

# TRIMBLE ACCESS HELP SHEETS

## Lines & Alignments

### CREATING AND STAKING AN ALIGNMENT FROM POINTS

This section will guide the user through the process of creating an alignment from two or more points and staking the alignment and offsets. Alignments are created and used when a line consists of two or more points and often have a vertical component. They can be defined by a series of points or created by another software program (ex: CADD) and imported to a survey job. This section will cover creating alignments from points. See the help sheet covering map functions for importing alignments from outside software.

1. You must be inside a survey job that contains points. The points can be observed, uploaded from file, or manually entered.

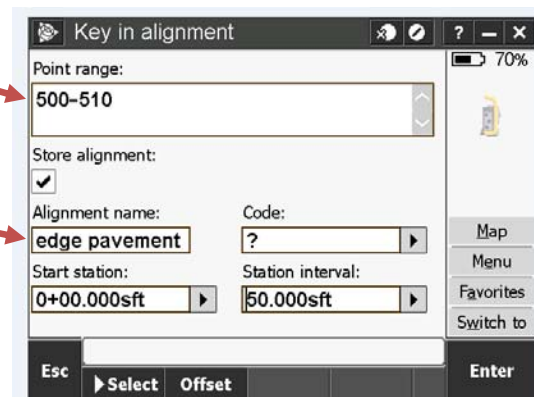
2. Click on *Key In* in the job home screen.

3. Choose *Alignments*.



4. Enter the points or point range that correspond to the alignment. (see the excerpt from the Trimble Access User Manual on the next page for details on entering points for alignments)

5. Name the Alignment and choose a station interval tap the box to store the alignment. If you will be staking the same alignment multiple times it is a good idea to store the alignment. Trimble alignments and the corresponding profiles are stored as *.rxl* files in the job folder.



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From page 147 of the Trimble Access User's Manual

#### To key in an alignment by a point name range:

1. From the main menu, select *Key in / Alignments*.
2. To key in a new alignment, enter the point names that define the alignment (if the *Key in alignment* screen is displayed). If the *Select an alignment* screen is displayed, tap *New* to enter the point range.

The following name range techniques are supported:

Enter	Result
1,3,5	Creates a line between points 1 to 3 to 5
1-10	Creates lines between all points from 1 through 10
1,3,5-10	Creates a line between points 1 to 3, to 5, and 5 through 10
1(2)3	Creates an arc between points 1 and 3, through point 2
1(2,L)3	2 (Radius point), L (left) or R (right) Creates a <b>Left</b> hand arc between points 1 and 3, with point 2 as the radius point
1(100,L,S)3	1 to 3, radius=100, L (left) or R (right), L (large) or S (small) Creates a <b>Left</b> hand <b>Small</b> arc between points 1 and 3 with a radius of 100

3. To store the alignment, select the *Store alignment* check box, enter an *Alignment name*, enter a *Code* (if required) and a *Start station* and *Station interval* and then tap *Store*.

Alignments are stored as RXL files. If you save the alignment, you can easily stake it again, view it in the map, and share it with other jobs and with other controllers.

Alignments always have a horizontal component; the vertical component is optional. If an alignment is created using entities that have elevations, the alignment will have a vertical component.

4. To offset an alignment, tap *Offset*.
5. Enter the offset distance.  
To offset to the left, enter a negative value.
6. To store the offset alignment, enable the *Store alignment* check box, enter an *Alignment name*, enter a *Code*, if required, and then tap *Store*. The alignment is stored as an RXL file.
7. To store node points at the vertices of the offset alignment, enable the *Store points at nodes* check box, enter a *Start point name*, enter a *Code*, if required, and then tap *Store*.

An offset alignment will have a vertical component if the vertical geometry of the original alignment is coincident with the horizontal geometry and the vertical geometry consists only of points. The offset vertical geometry cannot include curves. If the vertical geometry of an alignment cannot be offset, only the horizontal component will exist in the offset alignment. You cannot offset an alignment that includes transitions.

