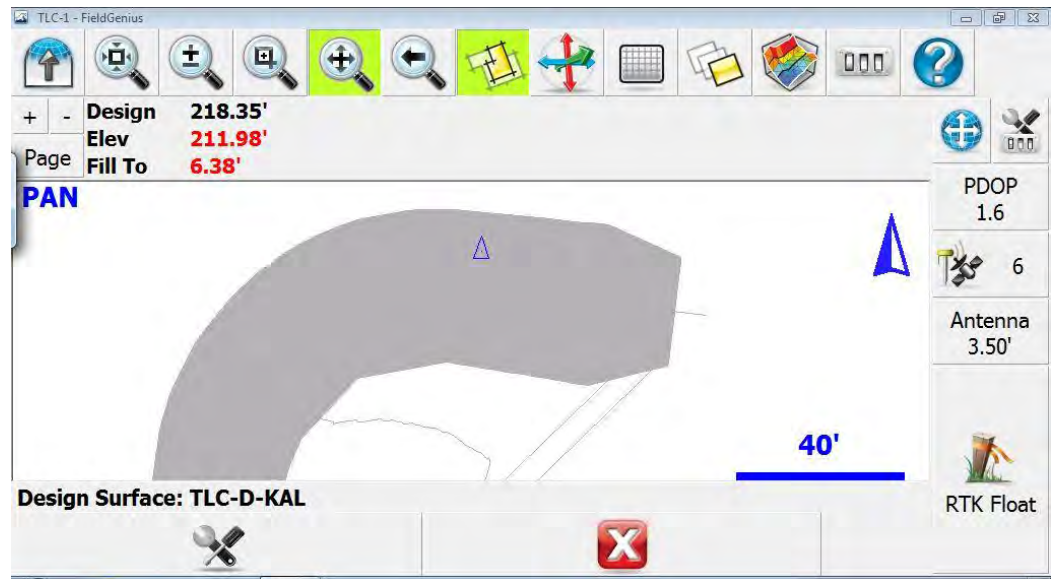
- You should now have a surface listed in your Select Surface menu. Tap Continue to proceed.



- You should now have a surface in your Map View and details about your position. If you are outside the limits of the surface model, it will let you know.



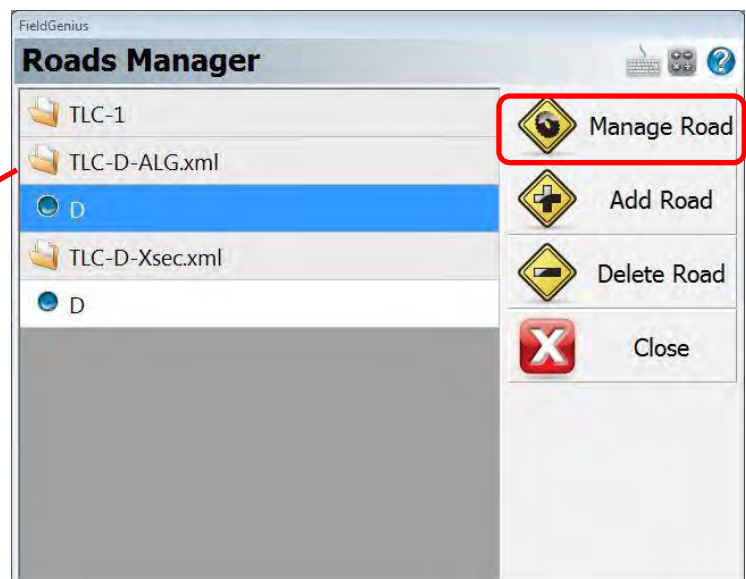
- Once you are within the surface limits you will be given a cut or fill to the design elevation at your point. Remember your elevation is based on the antenna height.



## Alignment Staking

- To stake an alignment select Stake Alignment from the Staking menu. The Road Manager menu will popup. Highlight the alignment you want to stake and tap Manage Road.

Note: The Alignment or cross section xml must be loaded into your project before you can stake it.



- Tap Stake Road to continue.

FieldGenius will stake using both horizontal and vertical information. If you need to use templates, cross sections or a surface to control the vertical design, make the proper selection in this detail screen. Once you have made the proper selection tap Stake Road to continue.

FieldGenius

### Road: D

Start Station	20+00.00
Alignment C/L	207.46'
Vertical Profile	D-Vert
Template	
Cross-Sections	
DTM Surface	TLC-D-KAL

OK
 Stake Road
 Cancel

- The Stake Alignment menu will popup. You can change the Station, Offset and Elevation you wish to stake. After making your selection tap Stake Offset to begin staking.

The centerline at Station 20+00 will be staked

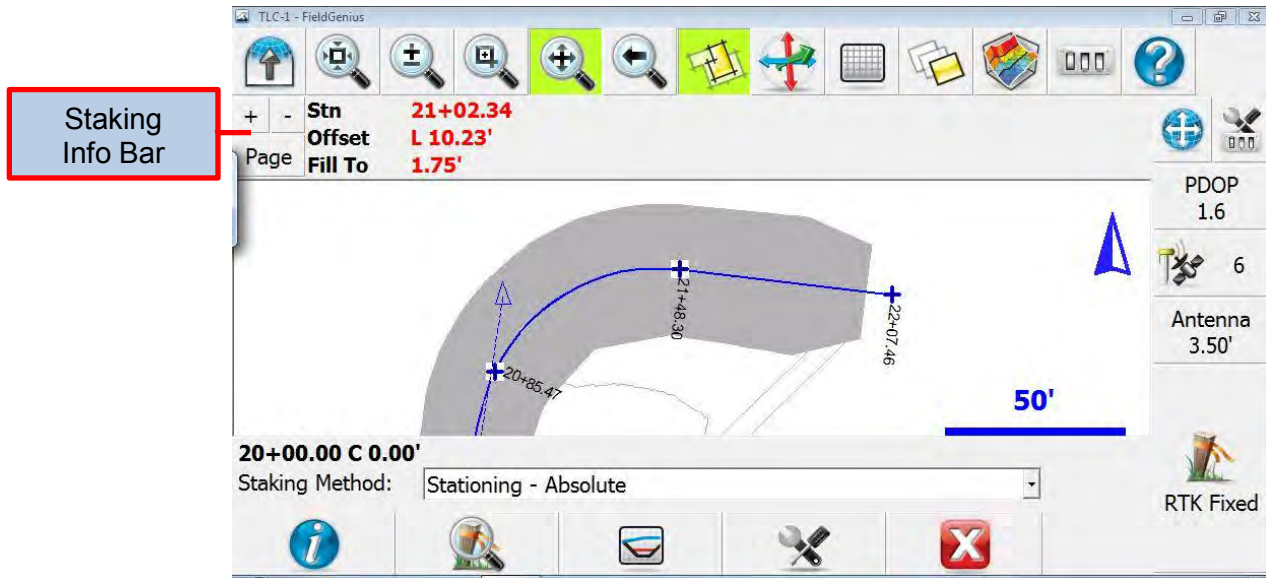
FieldGenius

### Stake Alignment: D

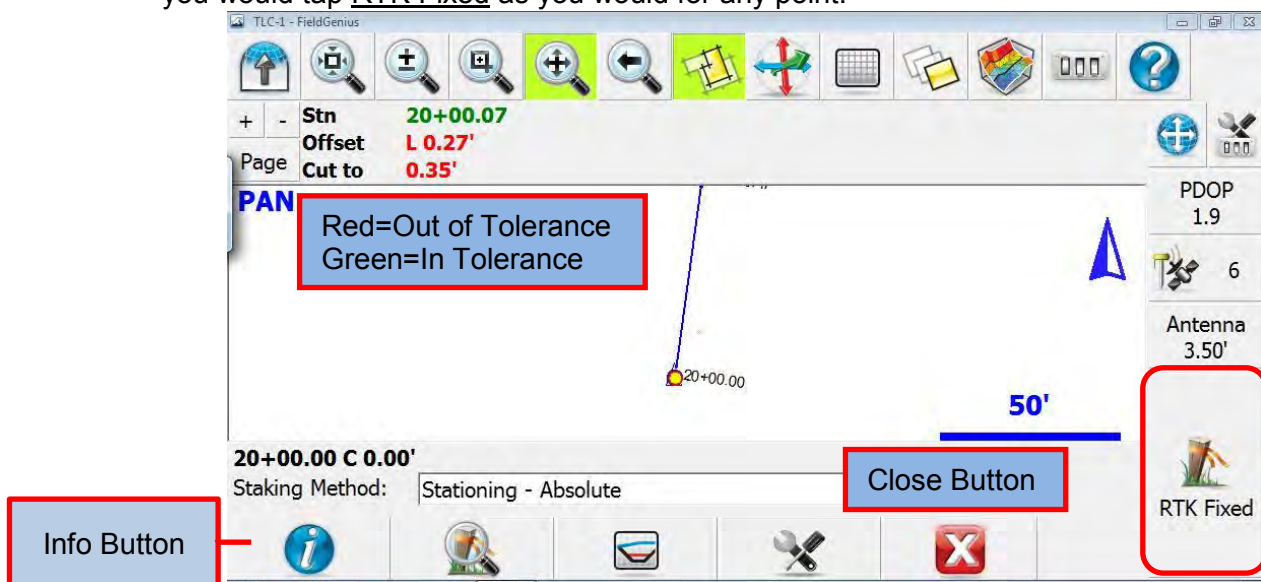
Station	20+00.00	Int	25.00'	Prev	Next
Offset	0.00'	Dir	Center	Left	Right
Stake Offset	0.00'	Setback	0.00'		
Elevation	218.75'	Vert Offset	0.00'		

Stake Offset
 Stake Slope
 Road Editor
 Close

- From the Map View screen you will see your current position and the dashed line to your desired station and offset. If you change the Staking Method to “Stationing – Absolute” you will be shown the station and offset of your position, as you move the information will update dynamically.

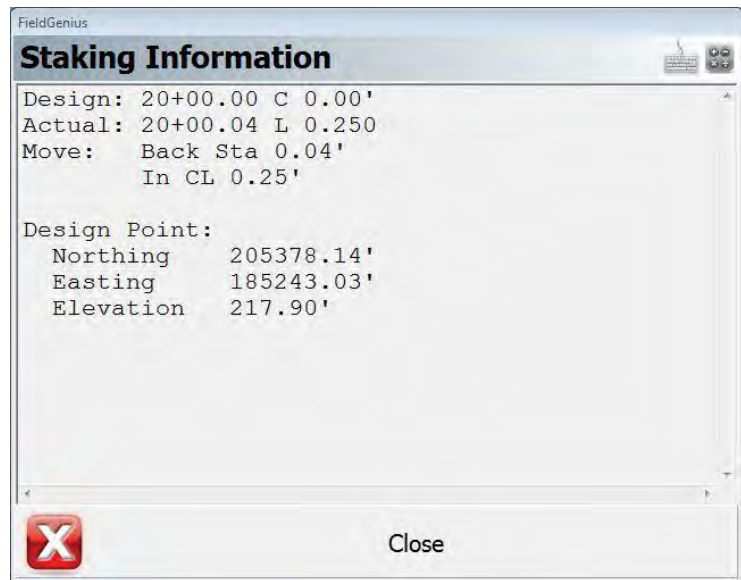


- There are four staking methods available:
  - 1) “Directional” – Gives you a northern/easting to get to location
  - 2) “Radial” – Gives you a bearing/distance to get to location
  - 3) “Stationing - Absolute” – Gives your position based on alignment
  - 4) “Stationing – Relative” – Gives you distance based on alignment to get to location
- Once you are within the staking tolerance of the design location the text in the info bar will switch from red to green. If you would like to store the position of the staked point, you would tap **RTK Fixed** as you would for any point.





