

# **Using the GNSS System**

#### **Objectives**

In this lesson you will learn how to:

- To set up a Base Station and broadcast corrections
- Start the rover and connect to the Base Station
- Start the rover and connect to a VRS Network
- Setup your position to the job site coordinates
- Layout and measure with the rover



### **GNSS** – What you need to know

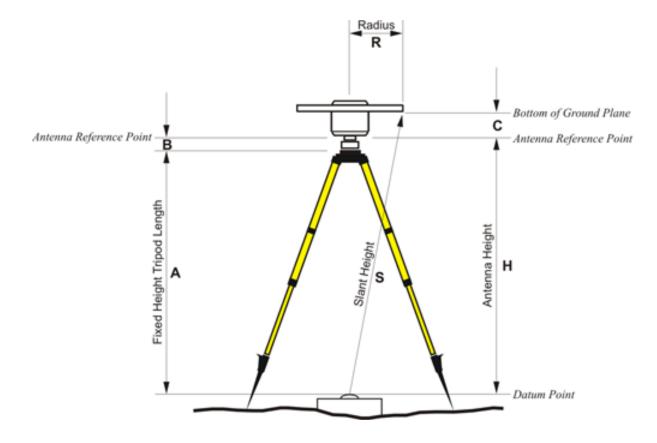
- You MUST have line of sight to the sky to track the satellites
  - High precision GNSS requires a stronger signal than your phone does for navigation

You need to be tracking a minimum of 6 satellites

Elevator shafts, cranes, columns may block satellite signals



#### **User errors**

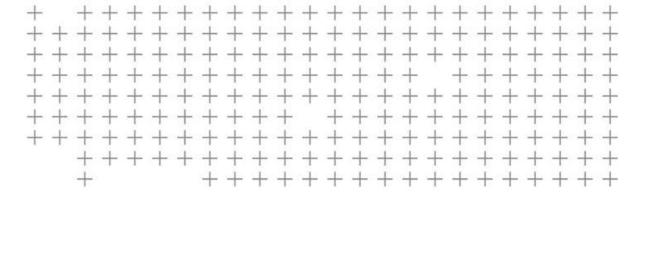


Measuring height of base station



Tilted rod







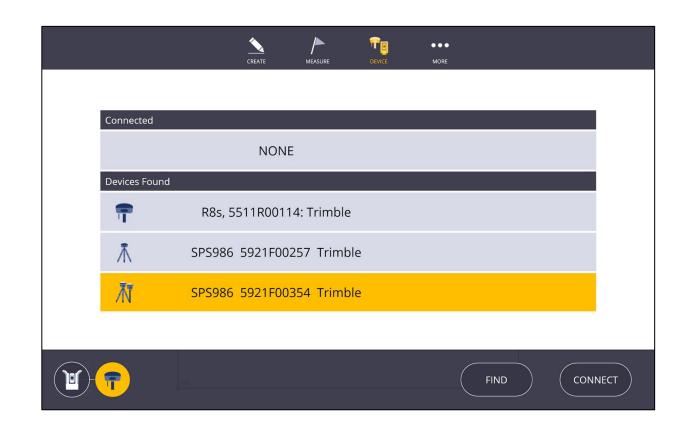
#### Procedure:

- Connect to SPS986 base receiver via Bluetooth
- Select point where Base Station is setup OR choose "Setup Anywhere"
- Enter Base Station name
- Input height of SPS986 above the ground (optional)
  - No need to do this if always using "Setup Anywhere"
- Select Radio Channel



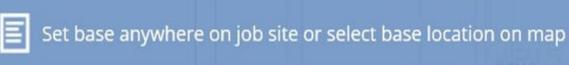
Connect to Base Station

- If not immediately visible
- Tap Find
- Select Base Station receiver
- Tap Connect