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### Staking Lines & Alignments

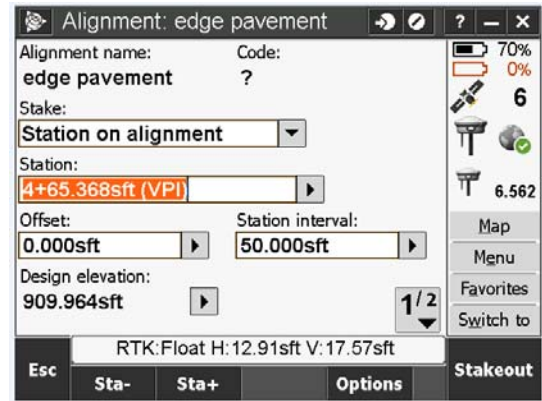
Pages 360-371 of the Trimble Access User's Manual

#### 1. ALIGNMENTS

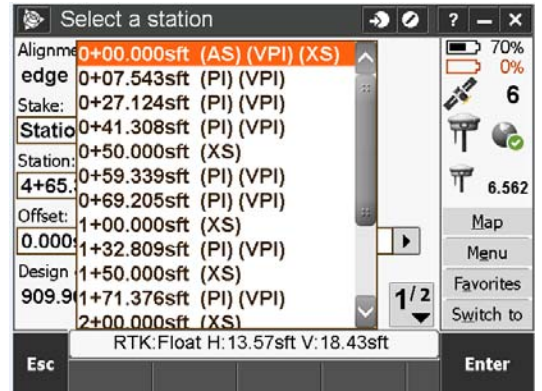
- Select the alignment or create a new one.
- Set the station interval and select a station.
- Set the station offset and side (left or right).

**NOTE: The alignment and profile will generate stations to stake at the interval you select. The alignment will also have stations identified where the profile and alignment changes direction. These are outlined in the table below (from the Trimble Access User's Manual).**

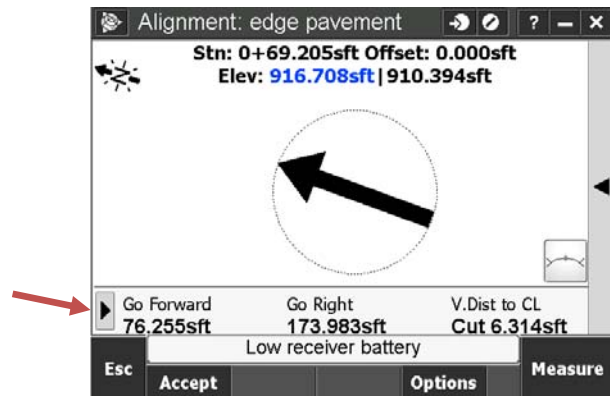
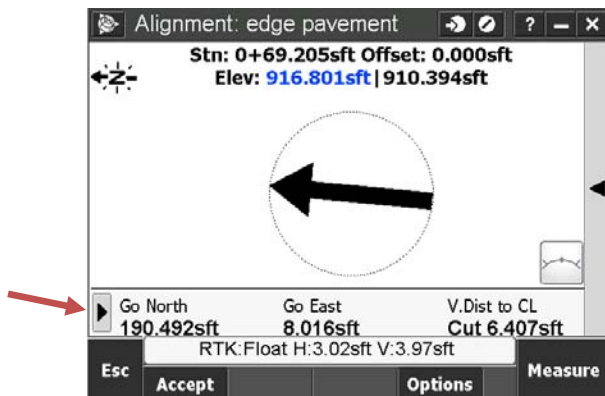
- Page 2 contains boxes will allow the user to set constant horizontal and vertical offsets to the alignment and profile.



Abbreviation	Meaning	Abbreviation	Meaning
CS	Curve to transition	SS	Transition to transition
PC	Point of curvature (Tangent to curve)	ST	Transition to tangent
PI	Point of intersection	TS	Tangent to transition
PT	Point of tangent (Curve to tangent)	VCE	Vertical curve end
AS	Alignment start	VCS	Vertical curve start
AE	Alignment end	VPI	Vertical point of intersection
SC	Transition to curve	XS	Regular sections
Hi	Vertical curve high point	Lo	Vertical curve low point



- Tap *Stakeout*.
- The stakeout mode orientates the user along the alignment. Click on the arrow above the *Esc* button to switch to a grid orientation.



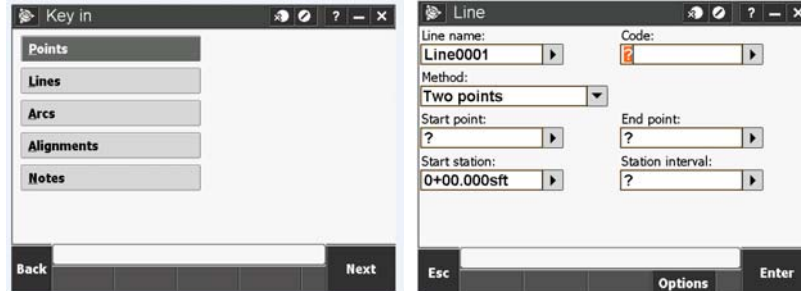
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### 2. LINES

Lines are simple versions of alignments. They consist of two points and may or may not have a vertical component. See the instructions from pages 355-357 of the Trimble Access User's Manual outlines staking Lines.