- At any point during Staking (point, line, surface, alignment, etc.) you can tap the Info button from the Staking View menu and get details on what you are staking and where you are at.



- To move to the next Station without storing a shot at the current Station – tap the Close button on the Staking bar and the Stake Alignment menu will popup allowing you to select another Station and Offset to stake.



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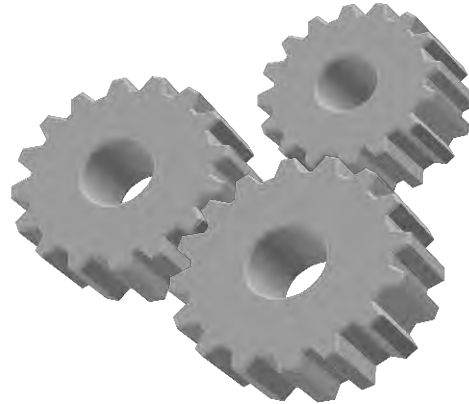
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Survey Crew Chief  
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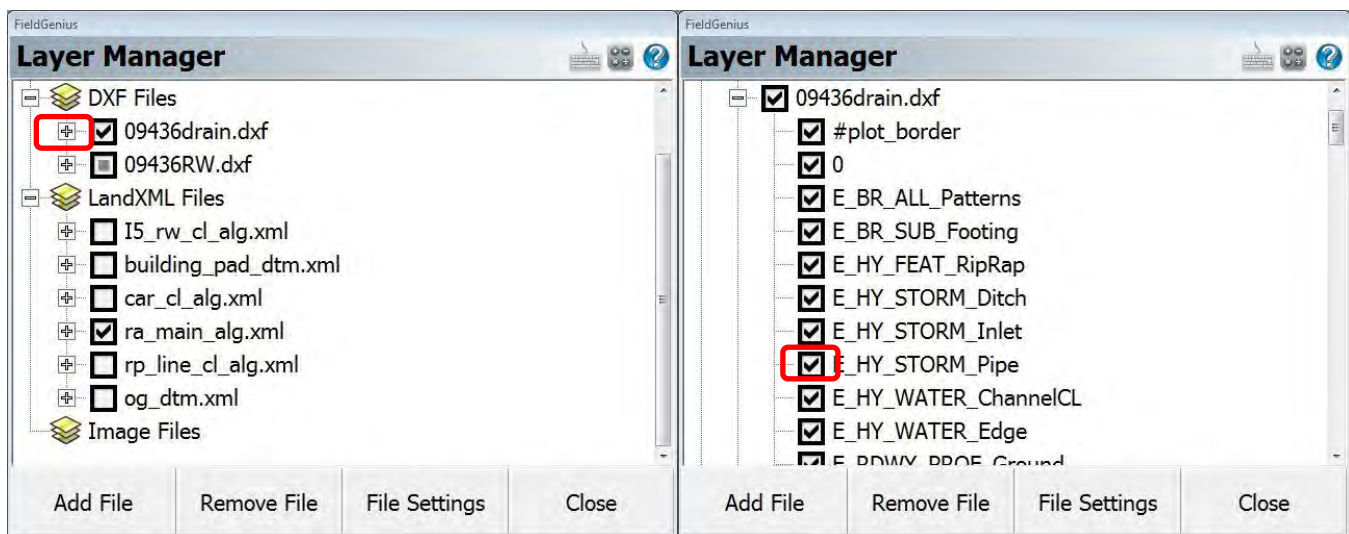


# **Working with DXF files in FieldGenius**

<b>Title</b>	Working with DXF files
<b>Version</b>	FieldGenius 8.1
<b>Date</b>	November 4, 2015
<b>Author</b>	Chris Pucci
<b>Overview</b> This document will cover using DXF files inside of FieldGenius.	

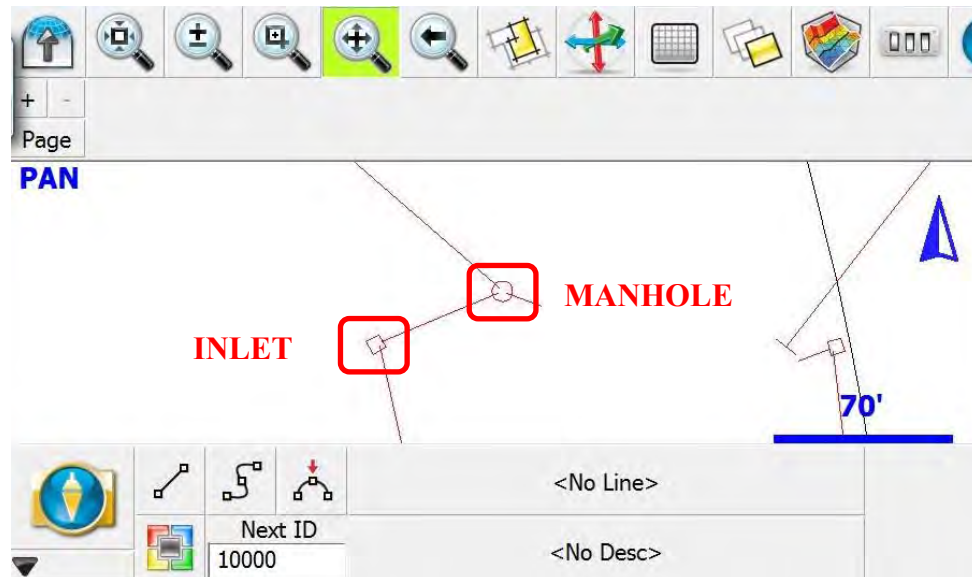
## Working with DXF Files

- The FieldGenius software can import and display .DXF files (a generic cad format) allowing you to see and work with design files on the job site. You can import the files using the layer manager or by going through the Main Menu and selecting Import/Export and then DXF files.
- Once you have loaded the DXF files into FieldGenius you can manage the files and the layers through the Layer Manager. If you expand a DXF file by tapping the “+” symbol you can turn levels on and off, much as you would in a cad or GIS program.

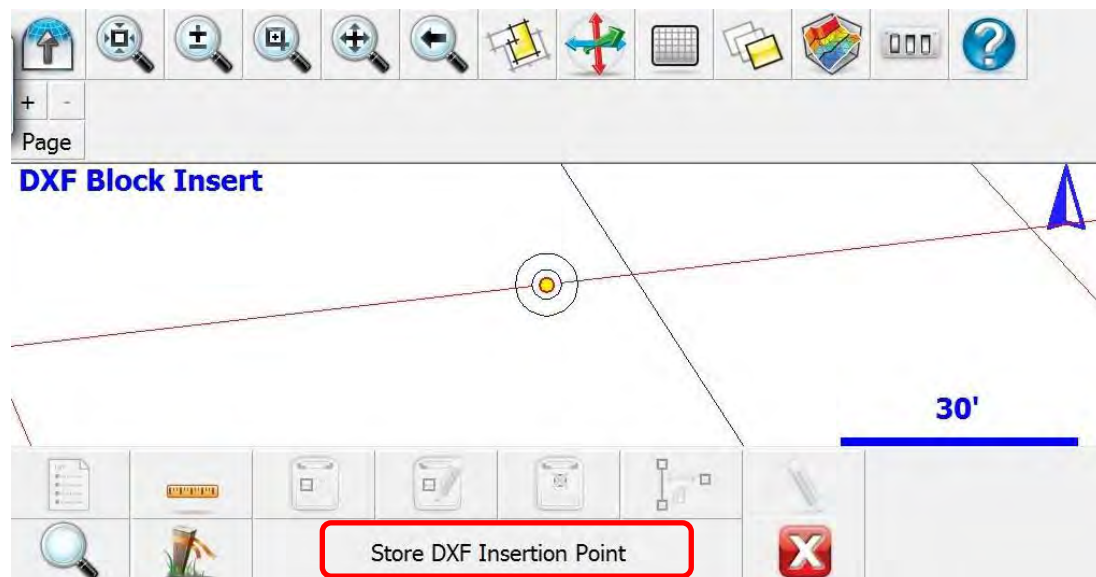


- The DXF files you will work with will all be very different depending on what they are and where they came from. Right of Way files may be made up of only lines. A drainage file will be lines and features. Depending on how the project was designed, will determine what data is associated with each line or feature. Some lines will be 2D, while other will be 3D. Some features will be blocks (cells in MicroStation) and other features will be simple shapes or lines and 2D or 3D depending on the original design.

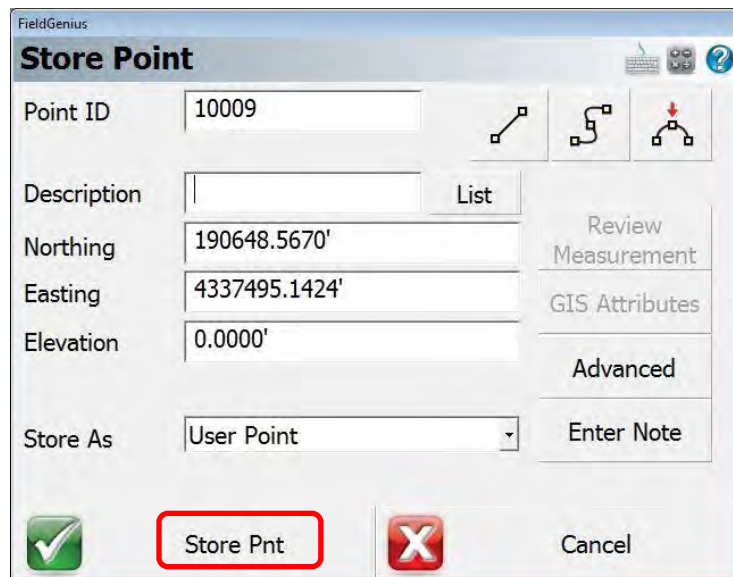
- In the project below we have zoomed in on a section of a drainage design DXF and can see round manholes and square inlet structures with pipes connecting them.