 Select Point of Base Station Location, Or



Select Set Anywhere



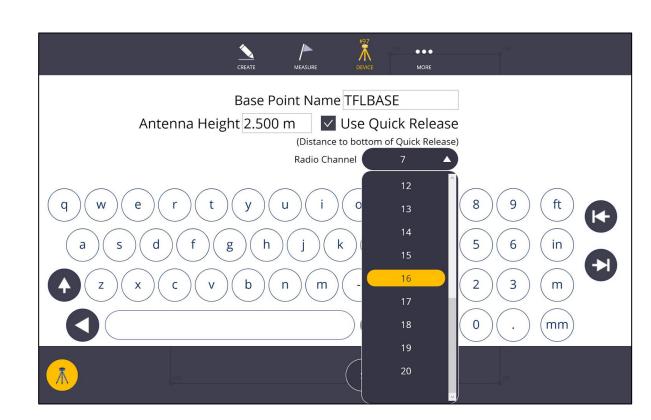


Enter Base Station Name

Enter Antennae Height

 Select Radio Channel from drop down menu

Tap Store



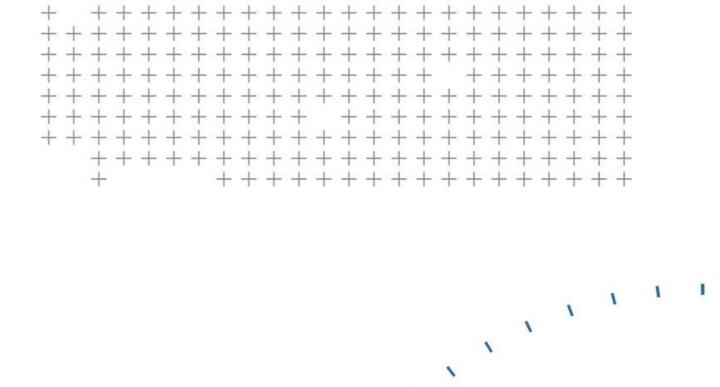


Base station is now broadcasting



Tap Find Rover





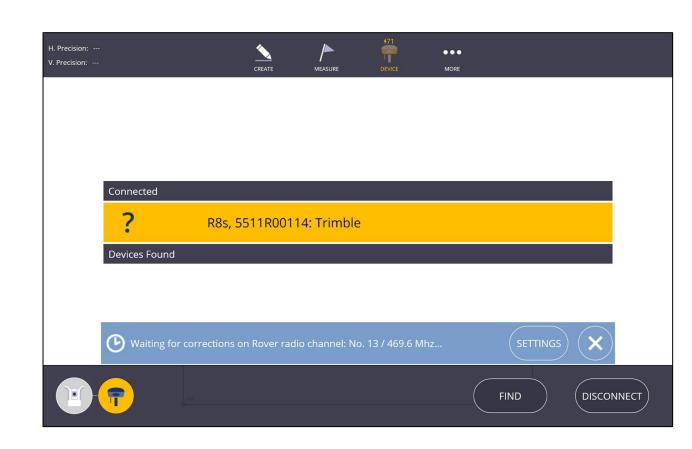


- Connect to SPS986 rover receiver via Bluetooth
- Select same radio channel as Base Station
- Input rod height
- Wait for SPS986 to receive base corrections
  - Receiver icon on top bar will not flash if receiving corrections