- Create a Line. Choose Key In or Stakeout Line and enter two points to define the line



### Stakeout - Lines

To stake out a line in an RTK or conventional survey:

1. Do one of the following:

- ◆ From the map, select two points to define a line, tap and hold on the map and then select *Stake out line* from the menu.
- ◆ From the map, select the line to be staked out. Tap *Stakeout*, or tap and hold on the map and then select *Stake out line* from the menu.
- ◆ From the main menu, select *Stakeout / Lines*. Enter the line name.

**Tips**

- ◆ In the *Line name* field (or the *Start point* or the *End point* field) use the advanced pop-up arrow to select staking either a keyed-in line or one defined from two points.
- ◆ To stake out a line, double tap it on the map.
- ◆ When selecting a line to stakeout, tap near the end of the line that you want to designate as the start. Arrows are then drawn on the line to indicate the direction.  
If the direction is incorrect, tap the line to deselect it and then tap it at the correct end to reselect the line in the direction required. Alternatively tap and hold on the map and select *Reverse line direction* from the menu.
- ◆ When staking by *Station on the line* or *Station/offset from line* use the *Sta-* and *Sta+* softkeys to select the station to stake.

**Note** - If the line has been offset, the offset directions are not swapped when the line direction is reversed.

2. In the *Stake* field, select one of the following options:

- ◆ *To the line*
- ◆ *Station on the line*
- ◆ *Station/offset from line*
- ◆ *Slope from line*

3. Enter the *Antenna/Target height*, the value of the station to be staked out (if any), and any further details, such as horizontal and vertical offsets. Tap *Start*.
4. Use the *graphical display* to navigate to the point.
5. When the point is within tolerance measure the point.

**Tips**

- ◆ When using a GNSS receiver with an in-built tilt sensor, you can:  
◊ tap *eBubble* to display an electronic bubble

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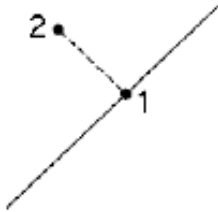
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◇ configure the survey style to prompt a warning when the pole is outside a specified *Tilt tolerance*

◆ Tap *Options* to configure the quality control, precision, and *tilt settings*.

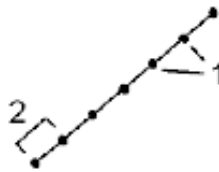
### To the line

Use this option, as shown in the diagram below, to stake out points on a defined line starting with the closest point (1) from your current position (2).



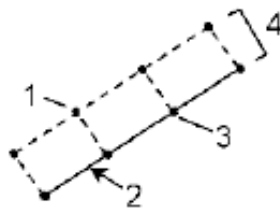
### Station on the line

Use this option, as shown in the diagram below, to stake out stations (1) on a defined line at the station interval (2) along the line.



### Station/offset from line

Use this option, as shown in the diagram below, to stake out points (1) perpendicular to stations (3) on a defined line (2) and offset to the left or right by a set distance (4).



### Slope from line

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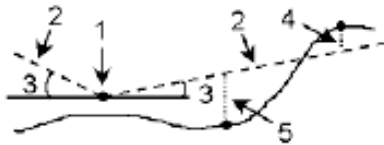
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Use this option, as shown in the diagram below, to stake out points on surfaces (2), at different defined grades (3), either side of the defined line (1).

Use the *Slope left* field and the *Slope right* field to define the type of grade in one of the following ways:

- horizontal and vertical distance
- grade and slope distance
- grade and horizontal distance

At any point on the surface, the display shows the closest station, the Horizontal offset, and the Vertical distance as a cut (4) or a fill (5).



### Using the Map to stake Alignments and Lines

1. Once an Alignment is created or imported it will appear in the map section. Tap on the alignment to select it. Tap Stakeout in the lower left corner of the screen. This will bring you to the alignment stakeout screen.
2. It is also possible to highlight two points in the map screen and hold the stylus to bring up a menu box. Select stakeout line to define and stakeout a line between the two highlighted points.
3. Different options appear in the menu box depending on how many points are highlighted.