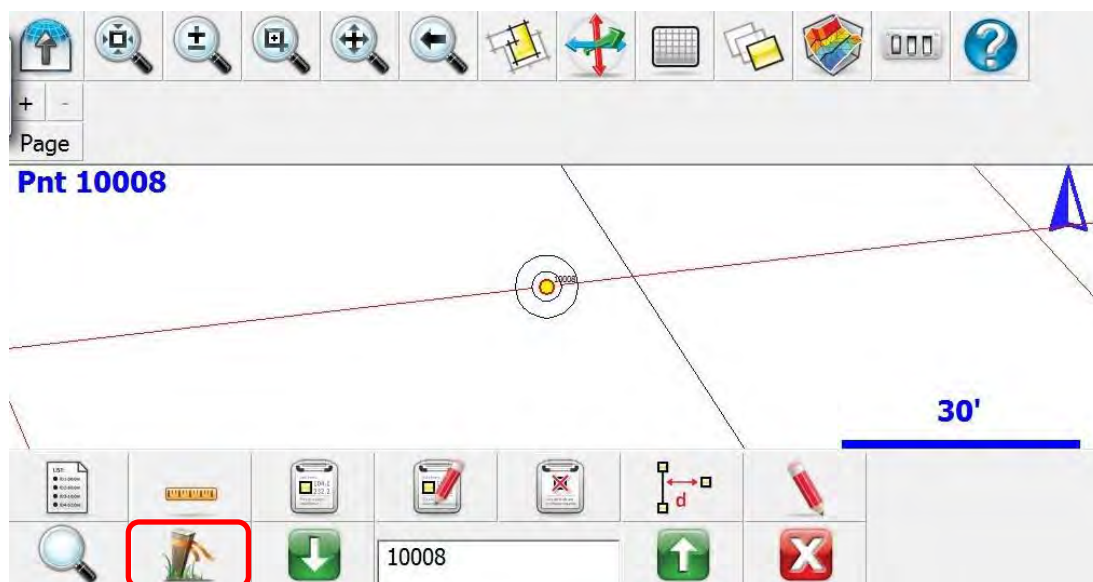
- If you select a manhole by tapping it, you will get a selection specific menu bar along the bottom of the screen. If you would like to make a point in the project that you can stake to, tap the Store DXF Insertion Point button and a Store Point box will open.



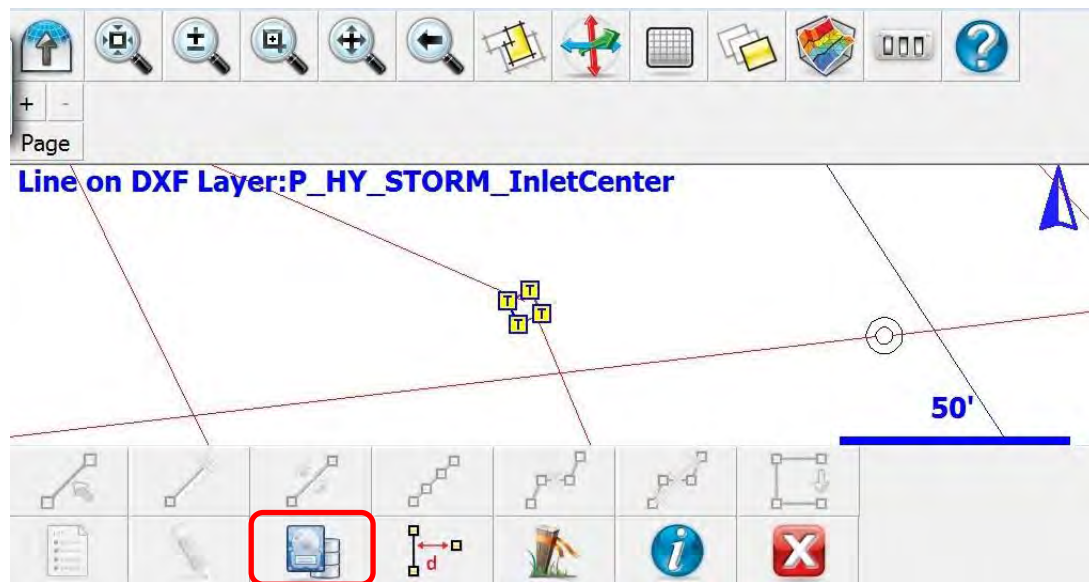
- From the Store Point box you can give the point a new ID (number) and description. You will notice that it is stored as a “User Point” to designate that it was not collected by GNSS or imported as control. Once you tap Store Pnt you will be returned to the Map View with the point you just created loaded into the selection box.



- With the point created and selected you can work with it like any other point in your database. If you tap the Stake icon you can stake the point out and check the location.

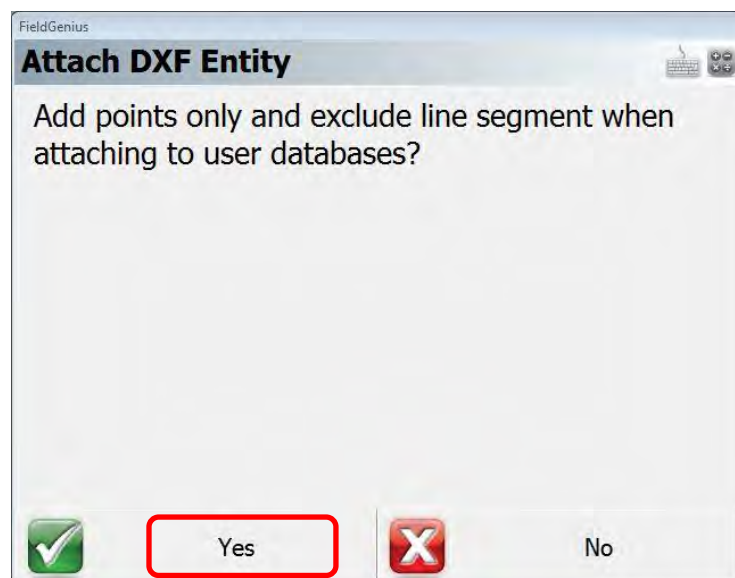


- If you select an inlet it will give you a different set of options in the bottom tool bar. The Stake icon will allow you to stake the lines that make up the inlet. Or you can tap the Coordinate DXF Data button and it will add points to all of the nodes that make up the inlet.



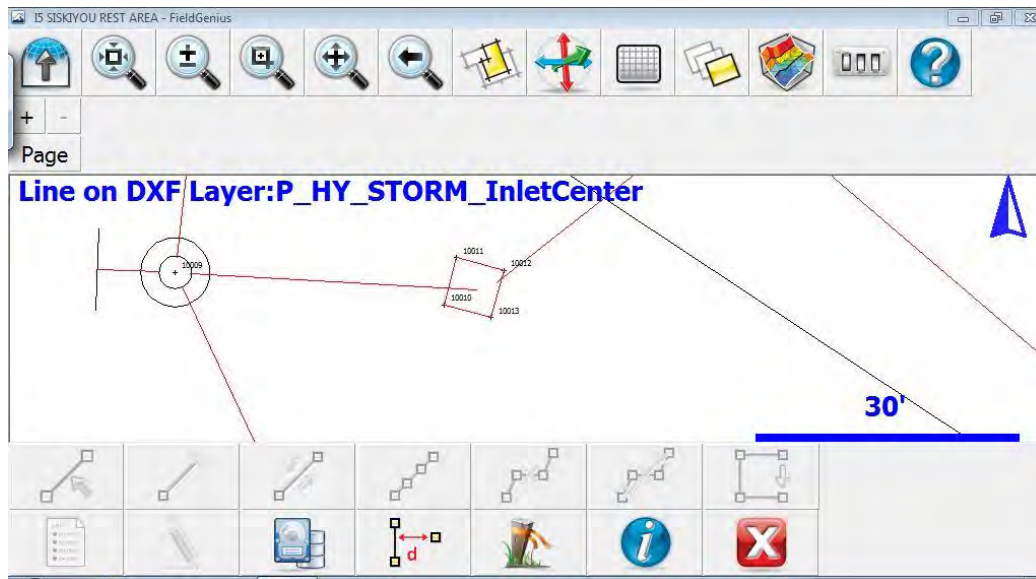
### COORDINATE DXF DATA

- After tapping the Coordinate DXF Data button you will be asked a question about points only. Select YES.





- You will now have points at all of the nodes that defined the inlet.



- You can use these same procedures on almost any line or feature within a DXF file. If the lines and features are 3D you will be able to stake the design elevations as well as the design location. If they are only 2D you will only be given a location and the elevation will default to 0.00'.



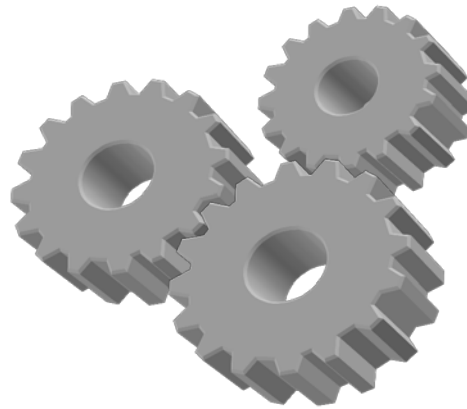
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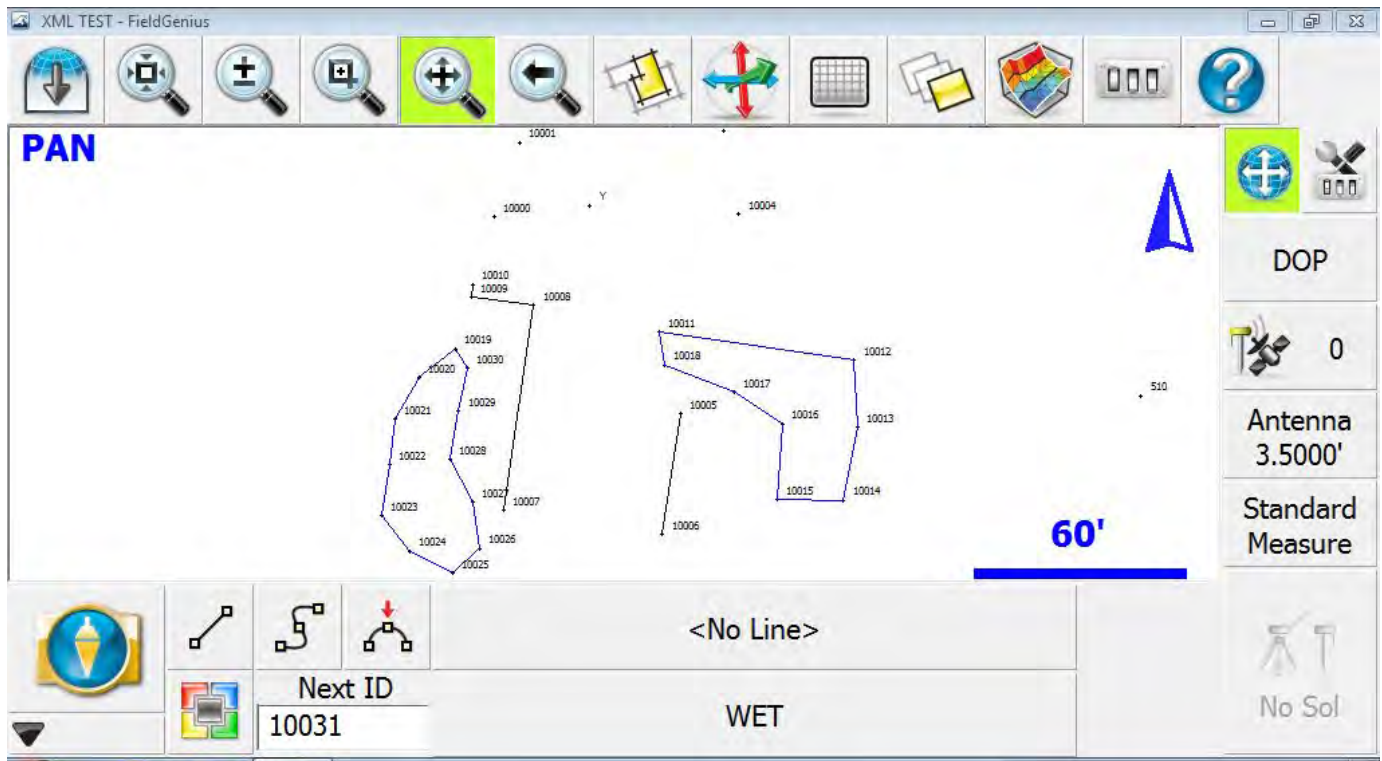
# **Exporting FieldGenius LandXML files for use in InRoads**



<b>Title</b>	Exporting LandXML files for use in Inroads
<b>Version</b>	FG 8.2
<b>Date</b>	September, 7 2016
<b>Author</b>	Chris Pucci
<b>Overview</b> This document will guide you through the process of exporting LandXML files from FieldGenius and importing them into InRoads.	