Connect to Rover

- If not immediately visible
- Tap Find
- Select Rover receiver
- Tap Connect





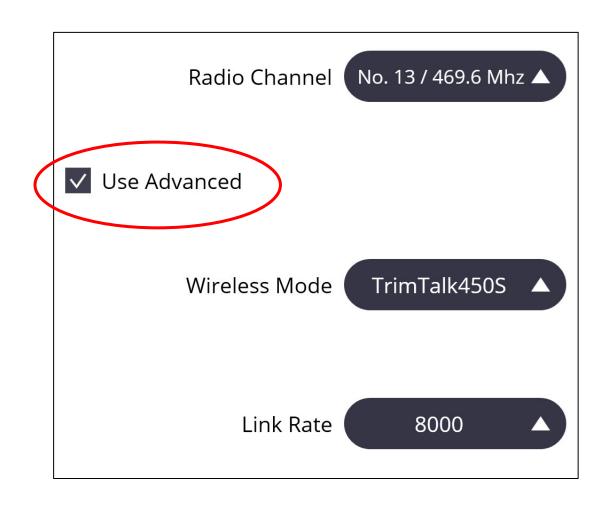
If no auto connection

- Tap Change Channel
- Select Radio Channel matching the Base Station
- Tap Store
- Enter Rod Height



 For connection to 450Mhz base stations

- use advanced option
  - select
    - wireless mode
    - link rate
    - options with external radios



Select various wireless types

Select link rate (aka baud rate)









 Additional options with external radios

Forward Error Correction
Scrambling



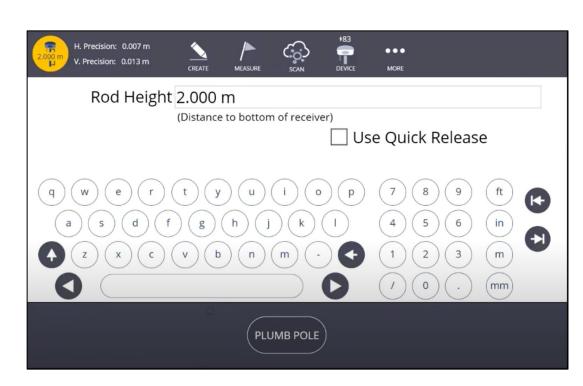
To input the rover rod height:

Tap Rod Height Icon

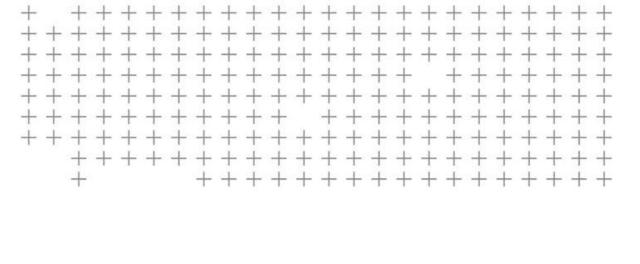


Enter Rod Height

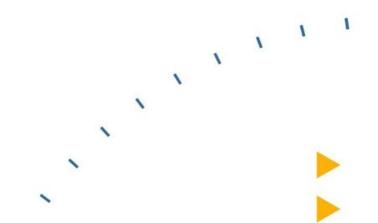
Option for use of Quick Release











**Start Rover with VRS** 



#### **Start Rover with VRS**

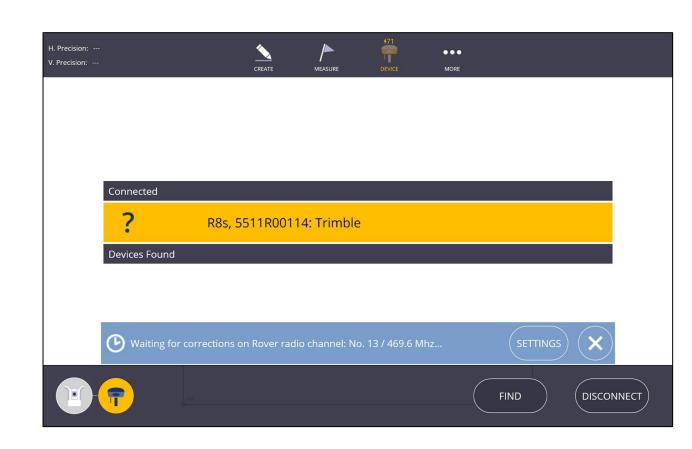
- Connect the Tablet to the internet using a mobile hotspot
- Connect via to Rover Bluetooth
- Input VRS login details
- Input rod height
- Wait for SPS986 to receive base corrections
  - Receiver icon on top bar will not flash if receiving corrections



