

TAKE CONTROL!

Alan W. Roth, MS

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One key element of data collection is being forgotten, ignored, or overlooked - making and recording observations to control points. While the modern total station and data collector are truly wonderful tools, without control the large amount of data collected by the system is like a boat without a rudder. To give direction to your efforts, shoot your control!

It has been my experience that a set routine should be established for your survey crew to follow. Our standard operating procedure requires that control be measured and noted immediately on the data collector and in the field book after the instrument has been set up and leveled. This assures the observations to controlling points are established before any outside influences have had an opportunity to degrade the set-up. If we are making observations for an extended period of time at a particular instrument location, we will observe our control points from time to time. This assures that any data observed between the control shots is either good or that a problem has developed and appropriate action can be taken to remedy the situation. As a minimum, we require our crews to observe both vertical and horizontal control points at the beginning of each instrument set-up and again before the instrument is picked up.

One of the major advantages of using a total station equipped with data collection is that errors previously attributed to blunders, i.e. transposition errors, can be eliminated. Even if the wrong reading is set on the horizontal circle in the field or the wrong elevation is used for the bench, the data itself may be quite precise.

I.S.T.O. NEWS

To make the data accurate, many software packages will allow the data to be rotated and/or adjusted as it is processed. The only way to assure that these corrections and/or observations have been accurately processed is to check the data to control points. Without these observations in the magnetically recorded data, the orientation of that data will always be in question.

The use of a total station with a data collector can be looked upon as two separate and distinct operations. The following check lists for setting up the total station and data collector are a good place to start.

Total Station

1. If EDM is modular, mount it on instrument.
2. Connect data collector.
3. Set up and level instrument.
4. Turn on total station.
5. Set atmospheric correction (ppm). This should be done in the morning or at noon.
6. Set horizontal circle.

7. Set coordinates.
- 8a. Observe backsight (check coordinates of backsight and check azimuth to backsight).
- 8b. Invert & repeat (check whether azimuth to backsight is 180 degrees from previous reading).
9. Observe backsight bench mark (obtain difference in elevation)*.
10. Compute relative instrument height (bench mark elevation +/- difference in height). Note height of rod and note computations in field book.
11. Input Z (elevation) value in instrument or data collector.
- 12a. Observe backsight bench mark (check elevation).
- 12b. Invert and repeat (check elevation).

* This may require factoring in the height of reflector above bench mark.

Data Collector

1. Record date and your job number.
2. Record client number and client's job number.
3. Record crew number and instrument serial number.
4. Record field book number and page number.
5. Record instrument location (coordinates).
6. Record backsight azimuth.

7. Record standard rod height.
8. Record height of instrument. **Note:** All the above information should also be recorded in field book.
9. Observe and record measurement to backsight bench mark.
10. Enter alpha or numeric descriptor of above point into data collector.
11. Invert instrument and repeat steps 9 and 10.
12. Observe and record measurement backsight bench mark or check bench mark (if setting bench mark, note in field book and repeat with instrument inverted).
13. Enter alpha or numeric descriptor of above point into data collector.
14. Observe and record measurement to backsight.
15. Enter alpha or numeric descriptor of above point into data collector.
16. Invert and repeat steps 14 and 15.
17. Observe and record measurement to foresight.
18. Enter alpha or numeric descriptor of above point into data collector.
19. Invert and repeat steps 17 and 18.
20. Observe and record measurement to side shot.
21. Enter alpha or numeric descriptor of above point into data collector (repeat steps 20 and 21 as needed).