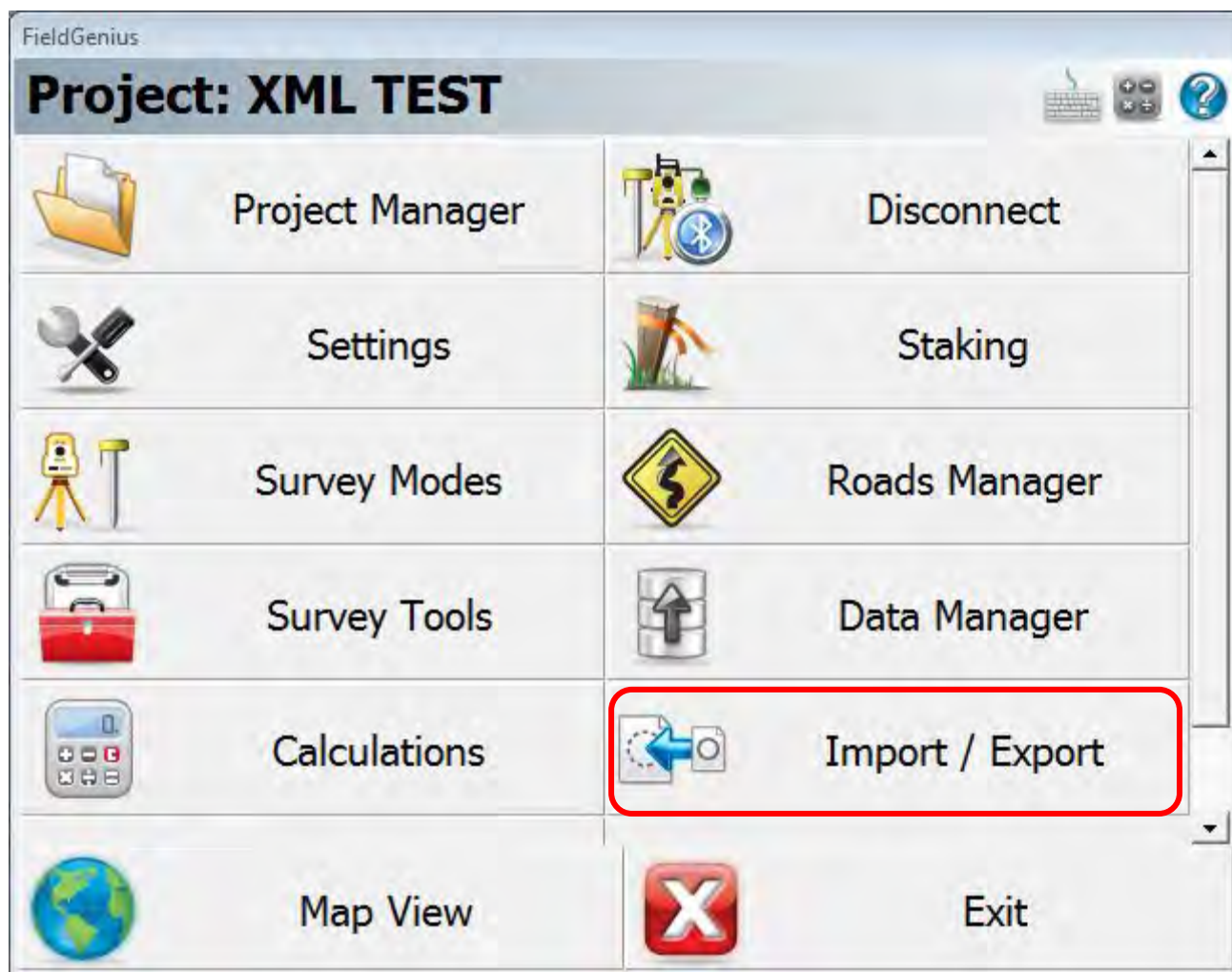
## Introduction

- There are many options for exporting data from FieldGenius for use in MicroStation and Inroads. You may find that exporting files in LandXML format is useful for transferring points, lines, and closed figures all with one file. This guide will give you the steps required to export a LandXML file from FieldGenius and import it into InRoads and begin using the data.
- We will start with the assumption you have collected points and lines on your project.

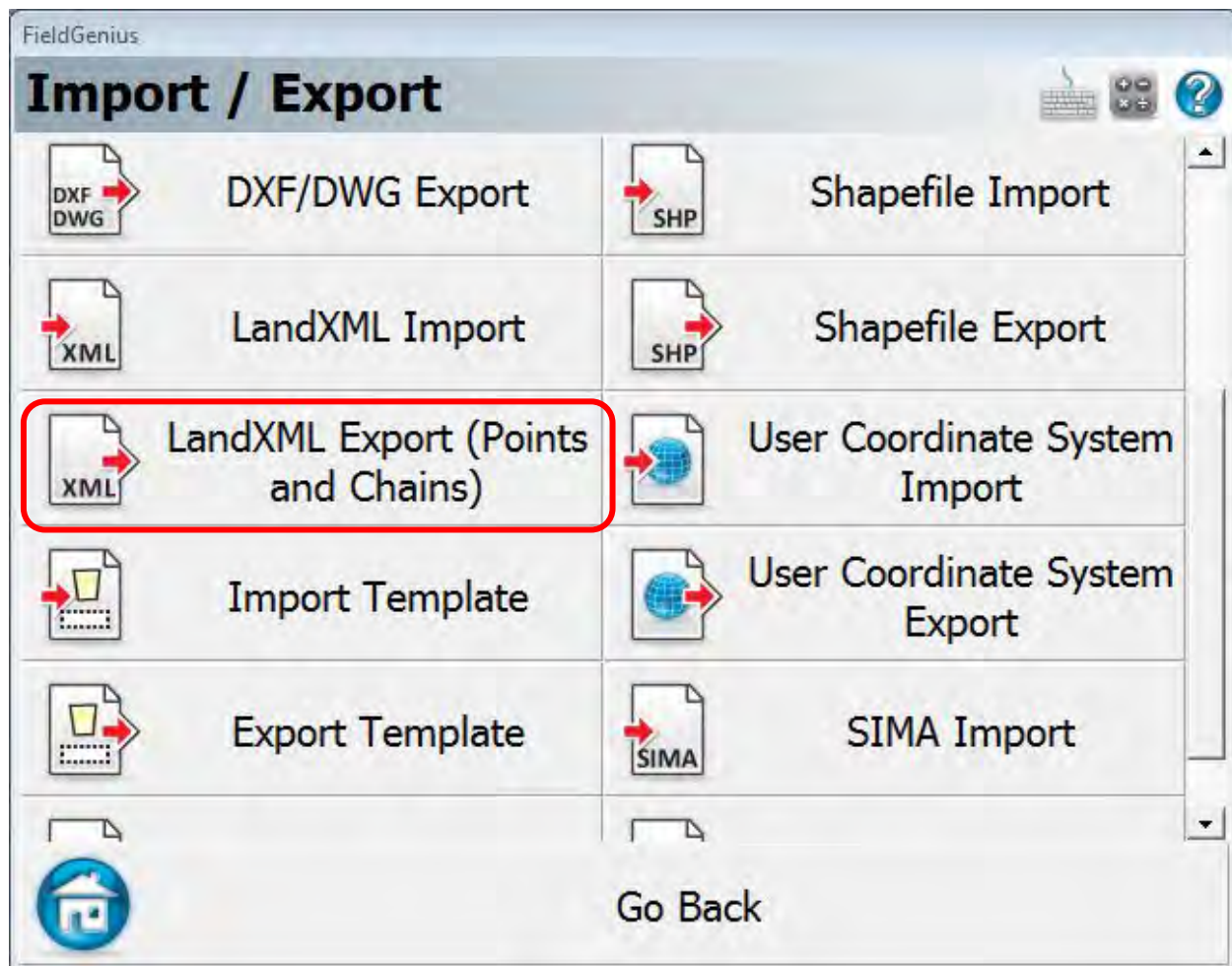


## Exporting a LandXML file from FieldGenius

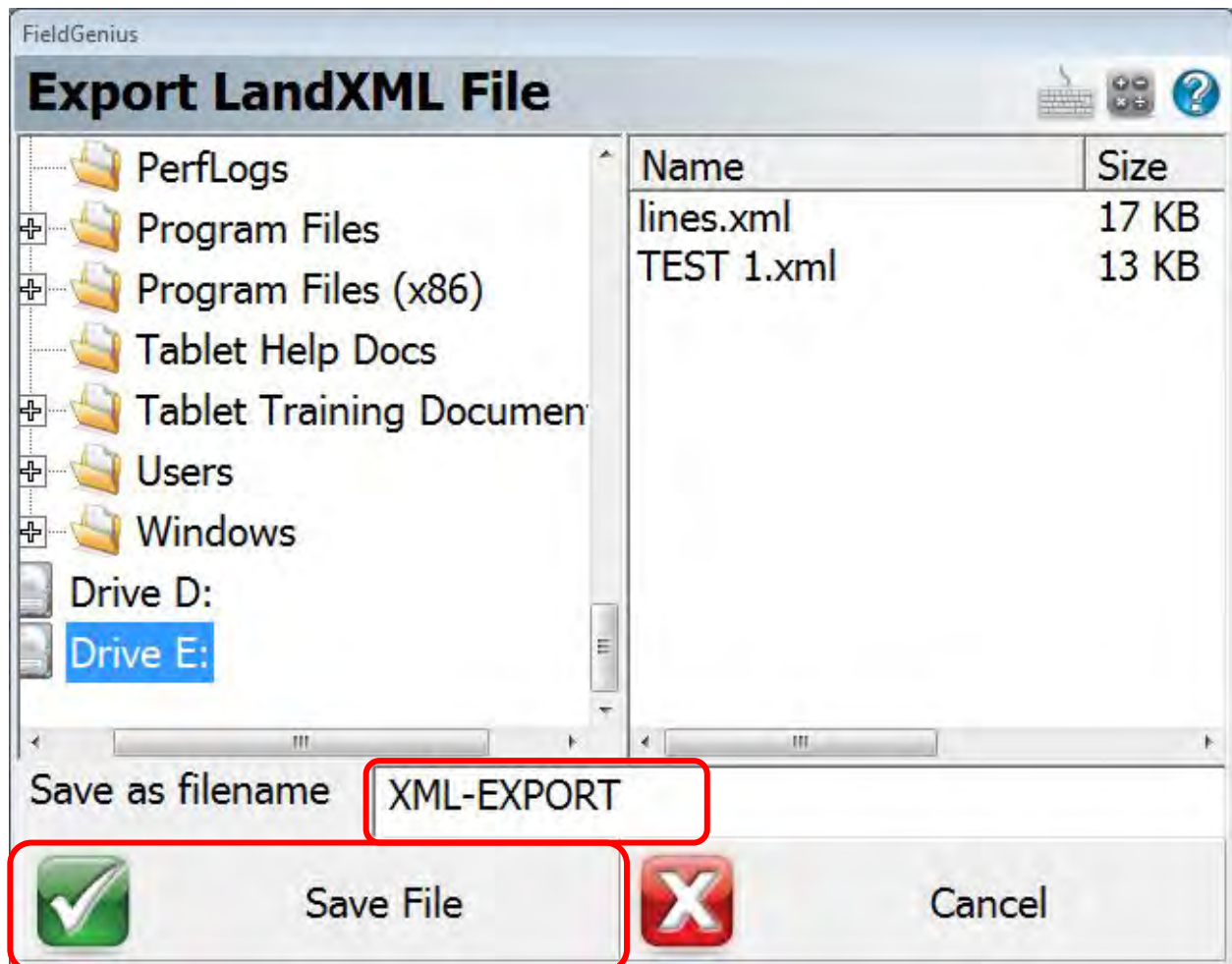
- From the FieldGenius Main Menu select Import/Export