#### **Start Rover with VRS**

Connect to Rover

- If not immediately visible
- Tap Find
- Select Rover receiver
- Tap Connect

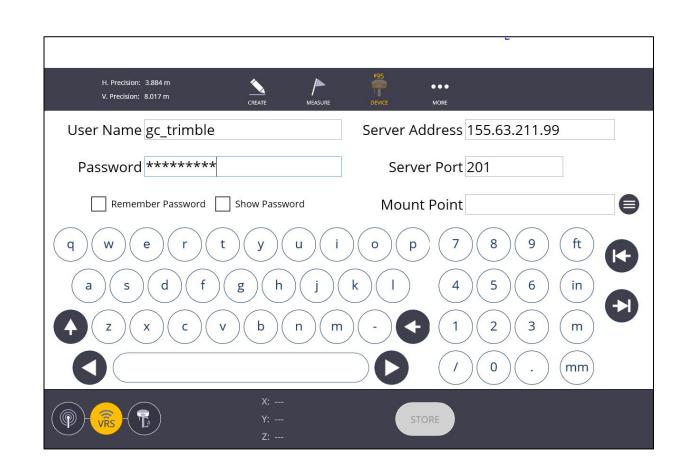




### **Input VRS Login Details**

Select VRS

Input VRS Login Details





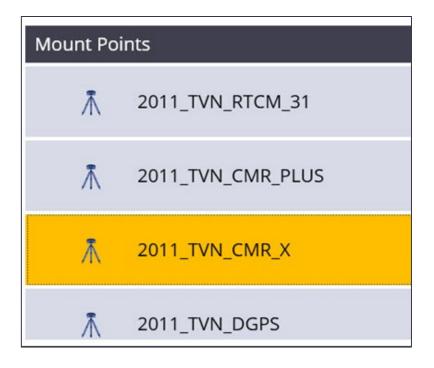
### **Input VRS Login Details**

Select Mount Point

Tap Store

Mount Point









Similar to RTS and RPT, you have to reference to known control points

 For the SPS986 rover you need three or more control points to establish the position

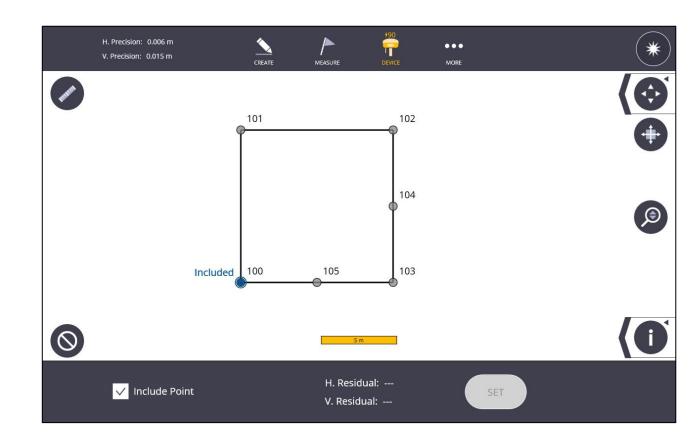
These points should encompass the area you are working in







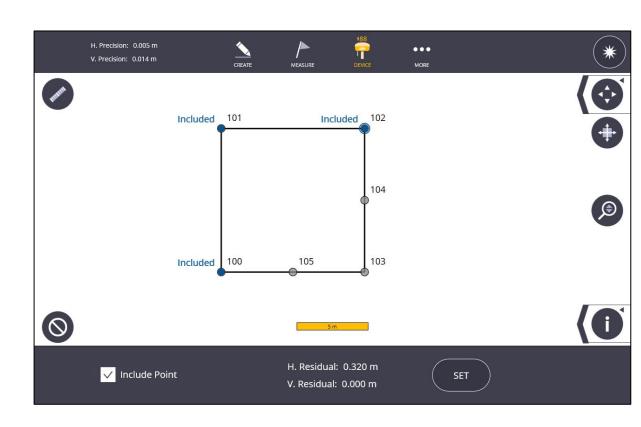
- Select Setup
- Measure first point
- Tap Include Point
- Measure 2<sup>nd</sup> & 3<sup>rd</sup> points