- From the Import/Export menu select LandXML Export (Points and Chains)

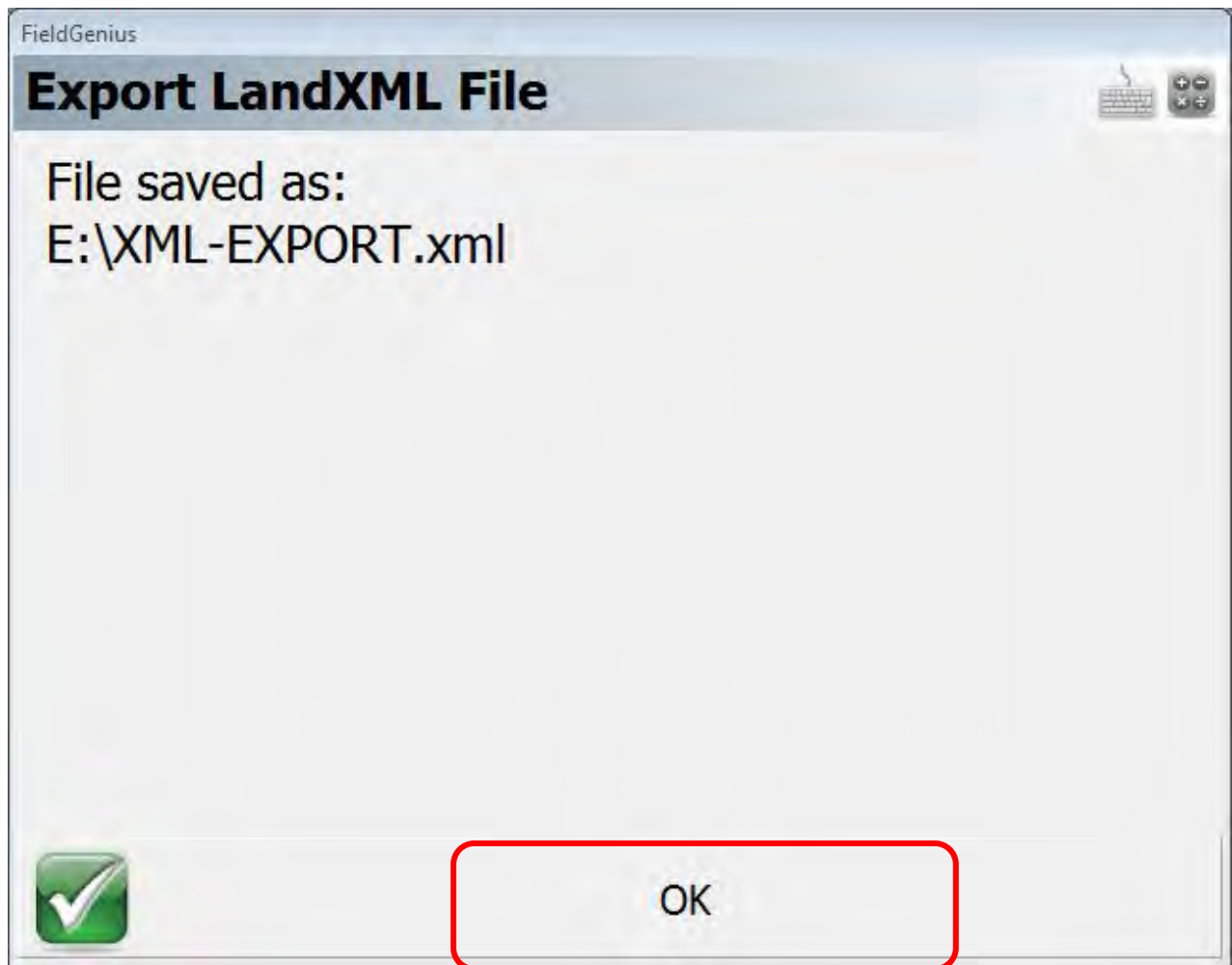


- You will be prompted to select a location for the file and type a name. (I am saving the file directly to the USB drive to skip a step of transferring the file from the hard drive to the USB drive.)





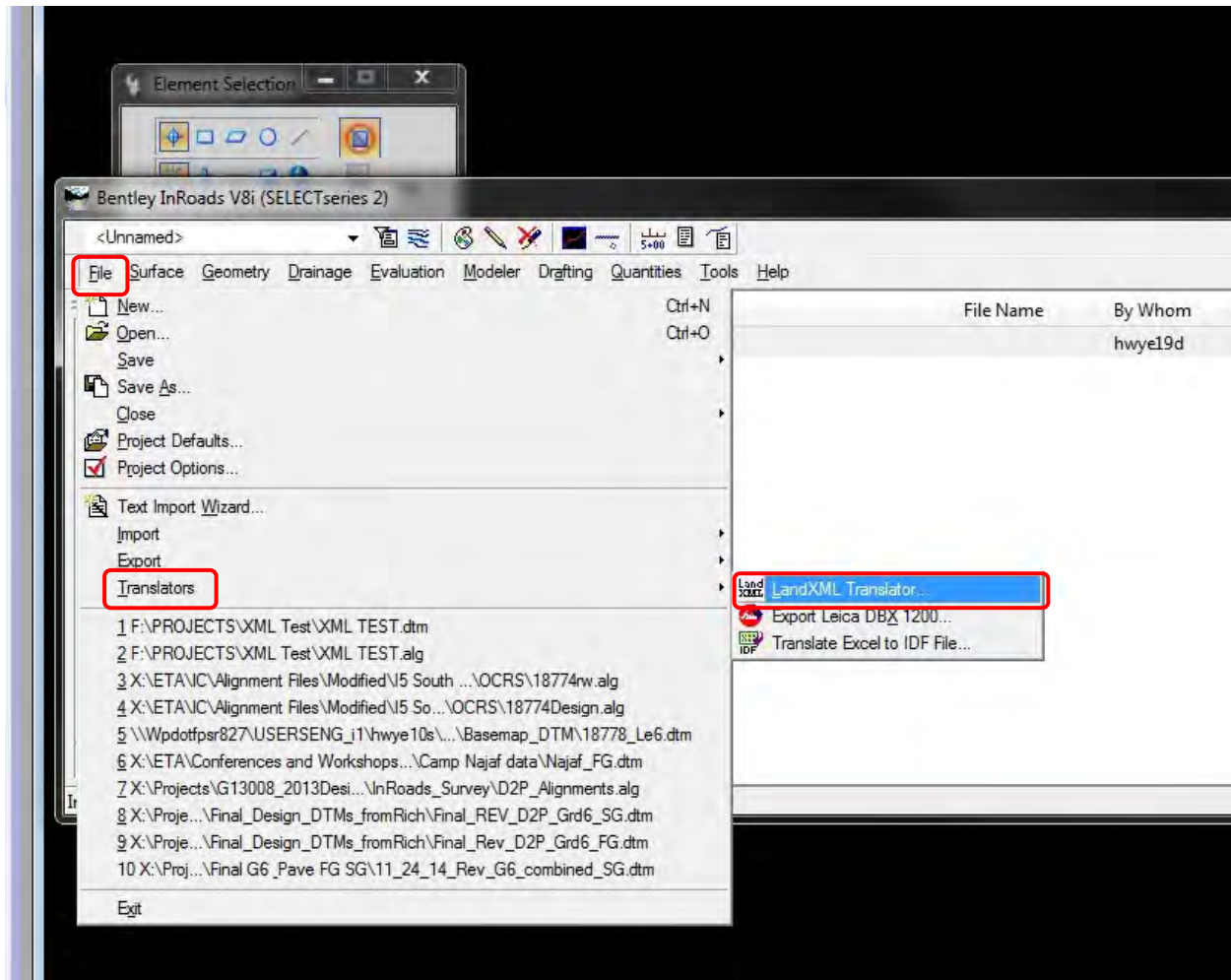
- After clicking the Save File icon you should see this screen. Tap OK to continue.



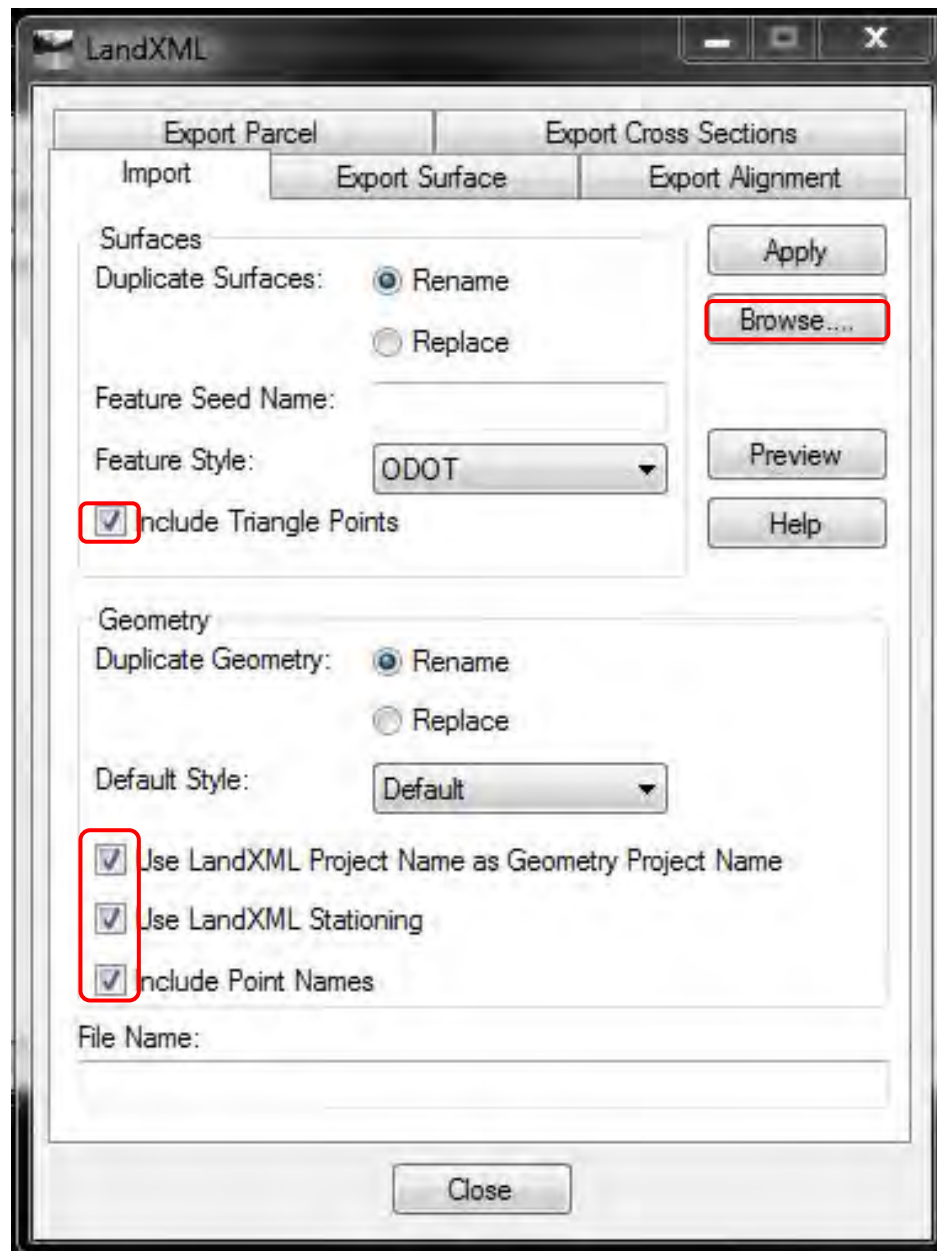
- After you have exported the LandXML file you are done with the FieldGenius portion of the process and ready to import the file into InRoads.

## Importing a LandXML into InRoads

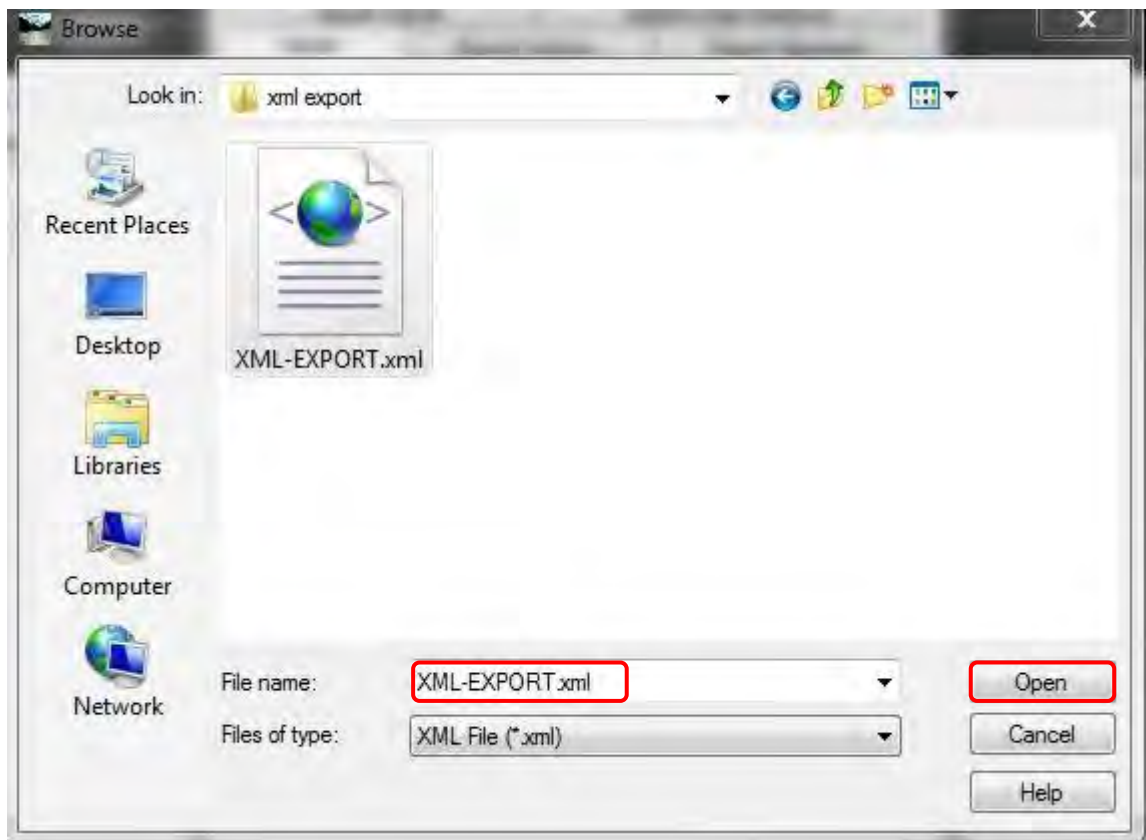
- With a MicroStation file opened and InRoads open, click on the File tab in InRoads and open the LandXML Translator.



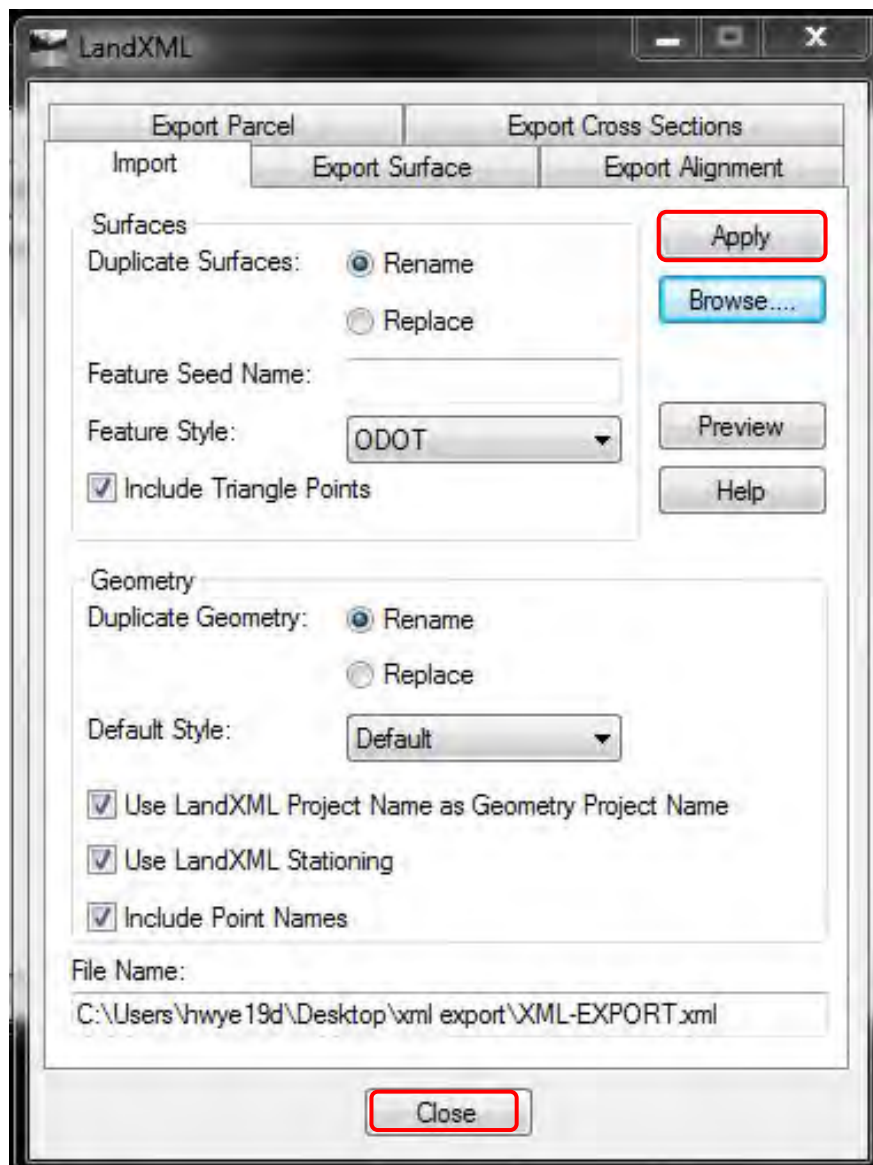
- From the LandXML translator, click all of the import options ON by checking the boxes, set your feature style to ODOT and click Browse to locate the LandXML file you exported from FieldGenius.



- Browse to your LandXML file and click Open

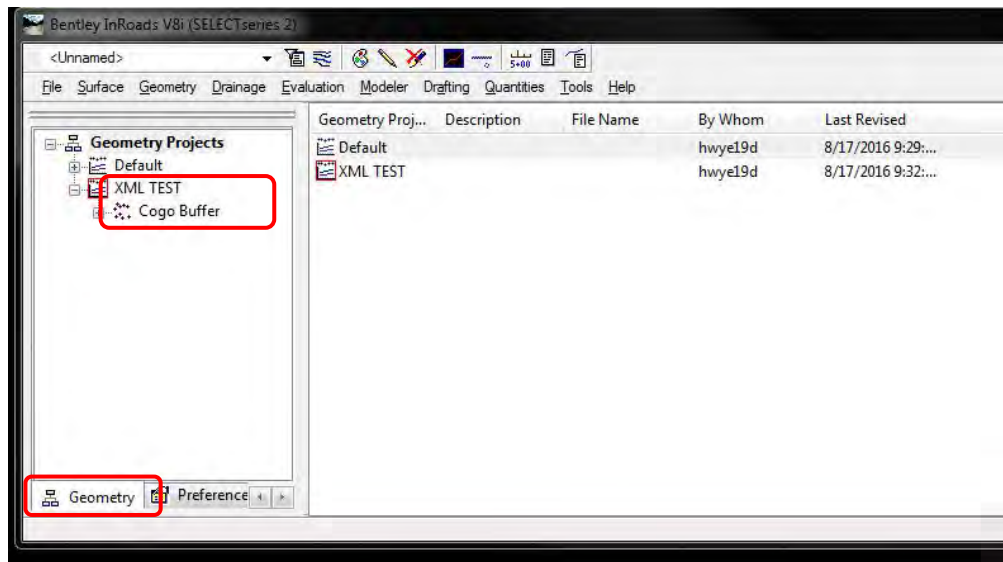


- You will then need to click Apply and then click Close on the LandXML translator. If all has gone as planned you will now have data loaded into InRoads!