- After 3<sup>rd</sup> point residuals are displayed
  - If required measure more points
  - Suggest 4<sup>th</sup> point for good vertical residuals

Tap Set





#### Setup verification

- Select Setup
- Measure Known Control Point
- Residuals are displayed
- If required, tap New Setup







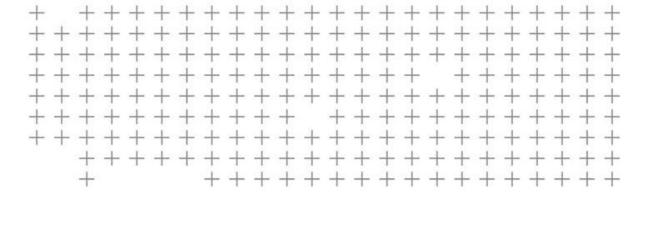
#### Do I always have to Setup Rover Position?

- NO!
- If you are using VRS, you only have to do this the first time
- If you are using a Base Station, you only have to do this the first time as long as you subsequently set the Base Station up on a Known Point

#### Notes:

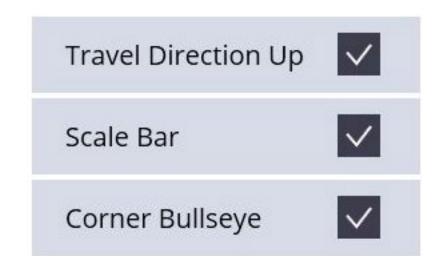
- Every time you start working, you should always verify the setup on a design or control point
- Redo setup if coordinates are different on each deck





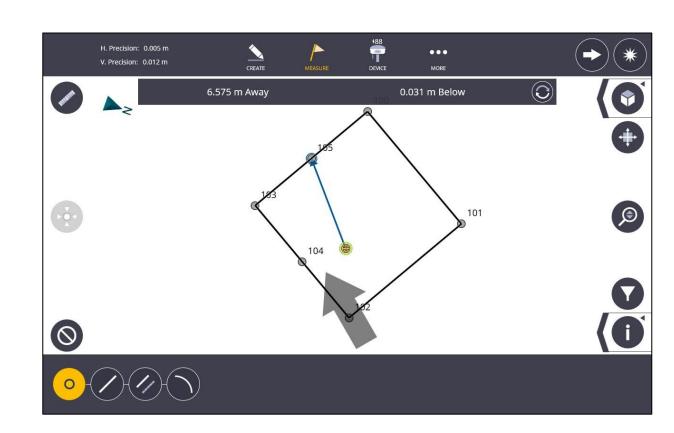


- Exactly the same as RTS/RPT except you have no RTS/RPT to orient yourself to
- In layout mode, make sure arrow is always pointing up the screen for best directions.
   This shows you are walking in the right direction. Select map options to have map rotate on screen with North orientation
- In bullseye mode, never rotate your body.
  Always shift left and right to keep the orientation correct





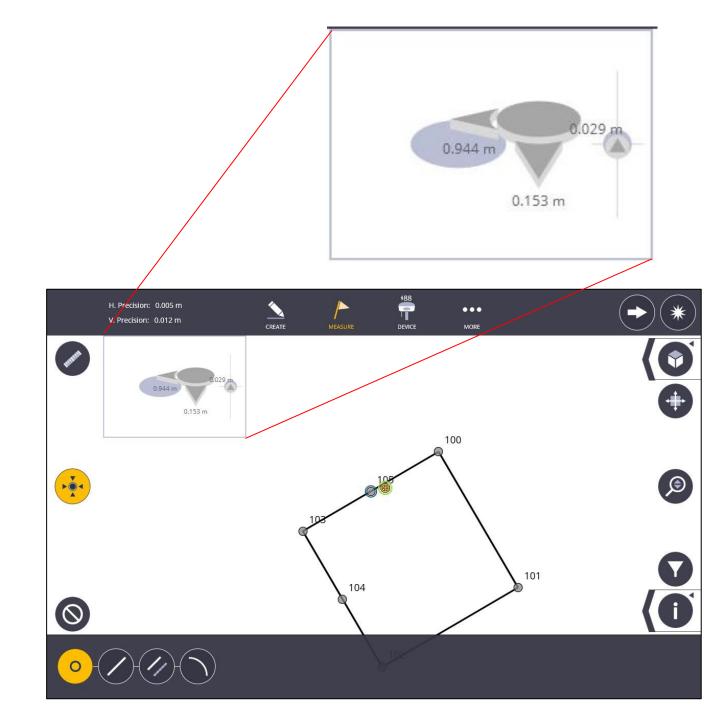
- Select Measure/Layout
- Select point on screen
- Written directions & directional arrow displayed
- Start walking keeping arrow point up to navigate to point





 When close to point bullseye graphic is displayed

- Level over point
- Tap measure





### Layout a Line

- Select Measure/Layout
- Select layout line icon



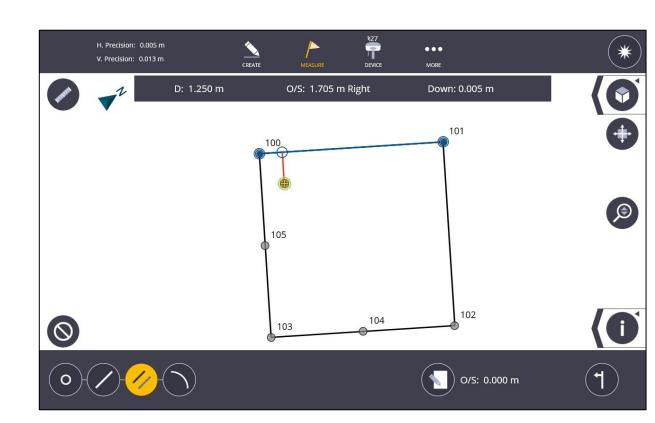
- Select the line on the map
- Using Input Form, enter O/S, Int, SD
- Select point and layout





## Layout To a Line

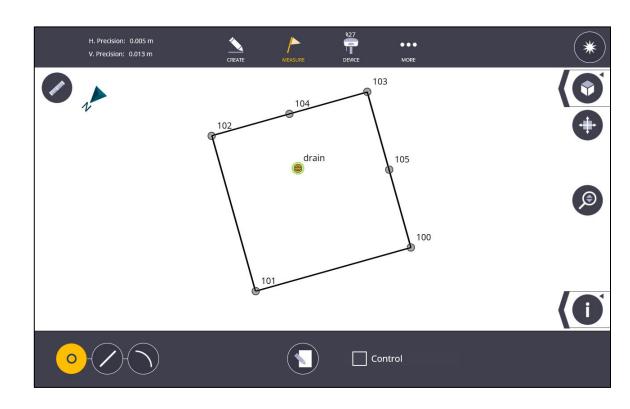
- Select Measure/Layout
- Select layout to a line icon
- Select the line on the map
- Using Input Form, enter O/S
- Follow directions to the line





#### **Collect data**

- Select Measure/Collect
- Select Point, Line or Arc
- Enter details via Input Form
- Move to location & measure



#### **Objectives**

You should now be able to:

- To set up a Base Station and broadcast corrections
- Start the rover and connect to the Base Station
- Start the rover and connect to a VRS Network
- Setup your position to the job site coordinates
- Layout and measure with the rover

### **Questions & Concerns**