- Your points will be located under the Geometry tab in the Cogo Buffer

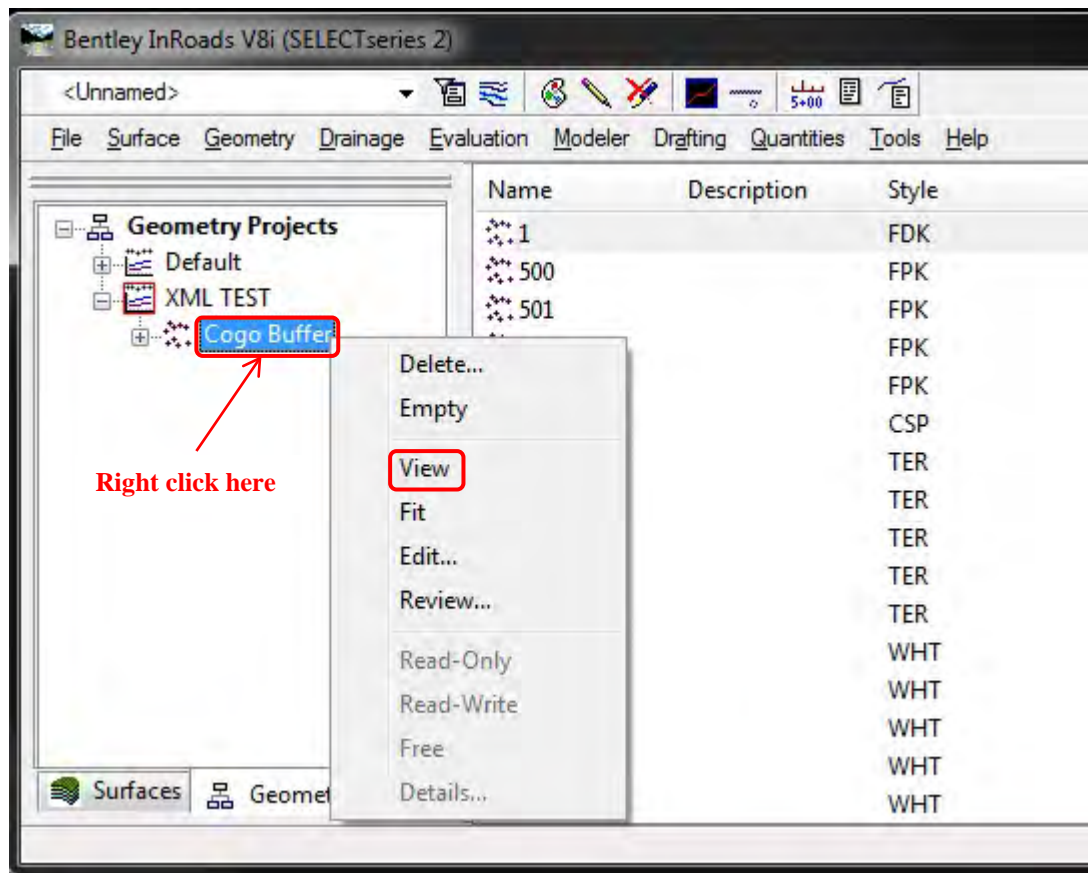


The screenshot shows the Bentley InRoads V8i (SELECTseries 2) interface with the 'Cogo Buffer' project selected in the 'Geometry Projects' tree. The main window displays a list of points with their coordinates and styles.

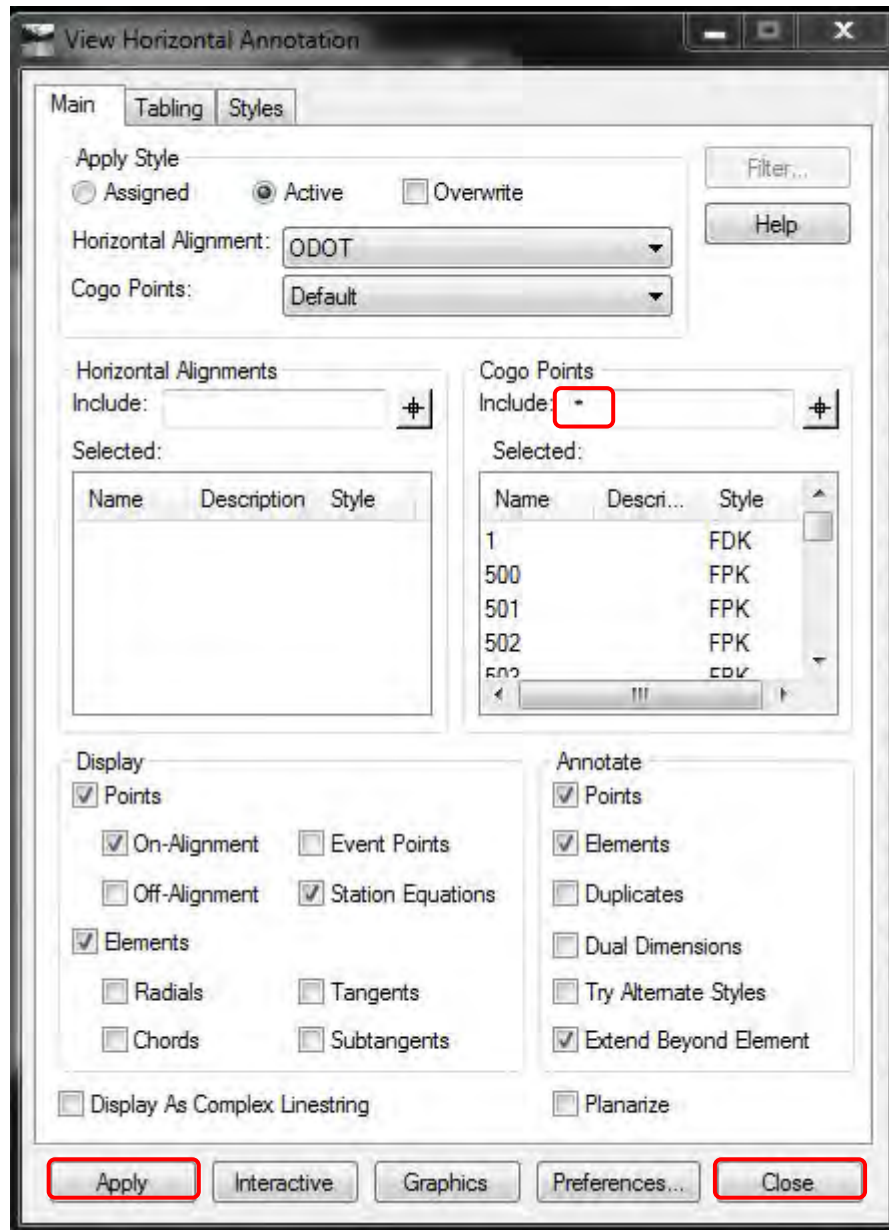
Name	Description	Style	Northing	Easting	Elevation
1		FDK	205013.987	185186.631	226.637
500		FPK	205404.266	185233.228	218.130
501		FPK	205344.890	185224.352	218.352
502		FPK	205285.542	185215.412	218.539
503		FPK	205226.137	185207.020	218.170
510		CSP	205485.212	185453.920	215.759
10000		TER	205535.590	185272.151	216.577
10001		TER	205556.612	185279.196	217.673
10002		TER	205570.213	185303.311	215.945
10003		TER	205559.774	185336.780	215.905
10004		TER	205536.301	185340.834	216.068
10005		WHT	205480.126	185324.446	215.314
10006		WHT	205446.082	185319.479	215.676
10007		WHT	205452.904	185274.768	216.084
10008		WHT	205510.724	185283.148	215.804
10009		WHT	205512.941	185265.685	216.014
10010		WHT	205516.537	185265.944	216.040
10011		WET	205503.124	185318.365	215.639
10012		WET	205495.240	185373.398	215.753
10013		WET	205476.360	185374.232	215.566
10014		WET	205455.844	185370.364	215.671
10015		WET	205455.942	185351.672	215.398
10016		WET	205477.315	185353.140	215.386
10017		WET	205486.190	185339.531	215.399
10018		WET	205493.859	185319.947	215.633
10019		WET	205498.540	185261.120	215.996
10020		WET	205490.352	185250.785	216.100
10021		WET	205478.590	185244.282	216.150
10022		WET	205465.797	185242.474	216.129
10023		WET	205451.538	185240.303	216.545
10024		WET	205441.466	185248.227	216.957
10025		WET	205435.303	185260.244	217.189
10026		WET	205442.241	185267.830	216.955

At the bottom left, the 'Geometry' tab is selected, and the 'Preference' button is visible.

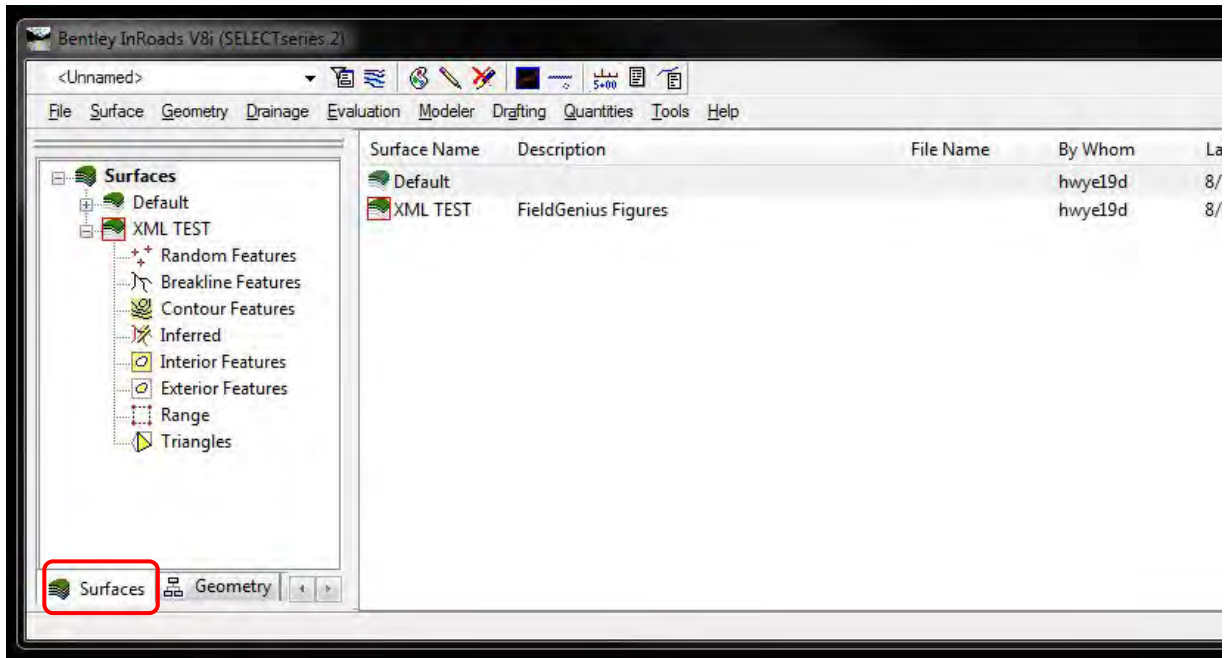
- To Display your Points, right click on the Cogo Buffer name and select View



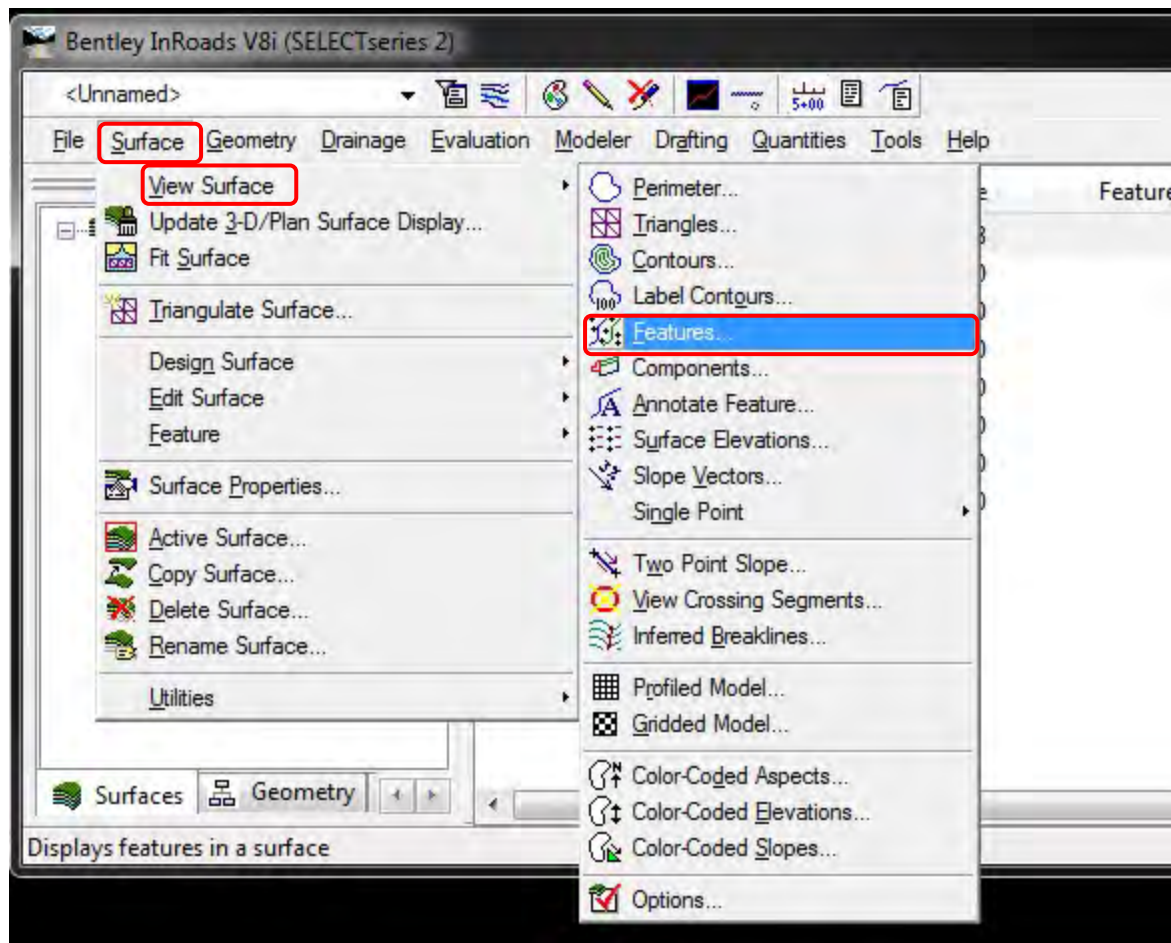
- From the View Horizontal Annotation menu, select all of your points by typing a “\*” symbol into the Cogo Points - Include box or by typing the point range you want to display. Once you have the points listed in the selection set, click Apply and then Close. You will now have points displayed in your drawing!



- Your lines and figures will be located under the Surfaces tab and will be loaded as Breakline Features

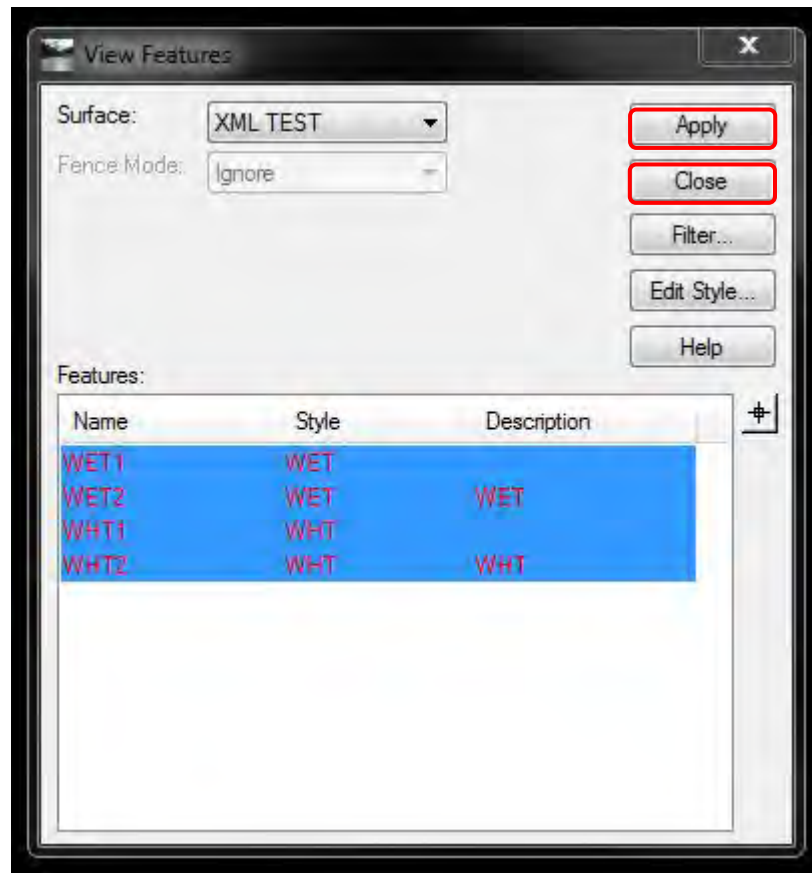


- To display your lines and figures. Select Surfaces, View Surface then Features to open the feature display menu.

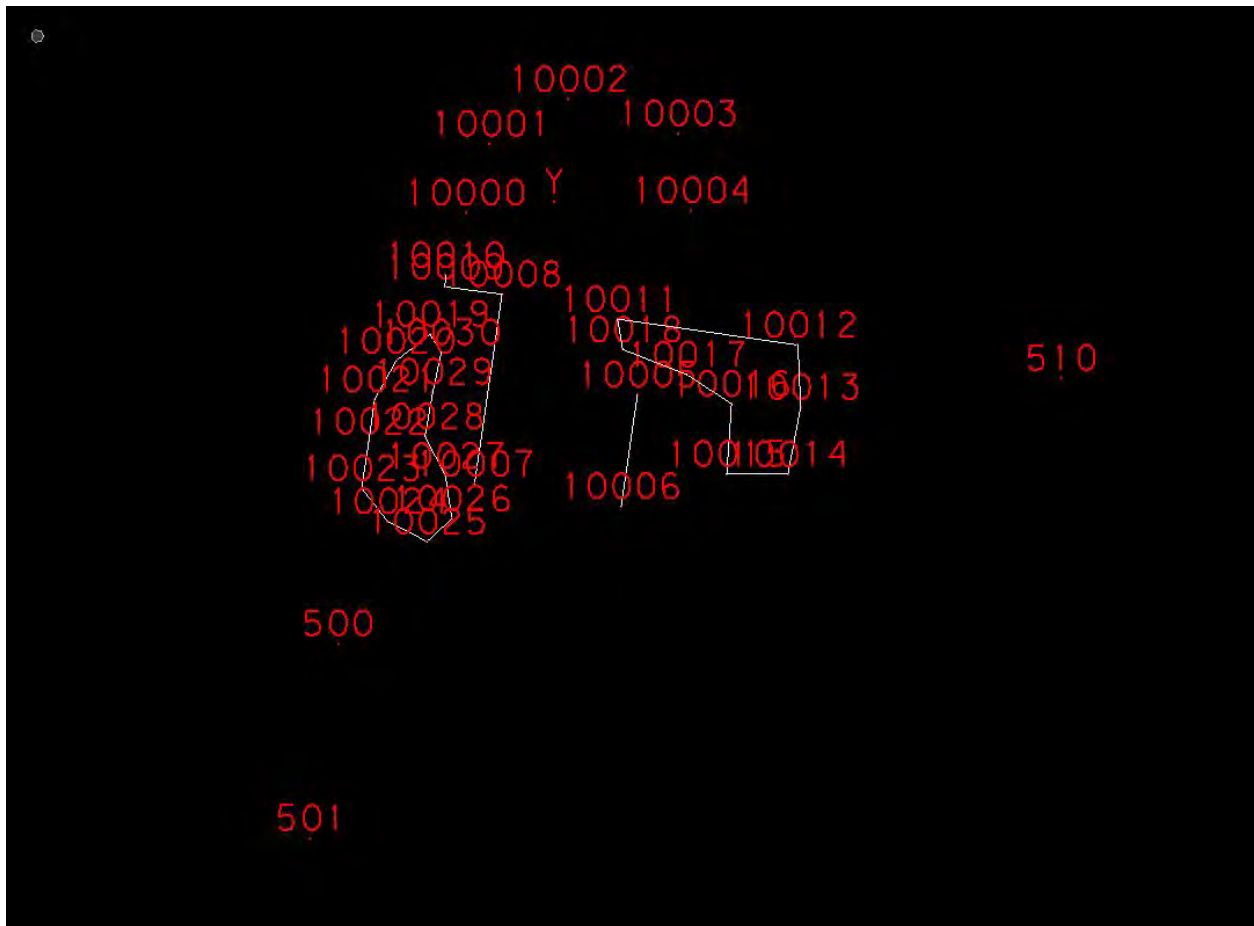




- The View Features menu will open. It will have all features defaulting to display. You can turn features on and off as needed by highlighting or un-highlighting. Once you have your selection set as you want it, click Apply and then Close. All of your lines and features will be displayed!



- With all of the points and lines displayed, you can work with them any way you want.



## Antenna Settings – Select HEMI P303 ORGN

**configuration for both internal and external antenna**

APR to APC Antenna Offsets

Internal: +/- 84.3mm

External White (Leica): 58.3mm

External Gray (AYLA): 60.0mm

Antenna  
3.500'

### Antenna Height

Internal HEMI P303 – Distance from tablet to point

External on fixed rod – 6.562 feet // 2meters

### NTRIP CASTER Settings

ORGN MAX GG: 167.131.109.57, Port 9882

ORGN Single: 167.131.109.57, Port 9879

User Name: XXTABXX, Password: GRADE

Data Format: RTCM 3

### RTK Radio Settings

GS14 2015 Models – Satel OEM22 – Channel 2

GS14 2013 Models – Satel OEM20 – Channel 2



To Access Main Menu



Instrument / Connection settings



RTK Fixed

To Store a point tap this icon



Opens Point Database

### Technical Questions/Support/Help

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